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October 5, 2004

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

SUBJECT: **Revised Final Characterization Report**
Small Arms Range Airfield Parcel (SEAD-122B)
Seneca Army Depot Activity
Romulus, New York

Dear Mr. Bradley:

Parsons Engineering Science, Inc. (Parsons) is pleased to submit electronic and hardcopy versions of the Revised Final Characterization Report for the Small Arms Range Airfield Parcel (SEAD-122B) at the Seneca Army Depot Activity in Romulus, New York.

Since this last version of this document was submitted in March 2004, this Characterization Report has been updated to (1) incorporate responses to EPA comments on the March 2004 document and to (2) include data from a reanalysis of a confirmation sample and from the collection of a new confirmation sample from the area where soil was stockpiled.

This work was performed in accordance with Delivery Order 21 as described in the Parsons Contract DACA87-02-D-0005.

Parsons appreciates the opportunity to provide you with this report. Should you have any questions, please do not hesitate to call me at (617) 457-7905 to discuss them.

Sincerely,

Todd Heino, P.E.
Program Manager

cc: S. Absolom, SEDA
R. Battaglia, USACE – NY District
K. Hoddinott, USACHPPM
C. Boes, USACE

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October 5, 2004

Mr. Julio Vazquez
USEPA Region II
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Mr. A. Joseph White
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Bureau of Eastern Remedial Action
Division of Hazardous Waste Remediation
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Albany, New York 12233-7015

SUBJECT: **Final Characterization Report**
Small Arms Range Airfield Parcel (SEAD-122B)
Seneca Army Depot Activity
Romulus, New York

Dear Mr. Vazquez / Mr. White:

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Should you have any questions, please do not hesitate to call me at (617) 457-7905 to discuss them.

Sincerely,

Todd Heino, P.E.
Program Manager

cc: E. Kashdan, Gannett Fleming Inc.
C. Bethoney, NYSDOH
S. Bradley, USACE
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FINAL, Revised

CHARACTERIZATION REPORT FOR THE SENECA ARMY DEPOT ACTIVITY SMALL ARMS RANGE AIRFIELD PARCEL (SEAD-122B)

Prepared For:

Seneca Army Depot Activity

5786 State Route 96
Romulus, NY 14541

U.S. Army Corps of Engineers

Engineering and Support Center, Huntsville
and
New York District

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EPA SITE ID# NY0213820830

NY State ID# 8-50-006

CONTRACT # DACA87-95-D-0031

DELIVERY ORDER #32

PROJECT # 741401

October 2004

LISTING OF ACRONYMS

ASP	Analytical Services Protocol
ATV	All-terrain Vehicle
bgs	Below ground surface
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liabilities Act
cy	cubic yards
FFA	Federal Facilities Agreement
GEL	General Engineering Laboratories, LLC
MS/MSD	Matrix Spike/Matrix Spike Duplicate
MW	Monitoring Well
NGVD	National Geodetic Vertical Datum
NTU	Nephelometric Turbidity Units
NY	New York
NYSDEC	New York State Department of Environmental Conservation
PID	Photoionization detector
PVC	Polyvinyl chloride
ppb	Part(s) per billion or micrograms per Kilogram (ug/Kg) or micrograms per Liter (ug/L)
ppm	Part(s) per million or milligrams per Kilogram (mg/Kg)
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SAR	Small Arms Range
SCIDA	Seneca County Industrial Development Agency
SEDA	Seneca Army Depot Activity
SOP	Standard Operating Procedures
SPLP	Synthetic Precipitation Leach Procedure
STL	Severn Trent Laboratories
TAGM	Technical and Administrative Guidance Memorandum
TAL	Target Analyte List
TCLP	Toxicity Characteristic Leaching Procedure
TOC	Total Organic Carbon
UFPO	Underground Facilities Protection Organization
ug/L	Microgram per liter (equal to a part per billion in water)
USEPA	United States Environmental Protection Agency

Listing of Acronyms
(continued)

VOCs	Volatile organic compounds

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SECTION 1

INTRODUCTION

1.1 PURPOSE OF INVESTIGATION WORK

The purpose of this report is to describe site characterization activities conducted at the Small Arms Range (SAR) within the Airfield Parcel (SEAD-122B) at the Seneca Army Depot Activity in Romulus, New York between late June 2002 and February 2004 (Figure 1.1). Ultimately, it is the Army's goal to transfer this property to the Seneca County Industrial Development Agency (SCIDA), and the SCIDA's identified future user of the site, the New York State Police, has indicated that they intend to use the range for arms training.

The characterization activities included the collection and chemical laboratory analysis of soil and shallow groundwater samples followed by analysis of the resulting data versus federal and state recommended soil cleanup objectives and groundwater quality standards. Site characterization activities were completed in two phases. First, a site investigation was performed throughout the area of the SAR to obtain data defining the nature and extent of potential residual contaminants present at the site. The site investigation was followed by a limited treatability study, which focused on documenting whether physical separation techniques in which spent bullets, bullet fragments, and shell casing were removed from the soil, could be used to mitigate identified site contamination caused primarily by lead. The treatability study included confirmational sampling and analysis of soil from the locations where soils were excavated and used as source material within the treatability study. The post treatability study confirmational soil sampling results are included in this report in order to fully characterize current site conditions at the SAR, Airfield. The scope of the treatability study and a description of the results achieved will be presented in a separate report for the treatability study, which will be issued after this report is issued.

Fieldwork described in this report was conducted in accordance with the *Characterization Work Plan* (Parsons June 2002), the *Treatability Study Work Plan for the Airfield Small Arms Range* (Parsons, November 2003), and with the *Generic Installation Remedial Investigation/ Feasibility Study (RI/FS) Work Plan for the Seneca Army Depot Activity* (Parsons 1995a). No significant deviations from the planned field activities were needed.

The project objectives for the characterization activities conducted at the Airfield SAR have been met. These objectives were to:

- Characterize the nature and extent of site-related contaminants in soil and groundwater at the Airfield SAR;

- Characterize the nature and extent of site-related contaminants in the soil following completion of the treatability study; and
- Provide the data necessary to assess whether future efforts are required prior to transferring the parcel to the State for use as an active small arms range.

The scope of the site investigation work was based on the United States Environmental Protection Agency (USEPA) Region 2 guidance document "Best Management Practices for Lead at Outdoor Shooting Ranges" (USEPA, 2001). The Army has determined that for small arms ranges, the major issues are residual lead contamination and erosion. This is referenced in the document *Prevention of Lead Migration and Erosion from Small Arms Ranges*, (U.S. Army Environmental Center, 1998).

Based on the findings for the site summarized below, the Army submits that no further action is needed and the site is suitable for transfer to the State for unrestricted reuse.

1.2 SITE BACKGROUND

The Air Force, Navy, and Army have operated the Airfield SAR since the 1950s for small arms qualification of base and security personnel. The Seneca Airfield SAR consists of two bermed small arms ranges, one of which was previously used for small arms training while the second was used for machine gun targeting. There have been modifications to the size and shape of the firing lanes and berms since initial construction by the Air Force in the 1950s. The current configuration, constructed by the Army in the early 1980s, consists of a 20-lane small arms range with protective wooden baffles, and a two-lane machine gun range. Each of the firing line areas are surrounded on three sides (north, east and south) by earthen berms that measure up to 28 feet in height. Underlying the firing lines within each range area is a network of footer drains that capture surface water runoff from within the firing lines and conveys it to the open area located west of the SAR where it is discharged..

The berms are constructed of brown to dark brown to gray, silt with clay with interbedded shale, and traces of fine sand and fine to medium gravel. The berms form a horseshoe-shaped protective barrier around each range to trap stray rounds and to protect the bunker and airfield areas behind the range. The west-trending topographic gradient is relatively flat.

Seneca Army Depot Activity (SEDA) is a historic military facility that was selected for closure under the nationwide Base Realignment and Closure (BRAC) program in 1995. The Army has been working with the SCIDA to identify and transfer lands from the Army to parties for beneficial reuses. The SCIDA is currently working with the New York (NY) State Police to transfer the Airfield Parcel, including the Airfield SAR, for state use. The State Police and other state and local entities plan to use the airfield for training in high-speed pursuits and driving skills, and use the Airfield SAR for target practice needed for qualification of enforcement agency staff (similar to past use of the

Airfield SAR). The State's need for the land is immediate. Requirements of the Army covenant on transferring properties (i.e., the risk to the current and future receptors must be controlled or mitigated) will be met prior to transfer.

The Airfield SAR is located in the southwest corner of SEDA adjacent to the SEDA Airfield Parcel (see Figure 1.2). The elevation of the site varies from 600 to 640 feet above mean sea level according to the National Geodetic Vertical Datum (NGVD) of 1929. The land slopes gently towards Seneca Lake (elevation 445 feet above mean sea level), which is located approximately 5,000 feet to the west. The site is bounded on the north by the gorge of the Kendaia Creek and by Indian Creek on the south. Kendaia Creek and Indian Creek are classified as Class C fresh surface waters on the base property and change to Class CTS (trout spawning) downstream of the base. For reference, Kendaia Creek is 2 miles to the north of the Airfield SAR and Indian Creek is 3,000 feet to the east of the Airfield SAR.

Subsurface characterization activities conducted in the vicinity of the Airfield indicate that glacial till and calcareous black shale are the two major geologic deposits. The till is light brown and composed of silt and clay, and some black shale fragments. Competent, calcareous black shale has been encountered at other SEDA sites at depths between approximately 9 and 14 feet below the ground surface. The elevations of the competent bedrock determined during the drilling and seismic programs at nearby SEAD-11 (located to the east of the Airfield SAR) suggest that the bedrock surface slopes to the west, mimicking the slope land surface. Immediately above the competent shale is a one to three-foot thick weathered zone (Parsons, 1995b).

Estimated depth to groundwater at the Airfield SAR is approximately between 8 and 15 feet below ground surface (bgs), based on data collected at the nearby SEAD-11 (Parsons, 1995b). The nature of the groundwater flow at the Airfield SAR is uncertain. Similar to SEAD-11, the groundwater flow in the overburden is anticipated to follow the general trend of the land towards the west and Seneca Lake.

Previous investigations indicate that surface water flow from precipitation events is controlled by local topography. The west-trending topographic gradient is relatively flat in the immediate vicinity of the Airfield SAR, but becomes progressively steeper in the direction of Seneca Lake. Based on local topography, surface water flow at the Airfield SAR is generally to the west toward Seneca Lake. As is indicated above, surface water from within the bermed area is conveyed to the west of the SAR. The Airfield SAR has a network of footer drains along each baffle/target line. These drains collect runoff from the berms (maximum height 28 feet) to grassed expanses that convey surface water to the open area located west of the Airfield SAR. No obvious depressions where surface water could collect are apparent at this site.

Previous contaminant investigation work done at this site included the collection of six surface soil samples (including one duplicate) at impact points along the berms. The samples were analyzed for total metals concentrations. The analytical results are reported in a report titled *Investigation of Environmental Baseline Survey Non-Evaluated Sites*

SEAD-119A, SEAD-122(A,B,C,D,E), and SEAD-123 (A,B,C,D,E,F), SEAD-46, SEAD-68, and SEAD-120(A,B,C,D,E,F,G,H,I,J), SEAD-121 (A,B,C,D,E,F,G,H,I) (Parsons, 1999). Based on the results of this preliminary work, the Army recommended that additional soil sampling and analyses be performed to determine the extent of impacts from metals. This report focuses on the results from the subsequent investigations of the Small Arms Range, Airfield parcel including work conducted as part of an initial site investigation (2002) and the treatability study (2004).

1.3 PROJECT TEAM

1.3.1 Army's Consulting Engineer - Parsons

Parsons project team for the SEDA Airfield SAR Characterization included the following personnel: Mr. Todd Heino, P.E., is the overall Seneca Army Depot Activity Program Manager, and he serves as Technical Director for the project. Mr. David Babcock, P.E., was Parsons' initial Project Manager, as well as Parsons' primary Army contact, and his role was to ensure that the project and client requirements were met in a timely manner. Mr. Babcock was replaced by Mr. Dan Hoffner, who served in an equivalent role, once Mr. Babcock moved to a new position within Parsons. The project supporting staff included environmental and civil engineers, geologist, and field technicians from Parsons Boston, Syracuse, and Buffalo offices.

1.3.2 Parsons' Subcontractors

Severn Trent Laboratories, Inc. Burlington (June – July 2002, STL, Burlington, VT) and General Engineering Laboratories, LLC (January – February, 2004, GEL, Charleston SC) performed the project chemical analyses. Soil analyses included lead, other Target Analyte List (TAL) metals, Total Organic Carbon (TOC), Synthetic Precipitation Leach Procedure (SPLP), and Toxicity Characteristic Leach Procedure (TCLP). Groundwater was analyzed for TAL metals.

North Star Drilling (Cortland, NY) performed drilling activities during the characterization project, which included seven soil borings and installation of three shallow monitoring wells. An all-terrain vehicle (ATV) drill rig was used to maneuver around and on top of the berms.

Welch Construction (Interlaken, NY) was subcontracted to grade down the berm surrounding the machine gun targeting area in order for the ATV drill rig to position itself atop the berm.

Deborah A. Naybor, PLS, P.C. (Alden, NY WBE) provided land topographic surveying and mapping services.

Data Validation Services (North Creek, NY WBE) performed data validation for the chemical characterization efforts completed during the 2002 sampling; Parsons self performed data validation for the 2004 chemical results.

1.4 ORGANIZATION OF THIS REPORT

Section 1 of this report presents the project purpose, site characteristics, team, and report organization. Section 2 outlines the scope of work conducted during the initial site investigation (2002) and the treatability study (2004). Section 3 presents the investigation results for soil and groundwater. Section 4 presents the Army's recommendation for the site. Section 5 contains the list of cited references. The figures and tables are presented at the end of each section to facilitate the review in context with the text. Appendix A contains the geological logs of soil borings and monitoring wells completed during the initial site investigation and the treatability study. Appendix B contains photographic logs. Appendix C contains the Data Validation Reports and analytical results.

SECTION 2

WORK SCOPE

2.1 SITE RECONNAISSANCE AND MAPPING

The identified sample locations were field checked for access and general condition. Various agencies were contacted through the Underground Facilities Protection Organization (UFPO) utility locating service to ascertain buried utility locations. Seneca site representatives were also consulted to help identify buried utility locations.

After completing the field sampling effort, a licensed New York surveyor surveyed the site topography, sample locations and other significant features. The surveyor then generated site mapping that is used for all the figures presented in Section 3.

2.2 INITIAL SITE INVESTIGATION (JUNE – JULY 2002)

2.2.1 Soil Sampling

Soil samples were collected to assess the lateral and vertical extent of the impacted soil during a field program performed in June and July 2002. Surface soil (0 to 2 ft bgs.) samples were collected at 25 locations. Subsurface soil boring samples were collected from 8 locations. Table 2.1 presents the sample identification numbers, the sample depths, and the analyses performed on each sample. Figure 2.1 presents sample locations. Fieldwork documentation summaries are presented in Appendix A.

Surface soil samples were collected at 25 different locations within the SAR. The objective was to assess the lateral and vertical extent of soil impacted by previous small arms training activities at the site. Surface debris, gravel, or grass was scraped from the sampling point before the sample was collected. Two samples were taken at each location (one from 0 to 6 inches bgs. and a second from 18 to 24 inches bgs.) except that only one sample (0 to 6 inches bgs.) was collected from sample location 1025. Each sample was screened for visible bullets and bullet fragments before being sent to the laboratory for analysis. Although the Work Plan states that a No. 10 sieve would be used to screen each sample for bullets, a No. 5 sieve was used for some samples due to the clay content.

Subsurface soil samples were collected during June and July 2002 at seven different boring locations throughout the two berms and three monitoring well locations (Figure 2.1). Between three and seven samples were taken at each of the seven boring locations within the berms and one sample was collected at each monitoring well location, for a total of 32 (plus one duplicate) samples ranging in depth from 0 to 2 feet bgs to 28 to 30 feet bgs into the native soil at the Site. Soil from the berms was comprised of brown to dark brown to gray silt with clay, interbedded shale, traces of fine sand, and traces of fine to medium gravel.

Subsurface soil borings were performed using an ATV drill rig operated by North Star Drilling of Cortland, New York under the observation of a Parsons geologist. Split spoon samplers were driven in advance of hollow stem augers to collect soil samples. Each split spoon sample was examined by a geologist immediately after recovery and monitored for the presence of volatile organic compounds (VOCs) with a photoionization detector (PID). The samples were placed in containers and the headspace was measured with a PID. The soil samples collected from each boring did not show any visual evidence of bullet fragments or elevated PID reading.

2.2.2 Site Monitoring Well Installation, Testing, and Sampling

Three monitoring wells (i.e., MW-1, MW-2, and MW-3) were constructed during the week of July 22, 2002 from borings advanced to depths of 15 to 17.5 feet (see Figure 2.1 for locations). The monitoring wells were constructed of 2-inch diameter, flush-joint, Schedule 40 polyvinyl chloride (PVC) well screen and casing. The final depth of the borings and screened intervals were determined in the field based upon the data collected at the time when the monitoring wells were drilled. The wells were constructed with 10 feet of well screen with 0.010-inch slot size. The well screens were positioned to straddle the water table to account for seasonal groundwater fluctuations. The assembled well pipes were installed through the augers and quartz sand was backfilled through the annulus between the well pipe and auger. The sand pack was extended above the top of each well screen. Above the sand pack, bentonite pellets were placed to form a seal. Cement/ bentonite grout was backfilled from the top of the seal to ground surface. The PVC casing was completed with a vented locking cap and covered by a steel protective casing. The protective casing was grouted in place to limit disturbance to the PVC well pipe. Drilling equipment that came into contact with the subsurface was thoroughly decontaminated by steam cleaning prior to setting up at new drilling locations.

After completing well construction, each of the three monitoring wells was developed and allowed to equilibrate for a minimum of ten days prior to sampling. Each of the wells was developed using an electric Waterra pump. During development, high levels of turbidity were recorded for each of the wells even though at least 50 gallons of water were removed from two of the wells (i.e., MW-1 and MW-3) and the third well was pumped dry three times.

After equilibration, each well was purged prior to collecting samples. A minimum of three well volume equivalents was removed from each of the wells during pre-sampling purging operations, as per standard well development procedures. Temperature, pH, electrical conductivity, and turbidity were measured at periodic intervals (5 – 10 minutes) during pre-sampling purging activities at each well.

Standard procedure calls for monitoring of the aforementioned field parameters and removal of water until the monitoring wells produce clean, sediment-free samples [50 Nephelometric Turbidity Units (NTUs) or less, if possible] and field parameters (temperature, pH, and electrical conductivity) stabilize. Stabilization is considered to be reached when three temperature, pH, and electrical conductivity readings measured at

least 10 minutes apart, are within 10% of each other and the level of turbidity has stabilized. If the field conditions preclude the above-mentioned criteria, the monitoring well development methods and field conditions are then reviewed to determine whether the achieved turbidity is acceptable. Groundwater pH was in the range of 7.2 to 7.4. Prior to the collection of samples, turbidity was measured at a level of 82.9 NTUs, 161 NTUs, and 184 NTUs for MW-1, MW-2, and MW-3, respectively prior to the collection of samples.

Based on field conditions, it was concluded that the achieved turbidity was acceptable. This conclusion was made based on the fact that each well was developed for an hour or greater without any significant decrease in turbidity (i.e., decrease in turbidity <20 NTU) and the fact that the lithological formation encountered was primarily made up of fine material (silt and clay) making the groundwater naturally turbid.

Groundwater samples were collected using low-flow procedures and peristaltic pumps with dedicated tubing following prescribed work plan procedures. The groundwater samples were analyzed for all TAL metals.

Static groundwater levels were measured on July 22, 2002 (see Table 2.2 for results). Groundwater level measurements and elevations based on surveyed top of casing elevations show water levels declining from east to west toward Seneca Lake parallel to and at approximately the same extent as local ground surface elevations.

Slug tests were performed on the three newly-installed groundwater monitoring wells (MW-1, MW-2, and MW-3) on July 24, 2002. The slug tests were performed to determine the hydraulic conductivity of the subsurface at SEAD-122B. Testing was conducted using a Hermit 2000 data logger, a six-foot metal slug, and nylon rope. All equipment was decontaminated between test locations. Both injection (falling head) and withdrawal (rising head) tests were performed at each well location. Results of the slug tests indicate that a wide-range of hydraulic conductivities exist within the subsurface at SEAD-122B. Based on test results, the southeastern section of the site (area in the vicinity of MW-1) exhibited a hydraulic conductivity of 10^{-2} cm/sec, while the southwestern section of the site (area in the vicinity of MW-2) exhibited a hydraulic conductivity of 10^{-3} cm/sec. In addition, the northern section of the site (area in the vicinity of MW-3) was observed to exhibit a hydraulic conductivity of 10^{1} cm/sec. Graphs showing slug test analysis and graphs are provided in Appendix A.

2.3 TREATABILITY STUDY (JANUARY – FEBRUARY 2004)

2.3.1 Study Overview

In January 2004, a limited treatability study was conducted at the Airfield SAR to determine if physical screening represented a viable alternative for treating identified soil with lead contamination, especially if the contamination resulted from the deposition of bullets and bullet fragments. As part of the treatability study, additional sampling and analyses were performed to document the treatability study and the condition of the soil

remaining at the site at the completion of the study (i.e., after the excavation conducted during the study).

Approximately 500 cubic yards (cy) of soil were excavated from the impacted areas, which included the western face of the backstop berm and a drainage swale used to carry surface water runoff away from the firing range area. The western face of the berm was excavated to a depth of 2 to 3 feet below grade surface; this accounted for approximately 250 cy of the soil treated. Approximately 100 cy of soil were excavated from the bottom of the drainage swale and included in the treatability study. These areas were selected for excavation as part of the treatability study due to the high levels of lead detected during the 2002 site investigation program as is reflected in data from sample locations 1010A, 1011A, 1013A, and 1018. Finally, after completion of the treatability study, the top 3 inches of soil underlying the range floor (approximately 150 cy) were excavated from the area confined by the SAR berm. All of the excavated soil was stockpiled, screened, managed within the larger bermed area, and then disposed of off-site at a licensed municipal waste facility.

Additional details of the treatability study will be presented in a separate report for documenting the performance of the treatability study that will be issued in the future for this site.

2.3.2 Confirmational Soil Sampling

Confirmation soil samples were collected from the bottom of areas where soil was excavated for use as source material in the treatability study, and one sample was collected from the area where excavated soil had been stockpiled on a poly-liner prior to disposal. Discrete soil samples were collected from 11 locations as is shown on Figure 2.2; each of these samples was collected 0 to 6 inches below grade. Table 2.1 presents the confirmation sample IDs, sample depths, and analytical methods. Manual grab sampling methods were employed to collect all confirmation samples.

2.4 INVESTIGATION-DERIVED WASTE

Investigation-derived waste resulting from the 2002 site investigation program included soil from monitoring well borings, development and purge water, and site dedicated disposable clothing. Investigation-derived waste was segregated by type and placed in 55-gallon drums and was disposed in accordance with regulatory requirements at off-site facilities. . Wastes resulting from the treatability study will be disposed at a licensed off-site facility. Final disposal of treatability study residues will be documented in the report prepared for the treatability study.

2.5 LABORATORY ANALYSIS

The analytical procedures used during the site investigation and treatability study sampling efforts were performed in accordance with USEPA SW846 methods and were reported in accordance with the New York State Department of Environmental

Conservation (NYSDEC) Analytical Services Protocol (ASP) Category B deliverables. Analytical holding times as specified in the NYSDEC ASP were followed. Table 2.1 presents a listing of all samples collected from the site and the analytical methods used.

Within the site characterization effort, each of the soil samples was analyzed initially for total lead. Then, based on the results for total lead, the most impacted soil samples were analyzed for TAL metals and leach water generated for each of the most impacted samples using the SPLP and TCLP methods. Thirteen soil samples were analyzed for all of these parameters (Table 2.1). The purpose of the SPLP and TCLP tests was to assess the leaching potential of identified impacted soil.

Within the treatability study, conformation samples were analyzed solely to determine the total lead concentration present at a site in the soil.

Groundwater samples from each of the three monitoring wells installed as part of the 2002 site characterization effort were analyzed for TAL metals.

2.6 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) PROGRAM

During the site characterization effort (June – July 2002) and the confirmational sampling effort associated with the treatability study (January – February 2004), QA/QC samples were collected to ensure that the reported sample results were representative, accurate, and precise. The QA/QC samples were analyzed for the same analytes as the corresponding field samples. Field duplicate samples are collected and analyzed to assess the representativeness of the sampling procedures. Matrix spike and matrix spike duplicate (MS/MSD) analyses were conducted using samples collected at the site to assess the presence and magnitude of potential interferences caused by the sample matrix. All site investigative samples characterized during this effort were maintained and shipped following approved sample custody and security procedures.

2.7 DATA VALIDATION

Data validation was performed in accordance with the guidelines set forth in the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (USEPA, 2002), the Region 2 RCRA and CERCLA Data Validation Standard Operating Procedures (SOPs) - SOP HW-2 (USEPA, 1992), and NYSDEC Contract Laboratory Program Analytical Services Protocol, with consideration for the methodology and project requirements. The data validation reports are presented in Appendix C.

SECTION 3

CHARACTERIZATION RESULTS

This section provides a summary of the site characterization findings during the initial site investigation and treatability study, and presents overall conclusions about the presence or absence of impacts, which are attributable to current or historical activities at the Airfield Small Arms Range. The results of the site characterization effort are initially reported separately, segregated by field activity (i.e., 2002 versus 2004 event), and by matrix. Once all results are presented and discussed separately, the overall conclusions of the site characterization effort are summarized and discussed. Comparisons of analytical results obtained from site investigative sampling and analysis procedures are made to State of New York soil cleanup guidance criterion and groundwater standard values.

3.1 FIELD SAMPLING PROGRAM (JUNE/JULY 2002)

3.1.1 Site Observations

The following field observations were made during the initial site characterization effort (June – July 2002):

- A bullet casing, somewhat new in appearance, was observed at the small arms shooting range;
- Bullet fragments were only observed during soil collection at locations 1010 and 1024 within the 0 to 0.5 feet bgs interval; and
- A wooden stand with a metal screen, possibly a weapon cleaning station, was observed at the small arms range.
- The small arms range and machine gun firing range berms were comprised of approximately 28 to 30 feet of brown to dark brown to gray, silt with clay with interbedded shale, and traces of fine sand and fine to medium gravel. The above soil description was based on the drilling of seven soil borings (PSB-1 through PSB-7) on top of the berms in June 2002.

3.1.2 Soil Results

All soil data from the initial site characterization effort are presented in Table 3-1 through Table 3-4.

Lead is the primary contaminant of concern at small arms ranges. Available literature indicates that small arms firing ranges contain lead, antimony, copper, zinc and arsenic contamination resulting from shell casings, non-exploding bullets and bullet fragments; however, lead has been assessed as the primary risk driver (ITRC, 2003).

Lead Results

Soil samples were collected at locations on the range floor, the face of the berms, and from adjacent drainage swales on June 28 and 29, 2002. The data for lead were compared to the federal guidance value of 400 milligrams per Kilogram (mg/Kg) or parts per million (ppm) (USEPA, 1998), and these results are summarized in Table 3.1 and Figure 3-1. Table 3.2 shows results of samples with total lead above 400 ppm.

Four of the surface soil samples showed lead concentrations greater than 400 ppm, which is the screening level recommended by USEPA (1998) for lead in soil at residential properties. The two samples located at target height along the east side of the berm (impact area), 1010A and 1011A, showed the highest lead levels, with concentrations of an estimated (i.e., "J") 7,320 ppm (the average of the sample and the field duplicate) and an estimated 60,650 ppm (the average of the sample and the field duplicate), respectively. The maximum lead value (88,700 J ppm) was detected in one of the duplicate pair samples collected at location 1011A, at the southeastern perimeter of the small arms berm.

Sample 1018A collected from the drainage swale in the 0-6 inch interval showed lead at 927 ppm. The lead concentration in the 18-24-inch interval at the same location was 19.3 ppm. Thus, the contamination was surficial only. Sample 1019A was collected further downstream and was 13.7 ppm. Thus, the end point (clean sample) was found and the lateral contamination is limited. Soil from the drainage swale, between the location of the range and sample 1019A was excavated and used in the treatability study operation.

No samples from the 18 to 24-inch interval below ground surface showed lead concentrations equal to or greater than 400 ppm.

Other TAL Metals Results

TAL total metal results for the 2002 samples are presented in Table 3.1. The concentrations at several locations were above the maximum SEDA-specific background levels for metals including antimony, arsenic, copper, lead, silver, sodium, thallium, and zinc. Although calcium and magnesium were detected above the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046 soil cleanup objectives at one surface soil sample location (1015A and 1001A for calcium and magnesium, respectively), the maximum calcium and magnesium concentrations were below the maximum SEDA-specific background levels.

Antimony

Antimony can be used as a hardening agent in bullets. Antimony was detected above the NYSDEC TAGM 4046 soil cleanup objective of 5.9 ppm in two surface soil (i.e., 0 to 6-inch depth) samples (1010A and 1011A). The maximum antimony concentration of 670 J ppm was observed at the same sample location (1011A) where lead was detected at

88,700 J ppm. Antimony concentration detected in sample 1010A was 109 J ppm. Both Sample 1010A and Sample 1011A were within the proposed excavation area for the treatability study.

Arsenic

Arsenic was detected above the TAGM 4046 soil cleanup objective of 8.2 ppm at the two surface soil sample locations: 1011A and 1013A. The concentrations were 84.6 J ppm and 11.5 ppm, respectively. Sample locations of 1011A and 1013A were within the proposed excavation area for the treatability study.

Copper

Five of the surface soil samples (1001A, 1011A, 1013A, 1024A) showed copper concentrations above the NYSDEC TAGM 4046 soil cleanup objective of 33 ppm. The maximum copper concentration of 5,690 J ppm was detected at sample location 1011A (0 to 6-inch depth) collected near the southeastern perimeter of the berm where lead was 88,700 J ppm. The copper concentrations detected at 1001A, 1013A, 1024A, and 1025A were comparable to the maximum Seneca background concentration (i.e., 41.2~75ppm vs. 62.8 ppm). Sample locations of 1001A, 1011A, and 1013A were within the proposed excavation area for the treatability study.

Silver

Silver was detected above the TAGM 4046 soil cleanup objective at 0 to 0.5 ft bgs at 1011A (3.4 J ppm vs. 0.75 ppm). Sample location of 1011A was within the proposed excavation area for the treatability study.

Sodium

Sodium was detected above the TAGM 4046 soil cleanup objective of 172 ppm at the following three locations: 0 to 0.5 ft bgs. at 1008A and 1009A and 1.5 to 2 ft bgs. at 1002B. The concentrations were 182 J ppm, 388 J ppm, and 343 J ppm, respectively. Sample locations of 1008A and 1009A were within the proposed excavation area for the treatability study. It should be noted that sodium is not a chemical of potential concern associated with small arms ranges and ammunition.

Thallium

Thallium was detected above the TAGM 4046 soil cleanup objective of 0.7 ppm at the following two locations: 0 to 0.5 ft bgs. at 1011A and 1.5 to 2 ft bgs. at 1024B. The concentrations were 1.7 J ppm and 0.74 J ppm, respectively. Sample location of 1011A was within the proposed excavation area for the treatability study.

Zinc

Zinc was detected above the TAGM 4046 soil cleanup objective at 0 to 0.5 ft bgs at 1011A (630 J ppm vs. 110 ppm). Sample location of 1011A was within the proposed excavation area for the treatability study.

SPLP Metals Results

SPLP results for soil samples are shown on Table 3.3.

Antimony SPLP concentrations exceeded the groundwater standard of 3 ug/L for eight soil samples (0-2 ft bgs) collected from 1030, 1002B, 1010A, 1011A, 1013B, 1018A, 1024A, and 1025A. The highest antimony SPLP value was 180 ug/L at sample location 1011A. Four of the eight sample locations were within the proposed excavation area for the treatability study. Three samples are in the machine gun range, where antimony concentrations in soil are below the maximum Seneca background concentration. One SPLP sample (1002B, 5.4 J ug/L) is on the firing line.

The iron SPLP leach results showed exceedances of the groundwater standard of 300 ug/L in several samples, with a high value of 2,030 ug/L, collected at sample location 1011A. Based on Seneca background groundwater quality of 4,480 ug/L, the iron results are consistent with Seneca background.

Thallium had three minor exceedances of the Class GA groundwater standards. These exceedances were in areas where thallium in soil was found at concentrations within the maximum Seneca background concentration.

TCLP Metals Results

TCLP results (Table 3.4) showed a single exceedance of the Resource Conservation and Recovery Act (RCRA) limit for lead of 5,000 ug/L. This exceedance (i.e., 99,900 ug/L) was observed at surface soil location 1011A, where the maximum total lead concentration of 88,700 J ppm was observed in soil at SAR. Sample 1011A was within the proposed area of excavation for the treatability study. This TCLP result indicates that this sample is considered to be hazardous by characteristic. However, it should be noted that the TCLP tests were conducted for the purpose of site soil characterization as versus soil disposal or treatment. All other TCLP results were below RCRA hazardous waste limits.

3.1.3 Groundwater Results

All groundwater data from the initial site characterization effort are presented in Table 3-5.

Groundwater occurs within the overburden beneath the Airfield Small Arms Range. Groundwater flow is from the higher elevations in the east toward the lower elevations to the west toward Seneca Lake. MW-1 is the upgradient well; MW-2 and MW-3 are

downgradient of the SAR (See Figure 2.1 for locations). The depth to groundwater is approximately 8 feet below ground surface.

The groundwater sample results for lead were all non-detect below 1.5 ug/L, so no impact to groundwater is evident from overlying soil.

All metal concentrations detected in MW-1, MW-2, and MW-3 were below the Class GA standards with the exception of antimony and iron. The antimony concentrations detected in all three monitoring wells exceeded the Class GA standard (estimated 14.4 ~26.7 ppb vs. 3 ppb). The antimony concentrations detected in the two downgradient monitoring wells (i.e., MW-2 and MW-3) were slightly above the concentration detected in the upgradient well MW-1 (estimated 18.1 ~26.7 ppb vs. 14.4 ppb). It should be noted that the elevated antimony concentrations were likely due to the elevated turbidity in the samples. As discussed in Section 2.2.2, high levels of turbidity were recorded during the well development for each of the wells. Even though groundwater samples were collected when no significant decrease in turbidity was observed (i.e., decrease in turbidity <20 NTU), the turbidities observed immediately prior to the sampling were elevated compared to the standard procedure requirement (i.e., <50 NTU if possible). Therefore, elevated turbidities in the three monitoring wells contributed to the elevated concentrations. Further, the elevated turbidities for samples collected from downgradient wells MW-2 and MW-3 (161~184 NTU vs. 82.9 NTU) contributed to the elevated antimony concentrations observed in these wells compared to MW-1. In summary, the elevated antimony concentrations in the monitoring wells were related to the elevated turbidities.

The iron concentrations detected in MW-1 and MW-2 exceeded the Class GA standard (421~580 ppb vs. 300 ppb); however, the iron concentrations detected in MW-3, one of the downgradient wells, were below the Class GA standard. It is concluded that groundwater at the site is not impacted by soil based on the following facts: 1). the elevated concentrations detected in MW-1 and MW-2 were related to the elevated turbidities; 2). there is no indication of impact to the downgradient well MW-3; 3). the observed concentrations at the three wells were below the SEDA-specific background level (i.e., 421~580 ppb vs. 4480ppb).

In summary, all metal concentrations detected in groundwater were below the Class GA standards with the exception of antimony and iron. The elevated antimony and iron concentrations were likely due to the elevated turbidities of the samples. The antimony and iron concentrations detected in the downgradient wells were generally consistent with the concentrations in the upgradient well. In addition, lead, the primary contaminant of concern at small arms ranges, was not detected in any of the groundwater samples. Based on the above discussion, it is concluded that groundwater is not impacted by the SAR site soil.

3.2 TREATABILITY STUDY SOIL SAMPLING (JAN – FEB 2004)

During the treatability study conducted between January and February 2004, soil was excavated in a few discrete areas surrounding sample locations 1010, 1011, 1013, and 1018 as shown on Figure 3.1. As a result of these soil excavation activities, analytical results obtained in 2002 from these sample locations are no longer representative of site conditions. Once the limited excavation was completed, confirmation samples were collected at ten locations. If a sample contained lead greater than 400 ppm, additional soil was excavated from that location and then a new confirmation sample was collected from the same location. Results of all soil samples collected during the treatability study are presented in Table 3.6.

During the initial confirmation sampling, lead was detected at a concentration greater than 400 ppm at sample locations CS001, CS005, CS009, and CS010. The maximum detection was 13,860 J ppm at CS001. Additional soil was excavated around these four locations and new confirmation samples were collected, labeled CS001A, CS005A, CS009A, and CS010A, and the lead concentrations were below 400 ppm in all of these samples. The final confirmation samples show that all sample locations detected lead at levels less than 400 ppm, as shown on Table 3.7 and Figure 3.2. The maximum detection of lead in the final confirmation samples was 213 ppm at CS005A.

3.3 SITE CHARACTERIZATION CONCLUSIONS

All lead data that characterizes current site conditions are presented in Table 3.7 and Figure 3.2; samples that were removed during excavation and preliminary confirmation samples that were subsequently dug out are not part of the final data set since they are no longer representative of current soil conditions at the range.

The analytical results indicate the following:

- Impacts attributable to Seneca Airfield range use are limited in nature and extent;
- TAL metals other than lead were either not detected above SEDA site background values or were consistent with SEDA site background values;
- Following soil excavation during the treatability study, lead was not detected at a concentration greater than 400 ppm in any location, and
- Groundwater has not been impacted by range operations.

The final confirmation samples show that all sample locations detected lead at levels less than 400 ppm, as shown on Table 3.7 and Figure 3.2. The maximum detection of lead in the final confirmation samples was 213 ppm at CS005A.

All metal concentrations detected in groundwater were below the Class GA standards with the exception of antimony and iron. The elevated antimony and iron

concentrations were likely due to the elevated turbidities of the samples. The antimony and iron concentrations detected in the downgradient wells were generally consistent with the concentrations in the upgradient well. In addition, lead, the primary contaminant of concern at small arms ranges, was not detected in any of the groundwater samples. Therefore, it is concluded that groundwater is not impacted by the SAR site soil.

Based on the investigation results, the investigation-derived waste from the work reported herein is manageable. Soil from the monitoring wells is managed with other soils from the site, and water extracted from the monitoring wells can be released on site to infiltrate back to the local groundwater. The investigation-derived waste will be disposed at a certified municipal disposal facility and the disposal will be presented in the report prepared for the treatability study.

Based on these findings, no further action is recommended for soil at this site.

SECTION 4

RECOMMENDATIONS

No further action is recommended for the Small Arms Range at the Airfield at the Seneca Army Depot. The site is considered suitable for transfer to the State for unrestricted use. The site should be closed out in accordance with procedures established in the Seneca Army Depot Activity Federal Facilities Agreement (FFA) (USEPA et al., 1993). The Army will prepare a No Further Action Proposed Plan and Record of Decision (ROD) for this site, in accordance with the FFA, for concurrence by USEPA and NYSDEC.

SECTION 5

LIST OF REFERENCES

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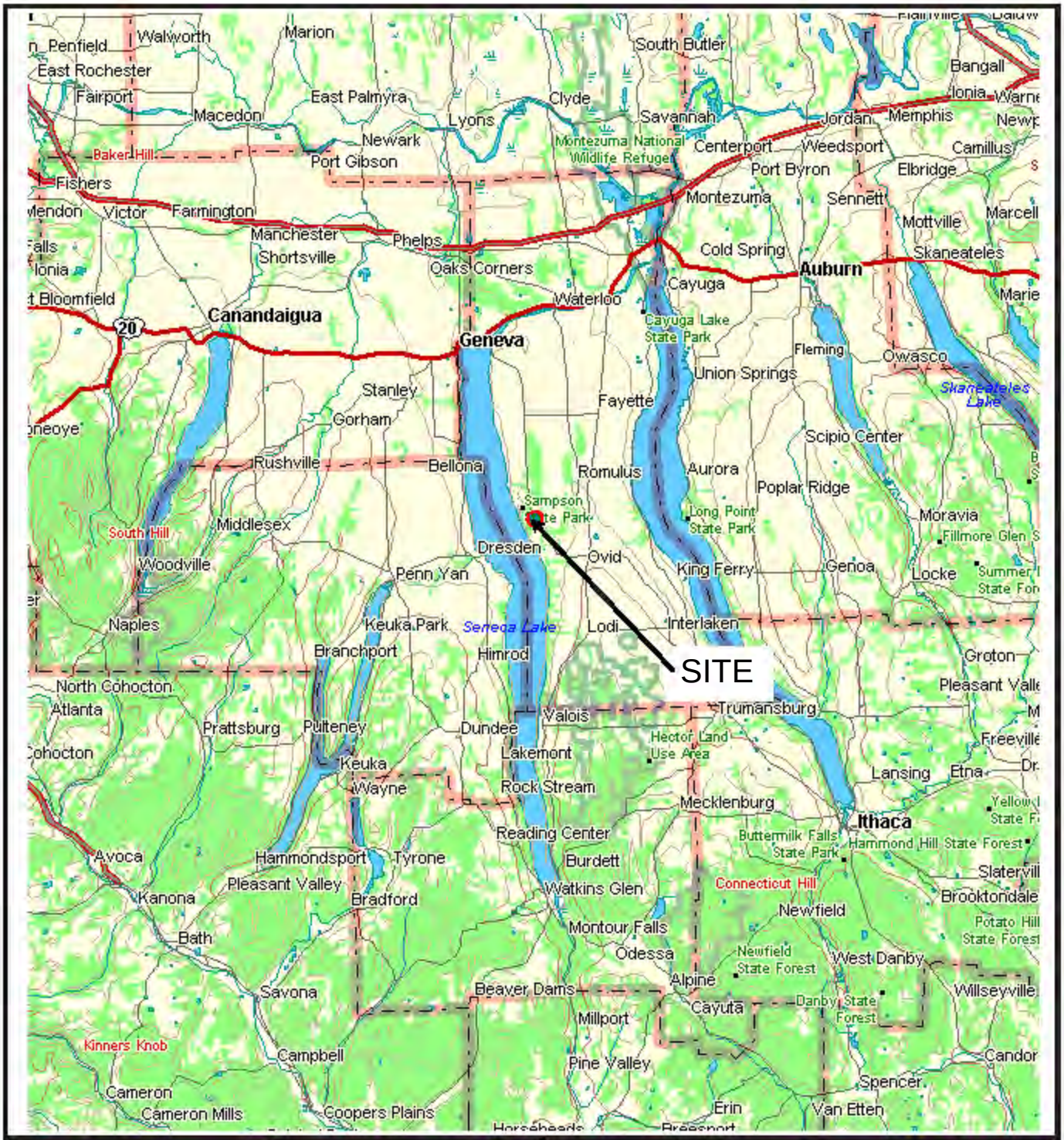
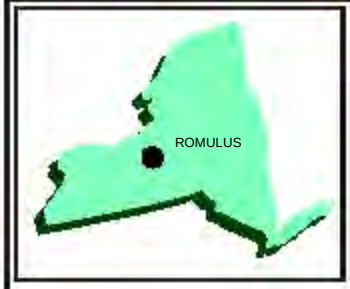




New York Quadrangle

LATITUDE: N42° 42' 54"
LONGITUED: W76° 53' 18"

N

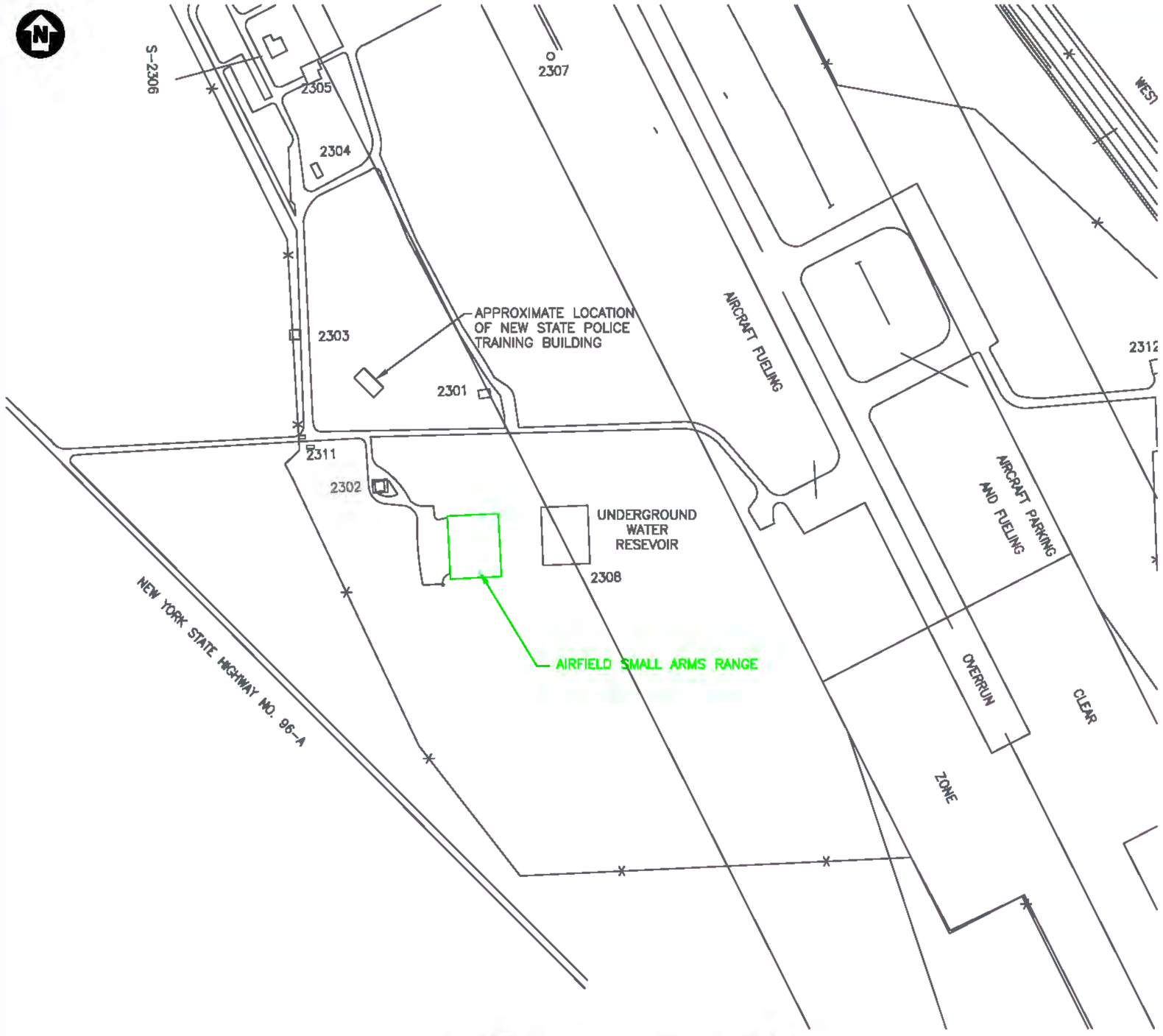
SOURCE: DeLORME 3-D TOPOQUAD PROGRAM

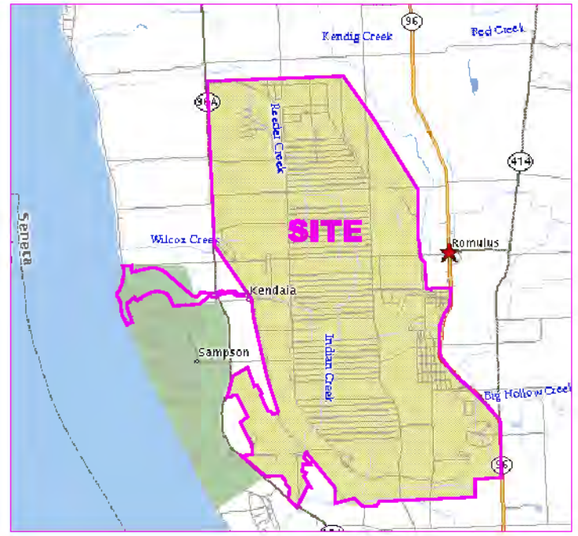
FIGURE 1.1

SENECA ARMY DEPOT ACTIVITY
ROMULUS, NEW YORK

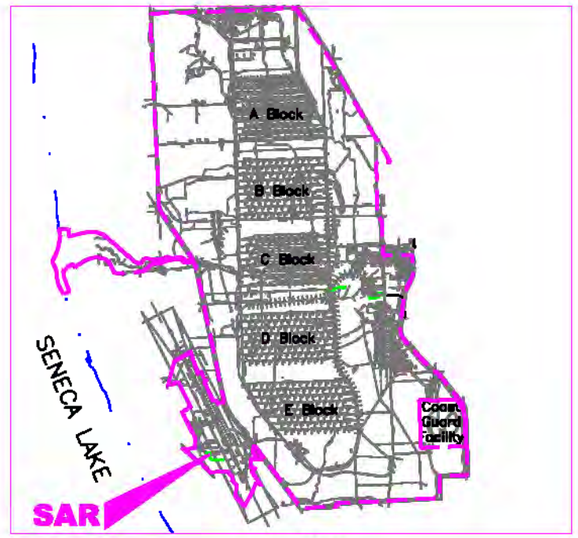
NEW YORK STATE VICINITY MAP

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, NY 13088 PHONE: (315) 451-9560





REGIONAL MAP
SCALE: 1 INCH=2.5 MILES
SOURCE: Mapquest.com



SITE MAP
SCALE: 1 INCH=10,000 FEET

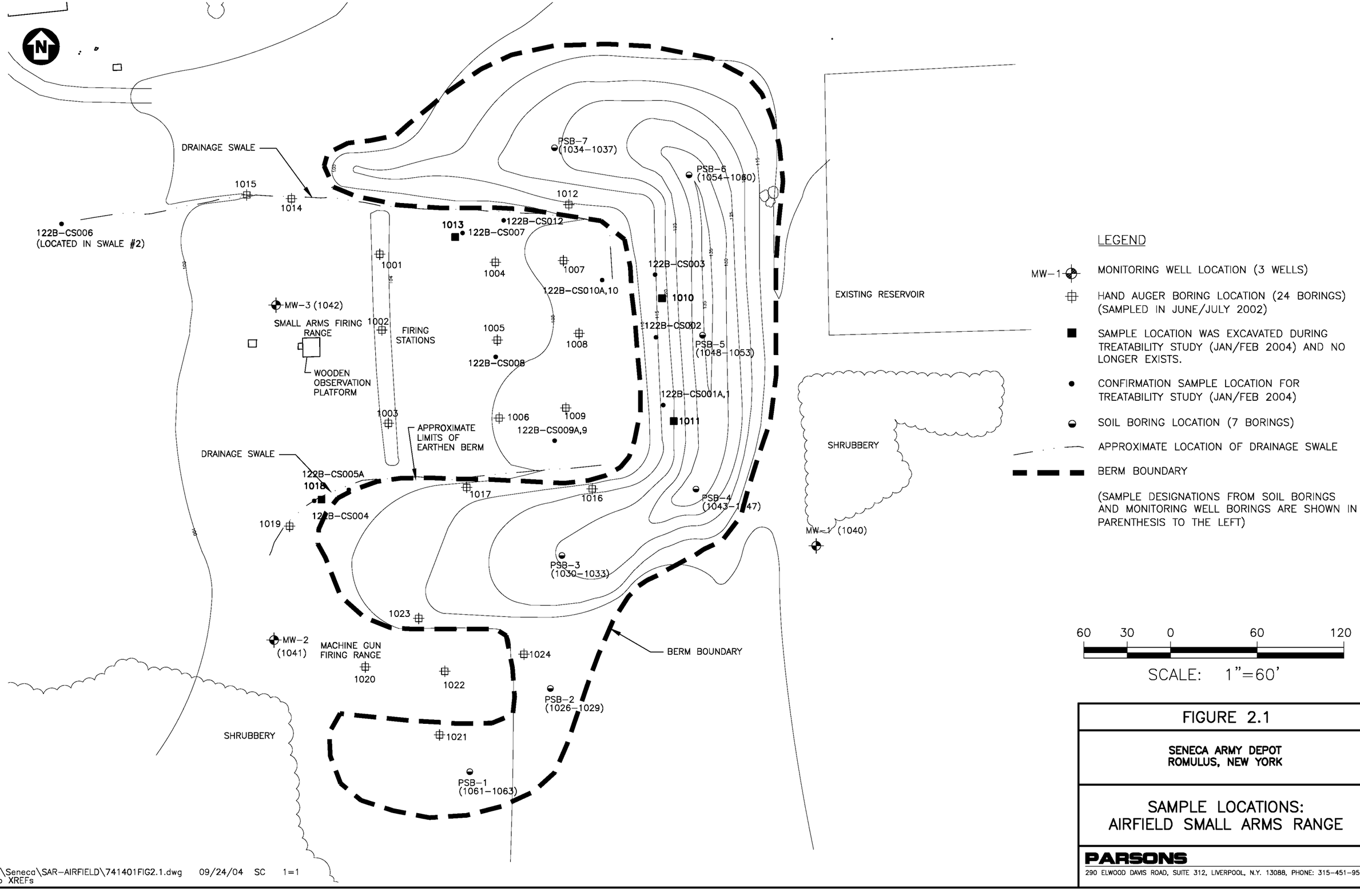
FIGURE 1.2

SENECA ARMY DEPOT ACTIVITY
ROMULUS, NEW YORK

SITE LOCATION MAP

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

R:\Seneca\SAR-AIRFIELD\741401FIG1.2.dwg 03/12/04 SC 1=1
No XREFs



R:\Seneca\SAR–AIRFIELD\741401FIG2.1.dwg 09/24/04 SC 1=1
No XREFs

FIGURE 2.1

SENECA army DEPOT
ROMULUS, NEW YORK

SAMPLE LOCATIONS:
AIRFIELD SMALL ARMS RANGE

PARSONS
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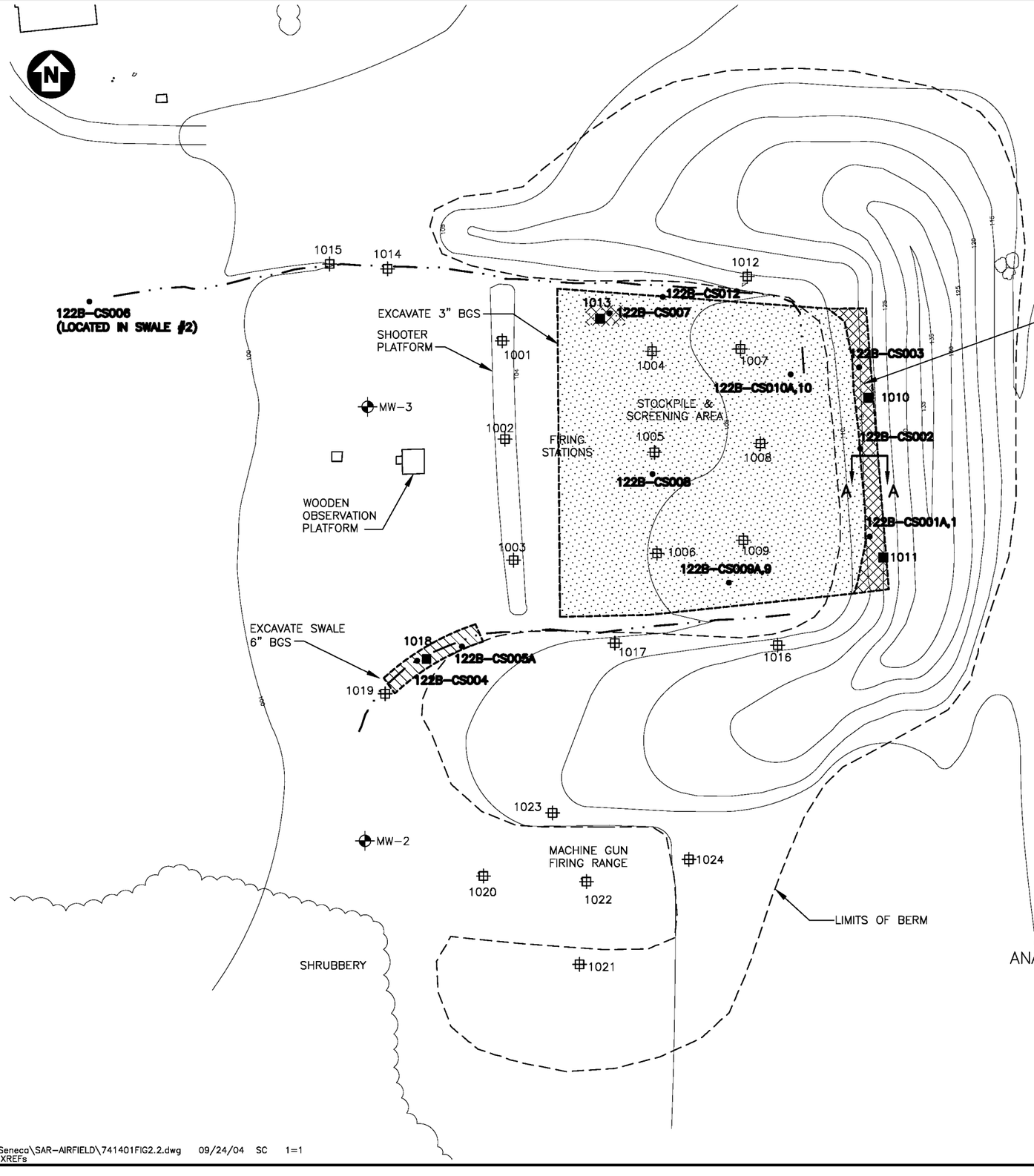
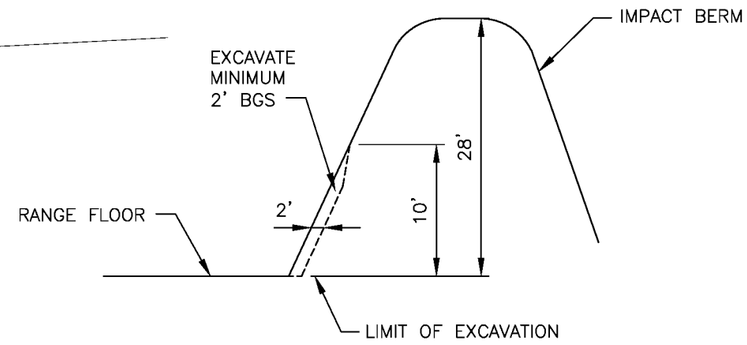




SECTION A–A
NOT TO SCALE

LEGEND

- MW–1 ⊕ MONITORING WELL LOCATION
- ⊞ HAND AUGER BORING LOCATION (24 BORINGS) (SAMPLED IN JUNE/JULY 2002)
- ■ SAMPLE LOCATION WAS EXCAVATED DURING TREATABILITY STUDY (JAN/FEB 2004) AND NO LONGER EXISTS.
- • COMFIRMATION SOIL SAMPLE LOCATION 0–6" BGS (JAN/FEB 2004)
- APPROXIMATE LOCATION OF DRAINAGE SWALE
- EXCAVATION AREA 2–3' BELOW GRADE SURFACE
- EXCAVATION AREA 6" BELOW GRADE SURFACE
- EXCAVATION AREA 3" BELOW GRADE SURFACE/ STOCKPILE SCREENING AREA

60 30 0 60 120

SCALE: 1"=60'

ANALYTICAL RESULTS FROM 2002 SOIL DATA
> 400ppm TOTAL LEAD

SAMPLE #	TOTAL LEAD (ppm)
1010	13,100
1011	88,700
1013	1,190
1018	927

FIGURE 2.2

SENECA ARMY DEPOT
ROMULUS, NEW YORK

EXCAVATION AREAS
AIRFIELD SMALL ARMS RANGE

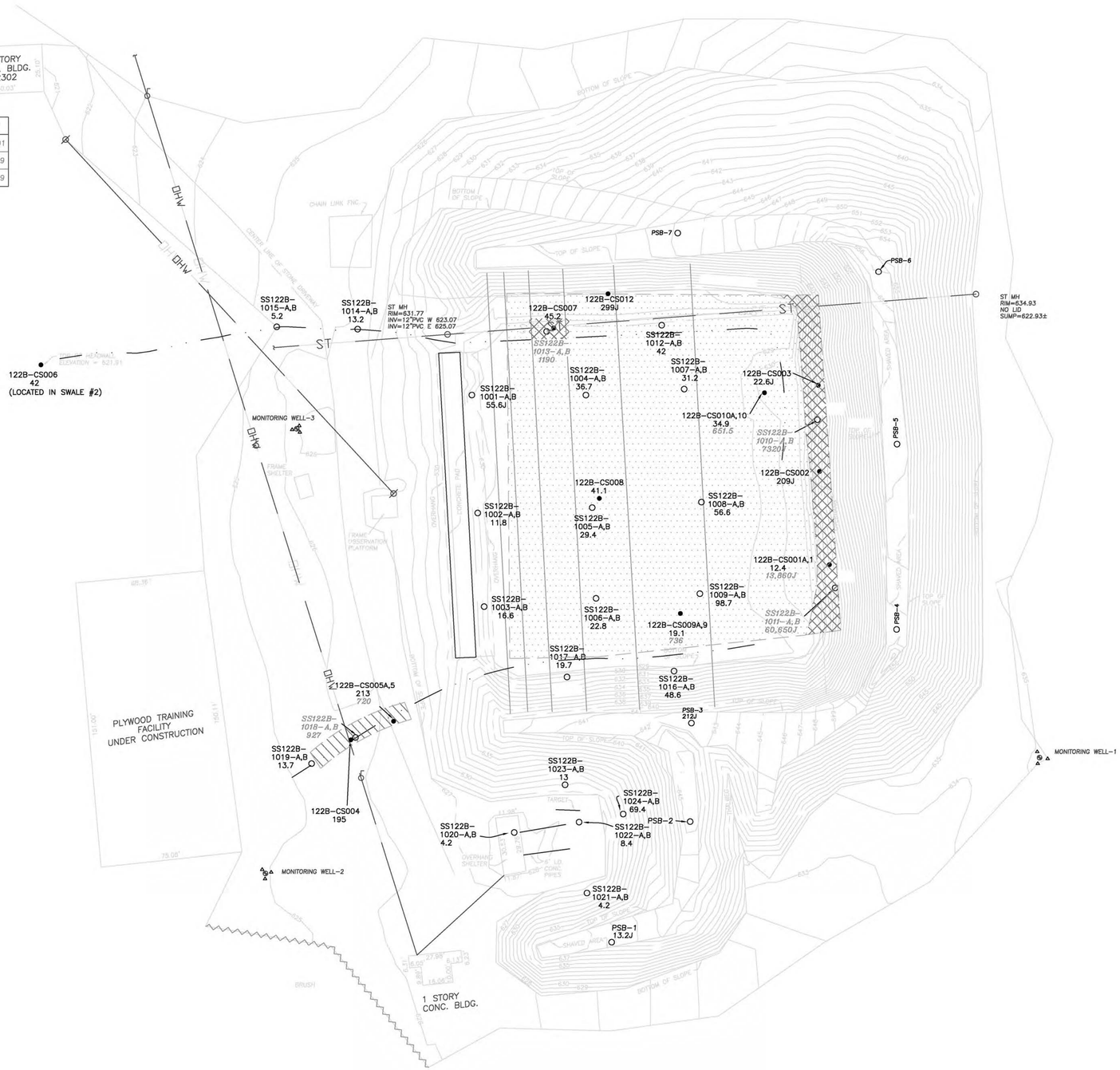
PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

R:\Seneca\SAR-AIRFIELD\741401FIG2.2.dwg 09/24/04 SC 1=1
No XREFs

	NORTHING	EASTING	EL	TOC	TOW
MONITORING WELL-1	986840.19	739802.90	635.14	637.16	637.01
MONITORING WELL-2	986779.02	739393.06	624.83	626.82	626.59
MONITORING WELL-3	987014.26	739409.59	625.82	627.94	627.69

	NORTHING	EASTING	ELEVATION
PSB-1	986742.65	739576.34	638.41
PSB-2	986806.36	739617.89	645.53
PSB-3	986858.49	739618.57	642.63
PSB-4	986908.17	739727.19	655.38
PSB-5	987006.16	739727.42	658.05
PSB-6	987097.43	739717.64	655.72
PSB-7	987117.93	739611.31	644.32
SS122B-1001-A,B	987032.12	739502.32	628.58
SS122B-1002-A,B	986969.76	739505.42	629.34
SS122B-1003-A,B	986920.24	739508.82	629.06
SS122B-1004-A,B	987032.09	739562.69	628.53
SS122B-1005-A,B	986972.61	739566.05	628.41
SS122B-1006-A,B	986924.62	739568.07	628.33
SS122B-1007-A,B	987035.25	739614.74	628.51
SS122B-1008-A,B	986975.51	739623.87	628.55
SS122B-1009-A,B	986927.09	739623.04	628.54
SS122B-1010-A,B	987019.06	739685.24	634.93
SS122B-1011-A,B	986930.13	739694.64	635.21
SS122B-1012-A,B	987069.04	739602.83	628.25
SS122B-1013-A,B	987065.73	739541.90	628.73
SS122B-1014-A,B	987066.96	739441.84	626.06
SS122B-1015-A,B	987068.18	739399.02	625.41
SS122B-1016-A,B	986886.15	739609.36	629.56
SS122B-1017-A,B	986883.03	739552.69	629.51
SS122B-1018-A,B	986850.87	739440.69	625.68
SS122B-1019-A,B	986837.04	739417.47	625.53
SS122B-1020-A,B	986800.60	739524.75	628.50
SS122B-1021-A,B	986768.66	739563.27	628.68
SS122B-1022-A,B	986806.08	739559.10	627.42
SS122B-1023-A,B	986825.83	739551.68	628.16
SS122B-1024-A,B	986810.35	739582.45	630.53
CS-001A,1	986942.43	739691.63	630.60
CS-002	986991.70	739686.37	631.45
CS-003	987037.28	739685.71	631.77
CS-004	986849.64	739438.27	624.97
CS-005A,5	986855.07	739462.40	625.26
CS-006	987048.07	739274.16	620.12
CS-007	987067.53	739545.70	628.77
CS-008	986977.46	739569.81	628.48
CS-009A,9	986916.61	739612.71	627.65
CS-010A,10	987033.32	739657.23	627.65
CS-012*	987085.64	739574.41	631.50

* LOCATION APPROXIMATED.



LEGEND

		DRAINAGE SWALE
	~~	CHAIN LINK FENCE
GP	△	GUARD POSTS
ST MH	○	STORM MANHOLE
UP	⌀	UTILITY POLE
UPL	○┐	UTILITY POLE W/ LIGHT
OHW		OVERHEAD WIRES
CONC		CONCRETE
	⊗	MONITORING WELL
122B-CS008 41.1 ●		CONFIRMATION SAMPLE LOCATION FOR TREATABILITY STUDY (JAN/FEB 2004) WITH LEAD CONCENTRATION (ppm) SEE NOTE BELOW
PSB-1 13.2J ○		SAMPLE LOCATION FROM JUNE/JULY 2002 SAMPLING WITH LEAD CONCENTRATION (ppm) SEE NOTE BELOW

EXCAVATION AREA 2-3' BELOW GRADE SURFACE

EXCAVATION AREA 6" BELOW GRADE SURFACE

EXCAVATION AREA 3" BELOW GRADE SURFACE/ STOCKPILE SCREENING AREA

NOTES:

CONCENTRATIONS IN GRAY AND ITALICS DENOTE RESULTS THAT ARE NO LONGER CHARACTERISTIC OF SITE CONDITIONS DUE TO EXCAVATION OF THAT AREA DURING THE TREATABILITY STUDY (JAN/FEB 2004)

LOCATION IDS IN GRAY AND ITALICS DENOTE SAMPLE LOCATIONS THAT WERE EXCAVATED DURING THE TREATABILITY STUDY (JAN/FEB 2004) AND NO LONGER EXIST.

AVERAGE CONCENTRATIONS ARE PRESENTED FOR SAMPLE LOCATION WITH DUPLICATE SAMPLES.

40 20 0 40 80

SCALE: 1"=40'

FIGURE 3.1

SENECA ARMY DEPOT
ROMULUS, NEW YORK

ALL SURFACE SOIL
ANALYTICAL RESULTS FOR LEAD
(0-6" BELOW GROUND SURFACE)

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

R:\Seneca\SAR-AIRFIELD\741401FIG3.1.dwg 09/24/04 SC 1=1
No XREFs

	NORTHING	EASTING	EL	TOC	TOW
MONITORING WELL-1	986840.19	739802.90	635.14	637.16	637.01
MONITORING WELL-2	986779.02	739393.06	624.83	626.82	626.59
MONITORING WELL-3	987014.26	739409.59	625.82	627.94	627.69

	NORTHING	EASTING	ELEVATION
PSB-1	986742.65	739576.34	638.41
PSB-2	986806.36	739617.89	645.53
PSB-3	986858.49	739618.57	642.63
PSB-4	986908.17	739727.19	655.38
PSB-5	987006.16	739727.42	658.05
PSB-6	987097.43	739717.64	655.72
PSB-7	987117.93	739611.31	644.32
SS122B-1001-A,B	987032.12	739502.32	628.58
SS122B-1002-A,B	986969.76	739505.42	629.34
SS122B-1003-A,B	986920.24	739508.82	629.06
SS122B-1004-A,B	987032.09	739562.69	628.53
SS122B-1005-A,B	986972.61	739566.05	628.41
SS122B-1006-A,B	986924.62	739568.07	628.33
SS122B-1007-A,B	987035.25	739614.74	628.51
SS122B-1008-A,B	986975.51	739623.87	628.55
SS122B-1009-A,B	986927.09	739623.04	628.54
SS122B-1010-A,B	987019.06	739685.24	634.93
SS122B-1011-A,B	986930.13	739694.64	635.21
SS122B-1012-A,B	987069.04	739602.83	628.25
SS122B-1013-A,B	987065.73	739541.90	628.73
SS122B-1014-A,B	987066.96	739441.84	626.06
SS122B-1015-A,B	987068.18	739399.02	625.41
SS122B-1016-A,B	986886.15	739609.36	629.56
SS122B-1017-A,B	986883.03	739552.69	629.51
SS122B-1018-A,B	986850.87	739440.69	625.68
SS122B-1019-A,B	986837.04	739417.47	625.53
SS122B-1020-A,B	986800.60	739524.75	628.50
SS122B-1021-A,B	986768.66	739563.27	628.68
SS122B-1022-A,B	986806.08	739559.10	627.42
SS122B-1023-A,B	986825.83	739551.68	628.16
SS122B-1024-A,B	986810.35	739582.45	630.53
CS-001A,1	986942.43	739691.63	630.60
CS-002	986991.70	739686.37	631.45
CS-003	987037.28	739685.71	631.77
CS-004	986849.64	739438.27	624.97
CS-005A,5	986855.07	739462.40	625.26
CS-006	987048.07	739274.16	620.12
CS-007	987067.53	739545.70	628.77
CS-008	986977.46	739569.81	628.48
CS-009A,9	986916.61	739612.71	627.65
CS-010A,10	987033.32	739657.23	627.65
CS-012*	987085.64	739574.41	631.50

* LOCATION APPROXIMATED.

LEGEND

		DRAINAGE SWALE
		CHAIN LINK FENCE
GP	△	GUARD POSTS
ST MH	○	STORM MANHOLE
UP	⌀	UTILITY POLE
UPL	○┐	UTILITY POLE W/ LIGHT
OHW		OVERHEAD WIRES
CONC		CONCRETE
	⊗	MONITORING WELL
122B-CS008 41.1 ●		CONFIRMATION SAMPLE LOCATION FOR TREATABILITY STUDY (JAN/FEB 2004) WITH LEAD CONCENTRATION (ppm) SEE NOTE BELOW
PSB-1 13.2J ○		SAMPLE LOCATION FROM JUNE/JULY 2002 SAMPLING WITH LEAD CONCENTRATION (ppm) SEE NOTE BELOW

EXCAVATION AREA 2-3' BELOW GRADE SURFACE

EXCAVATION AREA 6" BELOW GRADE SURFACE

EXCAVATION AREA 3" BELOW GRADE SURFACE/ STOCKPILE SCREENING AREA

NOTES:

LOCATIONS AND CONCENTRATIONS ASSOCIATED WITH SOILS EXCAVATED DURING THE TREATABILITY STUDY ARE NO LONGER EXIST AND NOT PRESENTED.

AVERAGE CONCENTRATIONS ARE PRESENTED FOR SAMPLE LOCATION WITH DUPLICATE SAMPLES.

40 20 0 40 80

SCALE: 1"=40'

FIGURE 3.2

SENECA ARMY DEPOT
ROMULUS, NEW YORK

FINAL SURFACE SOIL CONDITIONS
ANALYTICAL RESULTS FOR LEAD
(0-6" BELOW GROUND SURFACE)

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

R:\Seneca\SAR-AIRFIELD\741401FIG3.2.dwg 09/24/04 SC 1=1
No XREFs

PARSONS

TABLE 2.1

SOIL AND GROUNDWATER SAMPLES COLLECTED AND ANALYTICAL METHODS
SENECA AIRFIELD SMALL ARMS RANGE

Sample No.	Depth (ft bgs)	Total Lead (SW-846)	TAL Metals (SW-846)	Total Organic Carbon	TCLP (SW-846 Method 1311)	SPLP (SW-846 Method 1312)
Hand Auger Soil Samples						
1001A	0 to 0.5	X	X	X		
1001B	1.5 to 2	X				
1002A	0 to 0.5	X		X		
1002B	1.5 to 2	X	X		X	X
1003A	0 to 0.5	X		X		
1003B	1.5 to 2	X				
1004A	0 to 0.5	X				
1004B	1.5 to 2	X		X		
1005A	0 to 0.5	X				
1005B	1.5 to 2	X		X		
1006A	0 to 0.5	X				
1006B	1.5 to 2	X		X		
1007A	0 to 0.5	X				
1007B	1.5 to 2	X		X		
1008A	0 to 0.5	X	X			
1008B	1.5 to 2	X		X		
1009A	0 to 0.5	X	X			
1009B	1.5 to 2	X		X		
1010A	0 to 0.5	X	X	X	X	X
1010A DUP	0 to 0.5	X				
1010B	1.5 to 2	X		X		
1011A	0 to 0.5	X	X		X	X
1011A DUP	0 to 0.5	X				
1011B	1.5 to 2	X	X	X		
1012A	0 to 0.5	X				
1012B	1.5 to 2	X		X		
1013A	0 to 0.5	X	X			
1013B	1.5 to 2	X	X	X	X	X
1014A	0 to 0.5	X				
1014B	1.5 to 2	X		X		
1015A	0 to 0.5	X	X	X	X	X
1015B	1.5 to 2	X		X		
1016A	0 to 0.5	X				
1016B	1.5 to 2	X		X		
1017A	0 to 0.5	X				
1017B	1.5 to 2	X				
1018A	0 to 0.5	X	X		X	X
1018B	1.5 to 2	X		X		
1019A	0 to 0.5	X				
1019B	1.5 to 2	X				
1020A	0 to 0.5	X	X	X		
1020B	1.5 to 2	X		X		
1021A	0 to 0.5	X				
1021B	1.5 to 2	X		X		
1022A	0 to 0.5	X				

TABLE 2.1

SOIL AND GROUNDWATER SAMPLES COLLECTED AND ANALYTICAL METHODS
SENECA AIRFIELD SMALL ARMS RANGE

Sample No.	Depth (ft bgs)	Total Lead (SW-846)	TAL Metals (SW-846)	Total Organic Carbon	TCLP (SW-846 Method 1311)	SPLP (SW-846 Method 1312)
1022B	1.5 to 2	X		X		
1023A	0 to 0.5	X				
1023B	1.5 to 2	X				
1024A	0 to 0.5	X	X	X	X	X
1024B	1.5 to 2	X	X	X		
1025A	0 to 0.5	X	X			
Berm Borehole Soil Samples						
PSB-2						
1026	2.0 to 4	X	X			
1027	6. to 8	X		X		
1028	12.0 to 14	X				
1029	22 to 24	X		X		
PSB-3						
1030	0 to 2	X	X		X	X
1031	10. to 12	X	X	X	X	X
1032	16 to 18	X		X		
1033MS	16 to 18	X		X		
PSB-7						
1034	4 to 6	X				
1035	6 to 8	X		X		
1036	14 to 16	X	X			
1037	18 to 20	X		X		
1038MS	18 to 20	X				
1039MSD	18 to 20	X				
PSB-4						
1043	4 to 6	X				
1044	6 to 8	X		X		
1045	16 to 18	X				
1046	20 to 22	X	X	X	X	X
1047	28 to 30	X				
PSB-5						
1048	2 to 4	X		X		
1049	10 to 12	X				
1050	12 to 14	X		X		
1051	18 to 20	X				
1052	28 to 30	X		X		
PSB-6						
1053	28 to 30	X		X		
1054	2 to 4	X				
1055	8 to 10	X		X		
1056MS	8 to 10	X				
1057MSD	8 to 10	X				
1058	12 to 14	X				
1059	22 to 24	X	X	X	X	X
1060	28 to 28.8	X				

TABLE 2.1

SOIL AND GROUNDWATER SAMPLES COLLECTED AND ANALYTICAL METHODS
SENECA AIRFIELD SMALL ARMS RANGE

Sample No.	Depth (ft bgs)	Total Lead (SW-846)	TAL Metals (SW-846)	Total Organic Carbon	TCLP (SW-846 Method 1311)	SPLP (SW-846 Method 1312)
PSB-1						
1061	0 to 2	X		X		
1062	8. to 10	X				
1063	14 to 16	X	X	X		
Monitoring Well Soil Samples						
1040	12 to 14	X	X			
1041	14 to 16	X	X			
1042	12 to 14	X	X		X	X
Confirmation Surface Soil Samples						
CS001A	0 to 0.5	X				
CS002	0 to 0.5	X				
CS003	0 to 0.5	X				
CS004	0 to 0.5	X				
CS005A	0 to 0.5	X				
CS006	0 to 0.5	X				
CS007	0 to 0.5	X				
CS008	0 to 0.5	X				
CS009A	0 to 0.5	X				
CS010A	0 to 0.5	X				
CS012	0 to 0.5	X				
Monitoring Well Groundwater Samples						
2000		X	X			
2001		X	X			
2004		X	X			
2005		X	X			

Note: Total organic carbon was measured using the Lloyd Kahn Method consistent with the work plan.
bgs - below ground surface
SPLP - Synthetic Characteristic Leaching Procedure
TAL - Target Analyte List
TCLP - Toxicity Characteristic Leaching Procedure

TABLE 2.2

GROUNDWATER LEVELS AT SHALLOW MONIT0RING WELLS (MWs) SENECA AIRFIELD SMALL ARMS RANGE

	Surveyed TOC Elevation, feet above mean sea level	July 22, 2002 Status Groundwater Level, feet below TOC	July 22, 2002 Static Groundwater Elevation, feet above mean sea level
MW-1	637.16	7.02	630.14
MW-2	626.82	7.38	619.44
MW-3	627.94	6.44	621.50

Notes:

TOC – top of casing

Water levels were also recorded on July 11 and July 24, 2002 (See Appendix A).

TABLE 3.1
RESULTS OF SOIL TOTAL METALS ANALYSES - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B		SEAD-122B		SEAD-122B		SEAD-122B	
Loc ID								MW-1		MW-2		MW-3		PSB-1	
Matrix								SOIL		SOIL		SOIL		SOIL	
Sample ID								122B-1040		122B-1041		122B-1042		122B-1061	
Sample Depth TOP								12		14		12		0	
Sample Depth BOT								14		16		14		2	
Sample Date								7/8/02		7/9/02		7/9/02		7/11/02	
QC Code								SA		SA		SA		SA	
Activity			Frequency		Number	Number	Number	122B-RI		122B-RI		122B-RI		122B-RI	
Round		Maximum	of	Criteria	of	of Times	of Samples	1		1		1		1	
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
Aluminum	MG/KG	15100	100%	19300	0	26	26	13500		11800		14200			
Antimony	MG/KG	670	50%	5.9	2	13	26	1.2	UJ	1.4	UJ	1.5	UJ		
Arsenic	MG/KG	84.6	100%	8.2	2	26	26	3.7		6	J	3.3	J		
Barium	MG/KG	129	100%	300	0	26	26	97.1		23.6	J	51.9			
Beryllium	MG/KG	0.81	100%	1.1	0	26	26	0.56	J	0.42	J	0.62	J		
Cadmium	MG/KG	0.9	65%	2.3	0	17	26	0.18	J	0.25	J	0.25	J		
Calcium	MG/KG	191000	100%	121000	1	26	26	52100		68500		47100			
Chromium	MG/KG	26.8	100%	29.6	0	26	26	23.9	J	21.4	J	26.8	J		
Cobalt	MG/KG	13.2	100%	30	0	26	26	10.4		10.7		13.2			
Copper	MG/KG	5690	100%	33	5	26	26	17	J	15.3	J	19.9	J		
Iron	MG/KG	28700	100%	36500	0	26	26	27600		26000		28700			
Lead	MG/KG	88700	100%	400	6	85	85	6.5		8.5	J	10.6	J	13.2	J
Magnesium	MG/KG	24100	100%	21500	1	26	26	9710		8000		8650			
Manganese	MG/KG	789	100%	1060	0	26	26	457		608		519			
Mercury	MG/KG	0.078	8%	0.1	0	2	26	0.05	U	0.053	U	0.046	U		
Nickel	MG/KG	40.4	100%	49	0	26	26	35.9		32		40.4			
Potassium	MG/KG	2350	100%	2380	0	26	26	2160		1570		2240			
Selenium	MG/KG	1.7	35%	2	0	9	26	1.3	J	1.4	J	1.6	J		
Silver	MG/KG	3.4	8%	0.75	1	2	26	0.53	U	0.64	U	0.66	U		
Sodium	MG/KG	388	35%	172	3	9	26	91.6	U	110	U	113	U		
Thallium	MG/KG	1.7	15%	0.7	2	4	26	0.82	U	0.98	U	1	U		
Vanadium	MG/KG	25.3	100%	150	0	26	26	18.4		15.7		19.1			
Zinc	MG/KG	630	100%	110	1	26	26	52	J	63.6	J	103	J		
Total Organic Carbon	MG/KG	56500	100%		0	43	43							24500	J

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

J - Estimated Value

TABLE 3.1
RESULTS OF SOIL TOTAL METALS ANALYSES - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B
Loc ID								PSB-1	PSB-1	PSB-2	PSB-2
Matrix								SOIL	SOIL	SOIL	SOIL
Sample ID								122B-1062	122B-1063	122B-1026	122B-1027
Sample Depth TOP								8	14	2	6
Sample Depth BOT								10	16	4	8
Sample Date								7/11/02	7/11/02	7/1/02	7/1/02
QC Code								SA	SA	SA	SA
Activity			Frequency		Number	Number	Number	122B-RI	122B-RI	122B-RI	122B-RI
Round		Maximum	of	Criteria	of	of Times	of Samples	1	1	1	1
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Aluminum	MG/KG	15100	100%	19300	0	26	26		13700	13900	
Antimony	MG/KG	670	50%	5.9	2	13	26		1.4 UJ	1.3 UJ	
Arsenic	MG/KG	84.6	100%	8.2	2	26	26		1.9 J	2	
Barium	MG/KG	129	100%	300	0	26	26		84.7	83.2	
Beryllium	MG/KG	0.81	100%	1.1	0	26	26		0.6 J	0.66 J	
Cadmium	MG/KG	0.9	65%	2.3	0	17	26		0.17 J	0.16 U	
Calcium	MG/KG	191000	100%	121000	1	26	26		20400	26300	
Chromium	MG/KG	26.8	100%	29.6	0	26	26		21.1 J	20.5	
Cobalt	MG/KG	13.2	100%	30	0	26	26		9.5 J	9.4 J	
Copper	MG/KG	5690	100%	33	5	26	26		23.4 J	22 J	
Iron	MG/KG	28700	100%	36500	0	26	26		24800	23900	
Lead	MG/KG	88700	100%	400	6	85	85	11.7 J	11.4 J	11.3 J	8.4 J
Magnesium	MG/KG	24100	100%	21500	1	26	26		7190	6890	
Manganese	MG/KG	789	100%	1060	0	26	26		572	605	
Mercury	MG/KG	0.078	8%	0.1	0	2	26		0.051 U	0.046 U	
Nickel	MG/KG	40.4	100%	49	0	26	26		30.2	26.3	
Potassium	MG/KG	2350	100%	2380	0	26	26		1650	1990	
Selenium	MG/KG	1.7	35%	2	0	9	26		1.3	0.57 U	
Silver	MG/KG	3.4	8%	0.75	1	2	26		0.62 U	0.59 U	
Sodium	MG/KG	388	35%	172	3	9	26		107 U	156 J	
Thallium	MG/KG	1.7	15%	0.7	2	4	26		0.96 U	0.91 U	
Vanadium	MG/KG	25.3	100%	150	0	26	26		20	20.7	
Zinc	MG/KG	630	100%	110	1	26	26		76.5 J	74.1	
Total Organic Carbon	MG/KG	56500	100%		0	43	43		9630		10400 J

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

J - Estimated Value

TABLE 3.1
RESULTS OF SOIL TOTAL METALS ANALYSES - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B		SEAD-122B		SEAD-122B		SEAD-122B	
Loc ID								PSB-2		PSB-2		PSB-3		PSB-3	
Matrix								SOIL		SOIL		SOIL		SOIL	
Sample ID								122B-1028		122B-1029		122B-1030		122B-1031	
Sample Depth TOP								12		22		0		10	
Sample Depth BOT								14		24		2		12	
Sample Date								7/1/02		7/1/02		7/2/02		7/2/02	
QC Code								SA		SA		SA		SA	
Activity			Frequency		Number	Number	Number	122B-RI		122B-RI		122B-RI		122B-RI	
Round		Maximum	of	Criteria	of	of Times	of Samples	1		1		1		1	
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
Aluminum	MG/KG	15100	100%	19300	0	26	26					14500		15000	
Antimony	MG/KG	670	50%	5.9	2	13	26					1.4	UJ	1.6	UJ
Arsenic	MG/KG	84.6	100%	8.2	2	26	26					2.6	J	3.3	J
Barium	MG/KG	129	100%	300	0	26	26					95.3		92.8	
Beryllium	MG/KG	0.81	100%	1.1	0	26	26					0.68	J	0.75	J
Cadmium	MG/KG	0.9	65%	2.3	0	17	26					0.22	J	0.19	U
Calcium	MG/KG	191000	100%	121000	1	26	26					33400		30200	
Chromium	MG/KG	26.8	100%	29.6	0	26	26					23.5		22.3	
Cobalt	MG/KG	13.2	100%	30	0	26	26					9.9	J	10	J
Copper	MG/KG	5690	100%	33	5	26	26					28.7	J	29.5	J
Iron	MG/KG	28700	100%	36500	0	26	26					28600		26500	
Lead	MG/KG	88700	100%	400	6	85	85	9.7	J	11.4	J	212	J	145	J
Magnesium	MG/KG	24100	100%	21500	1	26	26					8220		7040	
Manganese	MG/KG	789	100%	1060	0	26	26					510		604	
Mercury	MG/KG	0.078	8%	0.1	0	2	26					0.047	J	0.041	U
Nickel	MG/KG	40.4	100%	49	0	26	26					27.3		29.2	
Potassium	MG/KG	2350	100%	2380	0	26	26					1760		2160	
Selenium	MG/KG	1.7	35%	2	0	9	26					0.59	U	0.69	U
Silver	MG/KG	3.4	8%	0.75	1	2	26					0.61	U	0.71	U
Sodium	MG/KG	388	35%	172	3	9	26					106	U	123	U
Thallium	MG/KG	1.7	15%	0.7	2	4	26					0.94	U	1.1	U
Vanadium	MG/KG	25.3	100%	150	0	26	26					23.4		23.7	
Zinc	MG/KG	630	100%	110	1	26	26					70.9		78.6	
Total Organic Carbon	MG/KG	56500	100%		0	43	43			4960	J			36400	

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

J - Estimated Value

TABLE 3.1
RESULTS OF SOIL TOTAL METALS ANALYSES - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B
Loc ID								PSB-3	PSB-3	PSB-4	PSB-4
Matrix								SOIL	SOIL	SOIL	SOIL
Sample ID								122B-1032	122B-1033	122B-1043	122B-1044
Sample Depth TOP								16	16	4	6
Sample Depth BOT								18	18	6	8
Sample Date								7/2/02	7/2/02	7/10/02	7/10/02
QC Code								SA	SA	SA	SA
Activity			Frequency		Number	Number	Number	122B-RI	122B-RI	122B-RI	122B-RI
Round		Maximum	of	Criteria	of	of Times	of Samples	1	1	1	1
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Aluminum	MG/KG	15100	100%	19300	0	26	26				
Antimony	MG/KG	670	50%	5.9	2	13	26				
Arsenic	MG/KG	84.6	100%	8.2	2	26	26				
Barium	MG/KG	129	100%	300	0	26	26				
Beryllium	MG/KG	0.81	100%	1.1	0	26	26				
Cadmium	MG/KG	0.9	65%	2.3	0	17	26				
Calcium	MG/KG	191000	100%	121000	1	26	26				
Chromium	MG/KG	26.8	100%	29.6	0	26	26				
Cobalt	MG/KG	13.2	100%	30	0	26	26				
Copper	MG/KG	5690	100%	33	5	26	26				
Iron	MG/KG	28700	100%	36500	0	26	26				
Lead	MG/KG	88700	100%	400	6	85	85	7.9 J	8.3 J	10.8 J	10.6 J
Magnesium	MG/KG	24100	100%	21500	1	26	26				
Manganese	MG/KG	789	100%	1060	0	26	26				
Mercury	MG/KG	0.078	8%	0.1	0	2	26				
Nickel	MG/KG	40.4	100%	49	0	26	26				
Potassium	MG/KG	2350	100%	2380	0	26	26				
Selenium	MG/KG	1.7	35%	2	0	9	26				
Silver	MG/KG	3.4	8%	0.75	1	2	26				
Sodium	MG/KG	388	35%	172	3	9	26				
Thallium	MG/KG	1.7	15%	0.7	2	4	26				
Vanadium	MG/KG	25.3	100%	150	0	26	26				
Zinc	MG/KG	630	100%	110	1	26	26				
Total Organic Carbon	MG/KG	56500	100%		0	43	43	4190 J	3300 J		5720

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

J - Estimated Value

TABLE 3.1
RESULTS OF SOIL TOTAL METALS ANALYSES - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B		SEAD-122B		SEAD-122B		SEAD-122B	
Loc ID								PSB-4		PSB-4		PSB-4		PSB-5	
Matrix								SOIL		SOIL		SOIL		SOIL	
Sample ID								122B-1045		122B-1046		122B-1047		122B-1048	
Sample Depth TOP								16		20		28		2	
Sample Depth BOT								18		22		30		4	
Sample Date								7/10/02		7/10/02		7/10/02		7/10/02	
QC Code								SA		SA		SA		SA	
Activity			Frequency		Number	Number	Number	122B-RI		122B-RI		122B-RI		122B-RI	
Round		Maximum	of	Criteria	of	of Times	of Samples	1		1		1		1	
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
Aluminum	MG/KG	15100	100%	19300	0	26	26			14100					
Antimony	MG/KG	670	50%	5.9	2	13	26			1.6	UJ				
Arsenic	MG/KG	84.6	100%	8.2	2	26	26			2.6	J				
Barium	MG/KG	129	100%	300	0	26	26			95.1					
Beryllium	MG/KG	0.81	100%	1.1	0	26	26			0.66	J				
Cadmium	MG/KG	0.9	65%	2.3	0	17	26			0.2	J				
Calcium	MG/KG	191000	100%	121000	1	26	26			14600					
Chromium	MG/KG	26.8	100%	29.6	0	26	26			22.1	J				
Cobalt	MG/KG	13.2	100%	30	0	26	26			9.3	J				
Copper	MG/KG	5690	100%	33	5	26	26			21.6	J				
Iron	MG/KG	28700	100%	36500	0	26	26			23200					
Lead	MG/KG	88700	100%	400	6	85	85	6.4	J	18.8	J	6.2	J	5.2	J
Magnesium	MG/KG	24100	100%	21500	1	26	26			6110					
Manganese	MG/KG	789	100%	1060	0	26	26			539					
Mercury	MG/KG	0.078	8%	0.1	0	2	26			0.063	U				
Nickel	MG/KG	40.4	100%	49	0	26	26			26.8					
Potassium	MG/KG	2350	100%	2380	0	26	26			2310					
Selenium	MG/KG	1.7	35%	2	0	9	26			1.7	J				
Silver	MG/KG	3.4	8%	0.75	1	2	26			0.74	U				
Sodium	MG/KG	388	35%	172	3	9	26			127	U				
Thallium	MG/KG	1.7	15%	0.7	2	4	26			1.1	U				
Vanadium	MG/KG	25.3	100%	150	0	26	26			22.8					
Zinc	MG/KG	630	100%	110	1	26	26			77.3	J				
Total Organic Carbon	MG/KG	56500	100%		0	43	43			27400				12600	J

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

J - Estimated Value

TABLE 3.1
RESULTS OF SOIL TOTAL METALS ANALYSES - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B		SEAD-122B		SEAD-122B		SEAD-122B	
Loc ID								PSB-5		PSB-5		PSB-5		PSB-5	
Matrix								SOIL		SOIL		SOIL		SOIL	
Sample ID								122B-1049		122B-1050		122B-1051		122B-1052	
Sample Depth TOP								10		12		18		28	
Sample Depth BOT								12		14		20		30	
Sample Date								7/10/02		7/10/02		7/10/02		7/10/02	
QC Code								SA		SA		SA		SA	
Activity			Frequency		Number	Number	Number	122B-RI		122B-RI		122B-RI		122B-RI	
Round		Maximum	of	Criteria	of	of Times	of Samples	1		1		1		1	
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
Aluminum	MG/KG	15100	100%	19300	0	26	26								
Antimony	MG/KG	670	50%	5.9	2	13	26								
Arsenic	MG/KG	84.6	100%	8.2	2	26	26								
Barium	MG/KG	129	100%	300	0	26	26								
Beryllium	MG/KG	0.81	100%	1.1	0	26	26								
Cadmium	MG/KG	0.9	65%	2.3	0	17	26								
Calcium	MG/KG	191000	100%	121000	1	26	26								
Chromium	MG/KG	26.8	100%	29.6	0	26	26								
Cobalt	MG/KG	13.2	100%	30	0	26	26								
Copper	MG/KG	5690	100%	33	5	26	26								
Iron	MG/KG	28700	100%	36500	0	26	26								
Lead	MG/KG	88700	100%	400	6	85	85	8.1	J	10.2	J	9.7	J	7.6	J
Magnesium	MG/KG	24100	100%	21500	1	26	26								
Manganese	MG/KG	789	100%	1060	0	26	26								
Mercury	MG/KG	0.078	8%	0.1	0	2	26								
Nickel	MG/KG	40.4	100%	49	0	26	26								
Potassium	MG/KG	2350	100%	2380	0	26	26								
Selenium	MG/KG	1.7	35%	2	0	9	26								
Silver	MG/KG	3.4	8%	0.75	1	2	26								
Sodium	MG/KG	388	35%	172	3	9	26								
Thallium	MG/KG	1.7	15%	0.7	2	4	26								
Vanadium	MG/KG	25.3	100%	150	0	26	26								
Zinc	MG/KG	630	100%	110	1	26	26								
Total Organic Carbon	MG/KG	56500	100%		0	43	43			8240	J			13000	J

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

J - Estimated Value

TABLE 3.1
RESULTS OF SOIL TOTAL METALS ANALYSES - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B		SEAD-122B		SEAD-122B		SEAD-122B	
Loc ID								PSB-5		PSB-6		PSB-6		PSB-6	
Matrix								SOIL		SOIL		SOIL		SOIL	
Sample ID								122B-1053		122B-1054		122B-1055		122B-1057REP	
Sample Depth TOP								28		2		8		8	
Sample Depth BOT								30		4		10		10	
Sample Date								7/10/02		7/11/02		7/11/02		7/11/02	
QC Code								SA		SA		SA		SA	
Activity			Frequency		Number	Number	Number	122B-RI		122B-RI		122B-RI		122B-RI	
Round		Maximum	of	Criteria	of	of Times	of Samples	1		1		1		1	
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
Aluminum	MG/KG	15100	100%	19300	0	26	26	9680							
Antimony	MG/KG	670	50%	5.9	2	13	26	1.3	UJ						
Arsenic	MG/KG	84.6	100%	8.2	2	26	26	2.3	J						
Barium	MG/KG	129	100%	300	0	26	26	86.9							
Beryllium	MG/KG	0.81	100%	1.1	0	26	26	0.37	J						
Cadmium	MG/KG	0.9	65%	2.3	0	17	26	0.16	U						
Calcium	MG/KG	191000	100%	121000	1	26	26	60400							
Chromium	MG/KG	26.8	100%	29.6	0	26	26	18.3	J						
Cobalt	MG/KG	13.2	100%	30	0	26	26	6.9	J						
Copper	MG/KG	5690	100%	33	5	26	26	18.1	J						
Iron	MG/KG	28700	100%	36500	0	26	26	18800							
Lead	MG/KG	88700	100%	400	6	85	85	10.8	J	9.1	J	10.1	J		
Magnesium	MG/KG	24100	100%	21500	1	26	26	15600							
Manganese	MG/KG	789	100%	1060	0	26	26	493							
Mercury	MG/KG	0.078	8%	0.1	0	2	26	0.055	U						
Nickel	MG/KG	40.4	100%	49	0	26	26	22.8							
Potassium	MG/KG	2350	100%	2380	0	26	26	1490							
Selenium	MG/KG	1.7	35%	2	0	9	26	1.3							
Silver	MG/KG	3.4	8%	0.75	1	2	26	0.61	U						
Sodium	MG/KG	388	35%	172	3	9	26	105	U						
Thallium	MG/KG	1.7	15%	0.7	2	4	26	0.93	U						
Vanadium	MG/KG	25.3	100%	150	0	26	26	16.1							
Zinc	MG/KG	630	100%	110	1	26	26	55	J						
Total Organic Carbon	MG/KG	56500	100%		0	43	43	15900	J			7770	J	9630	

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

J - Estimated Value

TABLE 3.1
RESULTS OF SOIL TOTAL METALS ANALYSES - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B		SEAD-122B		SEAD-122B		SEAD-122B	
Loc ID								PSB-6		PSB-6		PSB-6		PSB-7	
Matrix								SOIL		SOIL		SOIL		SOIL	
Sample ID								122B-1058		122B-1059		122B-1060		122B-1034	
Sample Depth TOP								12		22		28		4	
Sample Depth BOT								14		24		28.8		6	
Sample Date								7/11/02		7/11/02		7/11/02		7/3/02	
QC Code								SA		SA		SA		SA	
Activity			Frequency		Number	Number	Number	122B-RI		122B-RI		122B-RI		122B-RI	
Round		Maximum	of	Criteria	of	of Times	of Samples	1		1		1		1	
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
Aluminum	MG/KG	15100	100%	19300	0	26	26			13400					
Antimony	MG/KG	670	50%	5.9	2	13	26			1.7	UJ				
Arsenic	MG/KG	84.6	100%	8.2	2	26	26			3	J				
Barium	MG/KG	129	100%	300	0	26	26			104					
Beryllium	MG/KG	0.81	100%	1.1	0	26	26			0.64	J				
Cadmium	MG/KG	0.9	65%	2.3	0	17	26			0.34	J				
Calcium	MG/KG	191000	100%	121000	1	26	26			21200					
Chromium	MG/KG	26.8	100%	29.6	0	26	26			24.8	J				
Cobalt	MG/KG	13.2	100%	30	0	26	26			9.8	J				
Copper	MG/KG	5690	100%	33	5	26	26			24.3	J				
Iron	MG/KG	28700	100%	36500	0	26	26			25500					
Lead	MG/KG	88700	100%	400	6	85	85	11.8	J	24.3	J	12.5	J	10.8	J
Magnesium	MG/KG	24100	100%	21500	1	26	26			5960					
Manganese	MG/KG	789	100%	1060	0	26	26			731					
Mercury	MG/KG	0.078	8%	0.1	0	2	26			0.078	J				
Nickel	MG/KG	40.4	100%	49	0	26	26			28.4					
Potassium	MG/KG	2350	100%	2380	0	26	26			2350					
Selenium	MG/KG	1.7	35%	2	0	9	26			1.7					
Silver	MG/KG	3.4	8%	0.75	1	2	26			0.79	U				
Sodium	MG/KG	388	35%	172	3	9	26			167	J				
Thallium	MG/KG	1.7	15%	0.7	2	4	26			1.2	U				
Vanadium	MG/KG	25.3	100%	150	0	26	26			21.7					
Zinc	MG/KG	630	100%	110	1	26	26			85.5	J				
Total Organic Carbon	MG/KG	56500	100%		0	43	43			17100	J				

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

J - Estimated Value

TABLE 3.1
RESULTS OF SOIL TOTAL METALS ANALYSES - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B		SEAD-122B		SEAD-122B		SEAD-122B	
Loc ID								PSB-7		PSB-7		PSB-7		SS122B-1001-A,B	
Matrix								SOIL		SOIL		SOIL		SOIL	
Sample ID								122B-1035		122B-1036		122B-1037		122B-1001A	
Sample Depth TOP								6		14		18		0	
Sample Depth BOT								8		16		20		0.5	
Sample Date								7/3/02		7/3/02		7/3/02		6/26/02	
QC Code								SA		SA		SA		SA	
Activity			Frequency		Number	Number	Number	122B-RI		122B-RI		122B-RI		122B-RI	
Round		Maximum	of	Criteria	of	of Times	of Samples	1		1		1		1	
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
Aluminum	MG/KG	15100	100%	19300	0	26	26			15100				7630	
Antimony	MG/KG	670	50%	5.9	2	13	26			1.5	UJ			4.9	J
Arsenic	MG/KG	84.6	100%	8.2	2	26	26			1.8	J			4.8	
Barium	MG/KG	129	100%	300	0	26	26			108				87.4	
Beryllium	MG/KG	0.81	100%	1.1	0	26	26			0.79	J			0.36	J
Cadmium	MG/KG	0.9	65%	2.3	0	17	26			0.18	U			0.49	J
Calcium	MG/KG	191000	100%	121000	1	26	26			23100				66700	
Chromium	MG/KG	26.8	100%	29.6	0	26	26			23.1				14.6	
Cobalt	MG/KG	13.2	100%	30	0	26	26			10.1	J			5.9	J
Copper	MG/KG	5690	100%	33	5	26	26			22.6	J			**71.5**	J
Iron	MG/KG	28700	100%	36500	0	26	26			26000				15100	
Lead	MG/KG	88700	100%	400	6	85	85	10.9	J	12.7	J	5.3	J	55.6	
Magnesium	MG/KG	24100	100%	21500	1	26	26			6770				**24100**	
Manganese	MG/KG	789	100%	1060	0	26	26			670				473	
Mercury	MG/KG	0.078	8%	0.1	0	2	26			0.054	U			0.045	U
Nickel	MG/KG	40.4	100%	49	0	26	26			29.9				14.8	
Potassium	MG/KG	2350	100%	2380	0	26	26			1890				1610	
Selenium	MG/KG	1.7	35%	2	0	9	26			0.81	J			0.53	U
Silver	MG/KG	3.4	8%	0.75	1	2	26			0.68	U			0.31	U
Sodium	MG/KG	388	35%	172	3	9	26			141	J			125	J
Thallium	MG/KG	1.7	15%	0.7	2	4	26			1	U			1.2	U
Vanadium	MG/KG	25.3	100%	150	0	26	26			23.2				12.6	
Zinc	MG/KG	630	100%	110	1	26	26			74.9				57.3	
Total Organic Carbon	MG/KG	56500	100%		0	43	43	13200				14600	J	17800	

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

J - Estimated Value

TABLE 3.1
RESULTS OF SOIL TOTAL METALS ANALYSES - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B		SEAD-122B		SEAD-122B		SEAD-122B	
Loc ID								SS122B-1001-A,B		SS122B-1002-A,B		SS122B-1002-A,B		SS122B-1003-A,B	
Matrix								SOIL		SOIL		SOIL		SOIL	
Sample ID								122B-1001B		122B-1002A		122B-1002B		122B-1003A	
Sample Depth TOP								1.5		0		1.5		0	
Sample Depth BOT								2		0.5		2		0.5	
Sample Date								6/26/02		6/26/02		6/26/02		6/26/02	
QC Code								SA		SA		SA		SA	
Activity			Frequency		Number	Number	Number	122B-RI		122B-RI		122B-RI		122B-RI	
Round		Maximum	of	Criteria	of	of Times	of Samples	1		1		1		1	
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
Aluminum	MG/KG	15100	100%	19300	0	26	26					10800			
Antimony	MG/KG	670	50%	5.9	2	13	26					0.74	J		
Arsenic	MG/KG	84.6	100%	8.2	2	26	26					4.1			
Barium	MG/KG	129	100%	300	0	26	26					84.3			
Beryllium	MG/KG	0.81	100%	1.1	0	26	26					0.57	J		
Cadmium	MG/KG	0.9	65%	2.3	0	17	26					0.55	J		
Calcium	MG/KG	191000	100%	121000	1	26	26					23600			
Chromium	MG/KG	26.8	100%	29.6	0	26	26					19.6			
Cobalt	MG/KG	13.2	100%	30	0	26	26					7.8	J		
Copper	MG/KG	5690	100%	33	5	26	26					27.8			
Iron	MG/KG	28700	100%	36500	0	26	26					19800			
Lead	MG/KG	88700	100%	400	6	85	85	7.8		11.8		47.7		16.6	
Magnesium	MG/KG	24100	100%	21500	1	26	26					8770			
Manganese	MG/KG	789	100%	1060	0	26	26					576			
Mercury	MG/KG	0.078	8%	0.1	0	2	26					0.05	U		
Nickel	MG/KG	40.4	100%	49	0	26	26					18.5			
Potassium	MG/KG	2350	100%	2380	0	26	26					1690			
Selenium	MG/KG	1.7	35%	2	0	9	26					0.52	U		
Silver	MG/KG	3.4	8%	0.75	1	2	26					0.3	U		
Sodium	MG/KG	388	35%	172	3	9	26					343	J		
Thallium	MG/KG	1.7	15%	0.7	2	4	26					1.2	U		
Vanadium	MG/KG	25.3	100%	150	0	26	26					18.2			
Zinc	MG/KG	630	100%	110	1	26	26					62.4			
Total Organic Carbon	MG/KG	56500	100%		0	43	43			3930				6850	J

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

J - Estimated Value

TABLE 3.1
RESULTS OF SOIL TOTAL METALS ANALYSES - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B
Loc ID								SS122B-1003-A,B	SS122B-1004-A,B	SS122B-1004-A,B	SS122B-1005-A,B
Matrix								SOIL	SOIL	SOIL	SOIL
Sample ID								122B-1003B	122B-1004A	122B-1004B	122B-1005A
Sample Depth TOP								1.5	0	1.5	0
Sample Depth BOT								2	0.5	2	0.5
Sample Date								6/26/02	6/26/02	6/26/02	6/26/02
QC Code								SA	SA	SA	SA
Activity			Frequency		Number	Number	Number	122B-RI	122B-RI	122B-RI	122B-RI
Round		Maximum	of	Criteria	of	of Times	of Samples	1	1	1	1
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Aluminum	MG/KG	15100	100%	19300	0	26	26				
Antimony	MG/KG	670	50%	5.9	2	13	26				
Arsenic	MG/KG	84.6	100%	8.2	2	26	26				
Barium	MG/KG	129	100%	300	0	26	26				
Beryllium	MG/KG	0.81	100%	1.1	0	26	26				
Cadmium	MG/KG	0.9	65%	2.3	0	17	26				
Calcium	MG/KG	191000	100%	121000	1	26	26				
Chromium	MG/KG	26.8	100%	29.6	0	26	26				
Cobalt	MG/KG	13.2	100%	30	0	26	26				
Copper	MG/KG	5690	100%	33	5	26	26				
Iron	MG/KG	28700	100%	36500	0	26	26				
Lead	MG/KG	88700	100%	400	6	85	85	6.9	36.7	12.6	29.4
Magnesium	MG/KG	24100	100%	21500	1	26	26				
Manganese	MG/KG	789	100%	1060	0	26	26				
Mercury	MG/KG	0.078	8%	0.1	0	2	26				
Nickel	MG/KG	40.4	100%	49	0	26	26				
Potassium	MG/KG	2350	100%	2380	0	26	26				
Selenium	MG/KG	1.7	35%	2	0	9	26				
Silver	MG/KG	3.4	8%	0.75	1	2	26				
Sodium	MG/KG	388	35%	172	3	9	26				
Thallium	MG/KG	1.7	15%	0.7	2	4	26				
Vanadium	MG/KG	25.3	100%	150	0	26	26				
Zinc	MG/KG	630	100%	110	1	26	26				
Total Organic Carbon	MG/KG	56500	100%		0	43	43			23300	

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

J - Estimated Value

TABLE 3.1
RESULTS OF SOIL TOTAL METALS ANALYSES - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B
Loc ID								SS122B-1005-A,B	SS122B-1006-A,B	SS122B-1006-A,B	SS122B-1007-A,B
Matrix								SOIL	SOIL	SOIL	SOIL
Sample ID								122B-1005B	122B-1006A	122B-1006B	122B-1007A
Sample Depth TOP								1.5	0	1.5	0
Sample Depth BOT								2	0.5	2	0.5
Sample Date								6/26/02	6/26/02	6/26/02	6/26/02
QC Code								SA	SA	SA	SA
Activity			Frequency		Number	Number	Number	122B-RI	122B-RI	122B-RI	122B-RI
Round		Maximum	of	Criteria	of	of Times	of Samples	1	1	1	1
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Aluminum	MG/KG	15100	100%	19300	0	26	26				
Antimony	MG/KG	670	50%	5.9	2	13	26				
Arsenic	MG/KG	84.6	100%	8.2	2	26	26				
Barium	MG/KG	129	100%	300	0	26	26				
Beryllium	MG/KG	0.81	100%	1.1	0	26	26				
Cadmium	MG/KG	0.9	65%	2.3	0	17	26				
Calcium	MG/KG	191000	100%	121000	1	26	26				
Chromium	MG/KG	26.8	100%	29.6	0	26	26				
Cobalt	MG/KG	13.2	100%	30	0	26	26				
Copper	MG/KG	5690	100%	33	5	26	26				
Iron	MG/KG	28700	100%	36500	0	26	26				
Lead	MG/KG	88700	100%	400	6	85	85	9.9	22.8	11.3	31.2
Magnesium	MG/KG	24100	100%	21500	1	26	26				
Manganese	MG/KG	789	100%	1060	0	26	26				
Mercury	MG/KG	0.078	8%	0.1	0	2	26				
Nickel	MG/KG	40.4	100%	49	0	26	26				
Potassium	MG/KG	2350	100%	2380	0	26	26				
Selenium	MG/KG	1.7	35%	2	0	9	26				
Silver	MG/KG	3.4	8%	0.75	1	2	26				
Sodium	MG/KG	388	35%	172	3	9	26				
Thallium	MG/KG	1.7	15%	0.7	2	4	26				
Vanadium	MG/KG	25.3	100%	150	0	26	26				
Zinc	MG/KG	630	100%	110	1	26	26				
Total Organic Carbon	MG/KG	56500	100%		0	43	43	5480 J		7480	

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

J - Estimated Value

TABLE 3.1
RESULTS OF SOIL TOTAL METALS ANALYSES - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B		SEAD-122B		SEAD-122B		SEAD-122B	
Loc ID								SS122B-1007-A,B		SS122B-1008-A,B		SS122B-1008-A,B		SS122B-1009-A,B	
Matrix								SOIL		SOIL		SOIL		SOIL	
Sample ID								122B-1007B		122B-1008A		122B-1008B		122B-1009A	
Sample Depth TOP								1.5		0		1.5		0	
Sample Depth BOT								2		0.5		2		0.5	
Sample Date								6/26/02		6/26/02		6/26/02		6/26/02	
QC Code								SA		SA		SA		SA	
Activity			Frequency		Number	Number	Number	122B-RI		122B-RI		122B-RI		122B-RI	
Round		Maximum	of	Criteria	of	of Times	of Samples	1		1		1		1	
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
Aluminum	MG/KG	15100	100%	19300	0	26	26			13100				12300	
Antimony	MG/KG	670	50%	5.9	2	13	26			0.48	J			0.6	J
Arsenic	MG/KG	84.6	100%	8.2	2	26	26			7.6				7.6	
Barium	MG/KG	129	100%	300	0	26	26			63				83.5	
Beryllium	MG/KG	0.81	100%	1.1	0	26	26			0.61	J			0.62	J
Cadmium	MG/KG	0.9	65%	2.3	0	17	26			0.48	J			0.54	J
Calcium	MG/KG	191000	100%	121000	1	26	26			59700				40500	
Chromium	MG/KG	26.8	100%	29.6	0	26	26			23.5				22.1	
Cobalt	MG/KG	13.2	100%	30	0	26	26			11				10.1	J
Copper	MG/KG	5690	100%	33	5	26	26			30.4	J			31.7	J
Iron	MG/KG	28700	100%	36500	0	26	26			26200				25500	
Lead	MG/KG	88700	100%	400	6	85	85	9.8		56.6		12.5		98.7	
Magnesium	MG/KG	24100	100%	21500	1	26	26			12600				8500	
Manganese	MG/KG	789	100%	1060	0	26	26			501				656	
Mercury	MG/KG	0.078	8%	0.1	0	2	26			0.044	U			0.041	U
Nickel	MG/KG	40.4	100%	49	0	26	26			34.9				31.1	
Potassium	MG/KG	2350	100%	2380	0	26	26			1620				1620	
Selenium	MG/KG	1.7	35%	2	0	9	26			0.55	U			0.58	U
Silver	MG/KG	3.4	8%	0.75	1	2	26			0.32	U			0.33	U
Sodium	MG/KG	388	35%	172	3	9	26			**182**	J			**388**	J
Thallium	MG/KG	1.7	15%	0.7	2	4	26			1.3	U			1.3	U
Vanadium	MG/KG	25.3	100%	150	0	26	26			17				17.6	
Zinc	MG/KG	630	100%	110	1	26	26			86.4				80.5	
Total Organic Carbon	MG/KG	56500	100%		0	43	43	9500	J			9690			

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

J - Estimated Value

TABLE 3.1
RESULTS OF SOIL TOTAL METALS ANALYSES - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B		SEAD-122B		SEAD-122B		SEAD-122B	
Loc ID								SS122B-1009-A,B		SS122B-1010-A,B		SS122B-1010-A,B		SS122B-1010-A,B	
Matrix								SOIL		SOIL		SOIL		SOIL	
Sample ID								122B-1009B		122B-1010A		122B-1010A-DUP		122B-1010B	
Sample Depth TOP								1.5		0		0		1.5	
Sample Depth BOT								2		0.5		0.5		2	
Sample Date								6/26/02		6/26/02		6/26/02		6/26/02	
QC Code								SA		SA		SA		SA	
Activity			Frequency		Number	Number	Number	122B-RI		122B-RI		122B-RI		122B-RI	
Round		Maximum	of	Criteria	of	of Times	of Samples	1		1		1		1	
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
Aluminum	MG/KG	15100	100%	19300	0	26	26			4490					
Antimony	MG/KG	670	50%	5.9	2	13	26			**109**	J				
Arsenic	MG/KG	84.6	100%	8.2	2	26	26			6					
Barium	MG/KG	129	100%	300	0	26	26			25.4	J				
Beryllium	MG/KG	0.81	100%	1.1	0	26	26			0.19	J				
Cadmium	MG/KG	0.9	65%	2.3	0	17	26			0.28	J				
Calcium	MG/KG	191000	100%	121000	1	26	26			35200					
Chromium	MG/KG	26.8	100%	29.6	0	26	26			7.3					
Cobalt	MG/KG	13.2	100%	30	0	26	26			3.8	J				
Copper	MG/KG	5690	100%	33	5	26	26			28	J				
Iron	MG/KG	28700	100%	36500	0	26	26			9130					
Lead	MG/KG	88700	100%	400	6	85	85	25.7		**13100**	J	**1540**		14.7	
Magnesium	MG/KG	24100	100%	21500	1	26	26			10900					
Manganese	MG/KG	789	100%	1060	0	26	26			329					
Mercury	MG/KG	0.078	8%	0.1	0	2	26			0.042	U				
Nickel	MG/KG	40.4	100%	49	0	26	26			7.6	J				
Potassium	MG/KG	2350	100%	2380	0	26	26			937	J				
Selenium	MG/KG	1.7	35%	2	0	9	26			0.64	J				
Silver	MG/KG	3.4	8%	0.75	1	2	26			0.37	J				
Sodium	MG/KG	388	35%	172	3	9	26			142	J				
Thallium	MG/KG	1.7	15%	0.7	2	4	26			1.2	U				
Vanadium	MG/KG	25.3	100%	150	0	26	26			8.7	J				
Zinc	MG/KG	630	100%	110	1	26	26			29.3					
Total Organic Carbon	MG/KG	56500	100%		0	43	43	6300	J	12800	J			1730	J

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

J - Estimated Value

TABLE 3.1
RESULTS OF SOIL TOTAL METALS ANALYSES - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B		SEAD-122B		SEAD-122B		SEAD-122B	
Loc ID								SS122B-1011-A,B		SS122B-1011-A,B		SS122B-1011-A,B		SS122B-1012-A,B	
Matrix								SOIL		SOIL		SOIL		SOIL	
Sample ID								122B-1011A		122B-1011A-DUP		122B-1011B		122B-1012A	
Sample Depth TOP								0		0		1.5		0	
Sample Depth BOT								0.5		0.5		2		0.5	
Sample Date								6/26/02		6/26/02		6/26/02		6/26/02	
QC Code								SA		SA		SA		SA	
Activity			Frequency		Number	Number	Number	122B-RI		122B-RI		122B-RI		122B-RI	
Round		Maximum	of	Criteria	of	of Times	of Samples	1		1		1		1	
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
Aluminum	MG/KG	15100	100%	19300	0	26	26	8500				13400			
Antimony	MG/KG	670	50%	5.9	2	13	26	**670**	J			0.53	J		
Arsenic	MG/KG	84.6	100%	8.2	2	26	26	**84.6**	J			4.7			
Barium	MG/KG	129	100%	300	0	26	26	61.7				110			
Beryllium	MG/KG	0.81	100%	1.1	0	26	26	0.43	J			0.68	J		
Cadmium	MG/KG	0.9	65%	2.3	0	17	26	0.89	J			0.85	J		
Calcium	MG/KG	191000	100%	121000	1	26	26	28500				39900			
Chromium	MG/KG	26.8	100%	29.6	0	26	26	16.9				23.5			
Cobalt	MG/KG	13.2	100%	30	0	26	26	7.6	J			11.6			
Copper	MG/KG	5690	100%	33	5	26	26	**5690**	J			25.6			
Iron	MG/KG	28700	100%	36500	0	26	26	17000				24600			
Lead	MG/KG	88700	100%	400	6	85	85	**88700**	J	**32600**		68		42	
Magnesium	MG/KG	24100	100%	21500	1	26	26	7310				8200			
Manganese	MG/KG	789	100%	1060	0	26	26	443				716			
Mercury	MG/KG	0.078	8%	0.1	0	2	26	0.047	U			0.054	U		
Nickel	MG/KG	40.4	100%	49	0	26	26	20.8				28.7			
Potassium	MG/KG	2350	100%	2380	0	26	26	1690				2110			
Selenium	MG/KG	1.7	35%	2	0	9	26	0.55	U			0.58	U		
Silver	MG/KG	3.4	8%	0.75	1	2	26	**3.4**	J			0.33	U		
Sodium	MG/KG	388	35%	172	3	9	26	152	J			146	U		
Thallium	MG/KG	1.7	15%	0.7	2	4	26	**1.7**	J			0.42	UJ		
Vanadium	MG/KG	25.3	100%	150	0	26	26	13.7				20.1			
Zinc	MG/KG	630	100%	110	1	26	26	**630**	J			68.5			
Total Organic Carbon	MG/KG	56500	100%		0	43	43					19500	J		

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

J - Estimated Value

TABLE 3.1
RESULTS OF SOIL TOTAL METALS ANALYSES - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B
Loc ID								SS122B-1012-A,B	SS122B-1013-A,B	SS122B-1013-A,B	SS122B-1014-A,B
Matrix								SOIL	SOIL	SOIL	SOIL
Sample ID								122B-1012B	122B-1013A	122B-1013B	122B-1014A
Sample Depth TOP								1.5	0	1.5	0
Sample Depth BOT								2	0.5	2	0.5
Sample Date								6/26/02	6/26/02	6/26/02	6/27/02
QC Code								SA	SA	SA	SA
Activity								122B-RI	122B-RI	122B-RI	122B-RI
Round		Maximum	Frequency of	Criteria	Number of	Number of Times	Number of Samples	1	1	1	1
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Aluminum	MG/KG	15100	100%	19300	0	26	26		10700	10100	
Antimony	MG/KG	670	50%	5.9	2	13	26		4.5 J	1.2 J	
Arsenic	MG/KG	84.6	100%	8.2	2	26	26		**11.5**	7.1	
Barium	MG/KG	129	100%	300	0	26	26		86.3	78.2	
Beryllium	MG/KG	0.81	100%	1.1	0	26	26		0.56 J	0.54 J	
Cadmium	MG/KG	0.9	65%	2.3	0	17	26		0.9 J	0.8 J	
Calcium	MG/KG	191000	100%	121000	1	26	26		44500	67200	
Chromium	MG/KG	26.8	100%	29.6	0	26	26		21.8	19.4	
Cobalt	MG/KG	13.2	100%	30	0	26	26		10.2 J	12.1	
Copper	MG/KG	5690	100%	33	5	26	26		**41.2**	30.6	
Iron	MG/KG	28700	100%	36500	0	26	26		21200	20200	
Lead	MG/KG	88700	100%	400	6	85	85	9.7	**1190**	200	13.2
Magnesium	MG/KG	24100	100%	21500	1	26	26		14800	21500	
Manganese	MG/KG	789	100%	1060	0	26	26		562	601	
Mercury	MG/KG	0.078	8%	0.1	0	2	26		0.056 U	0.055 U	
Nickel	MG/KG	40.4	100%	49	0	26	26		25.8	24.9	
Potassium	MG/KG	2350	100%	2380	0	26	26		2280	1930	
Selenium	MG/KG	1.7	35%	2	0	9	26		0.6 U	0.59 U	
Silver	MG/KG	3.4	8%	0.75	1	2	26		0.35 U	0.34 U	
Sodium	MG/KG	388	35%	172	3	9	26		150 U	148 U	
Thallium	MG/KG	1.7	15%	0.7	2	4	26		0.44 U	0.43 U	
Vanadium	MG/KG	25.3	100%	150	0	26	26		17.6	17.2	
Zinc	MG/KG	630	100%	110	1	26	26		87.7	80.3	
Total Organic Carbon	MG/KG	56500	100%		0	43	43	22400 J		30000	

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

J - Estimated Value

TABLE 3.1
RESULTS OF SOIL TOTAL METALS ANALYSES - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B		SEAD-122B		SEAD-122B		SEAD-122B	
Loc ID								SS122B-1014-A,B		SS122B-1015-A,B		SS122B-1015-A,B		SS122B-1016-A,B	
Matrix								SOIL		SOIL		SOIL		SOIL	
Sample ID								122B-1014B		122B-1015A		122B-1015B		122B-1016A	
Sample Depth TOP								1.5		0		1.5		0	
Sample Depth BOT								2		0.5		2		0.5	
Sample Date								6/27/02		6/27/02		6/27/02		6/27/02	
QC Code								SA		SA		SA		SA	
Activity			Frequency		Number	Number	Number	122B-RI		122B-RI		122B-RI		122B-RI	
Round		Maximum	of	Criteria	of	of Times	of Samples	1		1		1		1	
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
Aluminum	MG/KG	15100	100%	19300	0	26	26			5970					
Antimony	MG/KG	670	50%	5.9	2	13	26			0.32	UJ				
Arsenic	MG/KG	84.6	100%	8.2	2	26	26			3.7					
Barium	MG/KG	129	100%	300	0	26	26			42.4					
Beryllium	MG/KG	0.81	100%	1.1	0	26	26			0.42	J				
Cadmium	MG/KG	0.9	65%	2.3	0	17	26			0.06	U				
Calcium	MG/KG	191000	100%	121000	1	26	26			**191000**					
Chromium	MG/KG	26.8	100%	29.6	0	26	26			11					
Cobalt	MG/KG	13.2	100%	30	0	26	26			8.5	J				
Copper	MG/KG	5690	100%	33	5	26	26			13.9					
Iron	MG/KG	28700	100%	36500	0	26	26			11400					
Lead	MG/KG	88700	100%	400	6	85	85	9		5.2		10.4		48.6	
Magnesium	MG/KG	24100	100%	21500	1	26	26			11300					
Manganese	MG/KG	789	100%	1060	0	26	26			387					
Mercury	MG/KG	0.078	8%	0.1	0	2	26			0.049	U				
Nickel	MG/KG	40.4	100%	49	0	26	26			20.7					
Potassium	MG/KG	2350	100%	2380	0	26	26			1280					
Selenium	MG/KG	1.7	35%	2	0	9	26			0.52	U				
Silver	MG/KG	3.4	8%	0.75	1	2	26			0.3	U				
Sodium	MG/KG	388	35%	172	3	9	26			131	U				
Thallium	MG/KG	1.7	15%	0.7	2	4	26			0.69	J				
Vanadium	MG/KG	25.3	100%	150	0	26	26			10.1					
Zinc	MG/KG	630	100%	110	1	26	26			38					
Total Organic Carbon	MG/KG	56500	100%		0	43	43	22500		56500		6480	J		

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

J - Estimated Value

TABLE 3.1
RESULTS OF SOIL TOTAL METALS ANALYSES - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B		SEAD-122B		SEAD-122B		SEAD-122B	
Loc ID								SS122B-1016-A,B		SS122B-1017-A,B		SS122B-1017-A,B		SS122B-1018-A,B	
Matrix								SOIL		SOIL		SOIL		SOIL	
Sample ID								122B-1016B		122B-1017A		122B-1017B		122B-1018A	
Sample Depth TOP								1.5		0		1.5		0	
Sample Depth BOT								2		0.5		2		0.5	
Sample Date								6/27/02		6/27/02		6/27/02		6/27/02	
QC Code								SA		SA		SA		SA	
Activity			Frequency		Number	Number	Number	122B-RI		122B-RI		122B-RI		122B-RI	
Round		Maximum	of	Criteria	of	of Times	of Samples	1		1		1		1	
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
Aluminum	MG/KG	15100	100%	19300	0	26	26							14300	
Antimony	MG/KG	670	50%	5.9	2	13	26							2.9	J
Arsenic	MG/KG	84.6	100%	8.2	2	26	26							4.2	
Barium	MG/KG	129	100%	300	0	26	26							129	
Beryllium	MG/KG	0.81	100%	1.1	0	26	26							0.81	J
Cadmium	MG/KG	0.9	65%	2.3	0	17	26							0.86	J
Calcium	MG/KG	191000	100%	121000	1	26	26							12900	
Chromium	MG/KG	26.8	100%	29.6	0	26	26							22.6	
Cobalt	MG/KG	13.2	100%	30	0	26	26							10	J
Copper	MG/KG	5690	100%	33	5	26	26							29	
Iron	MG/KG	28700	100%	36500	0	26	26							22500	
Lead	MG/KG	88700	100%	400	6	85	85	26.7		19.7		17.4		**927**	
Magnesium	MG/KG	24100	100%	21500	1	26	26							5700	
Manganese	MG/KG	789	100%	1060	0	26	26							789	
Mercury	MG/KG	0.078	8%	0.1	0	2	26							0.049	U
Nickel	MG/KG	40.4	100%	49	0	26	26							22.1	
Potassium	MG/KG	2350	100%	2380	0	26	26							1710	
Selenium	MG/KG	1.7	35%	2	0	9	26							0.61	U
Silver	MG/KG	3.4	8%	0.75	1	2	26							0.35	U
Sodium	MG/KG	388	35%	172	3	9	26							154	U
Thallium	MG/KG	1.7	15%	0.7	2	4	26							0.45	UJ
Vanadium	MG/KG	25.3	100%	150	0	26	26							25.3	
Zinc	MG/KG	630	100%	110	1	26	26							60.3	
Total Organic Carbon	MG/KG	56500	100%		0	43	43	11000							

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

J - Estimated Value

TABLE 3.1
RESULTS OF SOIL TOTAL METALS ANALYSES - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B		SEAD-122B		SEAD-122B		SEAD-122B	
Loc ID								SS122B-1018-A,B		SS122B-1019-A,B		SS122B-1019-A,B		SS122B-1020-A,B	
Matrix								SOIL		SOIL		SOIL		SOIL	
Sample ID								122B-1018B		122B-1019A		122B-1019B		122B-1020A	
Sample Depth TOP								1.5		0		1.5		0	
Sample Depth BOT								2		0.5		2		0.5	
Sample Date								6/27/02		6/27/02		6/27/02		6/27/02	
QC Code								SA		SA		SA		SA	
Activity			Frequency		Number	Number	Number	122B-RI		122B-RI		122B-RI		122B-RI	
Round		Maximum	of	Criteria	of	of Times	of Samples	1		1		1		1	
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
Aluminum	MG/KG	15100	100%	19300	0	26	26							4220	
Antimony	MG/KG	670	50%	5.9	2	13	26							0.31	UJ
Arsenic	MG/KG	84.6	100%	8.2	2	26	26							2.2	
Barium	MG/KG	129	100%	300	0	26	26							23.7	J
Beryllium	MG/KG	0.81	100%	1.1	0	26	26							0.21	J
Cadmium	MG/KG	0.9	65%	2.3	0	17	26							0.06	U
Calcium	MG/KG	191000	100%	121000	1	26	26							63200	
Chromium	MG/KG	26.8	100%	29.6	0	26	26							7.4	
Cobalt	MG/KG	13.2	100%	30	0	26	26							3.7	J
Copper	MG/KG	5690	100%	33	5	26	26							17.1	
Iron	MG/KG	28700	100%	36500	0	26	26							8980	
Lead	MG/KG	88700	100%	400	6	85	85	19.3		13.7		7.7		4.2	
Magnesium	MG/KG	24100	100%	21500	1	26	26							19800	
Manganese	MG/KG	789	100%	1060	0	26	26							330	
Mercury	MG/KG	0.078	8%	0.1	0	2	26							0.051	U
Nickel	MG/KG	40.4	100%	49	0	26	26							7	J
Potassium	MG/KG	2350	100%	2380	0	26	26							1100	
Selenium	MG/KG	1.7	35%	2	0	9	26							0.5	U
Silver	MG/KG	3.4	8%	0.75	1	2	26							0.29	U
Sodium	MG/KG	388	35%	172	3	9	26							127	U
Thallium	MG/KG	1.7	15%	0.7	2	4	26							0.37	U
Vanadium	MG/KG	25.3	100%	150	0	26	26							7.6	J
Zinc	MG/KG	630	100%	110	1	26	26							36.1	
Total Organic Carbon	MG/KG	56500	100%		0	43	43	6880						10900	

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

J - Estimated Value

TABLE 3.1
RESULTS OF SOIL TOTAL METALS ANALYSES - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B		SEAD-122B		SEAD-122B		SEAD-122B	
Loc ID								SS122B-1020-A,B		SS122B-1021-A,B		SS122B-1021-A,B		SS122B-1022-A,B	
Matrix								SOIL		SOIL		SOIL		SOIL	
Sample ID								122B-1020B		122B-1021A		122B-1021B		122B-1022A	
Sample Depth TOP								1.5		0		1.5		0	
Sample Depth BOT								2		0.5		2		0.5	
Sample Date								6/27/02		6/27/02		6/27/02		6/28/02	
QC Code								SA		SA		SA		SA	
Activity			Frequency		Number	Number	Number	122B-RI		122B-RI		122B-RI		122B-RI	
Round		Maximum	of	Criteria	of	of Times	of Samples	1		1		1		1	
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
Aluminum	MG/KG	15100	100%	19300	0	26	26								
Antimony	MG/KG	670	50%	5.9	2	13	26								
Arsenic	MG/KG	84.6	100%	8.2	2	26	26								
Barium	MG/KG	129	100%	300	0	26	26								
Beryllium	MG/KG	0.81	100%	1.1	0	26	26								
Cadmium	MG/KG	0.9	65%	2.3	0	17	26								
Calcium	MG/KG	191000	100%	121000	1	26	26								
Chromium	MG/KG	26.8	100%	29.6	0	26	26								
Cobalt	MG/KG	13.2	100%	30	0	26	26								
Copper	MG/KG	5690	100%	33	5	26	26								
Iron	MG/KG	28700	100%	36500	0	26	26								
Lead	MG/KG	88700	100%	400	6	85	85	3.7		4.2		2.6	J	8.4	
Magnesium	MG/KG	24100	100%	21500	1	26	26								
Manganese	MG/KG	789	100%	1060	0	26	26								
Mercury	MG/KG	0.078	8%	0.1	0	2	26								
Nickel	MG/KG	40.4	100%	49	0	26	26								
Potassium	MG/KG	2350	100%	2380	0	26	26								
Selenium	MG/KG	1.7	35%	2	0	9	26								
Silver	MG/KG	3.4	8%	0.75	1	2	26								
Sodium	MG/KG	388	35%	172	3	9	26								
Thallium	MG/KG	1.7	15%	0.7	2	4	26								
Vanadium	MG/KG	25.3	100%	150	0	26	26								
Zinc	MG/KG	630	100%	110	1	26	26								
Total Organic Carbon	MG/KG	56500	100%		0	43	43	3680	J			3160			

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

J - Estimated Value

TABLE 3.1
RESULTS OF SOIL TOTAL METALS ANALYSES - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B		SEAD-122B		SEAD-122B		SEAD-122B	
Loc ID								SS122B-1022-A,B		SS122B-1023-A,B		SS122B-1023-A,B		SS122B-1024-A,B	
Matrix								SOIL		SOIL		SOIL		SOIL	
Sample ID								122B-1022B		122B-1023A		122B-1023B		122B-1024A	
Sample Depth TOP								1.5		0		1.5		0	
Sample Depth BOT								2		0.5		2		0.5	
Sample Date								6/28/02		6/28/02		6/28/02		6/28/02	
QC Code								SA		SA		SA		SA	
Activity			Frequency		Number	Number	Number	122B-RI		122B-RI		122B-RI		122B-RI	
Round		Maximum	of	Criteria	of	of Times	of Samples	1		1		1		1	
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
Aluminum	MG/KG	15100	100%	19300	0	26	26							3380	
Antimony	MG/KG	670	50%	5.9	2	13	26							0.77	J
Arsenic	MG/KG	84.6	100%	8.2	2	26	26							1.4	J
Barium	MG/KG	129	100%	300	0	26	26							19	J
Beryllium	MG/KG	0.81	100%	1.1	0	26	26							0.18	J
Cadmium	MG/KG	0.9	65%	2.3	0	17	26							0.06	U
Calcium	MG/KG	191000	100%	121000	1	26	26							31800	
Chromium	MG/KG	26.8	100%	29.6	0	26	26							5.3	
Cobalt	MG/KG	13.2	100%	30	0	26	26							2.7	J
Copper	MG/KG	5690	100%	33	5	26	26							75	
Iron	MG/KG	28700	100%	36500	0	26	26							6720	
Lead	MG/KG	88700	100%	400	6	85	85	9.2		13		13.5		69.4	
Magnesium	MG/KG	24100	100%	21500	1	26	26							9980	
Manganese	MG/KG	789	100%	1060	0	26	26							280	
Mercury	MG/KG	0.078	8%	0.1	0	2	26							0.049	U
Nickel	MG/KG	40.4	100%	49	0	26	26							5.8	J
Potassium	MG/KG	2350	100%	2380	0	26	26							708	J
Selenium	MG/KG	1.7	35%	2	0	9	26							0.55	UJ
Silver	MG/KG	3.4	8%	0.75	1	2	26							0.31	U
Sodium	MG/KG	388	35%	172	3	9	26							137	U
Thallium	MG/KG	1.7	15%	0.7	2	4	26							0.4	U
Vanadium	MG/KG	25.3	100%	150	0	26	26							5.7	J
Zinc	MG/KG	630	100%	110	1	26	26							31.9	
Total Organic Carbon	MG/KG	56500	100%		0	43	43	4920	J					4590	J

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

J - Estimated Value

TABLE 3.1
RESULTS OF SOIL TOTAL METALS ANALYSES - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B		SEAD-122B	
Loc ID								SS122B-1024-A,B		SS122B-1025A	
Matrix								SOIL		SOIL	
Sample ID								122B-1024B		122B-1025A	
Sample Depth TOP								1.5		0	
Sample Depth BOT								2		0.5	
Sample Date								6/28/02		6/28/02	
QC Code								SA		SA	
Activity								122B-RI		122B-RI	
Round		**Maximum**	**Frequency of**	**Criteria**	**Number of**	**Number of Times**	**Number of Samples**	1		1	
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value	(Q)	Value	(Q)
Aluminum	MG/KG	15100	100%	19300	0	26	26	3040		3380	
Antimony	MG/KG	670	50%	5.9	2	13	26	0.61	J	0.83	J
Arsenic	MG/KG	84.6	100%	8.2	2	26	26	1.8	J	1.8	J
Barium	MG/KG	129	100%	300	0	26	26	14.5	J	18.4	J
Beryllium	MG/KG	0.81	100%	1.1	0	26	26	0.16	J	0.18	J
Cadmium	MG/KG	0.9	65%	2.3	0	17	26	0.06	U	0.06	U
Calcium	MG/KG	191000	100%	121000	1	26	26	31400		29500	
Chromium	MG/KG	26.8	100%	29.6	0	26	26	5.1		5.2	
Cobalt	MG/KG	13.2	100%	30	0	26	26	2.9	J	2.8	J
Copper	MG/KG	5690	100%	33	5	26	26	22.2		**44**	
Iron	MG/KG	28700	100%	36500	0	26	26	6570		6590	
Lead	MG/KG	88700	100%	400	6	85	85	14		57.4	
Magnesium	MG/KG	24100	100%	21500	1	26	26	8680		7720	
Manganese	MG/KG	789	100%	1060	0	26	26	285		284	
Mercury	MG/KG	0.078	8%	0.1	0	2	26	0.053	U	0.053	U
Nickel	MG/KG	40.4	100%	49	0	26	26	5.2	J	6	J
Potassium	MG/KG	2350	100%	2380	0	26	26	704	J	723	J
Selenium	MG/KG	1.7	35%	2	0	9	26	0.52	UJ	0.56	J
Silver	MG/KG	3.4	8%	0.75	1	2	26	0.3	U	0.32	U
Sodium	MG/KG	388	35%	172	3	9	26	130	U	140	U
Thallium	MG/KG	1.7	15%	0.7	2	4	26	**0.74**	J	0.5	J
Vanadium	MG/KG	25.3	100%	150	0	26	26	5.3	J	5.6	J
Zinc	MG/KG	630	100%	110	1	26	26	25.3		30.1	
Total Organic Carbon	MG/KG	56500	100%		0	43	43	2420	J		

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

J - Estimated Value

TABLE 3.2
SOIL LEAD SAMPLE RESULTS - 2002 Site Investigation
Airfield - Small Arms Range
Seneca Army Depot Activity

Soil Total Lead Results Greater Than 400 ppm

Sample No.	Lead Concentration (ppm)	Sample Depth
1010A	13100	0-6"
1010A DUP	1540	0-6"
1011A	88700	0-6"
1011A DUP	32600	0-6"
1013A	1190	0-6"
1018A	927	0-6"

Notes:
Results from Table 3.1.
A - 0- to 6-inch sample depth below ground surface
B - 18- to 24-inch sample depth below ground surface
bgs - below ground surface
DUP - Field duplicate

TABLE 3.3
RESULTS OF SYNTHETIC PRECIPITATION LEACHING PROCEDURE ANALYSES - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B		SEAD-122B		SEAD-122B		SEAD-122B
Loc								MW-3		PSB-3		PSB-3		PSB-4
Matrix								SOIL		SOIL		SOIL		SOIL
Sample ID								122B-1042,SPLP		122B-1030,SPLP		122B-1031,SPLP		122B-1046,SPLP
Sample Depth TOP								12		0		10		20
Sample Depth BOT								14		2		12		22
Sample Date								7/24/02		7/3/02		7/3/02		7/24/02
QA Code								SA		SA		SA		SA
Activity								122B-RI		122B-RI		122B-RI		122B-RI
Round								1		1		1		1
Parameter	**Units**	**Maximum Value**	**Frequency of Detection**	**Criteria Level**	**Number of Exceedances**	**Number of Times Detected**	**Number of Samples Collected**	Value	(Q)	Value	(Q)	Value	(Q)	Value
SPLP Aluminum	UG/L	2340	100%		0	13	13	295		1120		466		485
SPLP Antimony	UG/L	180	69%		0	9	13	2	J	17.9	J	4.2	U	1.6
SPLP Arsenic	UG/L	5.3	46%	5000	0	6	13	1.5	U	5.3	J	3.6	U	2.6
SPLP Barium	UG/L	28.2	92%	100000	0	12	13	6	J	19.1	J	16.5	J	22
SPLP Beryllium	UG/L	0.43	46%		0	6	13	0.2	U	0.2	U	0.2	U	0.2
SPLP Cadmium	UG/L	0	0%	1000	0	0	13	0.3	U	0.8	U	0.8	U	0.3
SPLP Calcium	UG/L	20200	100%		0	13	13	8630		15000		16000		16100
SPLP Chromium	UG/L	3.3	62%	5000	0	8	13	0.8	U	2.5	J	2.1	U	0.8
SPLP Cobalt	UG/L	0	0%		0	0	13	1.5	U	3.1	U	3.1	U	1.5
SPLP Copper	UG/L	59.1	85%		0	11	13	1.8	U	12.6	J	4.2	J	1.8
SPLP Iron	UG/L	2030	100%		0	13	13	179		1080		264		446
SPLP Lead	UG/L	334	69%	5000	0	9	13	0.9	U	22.8		1.5	U	0.9
SPLP Magnesium	UG/L	2510	100%		0	13	13	1250	J	1250	J	1690	J	2420
SPLP Manganese	UG/L	34.4	100%		0	13	13	2.8	J	9	J	6.6	J	3.5
SPLP Mercury	UG/L	0	0%	200	0	0	13	0.1	UJ	10	U	10	U	0.1
SPLP Nickel	UG/L	3.2	54%		0	7	13	1.3	U	2.4	U	3.2	J	1.3
SPLP Potassium	UG/L	8010	100%		0	13	13	1970	J	1230	J	389	J	1990
SPLP Selenium	UG/L	0	0%	1000	0	0	13	2.6	U	2.9	U	2.9	U	2.6
SPLP Silver	UG/L	0	0%	5000	0	0	13	1.5	U	3	U	3	U	1.5
SPLP Sodium	UG/L	20800	85%		0	11	13	4620	J	5240	U	9670	U	4580
SPLP Thallium	UG/L	5.1	23%		0	3	13	6	UJ	6	U	6	U	6
SPLP Vanadium	UG/L	4.2	31%		0	4	13	2.3	U	2.3	U	2.3	U	2.3
SPLP Zinc	UG/L	22.7	100%		0	13	13	2.3	J	10.7	J	6.2	J	3.9

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

TABLE 3.3
RESULTS OF SYNTHETIC PRECIPITATION LEACHING PROCEDURE ANALYSES - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site
Loc
Matrix

Sample ID
Sample Depth TOP
Sample Depth BOT
Sample Date
QA Code
Activity
Round

Parameter	Units	Maximum Value	Frequency of Detection	Criteria Level	Number of Exceedances	Number of Times Detected	Number of Samples Collected	(Q)
SPLP Aluminum	UG/L	2340	100%		0	13	13	
SPLP Antimony	UG/L	180	69%		0	9	13	U
SPLP Arsenic	UG/L	5.3	46%	5000	0	6	13	J
SPLP Barium	UG/L	28.2	92%	100000	0	12	13	J
SPLP Beryllium	UG/L	0.43	46%		0	6	13	U
SPLP Cadmium	UG/L	0	0%	1000	0	0	13	U
SPLP Calcium	UG/L	20200	100%		0	13	13	
SPLP Chromium	UG/L	3.3	62%	5000	0	8	13	U
SPLP Cobalt	UG/L	0	0%		0	0	13	U
SPLP Copper	UG/L	59.1	85%		0	11	13	U
SPLP Iron	UG/L	2030	100%		0	13	13	
SPLP Lead	UG/L	334	69%	5000	0	9	13	U
SPLP Magnesium	UG/L	2510	100%		0	13	13	J
SPLP Manganese	UG/L	34.4	100%		0	13	13	J
SPLP Mercury	UG/L	0	0%	200	0	0	13	UJ
SPLP Nickel	UG/L	3.2	54%		0	7	13	U
SPLP Potassium	UG/L	8010	100%		0	13	13	J
SPLP Selenium	UG/L	0	0%	1000	0	0	13	U
SPLP Silver	UG/L	0	0%	5000	0	0	13	U
SPLP Sodium	UG/L	20800	85%		0	11	13	J
SPLP Thallium	UG/L	5.1	23%		0	3	13	U
SPLP Vanadium	UG/L	4.2	31%		0	4	13	U
SPLP Zinc	UG/L	22.7	100%		0	13	13	J

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

TABLE 3.3
RESULTS OF SYNTHETIC PRECIPITATION LEACHING PROCEDURE ANALYSES - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B		SEAD-122B		SEAD-122B		SEAD-122B
Loc								PSB-6		SS122B-1002-A,B		SS122B-1010-A,B		SS122B-1011-A,B
Matrix								SOIL		SOIL		SOIL		SOIL
Sample ID								122B-1059,SPLP		122B-1002B,SPLP		122B-1010A,SPLP		122B-1011A,SPLP
Sample Depth TOP								22		1.5		0		0
Sample Depth BOT								24		2		0.5		0.5
Sample Date								7/24/02		6/26/02		6/26/02		6/26/02
QA Code								SA		SA		SA		SA
Activity			Frequency		Number	Number	Number	122B-RI		122B-RI		122B-RI		122B-RI
Round		Maximum	of	Criteria	of	of Times	of Samples	1		1		1		1
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value	(Q)	Value	(Q)	Value	(Q)	Value
SPLP Aluminum	UG/L	2340	100%		0	13	13	812		1540		2340		1900
SPLP Antimony	UG/L	180	69%		0	9	13	1.6	U	5.4	J	13.1	J	180
SPLP Arsenic	UG/L	5.3	46%	5000	0	6	13	4.9	J	1.5	U	2.2	J	1.5
SPLP Barium	UG/L	28.2	92%	100000	0	12	13	23.3	J	21.9	J	26.7	J	26.7
SPLP Beryllium	UG/L	0.43	46%		0	6	13	0.2	U	0.2	U	0.2	U	0.21
SPLP Cadmium	UG/L	0	0%	1000	0	0	13	0.3	U	0.6	U	0.6	U	0.3
SPLP Calcium	UG/L	20200	100%		0	13	13	17300		20200		7790		10400
SPLP Chromium	UG/L	3.3	62%	5000	0	8	13	0.8	U	1.7	J	3.3	J	2.2
SPLP Cobalt	UG/L	0	0%		0	0	13	1.5	U	1.5	U	1.5	U	1.5
SPLP Copper	UG/L	59.1	85%		0	11	13	2	J	7.6	J	10.4	J	59.1
SPLP Iron	UG/L	2030	100%		0	13	13	625		961		1840		2030
SPLP Lead	UG/L	334	69%	5000	0	9	13	0.9	U	2.3	J	26.9		334
SPLP Magnesium	UG/L	2510	100%		0	13	13	2300	J	2510	J	1450	J	1450
SPLP Manganese	UG/L	34.4	100%		0	13	13	5.3	J	8.2	J	14.9	J	29.8
SPLP Mercury	UG/L	0	0%	200	0	0	13	0.1	UJ	10	U	10	U	10
SPLP Nickel	UG/L	3.2	54%		0	7	13	1.5	J	2.1	J	2.4	J	2
SPLP Potassium	UG/L	8010	100%		0	13	13	8010		489	J	949	J	3720
SPLP Selenium	UG/L	0	0%	1000	0	0	13	2.6	U	2.6	U	2.6	U	2.6
SPLP Silver	UG/L	0	0%	5000	0	0	13	1.5	U	1.5	U	1.5	U	1.5
SPLP Sodium	UG/L	20800	85%		0	11	13	4730	J	14800		20800		8710
SPLP Thallium	UG/L	5.1	23%		0	3	13	6	UJ	6	U	6	U	1.9
SPLP Vanadium	UG/L	4.2	31%		0	4	13	2.3	U	3.7	J	2.9	J	2.3
SPLP Zinc	UG/L	22.7	100%		0	13	13	4.1	J	14.2	J	19	J	22.7

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

TABLE 3.3
RESULTS OF SYNTHETIC PRECIPITATION LEACHING PROCEDURE ANALYSES - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B		SEAD-122B		SEAD-122B	
Loc								SS122B-1013-A,B		SS122B-1015-A,B		SS122B-1018-A,B	SS1
Matrix								SOIL		SOIL		SOIL	
Sample ID								122B-1013B,SPLP		122B-1015A,SPLP		122B-1018A,SPLP	
Sample Depth TOP								1.5		0		0	
Sample Depth BOT								2		0.5		0.5	
Sample Date								6/26/02		6/28/02		6/27/02	
QA Code								SA		SA		SA	
Activity			Frequency		Number	Number	Number	122B-RI		122B-RI		122B-RI	
Round		Maximum	of	Criteria	of	of Times	of Samples	1		1		1	
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
SPLP Aluminum	UG/L	2340	100%		0	13	13		1540		1190		1830	
SPLP Antimony	UG/L	180	69%		0	9	13		5.6	J	1.6	U	7.3	J
SPLP Arsenic	UG/L	5.3	46%	5000	0	6	13	J	1.5	U	1.8	J	1.5	U
SPLP Barium	UG/L	28.2	92%	100000	0	12	13	J	21.8	J	16.6	J	28.2	J
SPLP Beryllium	UG/L	0.43	46%		0	6	13	J	0.22	J	0.38	J	0.23	J
SPLP Cadmium	UG/L	0	0%	1000	0	0	13	U	0.3	U	0.3	U	0.3	U
SPLP Calcium	UG/L	20200	100%		0	13	13		13400		13800		14800	
SPLP Chromium	UG/L	3.3	62%	5000	0	8	13	J	1.6	J	1.1	J	1.5	J
SPLP Cobalt	UG/L	0	0%		0	0	13	U	1.5	U	1.5	U	1.5	U
SPLP Copper	UG/L	59.1	85%		0	11	13		4.2	J	3.6	J	8	J
SPLP Iron	UG/L	2030	100%		0	13	13		1700		948		1360	
SPLP Lead	UG/L	334	69%	5000	0	9	13		17.1		1.2	J	26	
SPLP Magnesium	UG/L	2510	100%		0	13	13	J	1440	J	1470	J	1730	J
SPLP Manganese	UG/L	34.4	100%		0	13	13		15		4.7	J	8.2	J
SPLP Mercury	UG/L	0	0%	200	0	0	13	U	10	U	10	U	10	U
SPLP Nickel	UG/L	3.2	54%		0	7	13	J	2.9	J	2.4	U	2.3	J
SPLP Potassium	UG/L	8010	100%		0	13	13	J	2810	J	732	J	610	J
SPLP Selenium	UG/L	0	0%	1000	0	0	13	U	2.6	U	2.6	U	2.6	U
SPLP Silver	UG/L	0	0%	5000	0	0	13	U	1.5	U	1.5	U	1.5	U
SPLP Sodium	UG/L	20800	85%		0	11	13		8430		4540	J	10500	
SPLP Thallium	UG/L	5.1	23%		0	3	13	U	1.9	U	5.1	J	1.9	U
SPLP Vanadium	UG/L	4.2	31%		0	4	13	U	2.3	U	2.6	J	4.2	J
SPLP Zinc	UG/L	22.7	100%		0	13	13		14.9	J	8.7	J	22.6	

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

TABLE 3.3
RESULTS OF SYNTHETIC PRECIPITATION LEACHING PROCEDURE ANALYSES - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B		SEAD-122B	
Loc								22B-1024-A,B		SS122B-1024-A,B	
Matrix								SOIL		SOIL	
Sample ID								122B-1024A,SPLP		122B-1025A,SPLP	
Sample Depth TOP								0		0	
Sample Depth BOT								0.5		0.5	
Sample Date								6/28/02		6/29/02	
QA Code								SA		SA	
Activity								122B-RI		122B-RI	
Round		Maximum	Frequency of	Criteria	Number of	Number of Times	Number of Samples	1		1	
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value	(Q)	Value	(Q)
SPLP Aluminum	UG/L	2340	100%		0	13	13	359		1470	
SPLP Antimony	UG/L	180	69%		0	9	13	8.7	J	7.2	J
SPLP Arsenic	UG/L	5.3	46%	5000	0	6	13	1.5	U	1.5	U
SPLP Barium	UG/L	28.2	92%	100000	0	12	13	8.4	U	13.5	J
SPLP Beryllium	UG/L	0.43	46%		0	6	13	0.34	J	0.43	J
SPLP Cadmium	UG/L	0	0%	1000	0	0	13	0.3	U	0.3	U
SPLP Calcium	UG/L	20200	100%		0	13	13	8310		8430	
SPLP Chromium	UG/L	3.3	62%	5000	0	8	13	0.8	U	1.2	J
SPLP Cobalt	UG/L	0	0%		0	0	13	1.5	U	1.5	U
SPLP Copper	UG/L	59.1	85%		0	11	13	18.8	J	21.6	J
SPLP Iron	UG/L	2030	100%		0	13	13	317		1430	
SPLP Lead	UG/L	334	69%	5000	0	9	13	15.2		12.5	
SPLP Magnesium	UG/L	2510	100%		0	13	13	680	J	851	J
SPLP Manganese	UG/L	34.4	100%		0	13	13	23.6		34.4	
SPLP Mercury	UG/L	0	0%	200	0	0	13	10	U	10	U
SPLP Nickel	UG/L	3.2	54%		0	7	13	2.4	U	2.4	U
SPLP Potassium	UG/L	8010	100%		0	13	13	484	J	654	J
SPLP Selenium	UG/L	0	0%	1000	0	0	13	2.6	U	2.6	U
SPLP Silver	UG/L	0	0%	5000	0	0	13	1.5	U	1.5	U
SPLP Sodium	UG/L	20800	85%		0	11	13	1570	J	4020	J
SPLP Thallium	UG/L	5.1	23%		0	3	13	4	J	3.5	J
SPLP Vanadium	UG/L	4.2	31%		0	4	13	2.3	U	2.3	U
SPLP Zinc	UG/L	22.7	100%		0	13	13	5.3	J	12.2	J

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

TABLE 3.4
RESULTS OF TOXICITY CHARACTERISTICS LEACHING PROCEDURE - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B		SEAD-122B		SEAD-122B		SEAD-122B
Loc								MW-3		PSB-3		PSB-3		PSB-4
Matrix								SOIL		SOIL		SOIL		SOIL
Sample ID								122B-1042,TCLP		122B-1030,TCLP		122B-1031,TCLP		122B-1046,TCLP
Sample Depth TOP								12		0		10		20
Sample Depth BOT								14		2		12		22
Sample Date								7/24/02		7/3/02		7/3/02		7/24/02
QA Code								SA		SA		SA		SA
Activity								122B-RI		122B-RI		122B-RI		122B-RI
Round								1		1		1		1
Parameter	**Units**	**Maximum Value**	**Frequency of Detection**	**Criteria Level**	**Number of Exceedances**	**Number of Times Detected**	**Number of Samples Collected**	Value	(Q)	Value	(Q)	Value	(Q)	Value
TCLP Aluminum	UG/L	131	62%		0	8	13	19.7	U	29.9	J	43.5	J	21.4
TCLP Antimony	UG/L	564	62%		0	8	13	1.6	U	37.2	J	4.2	U	1.6
TCLP Arsenic	UG/L	46.7	38%	5000	0	5	13	1.5	U	4.8	J	3.6	U	1.9
TCLP Barium	UG/L	1050	100%	100000	0	13	13	440		637		657		770
TCLP Beryllium	UG/L	0.57	62%		0	8	13	0.26	J	0.2	U	0.2	U	0.3
TCLP Cadmium	UG/L	2.8	100%	1000	0	13	13	0.9	J	2.2	J	2	J	1.4
TCLP Calcium	UG/L	897000	100%		0	13	13	782000		696000		665000		494000
TCLP Chromium	UG/L	40.7	85%	5000	0	11	13	19.1		4.6	J	5.3	J	35.9
TCLP Cobalt	UG/L	38.4	69%		0	9	13	33.7	J	4.2	J	16.8	J	24
TCLP Copper	UG/L	1240	100%		0	13	13	2.4	J	8.5	J	4.1	J	6.6
TCLP Iron	UG/L	468	62%		0	8	13	45.6	J	44	J	15.1	U	154
TCLP Lead	UG/L	99900	85%	5000	1	11	13	0.9	U	846		31.3		1.7
TCLP Magnesium	UG/L	66500	100%		0	13	13	15400		15000		16700		14800
TCLP Manganese	UG/L	11800	100%		0	13	13	4870		1380		11800		9120
TCLP Mercury	UG/L	0.12	8%	200	0	1	13	0.1	UJ	10	UJ	10	UJ	0.12
TCLP Nickel	UG/L	31.9	100%		0	13	13	31.9	J	4.4	J	13.3	J	21.7
TCLP Potassium	UG/L	19700	100%		0	13	13	8520		6250		3600	J	5420
TCLP Selenium	UG/L	10.2	38%	1000	0	5	13	2.6	U	8.9		10.2		3.1
TCLP Silver	UG/L	0	0%	5000	0	0	13	1.5	U	3	U	3	U	1.5
TCLP Sodium	UG/L	0	0%		0	0	13	1337000	R	1682000	U	1667000	U	1270000
TCLP Thallium	UG/L	4.4	23%		0	3	13	6	UJ	6	U	6	U	6
TCLP Vanadium	UG/L	0	0%		0	0	13	2.3	U	2.3	U	2.3	U	2.3
TCLP Zinc	UG/L	552	69%		0	9	13	13.1	J	15.8	J	17.6	J	81.5

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

J - Estimated Value

TABLE 3.4
RESULTS OF TOXICITY CHARACTERISTICS LEACHING PROCEDURE - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site
Loc
Matrix

Sample ID
Sample Depth TOP
Sample Depth BOT
Sample Date
QA Code
Activity
Round

Parameter	Units	Maximum Value	Frequency of Detection	Criteria Level	Number of Exceedances	Number of Times Detected	Number of Samples Collected	(Q)
TCLP Aluminum	UG/L	131	62%		0	8	13	J
TCLP Antimony	UG/L	564	62%		0	8	13	U
TCLP Arsenic	UG/L	46.7	38%	5000	0	5	13	J
TCLP Barium	UG/L	1050	100%	100000	0	13	13	
TCLP Beryllium	UG/L	0.57	62%		0	8	13	J
TCLP Cadmium	UG/L	2.8	100%	1000	0	13	13	J
TCLP Calcium	UG/L	897000	100%		0	13	13	
TCLP Chromium	UG/L	40.7	85%	5000	0	11	13	
TCLP Cobalt	UG/L	38.4	69%		0	9	13	J
TCLP Copper	UG/L	1240	100%		0	13	13	J
TCLP Iron	UG/L	468	62%		0	8	13	
TCLP Lead	UG/L	99900	85%	5000	1	11	13	J
TCLP Magnesium	UG/L	66500	100%		0	13	13	
TCLP Manganese	UG/L	11800	100%		0	13	13	
TCLP Mercury	UG/L	0.12	8%	200	0	1	13	J
TCLP Nickel	UG/L	31.9	100%		0	13	13	J
TCLP Potassium	UG/L	19700	100%		0	13	13	
TCLP Selenium	UG/L	10.2	38%	1000	0	5	13	J
TCLP Silver	UG/L	0	0%	5000	0	0	13	U
TCLP Sodium	UG/L	0	0%		0	0	13	R
TCLP Thallium	UG/L	4.4	23%		0	3	13	U
TCLP Vanadium	UG/L	0	0%		0	0	13	U
TCLP Zinc	UG/L	552	69%		0	9	13	

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

J - Estimated Value

TABLE 3.4
RESULTS OF TOXICITY CHARACTERISTICS LEACHING PROCEDURE - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B		SEAD-122B		SEAD-122B		SEAD-122B	
Loc								PSB-6		SS122B-1002-A,B		SS122B-1010-A,B		SS122B-1011-A,B	
Matrix								SOIL		SOIL		SOIL		SOIL	
Sample ID								122B-1059,TCLP		122B-1002B,TCLP		122B-1010A,TCLP		122B-1011A,TCLP	
Sample Depth TOP								22		1.5		0		0	
Sample Depth BOT								24		2		0.5		0.5	
Sample Date								7/24/02		6/26/02		6/26/02		6/26/02	
QA Code								SA		SA		SA		SA	
Activity								122B-RI		122B-RI		122B-RI		122B-RI	
Round								1		1		1		1	
Parameter	**Units**	**Maximum Value**	**Frequency of Detection**	**Criteria Level**	**Number of Exceedances**	**Number of Times Detected**	**Number of Samples Collected**	Value	(Q)	Value	(Q)	Value	(Q)	Value	
TCLP Aluminum	UG/L	131	62%		0	8	13	131	J	97.5	J	37.4	J	19.7	
TCLP Antimony	UG/L	564	62%		0	8	13	1.6	U	9.8	J	24.2	J	564	
TCLP Arsenic	UG/L	46.7	38%	5000	0	5	13	7.1	J	1.5	U	2.1	J	46.7	
TCLP Barium	UG/L	1050	100%	100000	0	13	13	664		471		326		1050	
TCLP Beryllium	UG/L	0.57	62%		0	8	13	0.45	J	0.2	U	0.2	U	0.25	
TCLP Cadmium	UG/L	2.8	100%	1000	0	13	13	1.4	J	0.99	J	2.1	J	2.8	
TCLP Calcium	UG/L	897000	100%		0	13	13	290000		335000		752000		474000	
TCLP Chromium	UG/L	40.7	85%	5000	0	11	13	40.7		4.2	J	13.8		17.7	
TCLP Cobalt	UG/L	38.4	69%		0	9	13	38.4	J	1.5	U	5.5	J	28.8	
TCLP Copper	UG/L	1240	100%		0	13	13	5.8	J	9	J	21	J	1240	
TCLP Iron	UG/L	468	62%		0	8	13	468		31.7	J	15.1	U	61	
TCLP Lead	UG/L	99900	85%	5000	1	11	13	12.2		98.4		1290		**99900**	
TCLP Magnesium	UG/L	66500	100%		0	13	13	21000		66500		12200		10600	
TCLP Manganese	UG/L	11800	100%		0	13	13	9840		855		3000		4110	
TCLP Mercury	UG/L	0.12	8%	200	0	1	13	0.1	UJ	10	UJ	10	UJ	10	
TCLP Nickel	UG/L	31.9	100%		0	13	13	18.4	J	2.7	J	6.2	J	19.5	
TCLP Potassium	UG/L	19700	100%		0	13	13	19700		4430	J	1910	J	11900	
TCLP Selenium	UG/L	10.2	38%	1000	0	5	13	4.4	J	2.6	U	2.6	U	2.6	
TCLP Silver	UG/L	0	0%	5000	0	0	13	1.5	U	1.5	U	1.5	U	1.5	
TCLP Sodium	UG/L	0	0%		0	0	13	1372000	R	1579000	U	1579000	U	1352000	
TCLP Thallium	UG/L	4.4	23%		0	3	13	6	UJ	6	U	6	U	1.9	
TCLP Vanadium	UG/L	0	0%		0	0	13	2.3	U	2.3	U	2.3	U	2.3	
TCLP Zinc	UG/L	552	69%		0	9	13	220		14	UJ	21.6	U	552	

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

J - Estimated Value

TABLE 3.4
RESULTS OF TOXICITY CHARACTERISTICS LEACHING PROCEDURE - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B		SEAD-122B		SEAD-122B	
Loc								SS122B-1013-A,B		SS122B-1015-A,B		SS122B-1018-A,B	SS1
Matrix								SOIL		SOIL		SOIL	
Sample ID								122B-1013B,TCLP		122B-1015A,TCLP		122B-1018A,TCLP	
Sample Depth TOP								1.5		0		0	
Sample Depth BOT								2		0.5		0.5	
Sample Date								6/26/02		6/28/02		6/27/02	
QA Code								SA		SA		SA	
Activity			Frequency		Number	Number	Number	122B-RI		122B-RI		122B-RI	
Round		Maximum	of	Criteria	of	of Times	of Samples	1		1		1	
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
TCLP Aluminum	UG/L	131	62%		0	8	13	U	19.7	U	19.7	U	19.7	U
TCLP Antimony	UG/L	564	62%		0	8	13		9.1	J	1.6	U	11.6	J
TCLP Arsenic	UG/L	46.7	38%	5000	0	5	13		1.5	U	1.5	U	1.5	U
TCLP Barium	UG/L	1050	100%	100000	0	13	13		755		507		615	
TCLP Beryllium	UG/L	0.57	62%		0	8	13	J	0.22	J	0.57	J	0.2	U
TCLP Cadmium	UG/L	2.8	100%	1000	0	13	13	J	0.99	J	0.5	J	1.7	J
TCLP Calcium	UG/L	897000	100%		0	13	13		810000		897000		740000	
TCLP Chromium	UG/L	40.7	85%	5000	0	11	13		0.8	U	0.8	U	1.7	J
TCLP Cobalt	UG/L	38.4	69%		0	9	13	J	1.5	U	1.5	U	1.5	U
TCLP Copper	UG/L	1240	100%		0	13	13		3.7	J	5.6	J	5.3	J
TCLP Iron	UG/L	468	62%		0	8	13	J	23.4	U	23.4	U	23.4	U
TCLP Lead	UG/L	99900	85%	5000	1	11	13		38.5		0.9	U	193	
TCLP Magnesium	UG/L	66500	100%		0	13	13		13800		13200		20200	
TCLP Manganese	UG/L	11800	100%		0	13	13		141		160		542	
TCLP Mercury	UG/L	0.12	8%	200	0	1	13	UJ	10	UJ	10	UJ	10	UJ
TCLP Nickel	UG/L	31.9	100%		0	13	13	J	4.9	J	5.2	J	3.4	J
TCLP Potassium	UG/L	19700	100%		0	13	13		10400		3130	J	1540	J
TCLP Selenium	UG/L	10.2	38%	1000	0	5	13	U	2.6	U	2.6	U	2.6	U
TCLP Silver	UG/L	0	0%	5000	0	0	13	U	1.5	U	1.5	U	1.5	U
TCLP Sodium	UG/L	0	0%		0	0	13	U	1350000	U	1442000	U	1340000	U
TCLP Thallium	UG/L	4.4	23%		0	3	13	U	1.9	U	2.6	J	1.9	U
TCLP Vanadium	UG/L	0	0%		0	0	13	U	2.3	U	2.3	U	2.3	U
TCLP Zinc	UG/L	552	69%		0	9	13		10.1	UJ	16.5	J	10.9	UJ

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

J - Estimated Value

TABLE 3.4
RESULTS OF TOXICITY CHARACTERISTICS LEACHING PROCEDURE - 2002 SITE INVESTIGATION

SEAD-122B REMEDIAL INVESTIGATION
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B		SEAD-122B	
Loc								22B-1024-A,B		SS122B-1024-A,B	
Matrix								SOIL		SOIL	
Sample ID								122B-1024A,TCLP		122B-1025A,TCLP	
Sample Depth TOP								0		0	
Sample Depth BOT								0.5		0.5	
Sample Date								6/28/02		6/29/02	
QA Code								SA		SA	
Activity								122B-RI		122B-RI	
Round		**Maximum**	**Frequency of**	**Criteria**	**Number of**	**Number of Times**	**Number of Samples**	1		1	
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value	(Q)	Value	(Q)
TCLP Aluminum	UG/L	131	62%		0	8	13	22.3	J	22	J
TCLP Antimony	UG/L	564	62%		0	8	13	14.2	J	12.8	J
TCLP Arsenic	UG/L	46.7	38%	5000	0	5	13	1.5	U	1.5	U
TCLP Barium	UG/L	1050	100%	100000	0	13	13	265		275	
TCLP Beryllium	UG/L	0.57	62%		0	8	13	0.4	J	0.49	J
TCLP Cadmium	UG/L	2.8	100%	1000	0	13	13	0.66	J	0.7	J
TCLP Calcium	UG/L	897000	100%		0	13	13	723000		732000	
TCLP Chromium	UG/L	40.7	85%	5000	0	11	13	9.2	J	9.4	J
TCLP Cobalt	UG/L	38.4	69%		0	9	13	3	J	2.8	J
TCLP Copper	UG/L	1240	100%		0	13	13	71.2		73.2	
TCLP Iron	UG/L	468	62%		0	8	13	51.8	J	55.1	J
TCLP Lead	UG/L	99900	85%	5000	1	11	13	146		112	
TCLP Magnesium	UG/L	66500	100%		0	13	13	11900		12600	
TCLP Manganese	UG/L	11800	100%		0	13	13	2400		2340	
TCLP Mercury	UG/L	0.12	8%	200	0	1	13	10	UJ	10	UJ
TCLP Nickel	UG/L	31.9	100%		0	13	13	4.5	J	4	J
TCLP Potassium	UG/L	19700	100%		0	13	13	2180	J	2290	J
TCLP Selenium	UG/L	10.2	38%	1000	0	5	13	3	J	2.6	U
TCLP Silver	UG/L	0	0%	5000	0	0	13	1.5	U	1.5	U
TCLP Sodium	UG/L	0	0%		0	0	13	1400000	U	1403000	U
TCLP Thallium	UG/L	4.4	23%		0	3	13	2.5	J	4.4	J
TCLP Vanadium	UG/L	0	0%		0	0	13	2.3	U	2.3	U
TCLP Zinc	UG/L	552	69%		0	9	13	53.1		61.4	

Note:

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

J - Estimated Value

TABLE 3.5

GROUNDWATER RESULTS FOR SENECA AIRFIELD SMALL ARMS RANGE

Seneca Army Depot Groundwater Samples		Seneca Average Background Groundwater Quality [1]	Class GA Groundwater Standards	Sample ID:	122B-2000	122B-2001	122B-2004	122B-2005
				Lab Sample Id:	494827	494828	494829	494830
				Sample Location	MW-2	MW-1	MW-3	MW-3 DUP
				Source:	STLVT	STLVT	STLVT	STLVT
				SDG:	88924	88924	88924	88924
				Matrix:	Groundwater			
				Sampled:	7/24/02	7/24/02	7/24/02	7/24/02
				Validated:				
CAS NO.	COMPOUND			UNITS:				
	METALS							
7429-90-5	Aluminum	2730	None	ug/L	508	162 J	211	262
7440-36-0	Antimony	8.2	3	ug/L	18.1 J	14.4 J	26.7 J	19.7 J
7440-38-2	Arsenic	1.7	25	ug/L	3.6 U	3.6 U	4.6 J	3.7 J
7440-39-3	Barium	78.2	1000	ug/L	35.2 J	31.0 J	49.8 J	48.6 J
7440-41-7	Beryllium	0.21	3	ug/L	0.21 J	0.20 U	0.32 J	0.21 J
7440-43-9	Cadmium	0.5	5	ug/L	1.4 J	1.1 J	2.3 J	1.6 J
7440-70-2	Calcium	116000	None	ug/L	113000	105000	120000	118000
7440-47-3	Chromium	4.7	50	ug/L	10.2	8.7 J	12.5 J	10.2 J
7440-48-4	Cobalt	3.7	None	ug/L	3.5 U	3.5 U	3.5 U	3.5 U
7440-50-8	Copper	3.3	200	ug/L	8.8 J	7.3 J	11.3 J	8.5 J
7439-89-6	Iron	4480	300	ug/L	580	421	154	230
7439-92-1	Lead	2.5	25	ug/L	1.5 U	1.5 U	1.5 U	1.5 U
7439-95-4	Magnesium	28600	None	ug/L	34300	35800	32800	32200
7439-96-5	Manganese	224	300	ug/L	84.4	128	293	286
7439-97-6	Mercury	0.04	0.7	ug/L	0.10 U	0.10 U	0.10 U	0.10 U
7440-02-0	Nickel	7.3	100	ug/L	2.4 U	2.4 U	3.7 J	2.4 U
7440-09-7	Potassium	3830	None	ug/L	4440 J	9920	7610	7640
7782-49-2	Selenium	1.5	10	ug/L	2.9 U	2.9 U	2.9 U	2.9 U
7440-22-4	Silver	1	50	ug/L	1.5 U	1.5 U	1.5 U	1.5 U
7440-23-5	Sodium	14600	None	ug/L	10700	10400	18400	17600
7440-28-0	Thallium	1.5	0.5 (GV)	ug/L	6.0 U	6.0 U	6.0 U	6.0 U
7440-62-2	Vanadium	5.2	None	ug/L	10.3 J	8.0 J	14.0 J	10.8 J
7440-66-6	Zinc	23.1	2000 (GV)	ug/L	6.2 J	3.8 J	7.0 J	6.2 J

Note: Highlighted cells indicate exceedance of Class GA Groundwater Standards (or guidance value - GV)

(1) Based on statistics for Seneca-wide background groundwater results as of 2001.

U - Not detected at reported concentration

J - Estimated Value

TABLE 3.6
RESULTS OF CONFIRMATIONAL SAMPLING - 2004 TREATABILITY STUDY

SEAD-122B TREATABILITY STUDY
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B 100 ft from		SEAD-122B 100 ft from		SEAD-122B 100 ft from		SEAD-122B 1013		SEAD-122B 30 ft W		SEAD-122B 30 ft W	
Loc ID								FL		FL		FL		resample		CS003		CS003	
Matrix								SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
Sample ID								122B-CS009AD		122B-CS009		122B-CS009A		122B-CS007		122B-CS010D		122B-CS010	
Sample Depth TOP								0		0		0		0		0		0	
Sample Depth BOT								0.2		0.2		0.2		0.2		0.2		0.2	
Sample Date								1/21/04		1/21/04		1/21/04		1/21/04		1/21/04		1/21/04	
QC Code								DU		SA		SA		SA		SA		SA	
Activity			Frequency		Number	Number	Number	122B-TREAT		122B-TREAT		122B-TREAT		122B-TREAT		122B-TREAT		122B-TREAT	
Round		Maximum	of	Criteria	of	of Times	of Samples	2		2		2		2		2		2	
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
Lead	MG/KG	13860	100%	400	5	21	21	22		**736**		16.1		45.2		**1060**	J	243	J

Note:
* Sample 122B-CS003RA is a duplicate of sample 122B-CS003. Due to the variability in the duplicate pair of CS003 and CS003D, the Army requested that the laboratory rerun the sample as CS003RA. The laboratory was instructed to ensure that the sample was well-homogenized prior to reanalysis. The Army is confident that this result is representative of that sample location.

Highlighted cells indicate exceedance of criteria value.
U - Not detected at reported concentration
J - Estimated Value

TABLE 3.6
RESULTS OF CONFIRMATIONAL SAMPLING - 2004 TREATABILITY STUDY

SEAD-122B TREATABILITY STUDY
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B
								30 ft W	30 ft W				
Loc ID								CS003	CS003	Middle Berm	North Face	North Face	North Face
Matrix								SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
								122B-	122B-	122B-	122B-	122B-	122B-
Sample ID								CS010AD	CS010A	CS002	CS003D	CS003	CS003RA*
Sample Depth TOP								0	0	0	0	0	0
Sample Depth BOT								0.2	0.2	0.2	0.2	0.2	0.2
Sample Date								2/19/04	2/19/04	1/8/04	1/8/04	1/8/04	1/8/04
QC Code								SA	SA	SA	DU	SA	SA
								122B-	122B-	122B-	122B-	122B-	122B-
Activity			Frequency		Number	Number	Number	TREAT	TREAT	TREAT	TREAT	TREAT	TREAT
Round		Maximum	of	Criteria	of	of Times	of Samples	2	2	2	2	2	2
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Lead	MG/KG	13860	100%	400	5	21	21	44.9	24.9 J	209 J	**655**	20.6 J	24.6

Note:
* Sample 122B-CS003RA is a duplicate of sample 122B-CS003. Due to the variability in the duplicate pair of CS003 and CS003D, the Army requested that the laboratory rerun the sample as CS003RA. The laboratory was instructed to ensure that the sample was well-homogenized prior to reanalysis. The Army is confident that this result is representative of that sample location.

Highlighted cells indicate exceedance of criteria value.
U - Not detected at reported concentration
J - Estimated Value

TABLE 3.6
RESULTS OF CONFIRMATIONAL SAMPLING - 2004 TREATABILITY STUDY

SEAD-122B TREATABILITY STUDY
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B OD E Swale	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B
Loc ID								1	OD N Berm	OD N Berm	RF cntr 60	South Face	Swale 1
Matrix								SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID								122B-CS005A	122B-CS001AD	122B-CS001A	122B-CS008	122B-CS001	122B-CS004
Sample Depth TOP								0	0	0	0	0	0
Sample Depth BOT								0.2	0.2	0.2	0.2	0.2	0.2
Sample Date								1/21/04	1/13/04	1/13/04	1/21/04	1/8/04	1/13/04
QC Code								SA	DU	SA	SA	SA	SA
Activity								122B-TREAT	122B-TREAT	122B-TREAT	122B-TREAT	122B-TREAT	122B-TREAT
Round		**Maximum**	**Frequency of**	**Criteria**	**Number of**	**Number of Times**	**Number of Samples**	2	2	2	2	2	2
Parameter	**Units**	**Value**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Lead	MG/KG	13860	100%	400	5	21	21	213	13.3	11.4	41.1	**13860** J	195

Note:
* Sample 122B-CS003RA is a duplicate of sample 122B-CS003. Due to the variability in the duplicate pair of CS003 and CS003D, the Army requested that the laboratory rerun the sample as CS003RA. The laboratory was instructed to ensure that the sample was well-homogenized prior to reanalysis. The Army is confident that this result is representative of that sample location.

Highlighted cells indicate exceedance of criteria value.
U - Not detected at reported concentration
J - Estimated Value

TABLE 3.6
RESULTS OF CONFIRMATIONAL SAMPLING - 2004 TREATABILITY STUDY

SEAD-122B TREATABILITY STUDY
Seneca Army Depot Activity - Romulus, NY

Site								SEAD-122B		SEAD-122B		SEAD-122B Stockpile	
Loc ID								Swale 1		Swale 2		Area	
Matrix								SOIL		SOIL		SOIL	
Sample ID								122B-CS005		122B-CS006		122B-CS012	
Sample Depth TOP								0		0		0	
Sample Depth BOT								0.2		0.2		0.2	
Sample Date								1/13/04		1/13/04		6/24/04	
QC Code								SA		SA		SA	
Activity								122B-TREAT		122B-TREAT		122B-TREAT	
Round		**Maximum**	**Frequency of**		**Number of**	**Number of Times**	**Number of Samples**	2		2		2	
Parameter	**Units**	**Value**	**Detection**	**Criteria Level**	**Exceedances**	**Detected**	**Collected**	Value	(Q)	Value	(Q)	Value	(Q)
Lead	MG/KG	13860	100%	400	5	21	21	**720**		42		299	J

Note:
* Sample 122B-CS003RA is a duplicate of sample 122B-CS003. Due to the variability in the duplicate pair of CS003 and CS003D, the Army requested that the laboratory rerun the sample as CS003RA. The laboratory was instructed to ensure that the sample was well-homogenized prior to reanalysis. The Army is confident that this result is representative of that sample location.

Highlighted cells indicate exceedance of criteria value.
U - Not detected at reported concentration
J - Estimated Value

Table 3.7

Soil Total Lead Results For Current Site Conditions
Seneca Airfield Small Arms Range

Site								SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B
Loc								100 ft from FL	1013 resample	30 ft W CS003	MW-1	MW-2	MW-3	Middle Berm
Matrix								SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID								122B-CS009A	122B-CS007	122B-CS010A	122B-1040	122B-1041	122B-1042	122B-CS002
Sample Depth TOP								0	0	0	12	14	12	0
Sample Depth BOT								0.2	0.2	0.2	14	16	14	0.2
Sample Date								1/21/2004	1/21/2004	2/19/04	7/8/2002	7/9/2002	7/9/2002	1/8/2004
QA Code								SA	SA	SA	SA	SA	SA	SA
Activity								122B-TREAT	122B-TREAT	122B-TREAT	122B-RI	122B-RI	122B-RI	122B-TREAT
Round								2	2	2	1	1	1	2
Parameter	**Units**	**Maximum**	**Frequency of Detection**	**Criteria Level**	**Number of Exceedances**	**Number of Times Detected**	**Number of Samples Collected**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Lead	MG/KG	299	100%	400	0	85	85	19.1	45.2	34.9 J	6.5	8.5 J	10.6 J	209 J

Note:

* The lead result is the average of the sample (CS003 - 20.6 mg/Kg) and the duplicate reanalyzed (CS003RA - 24.6 mg/Kg). The sample was reanalyzed due to the variability in the duplicate pair of CS003 and CS003D, and therefore Army requested that the laboratory rerun the sample as CS003RA. The laboratory was instructed to ensure that the sample was well-homogenized prior to reanalysis. The Army is confident that this result is representative of that sample location.

Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration

J - Estimated Value

Table 3.7

Soil Total Lead Results For Current Site Conditions
Seneca Airfield Small Arms Range

Site								SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B
Loc								North Face	OD E Swale 1	OD N Berm	PSB-1	PSB-1
Matrix								SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID								122B-CS003*	122B-CS005A	122B-CS001A	122B-1061	122B-1062
Sample Depth TOP								0	0	0	0	8
Sample Depth BOT								0.2	0.2	0.2	2	10
Sample Date								1/8/2004	1/21/2004	1/13/2004	7/11/2002	7/11/2002
QA Code								SA	SA	SA	SA	SA
Activity			**Frequency**		**Number**	**Number**	**Number**	122B-TREAT	122B-TREAT	122B-TREAT	122B-RI	122B-RI
Round			**of**	**Criteria**	**of**	**of Times**	**of Samples**	2	2	2	1	1
Parameter	**Units**	**Maximum**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Lead	MG/KG	299	100%	400	0	85	85	22.6 J	213	12.4	13.2 J	11.7 J

Note:
* The lead result is the average of the sample (CS003 - 20.6 mg/Kg) and the duplicate reanalyzed (CS003RA - 24.6 mg/Kg). The sample was reanalyzed due to the variability in the duplicate pair of CS003 and CS003D, and therefore Army requested that the laboratory rerun the sample as CS003RA. The laboratory was instructed to ensure that the sample was well-homogenized prior to reanalysis. The Army is confident that this result is representative of that sample location.
Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration
J - Estimated Value

Table 3.7

Soil Total Lead Results For Current Site Conditions
Seneca Airfield Small Arms Range

Site								SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B
Loc								PSB-1	PSB-2	PSB-2	PSB-2	PSB-2	PSB-3	PSB-3
Matrix								SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID								122B-1063	122B-1026	122B-1027	122B-1028	122B-1029	122B-1030	122B-1031
Sample Depth TOP								14	2	6	12	22	0	10
Sample Depth BOT								16	4	8	14	24	2	12
Sample Date								7/11/2002	7/1/2002	7/1/2002	7/1/2002	7/1/2002	7/2/2002	7/2/2002
QA Code								SA	SA	SA	SA	SA	SA	SA
Activity			**Frequency**		**Number**	**Number**	**Number**	122B-RI	122B-RI	122B-RI	122B-RI	122B-RI	122B-RI	122B-RI
Round			**of**	**Criteria**	**of**	**of Times**	**of Samples**	1	1	1	1	1	1	1
Parameter	**Units**	**Maximum**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Lead	MG/KG	299	100%	400	0	85	85	11.4 J	11.3 J	8.4 J	9.7 J	11.4 J	212 J	145 J

Note:
* The lead result is the average of the sample (CS003 - 20.6 mg/Kg) and the duplicate reanalyzed (CS003RA - 24.6 mg/Kg). The sample was reanalyzed due to the variability in the duplicate pair of CS003 and CS003D, and therefore Army requested that the laboratory rerun the sample as CS003RA. The laboratory was instructed to ensure that the sample was well-homogenized prior to reanalysis. The Army is confident that this result is representative of that sample location.
Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration
J - Estimated Value

Table 3.7

Soil Total Lead Results For Current Site Conditions
Seneca Airfield Small Arms Range

Site								SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B
Loc								PSB-3	PSB-3	PSB-4	PSB-4	PSB-4	PSB-4	PSB-4
Matrix								SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID								122B-1032	122B-1033	122B-1043	122B-1044	122B-1045	122B-1046	122B-1047
Sample Depth TOP								16	16	4	6	16	20	28
Sample Depth BOT								18	18	6	8	18	22	30
Sample Date								7/2/2002	7/2/2002	7/10/2002	7/10/2002	7/10/2002	7/10/2002	7/10/2002
QA Code								SA	SA	SA	SA	SA	SA	SA
Activity			**Frequency**		**Number**	**Number**	**Number**	122B-RI	122B-RI	122B-RI	122B-RI	122B-RI	122B-RI	122B-RI
Round			**of**	**Criteria**	**of**	**of Times**	**of Samples**	1	1	1	1	1	1	1
Parameter	**Units**	**Maximum**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Lead	MG/KG	299	100%	400	0	85	85	7.9 J	8.3 J	10.8 J	10.6 J	6.4 J	18.8 J	6.2 J

Note:
* The lead result is the average of the sample (CS003 - 20.6 mg/Kg) and the duplicate reanalyzed (CS003RA - 24.6 mg/Kg). The sample was reanalyzed due to the variability in the duplicate pair of CS003 and CS003D, and therefore Army requested that the laboratory rerun the sample as CS003RA. The laboratory was instructed to ensure that the sample was well-homogenized prior to reanalysis. The Army is confident that this result is representative of that sample location.
Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration
J - Estimated Value

Table 3.7

Soil Total Lead Results For Current Site Conditions
Seneca Airfield Small Arms Range

Site								SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B
Loc								PSB-5	PSB-5	PSB-5	PSB-5	PSB-5	PSB-5	PSB-6
Matrix								SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID								122B-1048	122B-1049	122B-1050	122B-1051	122B-1052	122B-1053	122B-1054
Sample Depth TOP								2	10	12	18	28	28	2
Sample Depth BOT								4	12	14	20	30	30	4
Sample Date								7/10/2002	7/10/2002	7/10/2002	7/10/2002	7/10/2002	7/10/2002	7/11/2002
QA Code								SA	SA	SA	SA	SA	SA	SA
Activity			**Frequency**		**Number**	**Number**	**Number**	122B-RI	122B-RI	122B-RI	122B-RI	122B-RI	122B-RI	122B-RI
Round			**of**	**Criteria**	**of**	**of Times**	**of Samples**	1	1	1	1	1	1	1
Parameter	**Units**	**Maximum**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Lead	MG/KG	299	100%	400	0	85	85	5.2 J	8.1 J	10.2 J	9.7 J	7.6 J	10.8 J	9.1 J

Note:
* The lead result is the average of the sample (CS003 - 20.6 mg/Kg) and the duplicate reanalyzed (CS003RA - 24.6 mg/Kg). The sample was reanalyzed due to the variability in the duplicate pair of CS003 and CS003D, and therefore Army requested that the laboratory rerun the sample as CS003RA. The laboratory was instructed to ensure that the sample was well-homogenized prior to reanalysis. The Army is confident that this result is representative of that sample location.
Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration
J - Estimated Value

Table 3.7

Soil Total Lead Results For Current Site Conditions
Seneca Airfield Small Arms Range

Site								SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B
Loc								PSB-6	PSB-6	PSB-6	PSB-6	PSB-7	PSB-7	PSB-7
Matrix								SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID								122B-1055	122B-1058	122B-1059	122B-1060	122B-1034	122B-1035	122B-1036
Sample Depth TOP								8	12	22	28	4	6	14
Sample Depth BOT								10	14	24	28.8	6	8	16
Sample Date								7/11/2002	7/11/2002	7/11/2002	7/11/2002	7/3/2002	7/3/2002	7/3/2002
QA Code								SA	SA	SA	SA	SA	SA	SA
Activity			**Frequency**		**Number**	**Number**	**Number**	122B-RI	122B-RI	122B-RI	122B-RI	122B-RI	122B-RI	122B-RI
Round			**of**	**Criteria**	**of**	**of Times**	**of Samples**	1	1	1	1	1	1	1
Parameter	**Units**	**Maximum**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Lead	MG/KG	299	100%	400	0	85	85	10.1 J	11.8 J	24.3 J	12.5 J	10.8 J	10.9 J	12.7 J

Note:
* The lead result is the average of the sample (CS003 - 20.6 mg/Kg) and the duplicate reanalyzed (CS003RA - 24.6 mg/Kg). The sample was reanalyzed due to the variability in the duplicate pair of CS003 and CS003D, and therefore Army requested that the laboratory rerun the sample as CS003RA. The laboratory was instructed to ensure that the sample was well-homogenized prior to reanalysis. The Army is confident that this result is representative of that sample location.
Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration
J - Estimated Value

Table 3.7

Soil Total Lead Results For Current Site Conditions
Seneca Airfield Small Arms Range

Site								SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	
Loc								PSB-7	RF cntr 60	SS122B-1001-A,B	SS122B-1001-A,B	SS122B-1002-A,B	SS122B-1002-A,B	SS12
Matrix								SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
Sample ID								122B-1037	122B-CS008	122B-1001A	122B-1001B	122B-1002A	122B-1002B	
Sample Depth TOP								18	0	0	1.5	0	1.5	
Sample Depth BOT								20	0.2	0.5	2	0.5	2	
Sample Date								7/3/2002	1/21/2004	6/26/2002	6/26/2002	6/26/2002	6/26/2002	
QA Code								SA	SA	SA	SA	SA	SA	
Activity								122B-RI	122B-TREAT	122B-RI	122B-RI	122B-RI	122B-RI	
Round								1	2	1	1	1	1	
Parameter	**Units**	**Maximum**	**Frequency of Detection**	**Criteria Level**	**Number of Exceedances**	**Number of Times Detected**	**Number of Samples Collected**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	
Lead	MG/KG	299	100%	400	0	85	85	5.3 J	41.1	55.6	7.8	11.8	47.7	

Note:
* The lead result is the average of the sample (CS003 - 20.6 mg/Kg) and the duplicate reanalyzed (CS003RA - 24.6 mg/Kg). The sample was reanalyzed due to the variability in the duplicate pair of CS003 and CS003D, and therefore Army requested that the laboratory rerun the sample as CS003RA. The laboratory was instructed to ensure that the sample was well-homogenized prior to reanalysis. The Army is confident that this result is representative of that sample location.
Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration
J - Estimated Value

Table 3.7

Soil Total Lead Results For Current Site Conditions
Seneca Airfield Small Arms Range

Site								SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B
Loc								2B-1003-A,B	SS122B-1003-A,B	SS122B-1004-A,B	SS122B-1004-A,B	SS122B-1005-A,B	SS122B-1005-A,B	SS122B-1006-A,B SS12
Matrix								SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID								122B-1003A	122B-1003B	122B-1004A	122B-1004B	122B-1005A	122B-1005B	122B-1006A
Sample Depth TOP								0	1.5	0	1.5	0	1.5	0
Sample Depth BOT								0.5	2	0.5	2	0.5	2	0.5
Sample Date								6/26/2002	6/26/2002	6/26/2002	6/26/2002	6/26/2002	6/26/2002	6/26/2002
QA Code								SA	SA	SA	SA	SA	SA	SA
Activity			**Frequency**		**Number**	**Number**	**Number**	122B-RI	122B-RI	122B-RI	122B-RI	122B-RI	122B-RI	122B-RI
Round			**of**	**Criteria**	**of**	**of Times**	**of Samples**	1	1	1	1	1	1	1
Parameter	**Units**	**Maximum**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Lead	MG/KG	299	100%	400	0	85	85	16.6	6.9	36.7	12.6	29.4	9.9	22.8

Note:
* The lead result is the average of the sample (CS003 - 20.6 mg/Kg) and the duplicate reanalyzed (CS003RA - 24.6 mg/Kg). The sample was reanalyzed due to the variability in the duplicate pair of CS003 and CS003D, and therefore Army requested that the laboratory rerun the sample as CS003RA. The laboratory was instructed to ensure that the sample was well-homogenized prior to reanalysis. The Army is confident that this result is representative of that sample location.
Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration
J - Estimated Value

Table 3.7

Soil Total Lead Results For Current Site Conditions
Seneca Airfield Small Arms Range

Site								SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B
Loc								2B-1006-A,B	SS122B-1007-A,B	SS122B-1007-A,B	SS122B-1008-A,B	SS122B-1008-A,B	SS122B-1009-A,B	SS122B-1009-A,B SS12
Matrix								SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID								122B-1006B	122B-1007A	122B-1007B	122B-1008A	122B-1008B	122B-1009A	122B-1009B
Sample Depth TOP								1.5	0	1.5	0	1.5	0	1.5
Sample Depth BOT								2	0.5	2	0.5	2	0.5	2
Sample Date								6/26/2002	6/26/2002	6/26/2002	6/26/2002	6/26/2002	6/26/2002	6/26/2002
QA Code								SA	SA	SA	SA	SA	SA	SA
Activity			**Frequency**		**Number**	**Number**	**Number**	122B-RI	122B-RI	122B-RI	122B-RI	122B-RI	122B-RI	122B-RI
Round			**of**	**Criteria**	**of**	**of Times**	**of Samples**	1	1	1	1	1	1	1
Parameter	**Units**	**Maximum**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Lead	MG/KG	299	100%	400	0	85	85	11.3	31.2	9.8	56.6	12.5	98.7	25.7

Note:
* The lead result is the average of the sample (CS003 - 20.6 mg/Kg) and the duplicate reanalyzed (CS003RA - 24.6 mg/Kg). The sample was reanalyzed due to the variability in the duplicate pair of CS003 and CS003D, and therefore Army requested that the laboratory rerun the sample as CS003RA. The laboratory was instructed to ensure that the sample was well-homogenized prior to reanalysis. The Army is confident that this result is representative of that sample location.
Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration
J - Estimated Value

Table 3.7

Soil Total Lead Results For Current Site Conditions
Seneca Airfield Small Arms Range

Site								SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B
Loc								2B-1012-A,B	SS122B-1012-A,B	SS122B-1014-A,B	SS122B-1014-A,B	SS122B-1015-A,B	SS122B-1015-A,B	SS122B-1016-A,B SS12
Matrix								SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID								122B-1012A	122B-1012B	122B-1014A	122B-1014B	122B-1015A	122B-1015B	122B-1016A
Sample Depth TOP								0	1.5	0	1.5	0	1.5	0
Sample Depth BOT								0.5	2	0.5	2	0.5	2	0.5
Sample Date								6/26/2002	6/26/2002	6/27/2002	6/27/2002	6/27/2002	6/27/2002	6/27/2002
QA Code								SA	SA	SA	SA	SA	SA	SA
Activity			Frequency		Number	Number	Number	122B-RI	122B-RI	122B-RI	122B-RI	122B-RI	122B-RI	122B-RI
Round			of	Criteria	of	of Times	of Samples	1	1	1	1	1	1	1
Parameter	**Units**	**Maximum**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Lead	MG/KG	299	100%	400	0	85	85	42	9.7	13.2	9	5.2	10.4	48.6

Note:
* The lead result is the average of the sample (CS003 - 20.6 mg/Kg) and the duplicate reanalyzed (CS003RA - 24.6 mg/Kg). The sample was reanalyzed due to the variability in the duplicate pair of CS003 and CS003D, and therefore Army requested that the laboratory rerun the sample as CS003RA. The laboratory was instructed to ensure that the sample was well-homogenized prior to reanalysis. The Army is confident that this result is representative of that sample location.
Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration
J - Estimated Value

Table 3.7

Soil Total Lead Results For Current Site Conditions
Seneca Airfield Small Arms Range

Site								SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B
Loc								2B-1016-A,B	SS122B-1017-A,B	SS122B-1017-A,B	SS122B-1019-A,B	SS122B-1019-A,B	SS122B-1020-A,B	SS122B-1020-A,B SS12
Matrix								SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID								122B-1016B	122B-1017A	122B-1017B	122B-1019A	122B-1019B	122B-1020A	122B-1020B
Sample Depth TOP								1.5	0	1.5	0	1.5	0	1.5
Sample Depth BOT								2	0.5	2	0.5	2	0.5	2
Sample Date								6/27/2002	6/27/2002	6/27/2002	6/27/2002	6/27/2002	6/27/2002	6/27/2002
QA Code								SA	SA	SA	SA	SA	SA	SA
Activity			**Frequency**		**Number**	**Number**	**Number**	122B-RI	122B-RI	122B-RI	122B-RI	122B-RI	122B-RI	122B-RI
Round			**of**	**Criteria**	**of**	**of Times**	**of Samples**	1	1	1	1	1	1	1
Parameter	**Units**	**Maximum**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Lead	MG/KG	299	100%	400	0	85	85	26.7	19.7	17.4	13.7	7.7	4.2	3.7

Note:
* The lead result is the average of the sample (CS003 - 20.6 mg/Kg) and the duplicate reanalyzed (CS003RA - 24.6 mg/Kg). The sample was reanalyzed due to the variability in the duplicate pair of CS003 and CS003D, and therefore Army requested that the laboratory rerun the sample as CS003RA. The laboratory was instructed to ensure that the sample was well-homogenized prior to reanalysis. The Army is confident that this result is representative of that sample location.
Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration
J - Estimated Value

Table 3.7

Soil Total Lead Results For Current Site Conditions
Seneca Airfield Small Arms Range

Site								SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B
Loc								2B-1021-A,B	SS122B-1021-A,B	SS122B-1022-A,B	SS122B-1022-A,B	SS122B-1023-A,B	SS122B-1023-A,B	SS122B-1024-A,B SS12
Matrix								SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID								122B-1021A	122B-1021B	122B-1022A	122B-1022B	122B-1023A	122B-1023B	122B-1024A
Sample Depth TOP								0	1.5	0	1.5	0	1.5	0
Sample Depth BOT								0.5	2	0.5	2	0.5	2	0.5
Sample Date								6/27/2002	6/27/2002	6/28/2002	6/28/2002	6/28/2002	6/28/2002	6/28/2002
QA Code								SA	SA	SA	SA	SA	SA	SA
Activity			**Frequency**		**Number**	**Number**	**Number**	122B-RI	122B-RI	122B-RI	122B-RI	122B-RI	122B-RI	122B-RI
Round			**of**	**Criteria**	**of**	**of Times**	**of Samples**	1	1	1	1	1	1	1
Parameter	**Units**	**Maximum**	**Detection**	**Level**	**Exceedances**	**Detected**	**Collected**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Lead	MG/KG	299	100%	400	0	85	85	4.2	2.6 J	8.4	9.2	13	13.5	69.4

Note:
* The lead result is the average of the sample (CS003 - 20.6 mg/Kg) and the duplicate reanalyzed (CS003RA - 24.6 mg/Kg). The sample was reanalyzed due to the variability in the duplicate pair of CS003 and CS003D, and therefore Army requested that the laboratory rerun the sample as CS003RA. The laboratory was instructed to ensure that the sample was well-homogenized prior to reanalysis. The Army is confident that this result is representative of that sample location.
Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration
J - Estimated Value

Table 3.7

Soil Total Lead Results For Current Site Conditions
Seneca Airfield Small Arms Range

Site								SEAD-122B	SEAD-122B	SEAD-122B	SEAD-122B
Loc								2B-1024-A,B	Swale 1	Swale 2	Stockpile Area
Matrix								SOIL	SOIL	SOIL	SOIL
Sample ID								122B-1024B	122B-CS004	122B-CS006	122B-CS012
Sample Depth TOP								1.5	0	0	0
Sample Depth BOT								2	0.2	0.2	0.2
Sample Date								6/28/2002	1/13/2004	1/13/2004	6/24/04
QA Code								SA	SA	SA	SA
Activity								122B-RI	122B-TREAT	122B-TREAT	122B-TREAT
Round								1	2	2	2
Parameter	**Units**	**Maximum**	**Frequency of Detection**	**Criteria Level**	**Number of Exceedances**	**Number of Times Detected**	**Number of Samples Collected**	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Lead	MG/KG	299	100%	400	0	85	85	14	195	42	299 J

Note:
* The lead result is the average of the sample (CS003 - 20.6 mg/Kg) and the duplicate reanalyzed (CS003RA - 24.6 mg/Kg). The sample was reanalyzed due to the variability in the duplicate pair of CS003 and CS003D, and therefore Army requested that the laboratory rerun the sample as CS003RA. The laboratory was instructed to ensure that the sample was well-homogenized prior to reanalysis. The Army is confident that this result is representative of that sample location.
Highlighted cells indicate exceedance of criteria value.

U - Not detected at reported concentration
J - Estimated Value

APPENDIX A

MONITORING WELL LOGS, SOIL BORING REPORTS, AND SLUG TEST RESULTS

Contractor: NorthStar Drilling	**PARSONS**	**BORING/**	Sheet # 1 of 1 #
Driller: S. Breeds	**DRILLING RECORD**	**WELL NO.**	MW-1
Inspector: E. Ashton	**PROJECT NAME:** Seneca Army Depot - SEAD 122B	**Location Description:**	SEE SITE PLAN
Rig Type: CME-45	**PROJECT NUMBER:** 741401.031		

GROUNDWATER OBSERVATIONS				
Water Level	6.00	7.02	7.48	
Date	7/11/02	7/22/02	7/24/02	
Time	0830	0830	1035	
Meas. From	TOC	TOC	TOC	

Weather: Sunny - 75' F

Date/Time Start: 7/08/02-1020

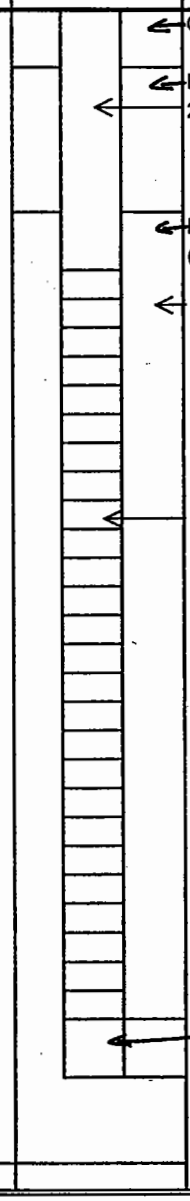
Date/Time Finish: 7/08/02-1530

Location Plan

SEE SITE PLAN

Sample Depth	Sample I.D.	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL
0-2		1/3	50	NA	(0'-2') Brown to Grey, roots, silt with clay, trace of fine sand
		5/8			and fine gravel, dry. (SM/SC)
2-4		17/22	NR	NA	(2'-4') No recovery in split-spoon.
		21/20			
4-6		15/17	50	NA	(4'-6') Brown, silt with trace of clay, trace of fine sand, fine to
		23/30			medium gravel, black shale interbedded, dry. (SM (Till))
6-8		50/	20	NA	(6'-6.8') Same as above. (SM (Till)).
		50/.3			Note: Refusal encountered at 6.8' bgs. Course gravel of black shale in tip of spoon. Drilled to 8' bgs with HSAs.
8-10		50/.3	2	NA	(8'-8.3') Same as above. (SM (Till))
					Note: Refusal encountered at 8.3' bgs. Black shale predominant in spoon. Drilled to 10' bgs with HSAs.
10-12		25/31	80	NA	(10'-11.8') Brown, silt with trace clay and interbedded shale, dry.
		50/			(SM (Till))
		50/.3			Note: Refusal encountered at 11.8' bgs. Drilled to 12' bgs with HSAs.
12-14	122B-1040	17/25	100	NA	(12'-14') Same as above. (SM (Till))
		40/40			
14-16		65/	10	NA	(14'-14.7') Brown to Grey, silt with clay and interbedded shale, wet.
		50/.2			(SM (Till))
					Note: Refusal encountered at 14.7' bgs. Attempted to drill to 20' bgs, but encountered auger refusal at 17.5' bgs.
16-18		NA	NA	NA	
					Terminated soil boring at 17.5' bgs.

SCHEMATIC



COMMENTS
stickup casing

SAMPLING METHOD

SS = SPLIT SPOON

A = AUGER CUTTINGS

C = CORED

COMMENTS:

Collected soil sample 122B-1040 for total lead analysis.

6-inch PVC sump installed at bottom of well screen.

2-inch well installed.

PARSONS
DRILLING RECORD

BORING/ WELL NO. MW-2 **Sheet** 1 **of** 1

Contractor: NorthStar Drilling
Driller: S. Breeds
Inspector: E. Ashton
Rig Type: CME-45

PROJECT NAME: Seneca Army Depot - SEAD 122B
PROJECT NUMBER: 741401.031

Location Description: SEE SITE PLAN

Location Plan

SEE SITE PLAN

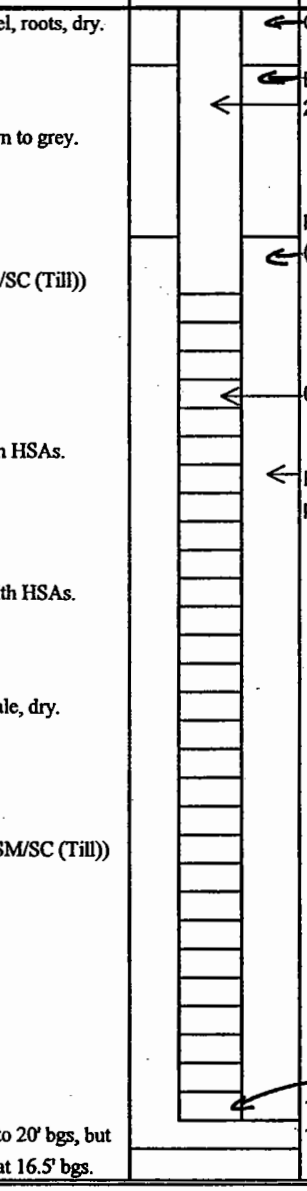
Weather: Cloudy - 65'F
Date/Time Start: 7/09/02-0920
Date/Time Finish: 7/09/02-1302

GROUNDWATER OBSERVATIONS

Water Level	6.5	7.38	7.54	
Date	7/12/02	7/22/02	7/24/02	
Time	0835	0835	1040	
Meas. From	TOC	TOC	TOC	

Sample Depth	Sample I.D.	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL
0-2		2/3	50	NA	(0'-2') Brown, silt with clay, trace of fine sand and fine gravel, roots, dry.
		3/4			(SM/SC)
2-4		5/8	40	NA	(2'-4') Same as above, except no roots and color of soil brown to grey.
		10/14			(SM/SC)
4-6		13/23	100	NA	(4'-6') Brown, silt with clay and interbedded shale, dry. (SM/SC (Till))
		35/40			
6-8		50/	NA	NA	(6'-8') No recovery.
		50/.3			Note: Refusal encountered at 6.8' bgs. Drilled to 8' bgs with HSAs.
8-10		50/.3	NA	NA	(8'-10') No recovery.
					Note: Refusal encountered at 8.3' bgs. Drilled to 10' bgs with HSAs.
					Course gravel of black shale present in tip of spoon.
10-12		37/40	50	NA	(10'-11.2') Brown to Grey, silt with clay and interbedded shale, dry.
		50/.2			(SM/SC (Till))
12-14		34/25	100	NA	(12'-14') Grey, silt with clay and interbedded shale, moist. (SM/SC (Till))
		23/24			
14-16	122B-1041	22/24	80	NA	(14'-16') Same as above. (SM/SC (Till))
		33/50/.4			
16-18		50/.3	2	NA	(16'-16.3') Weathered black shale, wet. (Shale)
					Note: Refusal encountered at 16.3' bgs. Attempted to drill to 20' bgs, but encountered auger refusal at 16.5' bgs. Boring Terminated at 16.5' bgs.

SCHEMATIC



COMMENTS (stickup casing)

COMMENTS:
Collected soil sample 122B-1041 for total lead analysis.
3-inch PVC sump installed at bottom of well screen.
2-inch well installed.

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

Contractor: NorthStar Drilling **Driller:** S. Breeds **Inspector:** E. Ashton **Rig Type:** CME-45	**PARSONS** **DRILLING RECORD** **PROJECT NAME:** Seneca Army Depot - SEAD 122B **PROJECT NUMBER:** 741401.031	**BORING/ WELL NO.** MW-3	**Sheet** # 1 **of** 1 #
		Location Description: SEE SITE PLAN	

GROUNDWATER OBSERVATIONS				
Water Level	5.6	6.44	6.68	
Date	7/12/02	7/22/02	7/24/02	
Time	0840	0840	1045	
Meas. From	TOC	TOC	TOC	

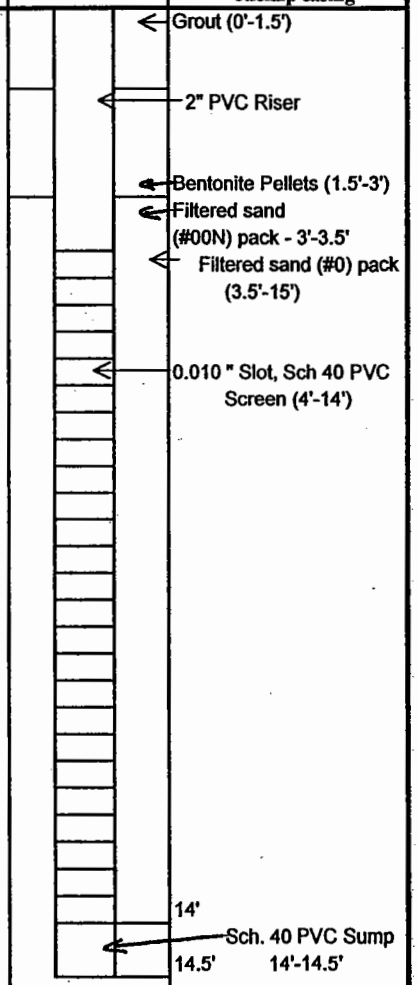
Weather: Sunny - 60'F

Date/Time Start: 7/10/02 - 0840

Date/Time Finish: 7/10/02 - 0930

Location Plan

SEE SITE PLAN

Sample Depth	Sample I.D.	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	SCHEMATIC	COMMENTS stickup casing
0-2		5/6/ 21/22	80	NA	(0'-2') Brown, silt with minor clay, roots, trace of fine sand and fine to medium gravel, dry. (SM)		Grout (0'-1.5') 2" PVC Riser
2-4		22/25 23/28	2	NA	(2'-4') Fine to course gravel. Very little to no recovery in spoon.		Bentonite Pellets (1.5'-3') Filtered sand (#00N) pack - 3'-3.5'
4-6		23/21 30/33	80	NA	(4'-6') Grey, silt with trace clay, fine to medium gravel, trace of fine sand, dry. (SM)		Filtered sand (#0) pack (3.5'-15') 0.010 " Slot, Sch 40 PVC Screen (4'-14')
6-8		50/.3	NA	NA	(6'-6.3') No recovery. Note: Refusal encountered at 6.3' bgs. Drilled to 8' bgs. with HSAs. Course gravel of black shale in tip of spoon.		
8-10		30/ 50/.3	20	NA	(8'-8.8') Brown to Grey, silt with clay and interbedded shale, dry. (SM/SC (Till)) Note: Refusal encountered at 8.8' bgs. Drilled to 10' bgs. with HSAs.		
10-12		35/ 50/.3	40	NA	(10'-10.8') Same as above. (SM/SC (Till)) Note: Refusal encountered at 10.8' bgs. Drilled to 12' bgs. with HSAs.		
12-14	122B-1042	38/ 50/.3	50	NA	(12'-12.8') Brown to Grey, silt with clay and interbedded shale, dry. (SM/SC (Till)) Note: Refusal encountered at 12.8' bgs. Drilled to 14' bgs. with HSAs.		14'
14-16		50/.1	50	NA	(14'-14.1') No recovery. Note: Refusal encountered at 14.1' bgs. Tip of spoon wet. Attempted to drill to 20' bgs., but encountered auger refusal at 15' bgs.		Sch. 40 PVC Sump 14.5' 14'-14.5'
16-18					Terminated soil boring at 15' bgs.		15'

SAMPLING METHOD

SS = SPLIT SPOON

A = AUGER CUTTINGS

C = CORED

COMMENTS:

Collected soil sample 122B-1042 for total lead analysis.

6-inch PVC sump installed at bottom of well screen.

2-inch well installed.

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
PROTECTIVE RISER COMPLETION

PARSONS | CLIENT: ACOE | WELL #: 1

PROJECT: Seneca Army Depot
LOCATION: Romulus, NY

PROJECT NO: 741401.03100
INSPECTOR: E Ashton
CHECKED BY: E Ashton

DRILLING CONTRACTOR: North Star Drilling Inc.
DRILLER: Scott Broods
DRILLING COMPLETED: 7/08/02
BORING DEPTH: 17.5'
DRILLING METHOD(S): Hollow Stem augers.
BORING DIAMETER(S): 8.25
ASSOCIATED SWMU/AOC: SEAD-122B

POW DEPTH: 16.5'
INSTALLATION STARTED: 7/08/02
INSTALLATION COMPLETED: 7/08/02
SURFACE COMPLETION DATE: 7/12/02
COMPLETION CONTRACTOR/CREW: North Star Drilling
BEDROCK CONFIRMED (Y/N?): Y
ESTIMATED GROUND ELEVATION: 635.14'

PROTECTIVE SURFACE CASING:
DIAMETER: 4" LENGTH: 3.5' TOR: Steel

RISER:
TOC: 637.16' TYPE: Sch 40, PVC DIAMETER: 2" LENGTH: 8.02'

SCREEN:
TSC: 629.14' TYPE: Sch 40, PVC DIAMETER: 2" LENGTH: 10' SLOT SIZE: 10-slot

POINT OF WELL: (SILT SUMP)
TYPE: – BSC: 619.14' POW: 618.64'

GROUT:
TG: 635.14' TYPE: Cement/Bent. LENGTH: 1.5'

SEAL: TBS: 633.64 TYPE: Pellets LENGTH: 2'

SAND PACK: TSP: 631.64 TYPE: Morie #00N (3.5-4') / " #0 (4-17.5') LENGTH: 14'

SURFACE COLLAR:
TYPE: Concrete RADIUS: 2' x 2' THICKNESS CENTER: 6" THICKNESS EDGE: 6"

CENTRALIZER DEPTHS
DEPTH 1: NA DEPTH 2: NA DEPTH 3: NA DEPTH 4: NA

COMMENTS:
See Boring Log for in depth details

* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
PROTECTIVE RISER COMPLETION

PARSONS	CLIENT: ACOE	WELL #: 2

PROJECT: Seneca Army Depot
LOCATION: Romulus, NY
PROJECT NO: 74140L.03100
INSPECTOR: EOAshton
CHECKED BY: EOAshton

DRILLING CONTRACTOR: NorthStar Drilling, Inc.
DRILLER: Scott Breads
DRILLING COMPLETED: 7/09/02
BORING DEPTH: 16.5'
DRILLING METHOD(S): Hollow Stem auger
BORING DIAMETER(S): 8.25
ASSOCIATED SWMU/AOC: SEAD-122B
POW DEPTH: 16.0'
INSTALLATION STARTED: 7/09/02
INSTALLATION COMPLETED: 7/09/02
SURFACE COMPLETION DATE: 7/12/02
COMPLETION CONTRACTOR/CREW: NorthStar Drilling
BEDROCK CONFIRMED (Y/N?) Y
ESTIMATED GROUND ELEVATION: 624.83'

PROTECTIVE SURFACE CASING:
DIAMETER: 4" LENGTH: 3.5' TOR: Steel

RISER:
TOC: 626.82' TYPE: Sch.40, PVC DIAMETER: 2" LENGTH: 7.99'

SCREEN:
TSC: 618.83' TYPE: Sch 40, PVC DIAMETER: 2" LENGTH: 9.7' SLOT SIZE: 10-Slot

POINT OF WELL: (SILT SUMP)
TYPE: - BSC: 609.13' POW: 608.83'

GROUT:
TG: 624.83' TYPE: Grout/Bent. LENGTH: 1.5'

SEAL: TBS: 623.33' TYPE: Pellets LENGTH: 2'

SAND PACK: TSP: 621.33' TYPE: Morie Hann C 3.5-4) " #OC6-16 LENGTH: 13'

SURFACE COLLAR:
TYPE: Concrete RADIUS: 2'x2' THICKNESS CENTER: 6" THICKNESS EDGE: 6"

CENTRALIZER DEPTHS
DEPTH 1: NA DEPTH 2: NA DEPTH 3: NA DEPTH 4: NA

COMMENTS:
See Boring Log for in-depth details

* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
PROTECTIVE RISER COMPLETION

PARSONS | CLIENT: ACOE | WELL #: 3

PROJECT: Seneca Army Depot
LOCATION: Romulus, NY
PROJECT NO: 741441.0300
INSPECTOR: E JAshton
CHECKED BY: EJAshton

DRILLING CONTRACTOR: Northstar Drilling, Inc.
DRILLER: Scott Breeds
DRILLING COMPLETED: 7/10/02
BORING DEPTH: 15'
DRILLING METHOD(S): Hollow Stem Auger
BORING DIAMETER(S): 8.25
ASSOCIATED SWMU/AOC: SEAD-122B
POW DEPTH: 14.5'
INSTALLATION STARTED: 7/10/02
INSTALLATION COMPLETED: 7/10/02
SURFACE COMPLETION DATE: 7/12/02
COMPLETION CONTRACTOR/CREW: Northstar Drilling
BEDROCK CONFIRMED (Y/N?) Y
ESTIMATED GROUND ELEVATION: 625.82'

PROTECTIVE SURFACE CASING:
DIAMETER: 4" LENGTH: 3.5' TOR: Flush

RISER:
TOC: 627.94' TYPE: Sch 40, PVC DIAMETER: 2" LENGTH: 6.12'

SCREEN:
TSC: 621.82' TYPE: Sch 40, PVC DIAMETER: 2" LENGTH: 10' SLOT SIZE: 10-slot

POINT OF WELL: (SILT SUMP)
YPE: — BSC: 611.82' POW: 611.32'

GROUT:
TG: 625.82' TYPE: Cement/Bent. LENGTH: 1.5'

SEAL: TBS: 624.32' TYPE: Pellets LENGTH: 1.5'

SAND PACK: TSP: 622.82' TYPE: Morie #1 Sand (3-3.5') #0 (4-15') LENGTH: 12'

SURFACE COLLAR:
TYPE: Concrete RADIUS: 2'x2' THICKNESS CENTER: 6" THICKNESS EDGE: 6"

CENTRALIZER DEPTHS
DEPTH 1: NA DEPTH 2: NA DEPTH 3: NA DEPTH 4: NA

COMMENTS:

See Boring Log for in-depth details.

* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN BORING REPORT

PARSONS	CLIENT: USACOE	BORING NO.: MW-1

PROJECT: RI FIELD INVESTIGATION
SWMU # (AREA): SEAD-122B
SOP NO.:

START DATE: 7/8/02
FINISH DATE: 7/8/02
CONTRACTOR: North Star Valley
DRILLER: Scott Brooks
INSPECTOR: E.J. Ashton
CHECKED BY: E.J. Ashton
CHECK DATE: 7/8/02
BORING CONVERTED TO MW? (Y) N

DRILLING SUMMARY

DRILLING METHOD	HOLE DIA.(ft)	DEPTH INTERVAL (ft)	SAMPLER SIZE	SAMPLER TYPE	HAMMER TYPE	HAMMER WT/FALL
HSA	8.25	2	2"x2'	SS	HHR	150

DRILLING ACRONYMS

HSA	HOLLOW-STEM AUGERS	HMR	HAMMER	SS	SPLIT SPOON
DW	DRIVE-AND-WASH	SHR	SAFETY HAMMER	CS	CONTINUOUS SAMPLING
MRSLC	MUD-ROTARY SOIL-CORING	HHR	HYDRAULIC HAMMER	5I	5 FT INTERVAL SAMPLING
CA	CASING ADVANCER	DHR	DOWN-HOLE HAMMER	NS	NO SAMPLING
SPC	SPIN CASING	WL	WIRE-LINE	ST	SHELBY TUBE
				3S	3 INCH SPLIT SPOON

MONITORING EQUPMENT SUMMARY – NA

INSTRUMENT TYPE	DETECTOR TYPE/ENERGY	RANGE	BACKGROUND READING	BACKGROUND TIME	BACKGROUND DATE	CALIBRATION TIME	CALIBRATION DATE	WEATHER (TEMP., WIND, ETC.)

MONITORING ACRONYMS

PID	PHOTO - IONIZATION DETECTOR	BGD	BACKGROUND	DGRT	DRAEGER TUBES
FID	FLAME - IONIZATION DETECTOR	CPM	COUNTS PER MINUTE	PPB	PARTS PER BILLION
GMD	GEIGER MUELLER DETECTOR	PPM	PARTS PER MILLION	MDL	METHOD DETECTION LIMIT
SCT	SCINTILLATION DETECTOR	RAD	RADIATION METER		

INVESTIGATION DERIVED WASTE

DATE	7/8/02		
SOIL AMOUNT: (fraction of drum)	1006		
DRUM #, LOCATION:	122B-15, SEAD-122B		

COMMENTS:

SAMPLES TAKEN:

SAMPLES: 122B-1040
DUPLICATES:
MS/MSD:
MRD:

OVERBURDEN BORING REPORT

PARSONS	CLIENT: USACOE	BORING NO.: MW-2

PROJECT: RI FIELD INVESTIGATION
SWMU # (AREA): SEAD-122B
SOP NO.:

START DATE: 7/9/02
FINISH DATE: 7/9/02
CONTRACTOR: Northstar Drilling
DRILLER: Scott Brooks
INSPECTOR: E.J. Ashton
CHECKED BY: E.J. Ashton
CHECK DATE: 7/5/02
BORING CONVERTED TO MW? (Y) N

DRILLING SUMMARY

DRILLING METHOD	HOLE DIA.(ft)	DEPTH INTERVAL (ft)	SAMPLER SIZE	SAMPLER TYPE	HAMMER TYPE	HAMMER WT/FALL
HSA	8.25	2	2'x2'	SS	HHR	150

DRILLING ACRONYMS

HSA	HOLLOW-STEM AUGERS	HMR	HAMMER	SS	SPLIT SPOON
DW	DRIVE-AND-WASH	SHR	SAFETY HAMMER	CS	CONTINUOUS SAMPLING
MRSLC	MUD-ROTARY SOIL-CORING	HHR	HYDRAULIC HAMMER	5I	5 FT INTERVAL SAMPLING
CA	CASING ADVANCER	DHR	DOWN-HOLE HAMMER	NS	NO SAMPLING
SPC	SPIN CASING	WL	WIRE-LINE	ST	SHELBY TUBE
				3S	3 INCH SPLIT SPOON

MONITORING EQUPMENT SUMMARY NA

INSTRUMENT TYPE	DETECTOR TYPE/ENERGY	RANGE	BACKGROUND READING	BACKGROUND TIME	BACKGROUND DATE	CALIBRATION TIME	CALIBRATION DATE	WEATHER (TEMP., WIND, ETC.)

MONITORING ACRONYMS

PID	PHOTO - IONIZATION DETECTOR	BGD	BACKGROUND	DGRT	DRAEGER TUBES
FID	FLAME - IONIZATION DETECTOR	CPM	COUNTS PER MINUTE	PPB	PARTS PER BILLION
GMD	GEIGER MUELLER DETECTOR	PPM	PARTS PER MILLION	MDL	METHOD DETECTION LIMIT
SCT	SCINTILLATION DETECTOR	RAD	RADIATION METER		

INVESTIGATION DERIVED WASTE

DATE	7/9/02		
SOIL AMOUNT: (fraction of drum)	1 DRUM		
DRUM #, LOCATION:	122B-25, SEAD 122B		

COMMENTS:

SAMPLES TAKEN:

SAMPLES: 122B-1041
DUPLICATES:
MS/MSD:
MRD:

OVERBURDEN BORING REPORT

PARSONS	CLIENT: USACOE	BORING NO.: MW-3

PROJECT: RI FIELD INVESTIGATION
SWMU # (AREA): SEAD-122B
SOP NO.:

START DATE: 7/10/02
FINISH DATE: 7/10/02
CONTRACTOR: North Star Drilling
DRILLER: Scott Broads
INSPECTOR: B. J. Ashton
CHECKED BY: B. J. Ashton
CHECK DATE: 7/9/02
BORING CONVERTED TO MW? (Y) N

DRILLING SUMMARY

DRILLING METHOD	HOLE DIA.(ft)	DEPTH INTERVAL (ft)	SAMPLER SIZE	SAMPLER TYPE	HAMMER TYPE	HAMMER WT/FALL
HSA	8.25	2	2"x2'	SS	HHR	150

DRILLING ACRONYMS

HSA	HOLLOW-STEM AUGERS	HMR	HAMMER	SS	SPLIT SPOON
DW	DRIVE-AND-WASH	SHR	SAFETY HAMMER	CS	CONTINUOUS SAMPLING
MRSLC	MUD-ROTARY SOIL-CORING	HHR	HYDRAULIC HAMMER	5I	5 FT INTERVAL SAMPLING
CA	CASING ADVANCER	DHR	DOWN-HOLE HAMMER	NS	NO SAMPLING
SPC	SPIN CASING	WL	WIRE-LINE	ST	SHELBY TUBE
				3S	3 INCH SPLIT SPOON

MONITORING EQUPMENT SUMMARY — NA

INSTRUMENT TYPE	DETECTOR TYPE/ENERGY	RANGE	BACKGROUND READING	BACKGROUND TIME	BACKGROUND DATE	CALIBRATION TIME	CALIBRATION DATE	WEATHER (TEMP., WIND, ETC.)

MONITORING ACRONYMS

PID	PHOTO - IONIZATION DETECTOR	BGD	BACKGROUND	DGRT	DRAEGER TUBES
FID	FLAME - IONIZATION DETECTOR	CPM	COUNTS PER MINUTE	PPB	PARTS PER BILLION
GMD	GEIGER MUELLER DETECTOR	PPM	PARTS PER MILLION	MDL	METHOD DETECTION LIMIT
SCT	SCINTILLATION DETECTOR	RAD	RADIATION METER		

INVESTIGATION DERIVED WASTE

DATE	7/9/02		
SOIL AMOUNT: (fraction of drum)	1/2 DRUM		
DRUM #, LOCATION:	122B-35, SEAD-122B		

COMMENTS:

SAMPLES TAKEN:
SAMPLES: 122B-1042
DUPLICATES:
MS/MSD:
MRD:

OVERBURDEN BORING REPORT

PARSONS	CLIENT: USACOE	BORING NO.: PSB-1

PROJECT: RI FIELD INVESTIGATION
SWMU # (AREA): SEAD-122B
SOP NO.:

START DATE: 7/11/02
FINISH DATE: 7/11/02
CONTRACTOR: North Star Valley
DRILLER: Scott Breeds
INSPECTOR: F.J. Ashton
CHECKED BY: F.J. Ashton
CHECK DATE: 7/11/02
BORING CONVERTED TO MW? Y (N)

DRILLING SUMMARY

DRILLING METHOD	HOLE DIA.(ft)	DEPTH INTERVAL (ft)	SAMPLER SIZE	SAMPLER TYPE	HAMMER TYPE	HAMMER WT/FALL
HSA	4.25	2	2"x2'	SS	HHR	150

DRILLING ACRONYMS

HSA	HOLLOW-STEM AUGERS	HMR	HAMMER	SS	SPLIT SPOON
DW	DRIVE-AND-WASH	SHR	SAFETY HAMMER	CS	CONTINUOUS SAMPLING
MRSLC	MUD-ROTARY SOIL-CORING	HHR	HYDRAULIC HAMMER	5I	5 FT INTERVAL SAMPLING
CA	CASING ADVANCER	DHR	DOWN-HOLE HAMMER	NS	NO SAMPLING
SPC	SPIN CASING	WL	WIRE-LINE	ST	SHELBY TUBE
				3S	3 INCH SPLIT SPOON

MONITORING EQUPMENT SUMMARY – NA

INSTRUMENT TYPE	DETECTOR TYPE/ENERGY	RANGE	BACKGROUND READING	BACKGROUND TIME	BACKGROUND DATE	CALIBRATION TIME	CALIBRATION DATE	WEATHER (TEMP., WIND, ETC.)

MONITORING ACRONYMS

PID	PHOTO - IONIZATION DETECTOR	BGD	BACKGROUND	DGRT	DRAEGER TUBES
FID	FLAME - IONIZATION DETECTOR	CPM	COUNTS PER MINUTE	PPB	PARTS PER BILLION
GMD	GEIGER MUELLER DETECTOR	PPM	PARTS PER MILLION	MDL	METHOD DETECTION LIMIT
SCT	SCINTILLATION DETECTOR	RAD	RADIATION METER		

INVESTIGATION DERIVED WASTE – NA

DATE			
SOIL AMOUNT: (fraction of drum)			
DRUM #, LOCATION:			

COMMENTS:

* Soil cuttings placed back into borehole

SAMPLES TAKEN:

SAMPLES: 1228-1061, 1062, 1063
DUPLICATES:
MS/MSD:
MRD:

FIGURE A-2

OVERBURDEN BORING REPORT

PARSONS	CLIENT: USACOE	BORING NO.: PSB-2

PROJECT: RI FIELD INVESTIGATION
SWMU # (AREA): SEAD-122B
SOP NO.:

START DATE: 7/11/02
FINISH DATE: 7/11/02
CONTRACTOR: North Star Drilling
DRILLER: Scott Brooks
INSPECTOR: E.J. Ashton
CHECKED BY: E.J. Ashton
CHECK DATE: 7/11/02
BORING CONVERTED TO MW? Y (N)

DRILLING SUMMARY

DRILLING METHOD	HOLE DIA.(ft)	DEPTH INTERVAL (ft)	SAMPLER SIZE	SAMPLER TYPE	HAMMER TYPE	HAMMER WT/FALL
HSA	4.25	2	2"x2'	SS	HHR	150

DRILLING ACRONYMS

HSA	HOLLOW-STEM AUGERS	HMR	HAMMER	SS	SPLIT SPOON
DW	DRIVE-AND-WASH	SHR	SAFETY HAMMER	CS	CONTINUOUS SAMPLING
MRSLC	MUD-ROTARY SOIL-CORING	HHR	HYDRAULIC HAMMER	5I	5 FT INTERVAL SAMPLING
CA	CASING ADVANCER	DHR	DOWN-HOLE HAMMER	NS	NO SAMPLING
SPC	SPIN CASING	WL	WIRE-LINE	ST	SHELBY TUBE
				3S	3 INCH SPLIT SPOON

MONITORING EQUPMENT SUMMARY - NA

INSTRUMENT TYPE	DETECTOR TYPE/ENERGY	RANGE	BACKGROUND READING	BACKGROUND TIME	BACKGROUND DATE	CALIBRATION TIME	CALIBRATION DATE	WEATHER (TEMP., WIND, ETC.)

MONITORING ACRONYMS

PID	PHOTO-IONIZATION DETECTOR	BGD	BACKGROUND	DGRT	DRAEGER TUBES
FID	FLAME-IONIZATION DETECTOR	CPM	COUNTS PER MINUTE	PPB	PARTS PER BILLION
GMD	GEIGER MUELLER DETECTOR	PPM	PARTS PER MILLION	MDL	METHOD DETECTION LIMIT
SCT	SCINTILLATION DETECTOR	RAD	RADIATION METER		

INVESTIGATION DERIVED WASTE - NA *

DATE			
SOIL AMOUNT: (fraction of drum)			
DRUM #, LOCATION:			

COMMENTS:
* - Soil cuttings placed back into borehole.

SAMPLES TAKEN:
SAMPLES: 122B-1026, 1027, 1028, & 1029
DUPLICATES:
MS/MSD:
MRD:

OVERBURDEN BORING REPORT

PARSONS	CLIENT: USACOE	BORING NO.: PSB-3

PROJECT: RI FIELD INVESTIGATION
SWMU # (AREA): SEAD-122B
SOP NO.:

START DATE: 7/2/02
FINISH DATE: 7/2/02
CONTRACTOR: Northstar Drilling
DRILLER: Scott Brooks
INSPECTOR: E. J. Ashton
CHECKED BY: E.J. Ashton
CHECK DATE: 7/2/02
BORING CONVERTED TO MW? Y (N)

DRILLING SUMMARY

DRILLING METHOD	HOLE DIA.(ft)	DEPTH INTERVAL (ft)	SAMPLER SIZE	SAMPLER TYPE	HAMMER TYPE	HAMMER WT/FALL
HSA	4.25	2	2"x2'	SS	HHR	150

DRILLING ACRONYMS

HSA	HOLLOW-STEM AUGERS	HMR	HAMMER	SS	SPLIT SPOON
DW	DRIVE-AND-WASH	SHR	SAFETY HAMMER	CS	CONTINUOUS SAMPLING
MRSLC	MUD-ROTARY SOIL-CORING	HHR	HYDRAULIC HAMMER	5I	5 FT INTERVAL SAMPLING
CA	CASING ADVANCER	DHR	DOWN-HOLE HAMMER	NS	NO SAMPLING
SPC	SPIN CASING	WL	WIRE-LINE	ST	SHELBY TUBE
				3S	3 INCH SPLIT SPOON

MONITORING EQUPMENT SUMMARY – NA

INSTRUMENT TYPE	DETECTOR TYPE/ENERGY	RANGE	BACKGROUND READING	BACKGROUND TIME	BACKGROUND DATE	CALIBRATION TIME	CALIBRATION DATE	WEATHER (TEMP., WIND, ETC.)

MONITORING ACRONYMS

PID	PHOTO-IONIZATION DETECTOR	BGD	BACKGROUND	DGRT	DRAEGER TUBES
FID	FLAME-IONIZATION DETECTOR	CPM	COUNTS PER MINUTE	PPB	PARTS PER BILLION
GMD	GEIGER MUELLER DETECTOR	PPM	PARTS PER MILLION	MDL	METHOD DETECTION LIMIT
SCT	SCINTILLATION DETECTOR	RAD	RADIATION METER		

INVESTIGATION DERIVED WASTE – NA*

DATE			
SOIL AMOUNT: (fraction of drum)			
DRUM #, LOCATION:			

COMMENTS:
* Soil cuttings placed back into borehole.

SAMPLES TAKEN:
SAMPLES: 122B-1030, 1031, 1032
DUPLICATES: 122B-1033
MS/MSD:
MRD:

OVERBURDEN BORING REPORT

PARSONS	CLIENT: USACOE	BORING NO.: PSB-4

PROJECT: RI FIELD INVESTIGATION

SWMU # (AREA): SEAD-122B

SOP NO.:

START DATE: 7/10/02

FINISH DATE: 7/10/02

CONTRACTOR: North Star Drilling

DRILLER: Scott Breeds

INSPECTOR: E.J. Ashton

CHECKED BY: E.J. Ashton

CHECK DATE: 7/10/02

BORING CONVERTED TO MW? Y (N)

DRILLING SUMMARY

DRILLING METHOD	HOLE DIA.(ft)	DEPTH INTERVAL (ft)	SAMPLER SIZE	SAMPLER TYPE	HAMMER TYPE	HAMMER WT/FALL
HSA	4.25	2	2"x2'	SS	HHR	150

DRILLING ACRONYMS

HSA	HOLLOW-STEM AUGERS	HMR	HAMMER	SS	SPLIT SPOON
DW	DRIVE-AND-WASH	SHR	SAFETY HAMMER	CS	CONTINUOUS SAMPLING
MRSLC	MUD-ROTARY SOIL-CORING	HHR	HYDRAULIC HAMMER	5I	5 FT INTERVAL SAMPLING
CA	CASING ADVANCER	DHR	DOWN-HOLE HAMMER	NS	NO SAMPLING
SPC	SPIN CASING	WL	WIRE-LINE	ST	SHELBY TUBE
				3S	3 INCH SPLIT SPOON

MONITORING EQUPMENT SUMMARY – NA

INSTRUMENT TYPE	DETECTOR TYPE/ENERGY	RANGE	BACKGROUND READING	BACKGROUND TIME	BACKGROUND DATE	CALIBRATION TIME	CALIBRATION DATE	WEATHER (TEMP., WIND, ETC.)

MONITORING ACRONYMS

PID	PHOTO - IONIZATION DETECTOR	BGD	BACKGROUND	DGRT	DRAEGER TUBES
FID	FLAME - IONIZATION DETECTOR	CPM	COUNTS PER MINUTE	PPB	PARTS PER BILLION
GMD	GEIGER MUELLER DETECTOR	PPM	PARTS PER MILLION	MDL	METHOD DETECTION LIMIT
SCT	SCINTILLATION DETECTOR	RAD	RADIATION METER		

INVESTIGATION DERIVED WASTE – NA

DATE			
SOIL AMOUNT: (fraction of drum)			
DRUM #, LOCATION:			

COMMENTS:

* Soil cuttings placed back into borehole.

SAMPLES TAKEN:

SAMPLES 1228-1043, 1044, 1045, 1046, 1047

DUPLICATES

MS/MSD

MRD

OVERBURDEN BORING REPORT

PARSONS	CLIENT: USACOE	BORING NO.: PSB-5

PROJECT : RI FIELD INVESTIGATION
SWMU # (AREA) : SEAD-122B
SOP NO.:

START DATE: 7/10/02
FINISH DATE: 7/10/02
CONTRACTOR: Northstar Drilling
DRILLER: Scott Breeds
INSPECTOR: E.J. Ashton
CHECKED BY: E.J. Ashton
CHECK DATE: 7/10/02
BORING CONVERTED TO MW? Y (N)

DRILLING SUMMARY

DRILLING METHOD	HOLE DIA.(ft)	DEPTH INTERVAL (ft)	SAMPLER SIZE	SAMPLER TYPE	HAMMER TYPE	HAMMER WT/FALL
HSA	4.25	2	2"x2'	SS	HHR	150

DRILLING ACRONYMS

HSA	HOLLOW-STEM AUGERS	HMR	HAMMER	SS	SPLIT SPOON
DW	DRIVE-AND-WASH	SHR	SAFETY HAMMER	CS	CONTINUOUS SAMPLING
MRSLC	MUD-ROTARY SOIL-CORING	HHR	HYDRAULIC HAMMER	5I	5 FT INTERVAL SAMPLING
CA	CASING ADVANCER	DHR	DOWN-HOLE HAMMER	NS	NO SAMPLING
SPC	SPIN CASING	WL	WIRE-LINE	ST	SHELBY TUBE
				3S	3 INCH SPLIT SPOON

MONITORING EQUPMENT SUMMARY — NA

INSTRUMENT TYPE	DETECTOR TYPE/ENERGY	RANGE	BACKGROUND READING	BACKGROUND TIME	BACKGROUND DATE	CALIBRATION TIME	CALIBRATION DATE	WEATHER (TEMP., WIND, ETC.)

MONITORING ACRONYMS

PID	PHOTO - IONIZATION DETECTOR	BGD	BACKGROUND	DGRT	DRAEGER TUBES
FID	FLAME - IONIZATION DETECTOR	CPM	COUNTS PER MINUTE	PPB	PARTS PER BILLION
GMD	GEIGER MUELLER DETECTOR	PPM	PARTS PER MILLION	MDL	METHOD DETECTION LIMIT
SCT	SCINTILLATION DETECTOR	RAD	RADIATION METER		

INVESTIGATION DERIVED WASTE — NA

DATE			
SOIL AMOUNT : (fraction of drum)			
DRUM #, LOCATION:			

COMMENTS:

* Soil cuttings placed back into borehole.

SAMPLES TAKEN:

SAMPLES	122B-1048, 1049, 1050, 1051, 1052
DUPLICATES	122B-1053
MS/MSD	
MRD	

OVERBURDEN BORING REPORT

PARSONS	CLIENT: USACOE	BORING NO.: SB-6

PROJECT: RI FIELD INVESTIGATION
SWMU # (AREA): SEAD-122B
SOP NO.:

START DATE: 7/11/02
FINISH DATE: 7/11/02
CONTRACTOR: Northstar Drilling
DRILLER: Scott Brooks
INSPECTOR: E. J. Ashton
CHECKED BY: E. J. Ashton
CHECK DATE: 7/11/02
BORING CONVERTED TO MW? Y (N)

DRILLING SUMMARY

DRILLING METHOD	HOLE DIA.(ft)	DEPTH INTERVAL (ft)	SAMPLER SIZE	SAMPLER TYPE	HAMMER TYPE	HAMMER WT/FALL
HSA	4.25	2	2"x2'	SS	HHR	150

DRILLING ACRONYMS

HSA	HOLLOW-STEM AUGERS	HMR	HAMMER	SS	SPLIT SPOON
DW	DRIVE-AND-WASH	SHR	SAFETY HAMMER	CS	CONTINUOUS SAMPLING
MRSLC	MUD-ROTARY SOIL-CORING	HHR	HYDRAULIC HAMMER	5I	5 FT INTERVAL SAMPLING
CA	CASING ADVANCER	DHR	DOWN-HOLE HAMMER	NS	NO SAMPLING
SPC	SPIN CASING	WL	WIRE-LINE	ST	SHELBY TUBE
				3S	3 INCH SPLIT SPOON

MONITORING EQUPMENT SUMMARY — NA

INSTRUMENT TYPE	DETECTOR TYPE/ENERGY	RANGE	BACKGROUND READING	BACKGROUND TIME	BACKGROUND DATE	CALIBRATION TIME	CALIBRATION DATE	WEATHER (TEMP., WIND, ETC.)

MONITORING ACRONYMS

PID	PHOTO-IONIZATION DETECTOR	BGD	BACKGROUND	DGRT	DRAEGER TUBES
FID	FLAME-IONIZATION DETECTOR	CPM	COUNTS PER MINUTE	PPB	PARTS PER BILLION
GMD	GEIGER MUELLER DETECTOR	PPM	PARTS PER MILLION	MDL	METHOD DETECTION LIMIT
SCT	SCINTILLATION DETECTOR	RAD	RADIATION METER		

INVESTIGATION DERIVED WASTE — NA

DATE			
SOIL AMOUNT: (fraction of drum)			
DRUM #, LOCATION:			

COMMENTS:

*Soil cuttings placed back into borehole.

SAMPLES TAKEN:

SAMPLES	122B-1054, 1055, 1058, 1059, 1060
DUPLICATES	
MS/MSD	122B-1056 MS; 1057 MSD
MRD	CLIMS # 6604

OVERBURDEN BORING REPORT

PARSONS	CLIENT: USACOE	BORING NO.: PSB-7

PROJECT: RI FIELD INVESTIGATION
SWMU # (AREA): SEAD-122B
SOP NO.:

START DATE: 7/3/02
FINISH DATE: 7/3/02
CONTRACTOR: North Star Drilling
DRILLER: Scott Brooks
INSPECTOR: E.J. Ashton
CHECKED BY: E.J. Ashton
CHECK DATE: 7/3/02
BORING CONVERTED TO MW? Y (N)

DRILLING SUMMARY

DRILLING METHOD	HOLE DIA.(ft)	DEPTH INTERVAL (ft)	SAMPLER SIZE	SAMPLER TYPE	HAMMER TYPE	HAMMER WT/FALL
HSA	4.25	2	2"x2'	SS	HHR	150

DRILLING ACRONYMS

HSA	HOLLOW-STEM AUGERS	HMR	HAMMER	SS	SPLIT SPOON
DW	DRIVE-AND-WASH	SHR	SAFETY HAMMER	CS	CONTINUOUS SAMPLING
MRSLC	MUD-ROTARY SOIL-CORING	HHR	HYDRAULIC HAMMER	5I	5 FT INTERVAL SAMPLING
CA	CASING ADVANCER	DHR	DOWN-HOLE HAMMER	NS	NO SAMPLING
SPC	SPIN CASING	WL	WIRE-LINE	ST	SHELBY TUBE
				3S	3 INCH SPLIT SPOON

MONITORING EQUPMENT SUMMARY - NA

INSTRUMENT TYPE	DETECTOR TYPE/ENERGY	RANGE	BACKGROUND READING	BACKGROUND TIME	BACKGROUND DATE	CALIBRATION TIME	CALIBRATION DATE	WEATHER (TEMP., WIND, ETC.)

MONITORING ACRONYMS

PID	PHOTO - IONIZATION DETECTOR	BGD	BACKGROUND	DGRT	DRAEGER TUBES
FID	FLAME - IONIZATION DETECTOR	CPM	COUNTS PER MINUTE	PPB	PARTS PER BILLION
GMD	GEIGER MUELLER DETECTOR	PPM	PARTS PER MILLION	MDL	METHOD DETECTION LIMIT
SCT	SCINTILLATION DETECTOR	RAD	RADIATION METER		

INVESTIGATION DERIVED WASTE - NA

DATE			
SOIL AMOUNT: (fraction of drum)			
DRUM #, LOCATION:			

COMMENTS:
* Soil cuttings placed back into borehole

SAMPLES TAKEN:
SAMPLES: 122B-1034, 1035, 1036, & 1037
DUPLICATES:
MS/MSD: 122B-1038 MS, 1039 MSD
MRD:

(#) Refer to Report for Analysis Details.

SAMPLING RECORD - SOIL

Seneca Army Depot | **DATE:** 7/11/02

CONSULTANT: Parsons
PROJECT: SEAD-122B
LOCATION: Airfield Small Arms Range PSB-2

INSPECTOR: E.J. Asata
LABORATORY: STL.
SAMPLING STAFF: N A
CHAIN OF CUSTODY #: NA

WEATHER / FIELD CONDITIONS CHECKLIST (RECORD MAJOR CHANGES)

TIME (24 HR)	TEMP (APPRX)	WEATHER (GEN.)	REL. HUMIDITY (APPRX)	WIND VELOCITY (APPRX)	WIND DIRECTION (0 - 360)	GROUND / SITE SURFACE CONDITIONS	MONITORING INSTRUMENT	MONITORING DECTECTOR
0800	80°F	Sunny	unknown	0-5	unknown	grass	NA	NA.

LOC ID	SAMPLE #	DEPTH RANGE	DEPTH TIME	TYPE GRAB/COMP	COLOR	GRAIN SIZE	USCS CLASS	FOREIGN MAT. (Y/N)	SAMPLE DEVICE	CONTAINER SIZE/TYPE	MON. VOC/RAD	QC SPL (Y/N)
122B-1026	1	2-4'	1430	Grab	Br. to Gr.	NA	SM/SC	N	SS	8 oz. glass	NA	N
122B-1027	2	6-8'	1440	Grab	Br. to Gr.	NA	SM/SC	N	SS	8 oz glass	NA	N
122B-1028	3	12-14'	1455	Grab	Br. to Gr.	NA	SM/SC	N	SS	8 oz glass	NA	N
122B-029	4	22-24'	1600	Grab	Gr.	NA	SM/SC	N	SS	8 oz glass	NA	N

Note: Cleaning Procedure according to SOP.

(#) Refer to Report for Analysis Details

SAMPLING RECORD - SOIL

Seneca Army Depot		DATE: 7/2/02

CONSULTANT: Parsons
PROJECT: SEAD-122B
LOCATION: Airfield Small Arms Range PSB-3

INSPECTOR: E.J. Ashta
LABORATORY: STL
SAMPLING STAFF: NA
CHAIN OF CUSTODY #: NA

WEATHER / FIELD CONDITIONS CHECKLIST (RECORD MAJOR CHANGES)

TIME (24 HR)	TEMP (APPRX)	WEATHER (GEN.)	REL. HUMIDITY (APPRX)	WIND VELOCITY (APPRX)	WIND DIRECTION (0 - 360)	GROUND / SITE SURFACE CONDITIONS	MONITORING INSTRUMENT	MONITORING DECTECTOR
0800	95°F	Sunny	Unknown	0-5	Unknown	grass	NA	NA

LOC ID	SAMPLE #	DEPTH RANGE	DEPTH TIME	TYPE GRAB/COMP	COLOR	GRAIN SIZE	USCS CLASS	FOREIGN MAT. (Y/N)	SAMPLE DEVICE	CONTAINER SIZE/TYPE	MON (#) VOC/RAD	QC SPL (Y/N)
122B-1030	5	0-2'	1000	Grab	Br. to Gr.	NA	SM/SC	N	SS	8 oz glass	NA	N
122B-1031	6	10-12'	1030	Grab	Br. to Gr.	NA	SM/SC	N	SS	8 oz glass	NA	N
122B-1032	7	16-18'	1110	Grab	Br.	NA	SC/SM	N	SS	8 oz glass	NA	N
122B-1033	8	16-18'	1130	Grab	Br.	NA	SC/SM	N	SS	8 oz glass	NA	Y

Note: Cleaning Procedure according to SOP.

⊕ Refer to Report for Analysis Details PAGE 1 OF 1

SAMPLING RECORD - SOIL

Seneca Army Depot | DATE: 7/3/02

CONSULTANT: Parsons
PROJECT: SEAD-122B
LOCATION: Airfield Small Arms Range PSB-7

INSPECTOR: E.J. Ashton
LABORATORY: STL
SAMPLING STAFF: NA
CHAIN OF CUSTODY #: NA

WEATHER / FIELD CONDITIONS CHECKLIST (RECORD MAJOR CHANGES)

TIME (24 HR)	TEMP (APPRX)	WEATHER (GEN.)	REL. HUMIDITY (APPRX)	WIND VELOCITY (APPRX)	WIND DIRECTION (0 - 360)	GROUND / SITE SURFACE CONDITIONS	MONITORING INSTRUMENT	MONITORING DECTECTOR
0830	90F	Sunny	unknown	0-5	unknown	grass	NA	NA

LOC ID	SAMPLE #	DEPTH RANGE	DEPTH TIME	TYPE GRAB/COMP	COLOR	GRAIN SIZE	USCS CLASS	FOREIGN MAT. (Y/N)	SAMPLE DEVICE	CONTAINER SIZE/TYPE	MON⊕ VOC/RAD	QC SPL (Y/N)
122B-1034	9	4-6'	0930	Grab	Br.	NA	SM/SC	N	SS	8 oz glass	NA	N
122B-1035	10	6-8'	0945	Grab	Br.	NA	SC/SM	N	SS	8 oz glass	NA	N
122B-1036	11	14-16'	1030	Grab	Br.	NA	SC/SM	N	SS	8 oz glass	NA	N
122B-37	12	18-20	1045	Grab	Br. & Gr.	NA	SC/SM	N	SS	8 oz glass	NA	N
122B-1038MS	13	18-20	1045	Grab	Br. & Gr.	NA	SC/SM	N	SS	8 oz glass	NA	Y
122B-1039MSD	14	18-20	1045	Grab	Br. & Gr.	NA	SC/SM	N	SS	8 oz glass	NA	Y

Note: Cleaning Procedure according to SOP.

(*) Refer to Report for Analysis Details

SAMPLING RECORD - SOIL

Seneca Army Depot		DATE: 7/8/02

CONSULTANT: Parsons
PROJECT: SEAD-122B
LOCATION: Airfield Small Arms Range MW-1

INSPECTOR: E.J. Ashton
LABORATORY: STL
SAMPLING STAFF: NA
CHAIN OF CUSTODY #: NA

WEATHER / FIELD CONDITIONS CHECKLIST (RECORD MAJOR CHANGES)

TIME (24 HR)	TEMP (APPRX)	WEATHER (GEN.)	REL. HUMIDITY (APPRX)	WIND VELOCITY (APPRX)	WIND DIRECTION (0 - 360)	GROUND / SITE SURFACE CONDITIONS	MONITORING INSTRUMENT	MONITORING DECTECTOR
0830	75°F	Sunny	Unknown	0-5	Unknown	Grass	NA	NA

LOC ID	SAMPLE #	DEPTH RANGE	DEPTH TIME	TYPE GRAB/COMP	COLOR	GRAIN SIZE	USCS CLASS	FOREIGN MAT. (Y/N)	SAMPLE DEVICE	CONTAINER SIZE/TYPE	MON (*) VOC/RAD	QC SPL (Y/N)
122B-1040	15	12-14'	1320	Grab	Br.	NA	SM	N	SS	8oz Glass	NA	N

Note: Cleaning Procedure according to SOP.

(*) Refer to Report for Analysis Details

SAMPLING RECORD - SOIL

Seneca Army Depot		DATE: 7/9/02

CONSULTANT: Parsons
PROJECT: SEAD-122B
LOCATION: Airfield-Small Arms Range

INSPECTOR: F.J. Asta
LABORATORY: STL
SAMPLING STAFF: NA
CHAIN OF CUSTODY #: NA

WEATHER / FIELD CONDITIONS CHECKLIST (RECORD MAJOR CHANGES)

TIME (24 HR)	TEMP (APPRX)	WEATHER (GEN.)	REL. HUMIDITY (APPRX)	WIND VELOCITY (APPRX)	WIND DIRECTION (0 - 360)	GROUND / SITE SURFACE CONDITIONS	MONITORING INSTRUMENT	MONITORING DECTECTOR
0755	65°F	cloudy	unknown	0-5	unknown	grass	NA	NA

LOC ID	SAMPLE #	DEPTH RANGE	DEPTH TIME	TYPE GRAB/COMP	COLOR	GRAIN SIZE	USCS CLASS	FOREIGN MAT. (Y/N)	SAMPLE DEVICE	CONTAINER SIZE/TYPE	MON. VOC/RAD	QC SPL (Y/N)	
122B-1041	16	14-16'	1122	Grab	Gr.	NA	SM/SC	N	SS	8 oz. glass	NA	N	(MW-2)
122B-1042	17	12-14'	1830	Grab	Br. to Gr.	NA	SM/SC	N	SS	8 oz. glass	NA	N	(MW-3)

Note: Cleaning Procedure according to SOP.

(*) Refer to Report for Analysis Details.

SAMPLING RECORD - SOIL

Seneca Army Depot		DATE: 7/10/02

CONSULTANT: Parsons
PROJECT: SEAD-122B
LOCATION: Airfield Small Arms Range

INSPECTOR: E.J. Asta
LABORATORY: STL
SAMPLING STAFF: NA
CHAIN OF CUSTODY #: NA

WEATHER / FIELD CONDITIONS CHECKLIST (RECORD MAJOR CHANGES)

TIME (24 HR)	TEMP (APPRX)	WEATHER (GEN.)	REL. HUMIDITY (APPRX)	WIND VELOCITY (APPRX)	WIND DIRECTION (0 - 360)	GROUND / SITE SURFACE CONDITIONS	MONITORING INSTRUMENT	MONITORING DECTECTOR
0810	60°F	Sunny	unknown	0-5	unknown	grass	NA	NA

LOC ID	SAMPLE #	DEPTH RANGE	DEPTH TIME	TYPE GRAB/COMP	COLOR	GRAIN SIZE	USCS CLASS	FOREIGN MAT. (Y/N)	SAMPLE DEVICE	CONTAINER SIZE/TYPE	MON(*) VOC/RAD	QC SPL (Y/N)	
122B-1043	18	4-6'	1035	Grab	Br.	NA	SM	N	SS	8oz glass	NA	N	(SB-4)
122B-1044	19	6-8'	1055	Grab	Br.	NA	SM	N	SS	8oz glass	NA	N	
122B-1045	20	16-18'	1125	Grab	Br. & Gr.	NA	SM	N	SS	8 oz. glass	NA	N	
122B-1046	21	20-22'	1140	Grab	Br. & Gr.	NA	SM/SC	N	SS	8oz glass	NA	N	
122B-1047	22	28-30'	1155	Grab	Gr.	NA	SM/SC	N	SS	8oz glass	NA	N	
122B-1048	23	2-4'	1315	Grab	Br.	NA	SM	N	SS	8oz glass	NA	N	(SB-5)
122B-1049	24	10-12'	1340	Grab	Br.	NA	SM/SC	N	SS	8oz glass	NA	N	
122B-1050	25	12-14'	1335	Grab	Br.	NA	SM/SC	N	SS	8 oz glass	NA	N	
122B-1051	26	18-20'	1415	Grab	Br. & Ark Br.	NA	SM/SC	N	SS	8oz glass	NA	N	
122B-1052	27	28-30'	1445	Grab	Gr.	NA	SM/SC	N	SS	8oz glass	NA	N	
122B-1053	28	28-30'	1500	Grab	Gr.	NA	SM/SC	N	SS	8oz glass	NA	Y	

Note: Cleaning Procedure according to SOP.

(*) Refer to Report for Analytical Details. PAGE 1 OF 1

SAMPLING RECORD - SOIL

Seneca Army Depot | DATE: 7/11/02

CONSULTANT: Parsons
PROJECT: SEAD-122B
LOCATION: Airfield Small Arms Range

INSPECTOR: E.J. Ashton
LABORATORY: STL
SAMPLING STAFF: NA
CHAIN OF CUSTODY #: NA

WEATHER / FIELD CONDITIONS CHECKLIST (RECORD MAJOR CHANGES)

TIME (24 HR)	TEMP (APPRX)	WEATHER (GEN.)	REL. HUMIDITY (APPRX)	WIND VELOCITY (APPRX)	WIND DIRECTION (0 - 360)	GROUND / SITE SURFACE CONDITIONS	MONITORING INSTRUMENT	MONITORING DECTECTOR
0815	65°F	Sunny	Unknown	0-5	unknown	Grass	NA	NA

LOC ID	SAMPLE #	DEPTH RANGE	DEPTH TIME	TYPE GRAB/COMP	COLOR	GRAIN SIZE	USCS CLASS	FOREIGN MAT. (Y/N)	SAMPLE DEVICE	CONTAINER SIZE/TYPE	MON (*) VOC/RAD	QC SPL (Y/N)	
122B-1054	29	2-4'	0930	Grab	Br.	NA	SM	N	SS	8 oz. G/SS	NA	N	PSB-6
122B-1055	30	8-10'	0945	Grab	Br.	NA	SM/SC	NA	SS	8 oz. G/SS	NA	N	
122B-1056MS	31	8-10'	0945	Grab	Br.	NA	SM/SC	NA	SS	8 oz. G/SS	NA	Y	
122B-1057MSD	32	8-10'	0945	Grab	Br.	NA	SM/SC	NA	SS	8 oz. G/SS	NA	Y	
122B-1058	33	12-14'	1020	Grab	Br. to Gr.	NA	SM/SC	NA	SS	8 oz. G/SS	NA	N	
122B-1059	34	22-24'	1110	Grab	Gr. to Dk. Br.	NA	SM/SC	NA	SS	8 oz. G/SS	NA	N	
122B-1060	35	28-28'	1120	Grab	Gr.	NA	SM/SC	NA	SS	8 oz. G/SS	NA	N	
122B-1061	36	0-2'	1255	Grab	Br.	NA	SM	NA	SS	8 oz. G/SS	NA	N	PSB-1
122B-1062	37	8-10'	1315	Grab	Br.	NA	SM/SC	NA	SS	8 oz. G/SS	NA	N	
122B-1063	38	14-16'	1330	Grab	Br. to Gr.	NA	SM/SC	NA	SS	8 oz. G/SS	NA	N	

Note: Cleaning Procedure according to SOP.

PAGE 1 OF 1

WELL DEVELOPMENT REPORT

PARSONS	CLIENT: USACOE	WELL #: MW-1	
PROGRAM TYPE: REMEDIAL INVESTIGATION	CREW INITIALS	START DATE	END DATE
WMU # (AREA): SEAD- 122B	Mark Stan	7/11/02	7/11/02
PROJECT NO. (JOB #): 741401.03100			
DRILLING DATE: 7/8/02	MONITORING	BEFORE DEVELOPMENT	AFTER DEVELOPMENT
INSTALLATION DATE: 7/8/02	INSTRUMENT	NA / NA	NA / NA
SOP REFERENCE NO. & REV. NO.: August 1995	READING	↓ / ↓	↓ / ↓
PUMP EQUIPMENT: Poly Tubing; Waterra Pump	UNITS (ppm or cps)	↓ / ↓	↓ / ↓

WELL TYPE (circle one)	BEDROCK	(OVERBURDEN)
WELL INNER RISER DIAMETER (inches)	2	2
WELL DIAMETER FACTOR (gal/ft)	0.163	0.163
BORING DIAMETER (inches)	3.80	8.5
BORING DIAMETER FACTOR (gal/ft)	0.5894	2.955

MEASURED WATER DEPTH (feet from TOC): 6.0
MEASURED POW DEPTH (feet from TOC): 17.0
WATER COLUMN (feet): 11.0
INSTALLED WATER DEPTH (feet from TOC): 6.0
INSTALLED POW DEPTH (feet from TOC): 17.0

1. STANDING VOLUME INSIDE WELL = WATER COLUMN X WELL DIAMETER FACTOR = — * GAL. = A

2. STANDING WATER IN ANNULAR SPACE =
WATER COLUMN BELOW SEAL(ft) X (BORING DIAMETER FACTOR - WELL DIAMETER FACTOR) X 0.3 = — GAL. = B

3. SINGLE STANDING WATER VOLUME = A + B — GAL. = C

4. MINIMUM VOLUME TO BE REMOVED = 3 X C — GALS.

DATE	ACTIVITY	START TIME (military)	END TIME (military)	GALLONS REMOVED PER TIME PERIOD	pH	CONDUCTIVITY µS/cm x1000 (umhos/cm)	TEMPERATURE (degrees C)	TURBIDITY (NTUs)
7/11/02	Development	1430	-	-	10.32	0.22	71.5	>1,000
"	"	1440	-	-	10.17	0.24	68.1	>1,000
"	"	1445	-	-	10.18	0.18	61.3	>1,000
"	"	1450	-	-	10.13	0.20	60.3	>1,000
"	"	1455	-	-	10.08	0.20	59.9	>1,000
"	"	1508	-	-	10.07	0.20	59.7	>1,000
"	"	1510	-	-	10.10	0.18	59.8	>1,000
"	"	1515	-	-	10.12	0.18	59.1	>1,000
"	"	1520	-	-	10.06	0.17	58.0	>1,000
"	"	1525	-	-	10.10	0.17	57.9	>1,000
"	"	1530	1530	50	10.09	0.16	57.7	>1,000
Pumped 50 gals from well MW-1 and water extremely turbid.								
	TOTALS/FINAL							

COMMENTS: * Calculation for water Extraction: T.D. - DTW x .164 x 3 well vols = gals
17' - 6' x .164 x 3 " " = 5.4 gal min.
to be extracted

INVESTIGATION DERIVED WASTE (IDW):

DATE	7/11/02		
GALLONS OF WASTE WATER	50		
DRUM NO. & LOCATION	122B-4W		

WELL DEVELOPMENT REPORT

PARSONS	CLIENT: USACOE	WELL #: MW -2

PROGRAM TYPE:	REMEDIAL INVESTIGATION	CREW INITIALS	START DATE	END DATE
SWMU # (AREA):	SEAD-122B	Nash Star	7/12/02	7/12/02
PROJECT NO. (JOB #):	741401.0310			
DRILLING DATE:	7/09/02			
INSTALLATION DATE:	7/09/02			
SOP REFERENCE NO. & REV. NO.:	August 1995			
PUMP EQUIPMENT:	Poly Tubing & Waterra Pump			

MONITORING	BEFORE DEVELOPMENT		AFTER DEVELOPMENT	
INSTRUMENT	NA	NA	NA	NA
READING	↓	↓	↓	↓
UNITS (ppm or cps)				

WELL TYPE (circle one)	BEDROCK	(OVERBURDEN)
WELL INNER RISER DIAMETER (inches)	2	2
WELL DIAMETER FACTOR (gal/ft)	0.163	0.163
BORING DIAMETER (inches)	3.80	8.5
BORING DIAMETER FACTOR (gal/ft)	0.5894	2.955

MEASURED WATER DEPTH (feet from TOC):	6.50
MEASURED POW DEPTH (feet from TOC):	16.50
WATER COLUMN (feet):	10
INSTALLED WATER DEPTH (feet from TOC):	6.50
INSTALLED POW DEPTH (feet from TOC):	16.50

1. STANDING VOLUME INSIDE WELL = WATER COLUMN X WELL DIAMETER FACTOR = —* GAL. = A

2. STANDING WATER IN ANNULAR SPACE =
WATER COLUMN BELOW SEAL(ft) X (BORING DIAMETER FACTOR - WELL DIAMETER FACTOR) X 0.3 = —* GAL. = B

3. SINGLE STANDING WATER VOLUME = A + B —* GAL. = C

4. MINIMUM VOLUME TO BE REMOVED = 3 X C —* GALS.

DATE	ACTIVITY	START TIME (military)	END TIME (military)	GALLONS REMOVED PER TIME PERIOD	pH	CONDUCTIVITY uS/cm x1000 ~~(umhos/cm)~~	TEMPERATURE (degrees C)	TURBIDITY (NTUs)
7/12/02	Development	0900	-	-	11.51	0.27	59.9	**
"	"	0905	-	-	11.43	0.29	59.8	**
"	"	0910	-	-	10.54	0.29	60.5	**
"	"	0915	0915	-	11.60	0.29	61.2	**
well pumped dry at 0915. Let well recharge.								
"	"	0930	-	-	11.45	0.29	60.3	**
"	"	0940	0940	-	11.12	0.30	60.3	**
well pumped dry at 0940 for second time. Let well recharge.								
"	"	1222	-	-	10.70	0.32	71.9	**
"	"	1225	-	-	10.62	0.34	69.2	**
"	"	1230	-	-	10.98	0.37	69.4	**
"	"	1235	-	-	11.41	0.38	69.2	**
"	"	1240	1240	25	11.45	0.39	69.4	**
well pumped dry at 1240 for third time. well purged dry a total of three times.								
	TOTALS/FINAL							

COMMENTS: * Calculation for water extraction: T.D - BTW x .163 x 3 well vols. = gals.
17.8' - 6.5' x .163 x 3 = = 5.55 gals. min. to be extracted
** Turbidity meter malfunctioned during development of MW-2. water Turbid.

INVESTIGATION DERIVED WASTE (IDW):

DATE	7/12/02		
GALLONS OF WASTE WATER	25		
DRUM NO. & LOCATION	122B-SW		

WELL DEVELOPMENT REPORT

PARSONS	CLIENT: USACOE	WELL #: MW - 3	
PROGRAM TYPE: REMEDIAL INVESTIGATION	CREW INITIALS	START DATE	END DATE
MU # (AREA): SEAD- 122B	Nortstar	7/12/02	7/12/02
PROJECT NO. (JOB #): 74140. 03100			

		MONITORING	BEFORE DEVELOPMENT		AFTER DEVELOPMENT	
DRILLING DATE: 7/10/02		INSTRUMENT	HA	HA	HA	HA
INSTALLATION DATE: 7/10/02		READING	↓	↓	↓	↓
SOP REFERENCE NO. & REV. NO.: August 1998		UNITS (ppm or cps)	↓	↓	↓	↓
PUMP EQUIPMENT: Poly Tubing; Waterra Pump						

WELL TYPE (circle one)	BEDROCK	(OVERBURDEN)	MEASURED WATER DEPTH (feet from TOC): 5.6
WELL INNER RISER DIAMETER (inches)	2	2	MEASURED POW DEPTH (feet from TOC): 15.3
WELL DIAMETER FACTOR (gal/ft)	0.163	0.163	WATER COLUMN (feet): 9.7
BORING DIAMETER (inches)	3.80	8.5	INSTALLED WATER DEPTH (feet from TOC): 5.6
BORING DIAMETER FACTOR (gal/ft)	0.5894	2.955	INSTALLED POW DEPTH (feet from TOC): 15.3

1. STANDING VOLUME INSIDE WELL = WATER COLUMN X WELL DIAMETER FACTOR = * ____ GAL. = A

2. STANDING WATER IN ANNULAR SPACE =
WATER COLUMN BELOW SEAL(ft) X (BORING DIAMETER FACTOR - WELL DIAMETER FACTOR) X 0.3 = * ____ GAL. = B

3. SINGLE STANDING WATER VOLUME = A + B * ____ GAL. = C

4. MINIMUM VOLUME TO BE REMOVED = 3 X C * ____ GALS.

DATE	ACTIVITY	START TIME (military)	END TIME (military)	GALLONS REMOVED PER TIME PERIOD	pH	CONDUCTIVITY ~~(umhos/cm)~~	TEMPERATURE (degrees C)	TURBIDITY (NTUs)
7/12/02	Development	0950	-	-	10.99	0.37	62.8	>1,000
"	"	1000	-	-	10.49	0.45	64.1	>1,000
"	"	1005	-	-	9.50	0.52	61.0	>1,000
"	"	1010	-	-	9.60	0.52	56.3	>1,000
"	"	1015	-	-	10.18	0.60	64.6	>1,000
"	"	1025	-	-	10.31	0.64	65.0	>1,000
"	"	1035	-	-	11.20	0.50	69.5	>1,000
"	"	1045	-	-	11.19	0.48	69.1	>1,000
"	"	1055	-	-	11.71	0.38	70.5	>1,000
"	"	1110	-	-	11.72	0.33	71.6	>1,000
"	"	1115	-	-	11.86	0.31	70.0	>1,000
"	"	1120	-	-	11.83	0.30	68.3	>1,000
"	"	1125	-	-	11.84	0.30	68.5	>1,000
"	"	1130	1130	52	11.90	0.28	68.5	>1,000
Pumped 52 gals. from well MW-3 and water extremely turbid.								
	TOTALS/FINAL							

COMMENTS: * Calculation for water Extraction: T.A - DTW x .164 x 3 well vols = gals
15.3' - 5.6' x .164 x 3 " " = 4.77 gals min to be extracted.

INVESTIGATION DERIVED WASTE (IDW):

DATE	7/12/02		
GALLONS OF WASTE WATER	52		
DRUM NO. & LOCATION	122B-64		

Form # _____

SAMPLING RECORD - GROUNDWATER

SENECA ARMY DEPOT ACTIVITY	CONSULTANT: PARSONS	WELL #: MW-1

PROJECT: Seneca Army Depot, SEAD-122B
LOCATION: ROMULUS, NY

DATE: 7/22/02
INSPECTORS: EJA+SM
PUMP #: PES-1
SAMPLE ID #: 122B-2001

WEATHER / FIELD CONDITIONS CHECKLIST (RECORD MAJOR CHANGES)

TIME (24 HR)	TEMP (APPRX)	WEATHER (APPRX)	REL. HUMIDITY (GEN)	WIND VELOCITY (APPRX)	(FROM) DIRECTION (0 - 360)	GROUND / SITE SURFACE CONDITIONS	MONITORING INSTRUMENT	MONITORING DETECTOR
0800	80°F	Sunny	Unknown	0-5	Unknown	grass	Horbia U-22 TG	

WELL VOLUME CALCULATION FACTORS

DIAMETER (INCHES):	0.25	1	2	3	4	6
GALLONS / FOOT:	0.0026	0.041	0.163	0.367	0.654	1.47
LITERS/FOOT	0.010	0.151	0.617	1.389	2.475	5.564

ONE WELL VOLUME (GAL) = [(POW - STABILIZED WATER LEVEL) X WELL DIAMETER FACTOR (GAL/FT)]

18.2' - 7.02' x .164 x 3 = 5.50 gals.

HISTORIC DATA	DEPTH TO POINT OF WELL (TOC)	DEPTH TO TOP OF SCREEN (TOC)	SCREEN LENGTH (FT)	WELL DEVELOPMENT TURBIDITY	WELL DEVELOPMENT pH	WELL DEVELOPMENT SPEC. COND
	18.52	8.02	10	>1,000	10.09	0.16 mS/cm x 1,000

DATA COLLECTED AT WELL SITE	PID READING (OPENING WELL)	DEPTH TO STATIC WATER LEVEL (TOC)	DEPTH TO STABILIZED WATER LEVEL (TOC)	DEPTH TO PUMP INTAKE (TOC)	PUMPING START TIME
	NA	7.02	7.48	16.52	1300

RADIATION SCREENING DATA	PUMP PRIOR TO SAMPLING (cps)	PUMP AFTER SAMPLING (cps)
	NA	NA

MONITORING DATA COLLECTED DURING PURGING OPERATIONS

TIME (min)	WATER LEVEL	PUMPING RATE (ml/min)	CUMULATIVE VOL (GALLONS)	DISSOLVED OXYGEN (mg/L)	TEMP (C)	SPEC. COND mS/cm x 1,000	pH	ORP (mV)	TURBIDITY (NTU)
0	7.36	200	0.406	0.51	17.22	0.594	7.77	-109	998
1305	7.42	200	0.812	0.48	16.24	0.589	7.70	-130	634
1310	7.42	200	1.218	0.41	16.69	0.579	7.62	-136	502
1315	7.44	200	1.624	0.37	16.12	0.583	7.81	-137	456
1320	7.44	200	2.030	0.37	16.55	0.575	7.52	-138	251
1325	7.44	200	2.436	0.38	17.20	0.578	7.50	-139	258
1330	7.44	200	2.842	0.39	17.13	0.576	7.51	-139	252
1340	7.48	200	3.248	0.34	16.97	0.575	7.49	-139	197
1350	7.46	200	3.654	0.39	17.90	0.576	7.42	-138	281
1400	7.48	200	4.060	0.36	17.31	0.576	7.43	-137	172
1410	7.46	200	4.466	0.39	18.05	0.575	7.40	-135	147
1420	7.48	200	4.872	0.38	17.48	0.576	7.43	-135	84.9
1430	7.48	200	5.278	0.40	18.16	0.574	7.40	-134	100
1440	7.48	200	5.684	0.38	17.85	0.577	7.39	-133	108
1445	7.48	200	6.090	0.40	17.92	0.575	7.39	-132	91.1
1450	7.48	200	6.496	0.40	17.86	0.575	7.40	-131	82.9

FORM #

SAMPLING RECORD - GROUNDWATER

SENECA ARMY DEPOT ACTIVITY	CONSULTANT: PARSONS	WELL #: MW-1

	SAMPLING ORDER		PRESERVATIVES	BOTTLES COUNT/ VOLUME	BOTTLES TYPE	SAMPLE NUMBER	TIME	CHECKED BY/ DATE
1	VOC -CLP(Low Level) 524.2		4 deg. C HCL	3/ 40 ml	VOA	NA		
2	SVOC 8270		4 deg. C	2 x 1L	Am G	NA		
3	PEST/PCBs 8080		4 deg. C	2 x 1L	Am G	NA		
4	TAL METALS 6010		4 deg. C HNO3	1/ 500m L	HDPE	122B-2001	1510	EQA 7/22/02
5	CYANIDE 9012		4 deg. C NaOH	1/250 mL	HDPE	NA		
6	Explosives 8330		4 deg. C	2 x 1L	Am G	NA		
7	Nitrate/Nitrogen 352.1		4 deg. C H2SO4	1 x 250 ml	HDPE	NA		

COMMENTS: (QA/QC?)

Rinse Blank = 122B-0006

MS = 122B-2002 MS

MSD = 122B-2003 MSD

Duplicate = 122B-2005

IDW INFORMATION:

1- drum

(See IDW drum form for details)

Form #

SAMPLING RECORD - GROUNDWATER

SENECA ARMY DEPOT ACTIVITY	CONSULTANT: PARSONS	WELL #: MW-1

	SAMPLING ORDER	PRESERVATIVES	BOTTLES COUNT/ VOLUME	BOTTLES TYPE	SAMPLE NUMBER	TIME	CHECKED BY/ DATE
1	VOC -CLP(Low Level) or 524.2	4 deg. C HCL	3/ 40 ml	VOA	NA		
1	DOC	4 deg. C H_2SO_4	3/ 40 ml	VOA	NA		
2	Nitrate/Nitrogen 352.1	4 deg. C	1 x 500 ml	HDPE	NA		
3	Ferrous Iron	Field Analysis			NA		
4	Sulfide	Field Analysis			NA		
5	Alkalinity/Sulfate/Chlorides	4 deg. C	1 x 1L	HDPE	NA		
6							
7	DOC						
8	Hardness 130.2	4 deg. C HNO3	1 x 500 mL with #4	HDPE	NA		
9	Total Dissolved Solids 160.1	4 deg. C	1 x 1L	HDPE	NA		
10	Chemical Oxygen Demand 410.1	4 deg. C H2SO4	1 x 50 mL with #7	HDPE	NA.		

C IMENTS: (QA/QC?)

- None of the above chemical parameters analyzed.

IDW INFORMATION:

*NA - Turbidity meter was malfunctioning during development of MW-2.

FORM #_____

SAMPLING RECORD - GROUNDWATER

SENECA ARMY DEPOT ACTIVITY	CONSULTANT: PARSONS	WELL #: MW-2

PROJECT: Seneca Army Depot SEAD-122B
LOCATION: ROMULUS, NY

DATE: 7/22/02
INSPECTORS: [illegible]
PUMP #: PES-1
SAMPLE ID #: 122B-2000

WEATHER / FIELD CONDITIONS CHECKLIST (RECORD MAJOR CHANGES)

TIME (24 HR)	TEMP (APPRX)	WEATHER (APPRX)	REL. HUMIDITY (GEN)	WIND VELOCITY (APPRX)	WIND (FROM) DIRECTION (0-360)	GROUND / SITE SURFACE CONDITIONS	MONITORING INSTRUMENT	MONITORING DETECTOR
0800	80°F	Sunny	Unknown	0-5	Unknown	grass	Horiba U-22	T.G

WELL VOLUME CALCULATION FACTORS

DIAMETER (INCHES):	0.25	1	2	3	4	6
GALLONS / FOOT:	0.0026	0.041	0.163	0.367	0.654	1.47
LITERS/FOOT	0.010	0.151	0.617	1.389	2.475	5.564

ONE WELL VOLUME (GAL) = [(POW - STABILIZED WATER LEVEL) X WELL DIAMETER FACTOR (GAL/FT)]
17.8' - 7.38 x .164 x 3 = 5.12 gal

	DEPTH TO POINT OF WELL (TOC)	DEPTH TO TOP OF SCREEN (TOC)	SCREEN LENGTH (FT)	WELL DEVELOPMENT TURBIDITY	WELL DEVELOPMENT pH	WELL DEVELOPMENT SPEC. COND
HISTORIC DATA	17.99	7.99	10	NA*	11.45	0.39 mS/cm x 1000

DATA COLLECTED AT WELL SITE	PID READING (OPENING WELL)	DEPTH TO STATIC WATER LEVEL (TOC)	DEPTH TO STABILIZED WATER LEVEL (TOC)	DEPTH TO PUMP INTAKE (TOC)	PUMPING START TIME
	NA	7.38	7.38	15.99	0940

RADIATION SCREENING DATA	PUMP PRIOR TO SAMPLING (cps)	PUMP AFTER SAMPLING (cps)
	NA	NA

MONITORING DATA COLLECTED DURING PURGING OPERATIONS

TIME (min)	WATER LEVEL	PUMPING RATE (ml/min)	CUMULATIVE VOL (GALLONS)	DISSOLVED OXYGEN (mg/L)	TEMP (C)	SPEC. COND mS/cm x 1000	pH	ORP (mV)	TURBIDITY (NTU)
0	8.40	200	0.258	2.94	14.94	0.609	7.24	189	88.3
0945	8.41	200	0.516	2.76	15.37	0.606	7.26	184	75.4
0950	8.41	200	0.774	2.37	15.13	0.609	7.29	175	163
0955	8.44	200	1.032	2.10	16.40	0.601	7.29	165	107
1000	8.60	200	1.29	2.02	16.24	0.606	7.30	160	121
1005	8.90	200	1.548	1.92	15.83	0.608	7.32	152	157
1010	9.14	200	1.806	1.91	15.28	0.616	7.34	147	217
1015	9.78	200	2.064	1.75	15.29	0.610	7.33	143	139
1020	10.28	200	2.322	1.60	15.20	0.610	7.36	132	144
1025	10.44	200	2.58	1.48	16.24	0.607	7.34	118	219
1030	10.52	200	2.838	1.33	15.94	0.612	7.31	107	218
1035	10.60	200	3.096	1.15	16.14	0.602	7.32	93	314
1040	10.60	200	3.354	1.11	17.01	0.601	7.30	73	291
1045	10.70	200	3.612	1.03	16.30	0.600	7.40	55	269
1050	10.76	200	3.87	1.17	15.97	0.602	7.38	55	278
1055	10.84	200	4.128	1.20	15.47	0.616	7.39	44	140
1100	10.96	200	4.386	1.13	16.12	0.602	7.40	37	141
1105	11.00	200	4.644	1.05	16.57	0.605	7.40	27	151
	11.10	200	4.902	1.10	16.22	0.605	7.43	18	243
1115	11.20	200	5.16	1.10	17.05	0.600	7.38	23	226
1120	11.30	200	5.418	1.01	16.91	0.599	7.38	13	172

page 1 of 2

FORM #

* NA - Turbidity meter was malfunctioning during development of MW-2.

SAMPLING RECORD - GROUNDWATER

SENECA ARMY DEPOT ACTIVITY	CONSULTANT: PARSONS	WELL #: MW-2

PROJECT: Seneca Army Depot, SEAD-122B
LOCATION: ROMULUS, NY

DATE: 7/22/02
INSPECTORS: EJT, SW
PUMP #: PES-1
SAMPLE ID #: 122B-2000

WEATHER / FIELD CONDITIONS CHECKLIST (RECORD MAJOR CHANGES)

TIME (24 HR)	TEMP (APPRX)	WEATHER (APPRX)	REL. HUMIDITY (GEN)	WIND VELOCITY (APPRX)	WIND (FROM) DIRECTION (0-360)	GROUND / SITE SURFACE CONDITIONS	MONITORING INSTRUMENT	MONITORING DETECTOR
0800	80°F	Sunny	Unknown	0-5	Unknown	grass	Horiba U-22 76	

WELL VOLUME CALCULATION FACTORS

DIAMETER (INCHES):	0.25	1	2	3	4	6
GALLONS / FOOT:	0.0026	0.041	0.163	0.367	0.654	1.47
LITERS/FOOT	0.010	0.151	0.617	1.389	2.475	5.564

ONE WELL VOLUME (GAL) = [(POW - STABILIZED WATER LEVEL) X WELL DIAMETER FACTOR (GAL/FT)]
17.8' - 7.38' x .164 x 3 = 5.12 gal.

HISTORIC DATA	DEPTH TO POINT OF WELL (TOC)	DEPTH TO TOP OF SCREEN (TOC)	SCREEN LENGTH (FT)	WELL DEVELOPMENT TURBIDITY	WELL DEVELOPMENT pH	WELL DEVELOPMENT SPEC. COND
	17.99	7.99	10	NA*	11.45	0.38 mS/cm x 1000

DATA COLLECTED AT WELL SITE	PID READING (OPENING WELL)	DEPTH TO STATIC WATER LEVEL (TOC)	DEPTH TO STABILIZED WATER LEVEL (TOC)	DEPTH TO PUMP INTAKE (TOC)	PUMPING START TIME
	NA	7.38	7.38	15.99	0940

RADIATION SCREENING DATA	PUMP PRIOR TO SAMPLING (cps)	PUMP AFTER SAMPLING (cps)
	NA	NA

MONITORING DATA COLLECTED DURING PURGING OPERATIONS

TIME (min)	WATER LEVEL	PUMPING RATE (ml/min)	CUMULATIVE VOL (GALLONS)	DISSOLVED OXYGEN (mg/L)	TEMP (C)	SPEC. COND	pH	ORP (mV)	TURBIDITY (NTU)
5	11.40	200	5.676	0.830	17.18	0.583	7.37	2	341
1130	11.42	200	5.934	0.820	17.86	0.586	7.37	3	320
1135	11.40	200	6.192	0.820	20.23	0.562	7.32	-10	568
1140	11.46	200	6.45	0.890	15.98	0.601	7.43	-15	90.4
1145	11.62	200	6.708	0.851	15.86	0.588	7.48	-15	186
1150	11.80	200	6.966	1.03	16.61	0.588	7.41	-5	206
1155	11.88	200	7.224	1.03	15.80	0.586	7.40	-17	218
1200	12.10	200	7.482	1.05	16.38	0.586	7.38	-13	178
1205	12.18	200	7.74	0.910	15.73	0.589	7.40	-20	178
1210	12.22	200	8.00	0.960	16.30	0.582	7.38	-16	161

FORM #

SAMPLING RECORD - GROUNDWATER

SENECA ARMY DEPOT ACTIVITY	CONSULTANT: PARSONS	WELL #: MW-2

	SAMPLING ORDER		PRESERVATIVES	BOTTLES COUNT/ VOLUME	BOTTLES TYPE	SAMPLE NUMBER	TIME	CHECKED BY/ DATE
1	VOC -CLP(Low Level) 524.2		4 deg. C HCL	3/ 40 ml	VOA	NA		
2	SVOC 8270		4 deg. C	2 x 1L	Am G	NA		
3	PEST/PCBs 8080		4 deg. C	2 x 1L	Am G	NA		
4	TAL METALS 6010		4 deg. C HNO3	1/ 500m L	HDPE	122B-2000	1230	EJA 7/22/02
5	CYANIDE 9012		4 deg. C NaOH	1/250 mL	HDPE	NA		
6	Explosives 8330		4 deg. C	2 x 1L	Am G	NA		
7	Nitrate/Nitrogen 352.1		4 deg. C H2SO4	1 x 250 ml	HDPE	NA		

COMMENTS: (QA/QC?)

Rinse Blank = 122B-0006

MS = 122B-2002MS

MSD = 122B-2003MSD

Duplicate = 122B-2005

IDW INFORMATION:

1-dram

(See IDW drum form for details)

Form #

SAMPLING RECORD - GROUNDWATER

SENECA ARMY DEPOT ACTIVITY	CONSULTANT: PARSONS	WELL #: MW-2

	SAMPLING ORDER	PRESERVATIVES	BOTTLES COUNT/ VOLUME	BOTTLES TYPE	SAMPLE NUMBER	TIME	CHECKED BY/ DATE
1	VOC -CLP(Low Level) or 524.2	4 deg. C HCL	3/ 40 ml	VOA	NA		
1	DOC	4 deg. C H_2SO_4	3/ 40 ml	VOA	NA		
2	Nitrate/Nitrogen 352.1	4 deg. C	1 x 500 ml	HDPE	NA		
3	Ferrous Iron	Field Analysis			NA		
4	Sulfide	Field Analysis			NA		
5	Alkalinity/Sulfate/Chlorides	4 deg. C	1 x 1L	HDPE	NA		
6							
7	DOC						
8	Hardness 130.2	4 deg. C HNO3	1 x 500 mL with #4	HDPE	NA		
9	Total Dissolved Solids 160.1	4 deg. C	1 x 1L	HDPE	NA		
10	Chemical Oxygen Demand 410.1	4 deg. C H2SO4	1 x 50 mL with #7	HDPE	NA		

C MENTS: (QA/QC?)

None of the above chemical parameters analyzed

IDW INFORMATION:

Form # _____

SAMPLING RECORD - GROUNDWATER

SENECA ARMY DEPOT ACTIVITY	CONSULTANT: PARSONS	WELL #: MW-3

PROJECT: Seneca Army Depot, SEAD-122B
LOCATION: ROMULUS, NY

DATE: 7/22/02
INSPECTORS: EJ Ashton
PUMP #: PES-1
SAMPLE ID #: 122B-2004

WEATHER / FIELD CONDITIONS CHECKLIST (RECORD MAJOR CHANGES)

TIME (24 HR)	TEMP (APPRX)	WEATHER (APPRX)	REL. HUMIDITY (GEN)	WIND VELOCITY (APPRX)	(FROM) DIRECTION (0 - 360)	GROUND / SITE SURFACE CONDITIONS	MONITORING INSTRUMENT	MONITORING DETECTOR
0800	80°F	Sunny	Unknown	0-5	Unknown	grass	Horiba U-22 TG	

WELL VOLUME CALCULATION FACTORS

DIAMETER (INCHES):	0.25	1	2	3	4	6
GALLONS / FOOT:	0.0026	0.041	0.163	0.367	0.654	1.47
LITERS/FOOT	0.010	0.151	0.617	1.389	2.475	5.564

ONE WELL VOLUME (GAL) = [(POW - STABILIZED WATER LEVEL) X WELL DIAMETER FACTOR (GAL/FT)]

HISTORIC DATA	DEPTH TO POINT OF WELL (TOC)	DEPTH TO TOP OF SCREEN (TOC)	SCREEN LENGTH (FT)	WELL DEVELOPMENT TURBIDITY	WELL DEVELOPMENT pH	WELL DEVELOPMENT SPEC. COND
	16.62	16.12	10	>1,000	11.90	0.28 us/cm x 1,000

DATA COLLECTED AT WELL SITE	PID READING (OPENING WELL)	DEPTH TO STATIC WATER LEVEL (TOC)	DEPTH TO STABILIZED WATER LEVEL (TOC)	DEPTH TO PUMP INTAKE (TOC)	PUMPING START TIME
	NA	6.44	6.52	14.62	1525

RADIATION SCREENING DATA	PUMP PRIOR TO SAMPLING (cps)	PUMP AFTER SAMPLING (cps)
	NA	NA

MONITORING DATA COLLECTED DURING PURGING OPERATIONS

TIME (min)	WATER LEVEL	PUMPING RATE (ml/min)	CUMULATIVE VOL (GALLONS)	DISSOLVED OXYGEN (mg/L)	TEMP (C)	SPEC. COND us/cm x1000	pH	ORP (mV)	TURBIDITY (NTU)
5	6.48	200	0.361	0.890	19.82	0.593	7.34	82	999
1530	6.48	200	0.722	0.590	19.80	0.595	7.31	72	822
1535	6.48	200	1.083	0.570	19.66	0.595	7.28	64	520
1540	6.48	200	1.444	0.650	19.57	0.594	7.28	62	385
1545	6.48	200	1.805	0.810	19.82	0.595	7.27	60	309
1550	6.48	200	2.166	1.03	21.24	0.594	7.23	60	306
1555	6.50	200	2.527	0.95	18.22	0.594	7.31	61	266
1600	6.52	200	2.888	1.00	17.83	0.595	7.30	62	234
1605	6.52	200	3.249	1.05	17.85	0.594	7.28	63	233
1610	6.52	200	3.610	1.12	17.54	0.595	7.23	68	247
1615	6.52	200	3.971	1.18	17.11	0.596	7.22	69	217
1620	6.52	200	4.332	1.19	17.09	0.599	7.22	70	216
1625	6.52	200	4.693	1.24	17.64	0.595	7.20	72	193
1630	6.52	200	5.054	1.27	18.21	0.593	7.22	73	194
1635	6.52	200	5.415	1.37	17.37	0.597	7.18	77	215
1640	6.52	200	5.776	1.47	17.18	0.593	7.18	78	177
1645	6.52	200	6.137	1.44	16.85	0.595	7.21	79	186
1650	6.52	200	6.500	1.47	17.35	0.594	7.23	78	184

FORM #

SAMPLING RECORD - GROUNDWATER

SENECA ARMY DEPOT ACTIVITY	CONSULTANT: PARSONS	WELL #: MW-3

	SAMPLING ORDER		PRESERVATIVES	BOTTLES COUNT/ VOLUME	BOTTLES TYPE	SAMPLE NUMBER	TIME	CHECKED BY/ DATE
1	VOC -CLP(Low Level) 524.2		4 deg. C HCL	3/ 40 ml	VOA	NA		
2	SVOC 8270		4 deg. C	2 x 1L	Am G	NA		
3	PEST/PCBs 8080		4 deg. C	2 x 1L	Am G	NA		
4	TAL METALS 6010		4 deg. C HNO3	1/ 500m L	HDPE	122B-2004	1700	EGH/7/22/02
5	CYANIDE 9012		4 deg. C NaOH	1/250 mL	HDPE	NA		
6	Explosives 8330		4 deg. C	2 x 1L	Am G	NA		
7	Nitrate/Nitrogen 352.1		4 deg. C H2SO4	1 x 250 ml	HDPE	NA		

COMMENTS: (QA/QC?)

Rinse Blank = 122B-0006

MS = 122B-2002MS

MSD = 122B-2003 MSD

Duplicate = 122B-2005

IDW INFORMATION:

1-drum

(see IDW Drum Form for details)

Form #

SAMPLING RECORD - GROUNDWATER

SENECA ARMY DEPOT ACTIVITY	CONSULTANT: PARSONS	WELL #: MW-3

	SAMPLING ORDER	PRESERVATIVES	BOTTLES COUNT/ VOLUME	BOTTLES TYPE	SAMPLE NUMBER	TIME	CHECKED BY/ DATE
1	VOC -CLP(Low Level) or 524.2	4 deg. C HCL	3/ 40 ml	VOA	NA		
1	DOC	4 deg. C H_2SO_4	3/ 40 ml	VOA	NA		
2	Nitrate/Nitrogen 352.1	4 deg. C	1 x 500 ml	HDPE	NA		
3	Ferrous Iron	Field Analysis			NA		
4	Sulfide	Field Analysis			NA		
5	Alkalinity/Sulfate/Chlorides	4 deg. C	1 x 1L	HDPE	NA		
6							
7	DOC						
8	Hardness 130.2	4 deg. C HNO3	1 x 500 mL with #4	HDPE	NA		
9	Total Dissolved Solids 160.1	4 deg. C	1 x 1L	HDPE	NA		
10	Chemical Oxygen Demand 410.1	4 deg. C H2SO4	1 x 50 mL with #7	HDPE	NA		

(IMENTS: (QA/QC?)

None of the above chemical parameters analyzed.

IDW INFORMATION:

GROUNDWATER ELEVATION REPORT

PARSONS	CLIENT: ACoE	DATE: 7/11/02 and 7/12/02
PROJECT: Seneca Army Depot, SEAD-122B		PROJECT NO: 741401.0300
LOCATION: Romulus, NY		INSPECTOR: EJAshton

MONITORING EQUIPMENT:

INSTRUMENT	DECTECTOR	BGD	TIME	REMARKS

WATER LEVEL INDICATOR:

INSTRUMENT	CORRECTION FACTOR
Solinst 212	

COMMENTS: See attached plates of wells

WELL	TIME	DEPTH TO WATER	DEPTH TO PRODUCT	CORRECTED WATER LEVEL	MEASURED POW	INSTALLED POW	PRODUCT SPEC. GRAV.	WELL STATUS / COMMENTS (Lock?, Well #?, Surface Disturbance?, Riser marked?, Condition of: riser, concrete, protective casing, etc.)
MW-1	7/11/02 0830	6.00	6.00	NA	NA	NA	NA	Well just installed and PVC riser not cut to 2' interval above grade yet.
MW-2	7/12/02 0835	7.38	7.38	NA	NA	NA	NA	" "
MW-3	7/12/02 0840	5.60	5.60	NA	NA	NA	NA	" "

(ALL DEPTH MEASUREMENTS FROM MARKED LOCATION ON RISER)

PVC

H:\ENG\SENECA\FORMS\FIELD\Gwelev.xls

FIGURE A-18

GROUNDWATER ELEVATION REPORT

PARSONS	CLIENT: ACOE	DATE: 7/22/02
PROJECT: Seneca Army Depot, SEAD-122B LOCATION: Romulus, NY		PROJECT NO: 741401. 03100 INSPECTOR: EJAshton

MONITORING EQUIPMENT:

INSTRUMENT	DECTECTOR	BGD	TIME	REMARKS

WATER LEVEL INDICATOR:

INSTRUMENT	CORRECTION FACTOR
Solinest 212	

COMMENTS: See attached photos of wells.

WELL	TIME	DEPTH TO WATER	DEPTH TO PRODUCT	CORRECTED WATER LEVEL	MEASURED POW *	INSTALLED POW *	PRODUCT SPEC. GRAV.	WELL STATUS / COMMENTS (Lock?, Well #?, Surface Disturbance?, Riser marked?, Condition of: riser, concrete, protective casing, etc.)
MW-1	0830	7.02	7.02	NA	637.01	637.01	NA	Lock # Master 5000KA-370, 2'x2' concrete pad w/ steel protective casing, and 3-steel ballards.
MW-2	0835	7.38	7.38	NA	626.59	626.59	NA	same as above
MW-3	0840	6.44	6.44	NA	627.69	627.69	NA	same as above

* (ALL DEPTH MEASUREMENTS FROM MARKED LOCATION ON RISER)
PVC

GROUNDWATER ELEVATION REPORT

PARSONS	CLIENT:	DATE: 7/24/02
PROJECT: Seneca Army Depot, SEAD-122B LOCATION: Romulus, NY		PROJECT NO: 741401.03100 INSPECTOR: EJAshton

MONITORING EQUIPMENT:

INSTRUMENT	DECTECTOR	BGD	TIME	REMARKS

WATER LEVEL INDICATOR:

INSTRUMENT	CORRECTION FACTOR
Solinest 212	

COMMENTS: See attached photos of wells

WELL	TIME	DEPTH TO WATER	DEPTH TO PRODUCT	CORRECTED WATER LEVEL	MEASURED POW*	INSTALLED POW*	PRODUCT SPEC. GRAV.	WELL STATUS / COMMENTS (Lock?, Well #?, Surface Disturbance?, Riser marked?, Condition of: riser, concrete, protective casing, etc.)
MW-1	1035	7.48	7.48	NA	637.01	637.01	NA	See form dated 7/22/02
MW-2	1040	7.54	7.54	NA	626.59	626.59	NA	same as above
MW-3	1045	6.68	6.68	NA	627.69	627.69	NA	same as above

* (ALL DEPTH MEASUREMENTS FROM MARKED LOCATION ON RISER) PVC

A.2 SLUG TEST RESULTS

PARAMETERS	input		calculated
Slug diameter	1.00	inches	3 cm
Slug length (submerged length)	6.00	feet	183 cm
Slug volume (V)			927 cm^3
Initial water level change (H_0)			46 cm
Casing diameter	2.00	inches	5.1 cm
Casing radius (r_c)			2.5 cm
Screen length	10.00	feet	305 cm
Aquifer thickness (m)	10.00	feet	305 cm
α	1.E-05		

MATCH POINT		
t	11	sec
H/H_0	0.5	feet
β	40.70	
$F(B,\alpha)$	0.5	

CALCULATIONS[1][2]

$$T = \frac{\beta r_c^2}{t} = \frac{40.70 \times (2.54)^2}{11}$$

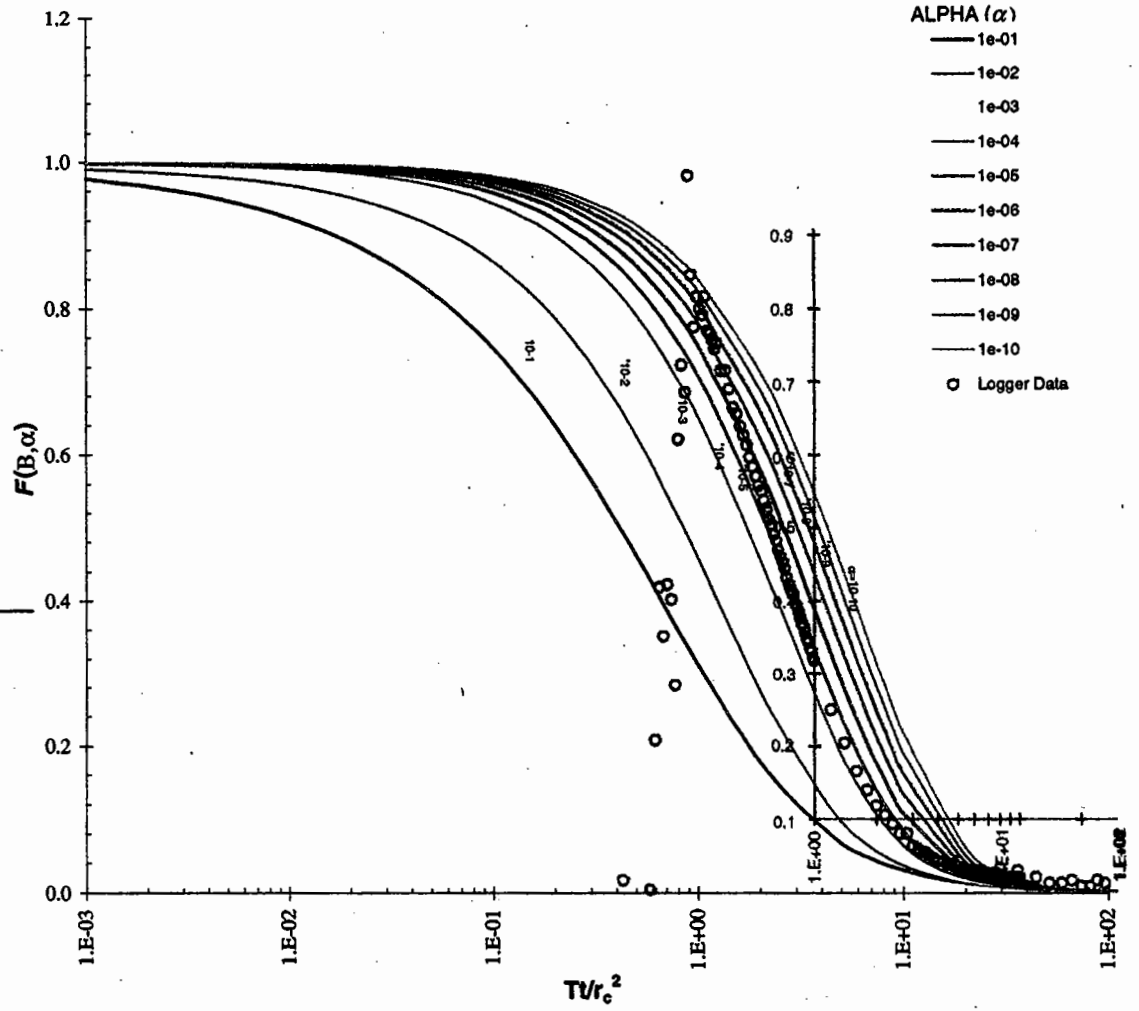
$$= 2.4E+01 \text{ cm}^2/\text{sec}$$

$$k = \frac{T}{m} = \frac{2.39E+01 \text{ cm}^2/\text{sec}}{304.8 \text{ cm}}$$

$$= 7.8E-02 \text{ cm/sec}$$

$$= 222 \text{ FT/DAY}$$

$$s = \alpha = 0.00001$$



(1) Cooper, Jr., H. H., J. D. Bredehoeft and I. S. Papadopulos. 1967. "Response of a Finite-Diameter Well to an Instaneous Charge of Water". *Water Resources Research*, vol 3. no. 1, pp 263-269

(2) Papadopulos, I. S. 1973. "On the Analysis of 'Slug Test' Data" *Water Resources Research*. vol. 9, no. 4. pp. 1087-1089.

SENECA army DEPOT - SEAD 122B

PARSONS

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FIGURE 1.0
CONFINED AQUIFER SLUG TEST
MONITORING WELL MW-1
INJECTION TEST

PARAMETERS	input		calculated
Slug diameter	1.00	inches	3 cm
Slug length	6.00	feet	183 cm
(submerged length)			
Slug volume (V)			927 cm^3
Initial water level change (H_0)			46 cm
Casing diameter	2.00	inches	5.1 cm
Casing radius (r_c)			2.5 cm
Screen length	10.00	feet	305 cm
Aquifer thickness (m)	10.00	feet	305 cm
α	1.E-05		

MATCH POINT

t	11 sec
H/H_0	0.5 feet
β	50.60
$F(B,\alpha)$	0.5

CALCULATIONS[1][2]

$$T = \frac{\beta r_c^2}{t} = \frac{50.60 \times (2.54)^2}{11}$$

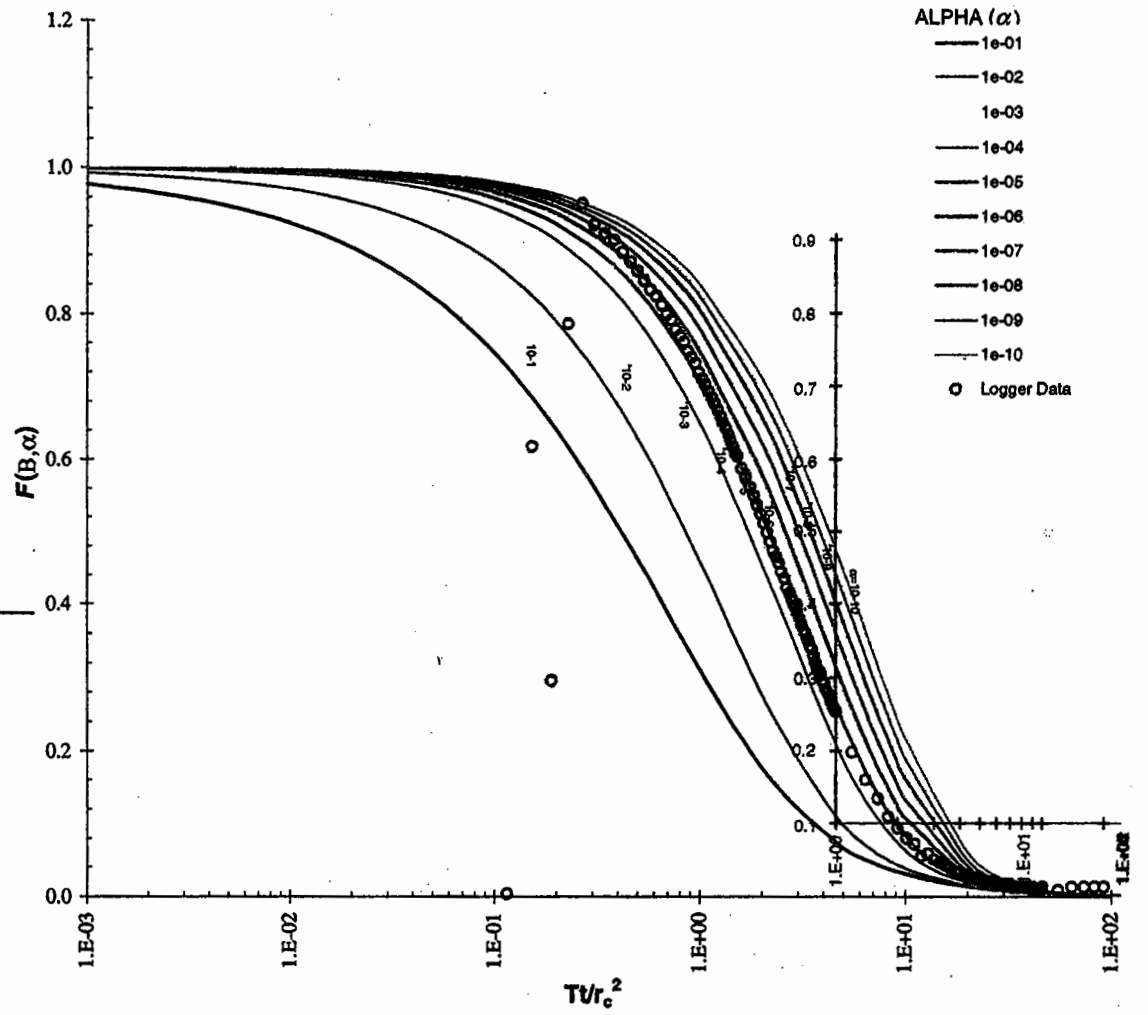
$$= 3.0E+01 \text{ cm}^2/\text{sec}$$

$$k = \frac{T}{m} = \frac{2.97E+01 \text{ cm}^2/\text{sec}}{304.8 \text{ cm}}$$

$$= 9.7E-02 \text{ cm/sec}$$

$$= 276 \text{ FT/DAY}$$

$$S = \alpha = 0.00001$$



(1) Cooper, Jr., H. H., J. D. Bredehoeft and I. S. Papadopulos. 1967. "Response of a Finite-Diameter Well to an Instaneous Charge of Water". *Water Resources Research* , vol 3. no. 1, pp 263-269

(2) Papadopulos, I. S. 1973. "On the Analysis of 'Slug Test' Data' *Water Resources Research* . vol. 9, no. 4. pp. 1087-1089.

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FIGURE 1.1
CONFINED AQUIFER SLUG TEST
MONITORING WELL MW-1
WITHDRAWAL TEST

PARAMETERS

	Input		calculated
Slug diameter	1.00	inches	3 cm
Slug length	6.00	feet	183 cm
(submerged length)			
Slug volume (V)			927 cm^3
Initial water level change (H_0)			46 cm
Casing diameter	2.00	inches	5.1 cm
Casing radius (r_c)			2.5 cm
Screen length	10.00	feet	305 cm
Aquifer thickness (m)	10.00	feet	305 cm
α	1.E-01		

MATCH POINT

t	11 sec
H/H_0	0.5 feet
β	1.10
$F(B,\alpha)$	0.5

CALCULATIONS[1][2]

$$T = \frac{\beta r_c^2}{t} = \frac{1.10 \times (2.54)^2}{11}$$

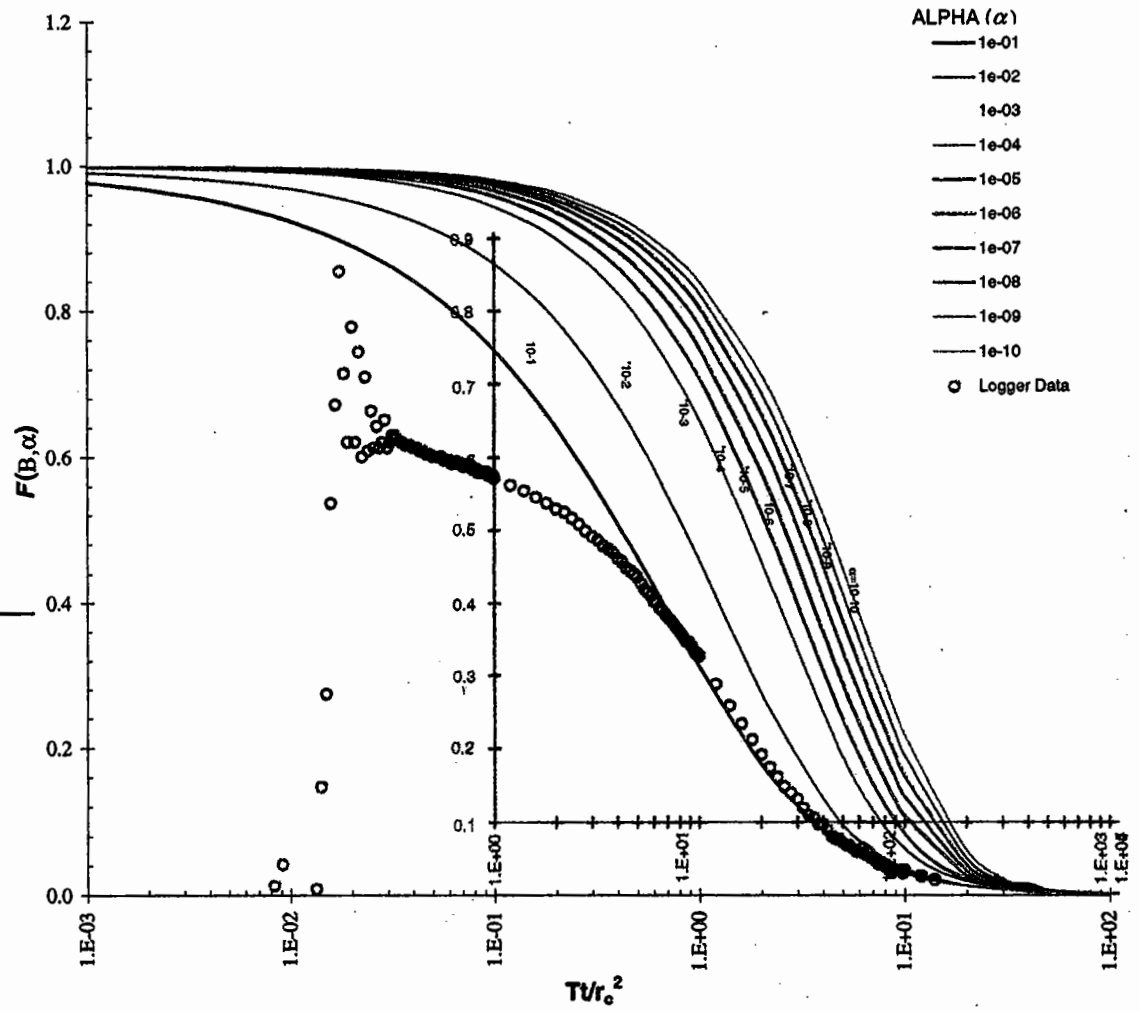
$$= 6.5E\text{-}01 \ cm^2/sec$$

$$k = \frac{T}{m} = \frac{6.45E\text{-}01 \ cm^2/sec}{304.8 \ cm}$$

$$= 2.1E\text{-}03 \ cm/sec$$

$$= 6 \ FT/DAY$$

$$S = \alpha = 0.1$$



(1) Cooper, Jr., H. H., J. D. Bredehoeft and I. S. Papadopulos. 1967. "Response of a Finite-Diameter Well to an Instaneous Charge of Water". *Water Resources Research*, vol 3. no. 1, pp 263-269

(2) Papadopulos, I. S. 1973. "On the Analysis of 'Slug Test' Data" *Water Resources Research*. vol. 9, no. 4. pp. 1087-1089.

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FIGURE 1.2
CONFINED AQUIFER SLUG TEST
MONITORING WELL MW-2
INJECTION TEST

PARAMETERS

	Input		calculated
Slug diameter	1.00	inches	3 cm
Slug length (submerged length)	6.00	feet	183 cm
Slug volume (V)			927 cm^3
Initial water level change (H_0)			46 cm
Casing diameter	2.00	inches	5.1 cm
Casing radius (r_c)			2.5 cm
Screen length	10.00	feet	305 cm
Aquifer thickness (m)	10.00	feet	305 cm
α	1.E-01		

MATCH POINT

t	11 sec
H/H_0	0.5 feet
β	1.54
$F(B,\alpha)$	0.5

CALCULATIONS(1)(2)

$$T = \frac{\beta r_c^2}{t} = \frac{1.54 \times (2.54)^2}{11}$$

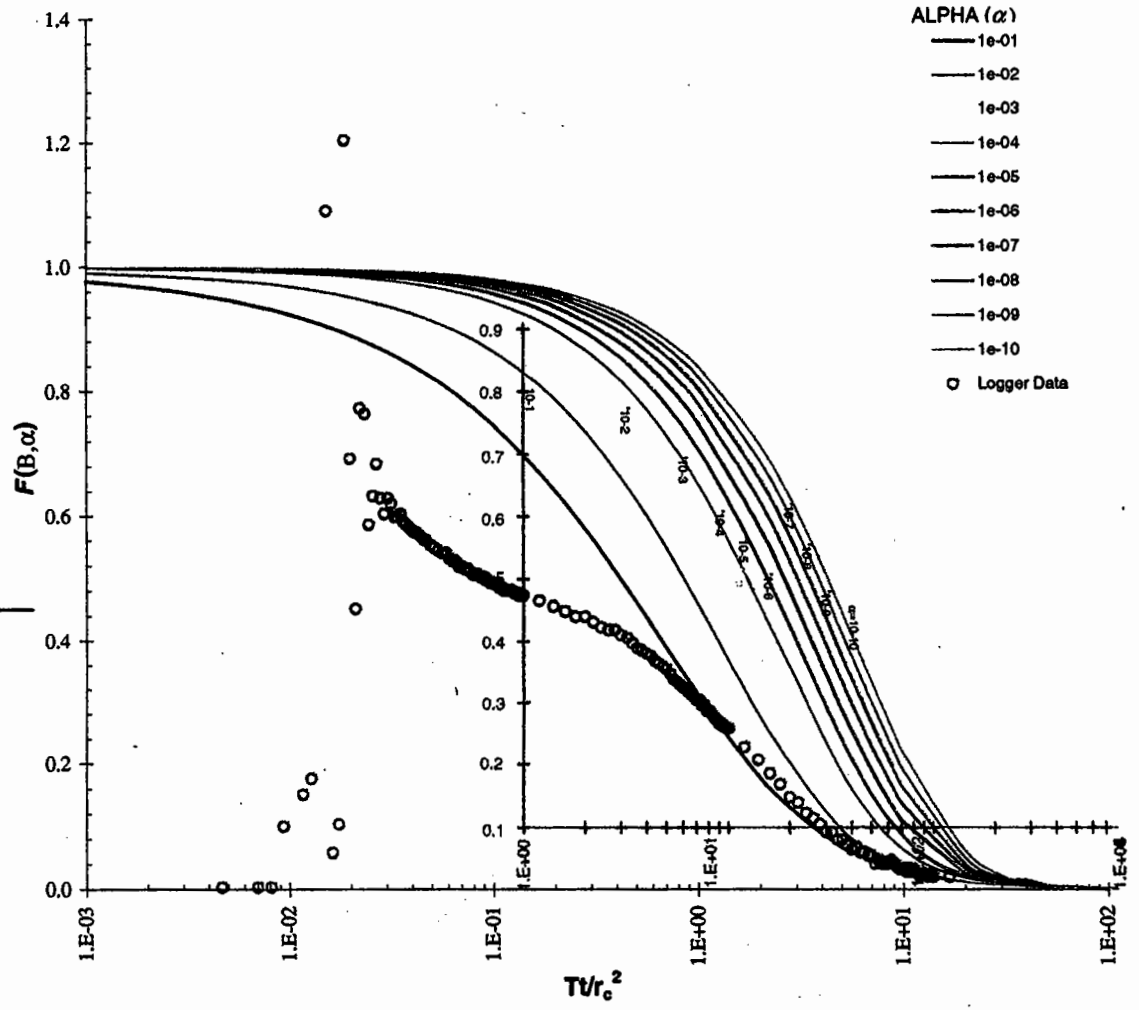
$$= 9.0E\text{-}01 \ cm^2/sec$$

$$k = \frac{T}{m} = \frac{9.03E\text{-}01 \ cm^2/sec}{304.8 \ cm}$$

$$= 3.0E\text{-}03 \ cm/sec$$

$$= 8 \ FT/DAY$$

$$S = \alpha = 0.1$$



(1) Cooper, Jr., H. H., J. D. Bredehoeft and I. S. Papadopulos. 1967. "Response of a Finite-Diameter Well to an Instaneous Charge of Water". *Water Resources Research*, vol 3. no. 1, pp 263-269

(2) Papadopulos, I. S. 1973. "On the Analysis of 'Slug Test'Data'*Water Resources Research*. vol. 9, no. 4. pp. 1087-1089.

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FIGURE 1.3
CONFINED AQUIFER SLUG TEST
MONITORING WELL MW-2
WITHDRAWAL TEST

PARAMETERS

	input		calculated
Slug diameter	1.00	inches	3 cm
Slug length	6.00	feet	183 cm
(submerged length)			
Slug volume (V)			927 cm^3
Initial water level change (H_0)			46 cm
Casing diameter	2.00	inches	5.1 cm
Casing radius (r_c)			2.5 cm
Screen length	10.00	feet	305 cm
Aquifer thickness (m)	10.00	feet	305 cm
α	1.E-03		

MATCH POINT

t	11 sec
H/H_0	0.5 feet
β	140.80
$F(B,\alpha)$	0.5

CALCULATIONS[1][2]

$$T = \frac{\beta r_c^2}{t} = \frac{140.80 \times (2.54)^2}{11}$$

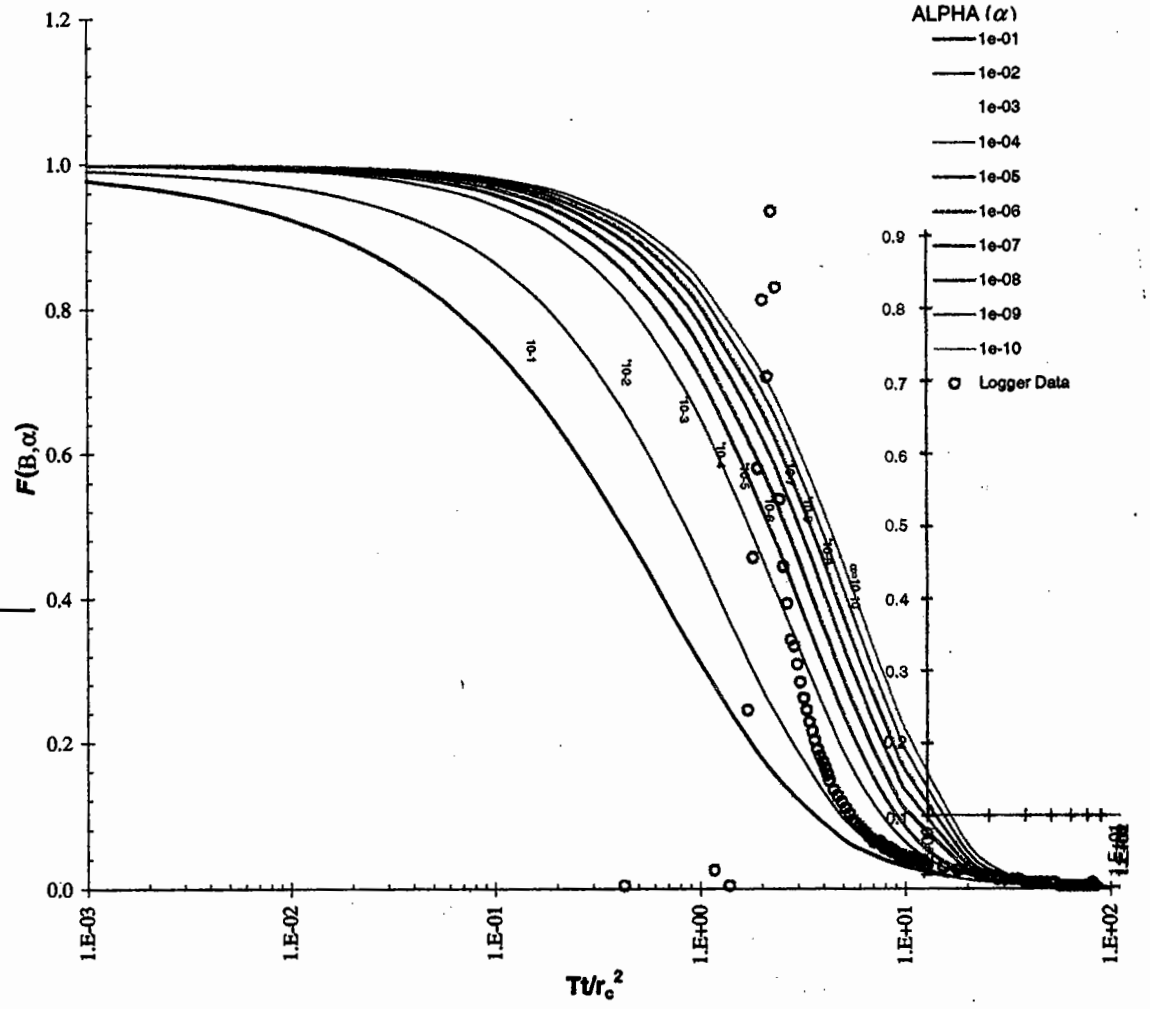
$$= 8.3E+01 \text{ cm}^2/\text{sec}$$

$$k = \frac{T}{m} = \frac{8.26E+01 \text{ cm}^2/\text{sec}}{304.8 \text{ cm}}$$

$$= 2.7E-01 \text{ cm/sec}$$

$$= 768 \text{ FT/DAY}$$

$$s = \alpha = 0.001$$



(1) Cooper, Jr., H. H., J. D. Bredehoeft and I. S. Papadopulos. 1967. "Response of a Finite-Diameter Well to an Instaneous Charge of Water". *Water Resources Research*, vol 3. no. 1, pp 263-269

(2) Papadopulos, I. S. 1973. "On the Analysis of 'Slug Test' Data' *Water Resources Research*. vol. 9, no. 4. pp. 1087-1089.

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FIGURE 1.4
CONFINED AQUIFER SLUG TEST
MONITORING WELL MW-3
INJECTION TEST

PARAMETERS	input		calculated
Slug diameter	1.00	inches	3 cm
Slug length	6.00	feet	183 cm
(submerged length)			
Slug volume (V)			927 cm^3
Initial water level change (H_0)			46 cm
Casing diameter	2.00	inches	5.1 cm
Casing radius (r_c)			2.5 cm
Screen length	10.00	feet	305 cm
Aquifer thickness (m)	10.00	feet	305 cm
α	1.E-03		

MATCH POINT

t	11	sec
H/H_0	0.5	feet
β	170.50	
$F(B,\alpha)$	0.5	

CALCULATIONS[1][2]

$$T = \frac{\beta r_c^2}{t} = \frac{170.50 \times (2.54)^2}{11}$$

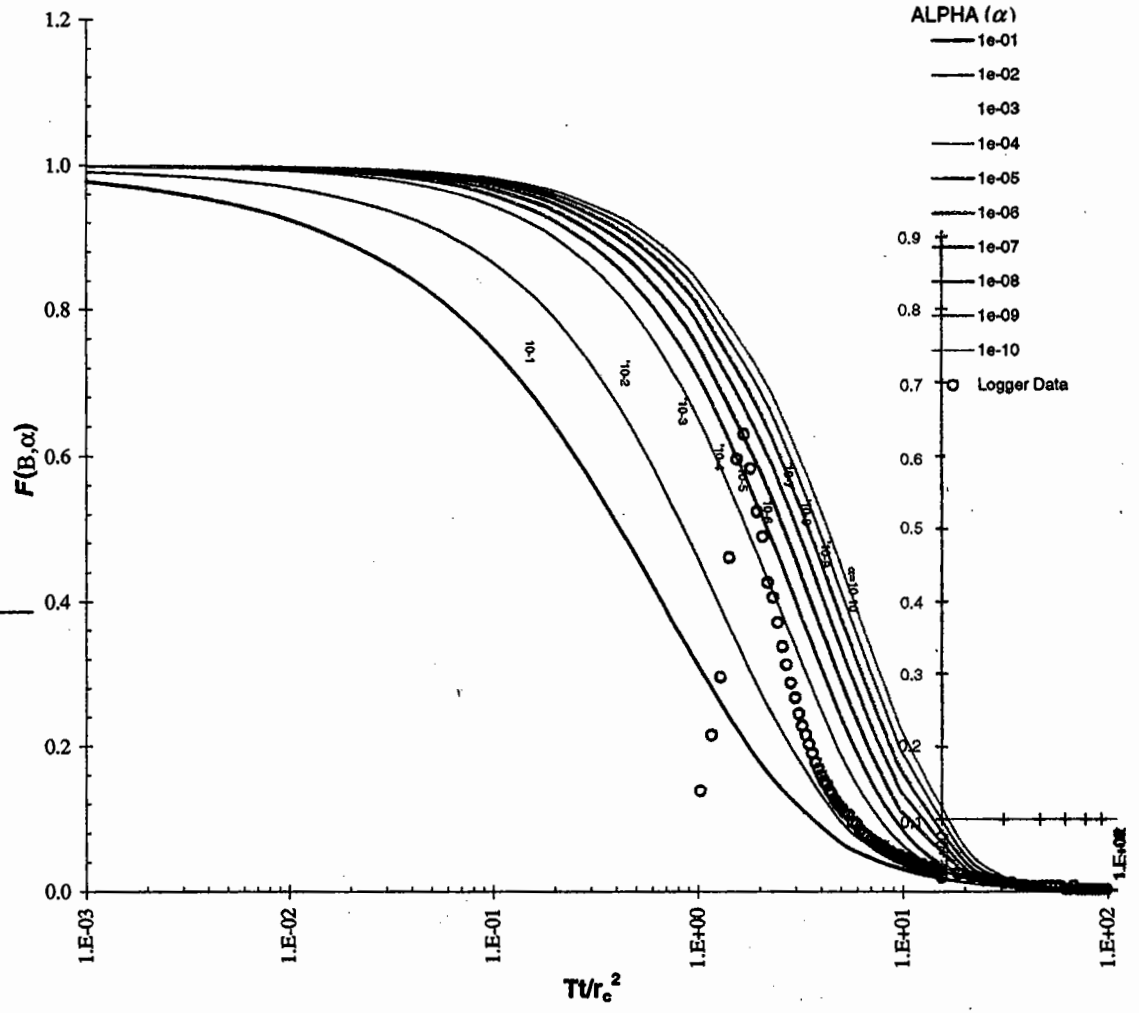
$$= 1.0E+02 \text{ cm}^2/\text{sec}$$

$$k = \frac{T}{m} = \frac{1.00E+02 \text{ cm}^2/\text{sec}}{304.8 \text{ cm}}$$

$$= 3.3E-01 \text{ cm/sec}$$

$$= 930 \text{ FT/DAY}$$

$$s = \alpha = 0.001$$



(1) Cooper, Jr., H. H., J. D. Bredehoeft and I. S. Papadopulos. 1967. "Response of a Finite-Diameter Well to an Instaneous Charge of Water". *Water Resources Research*, vol 3. no. 1, pp 263-269

(2) Papadopulos, I. S. 1973. "On the Analysis of 'Slug Test' Data' *Water Resources Research*, vol. 9, no. 4. pp. 1087-1089.

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FIGURE 1.5
CONFINED AQUIFER SLUG TEST
MONITORING WELL MW-3
WITHDRAWAL TEST

PARAMETERS

	input		calculated
Slug diameter	1.00	inches	3 cm
Slug length	6.00	feet	183 cm
(submerged length)			
Slug volume (V)			927 cm^3
Initial water level change (H_0)			46 cm
Casing diameter	2.00	inches	5.1 cm
Casing radius (r_c)			2.5 cm
Screen length	10.00	feet	305 cm
Aquifer thickness (m)	10.00	feet	305 cm
α	1.E-03		

MATCH POINT

t	11 sec
H/H_0	0.5 feet
β	134.20
$F(B,\alpha)$	0.5

CALCULATIONS[1][2]

$$T = \frac{\beta r_c^2}{t} = \frac{134.20 \times (2.54)^2}{11}$$

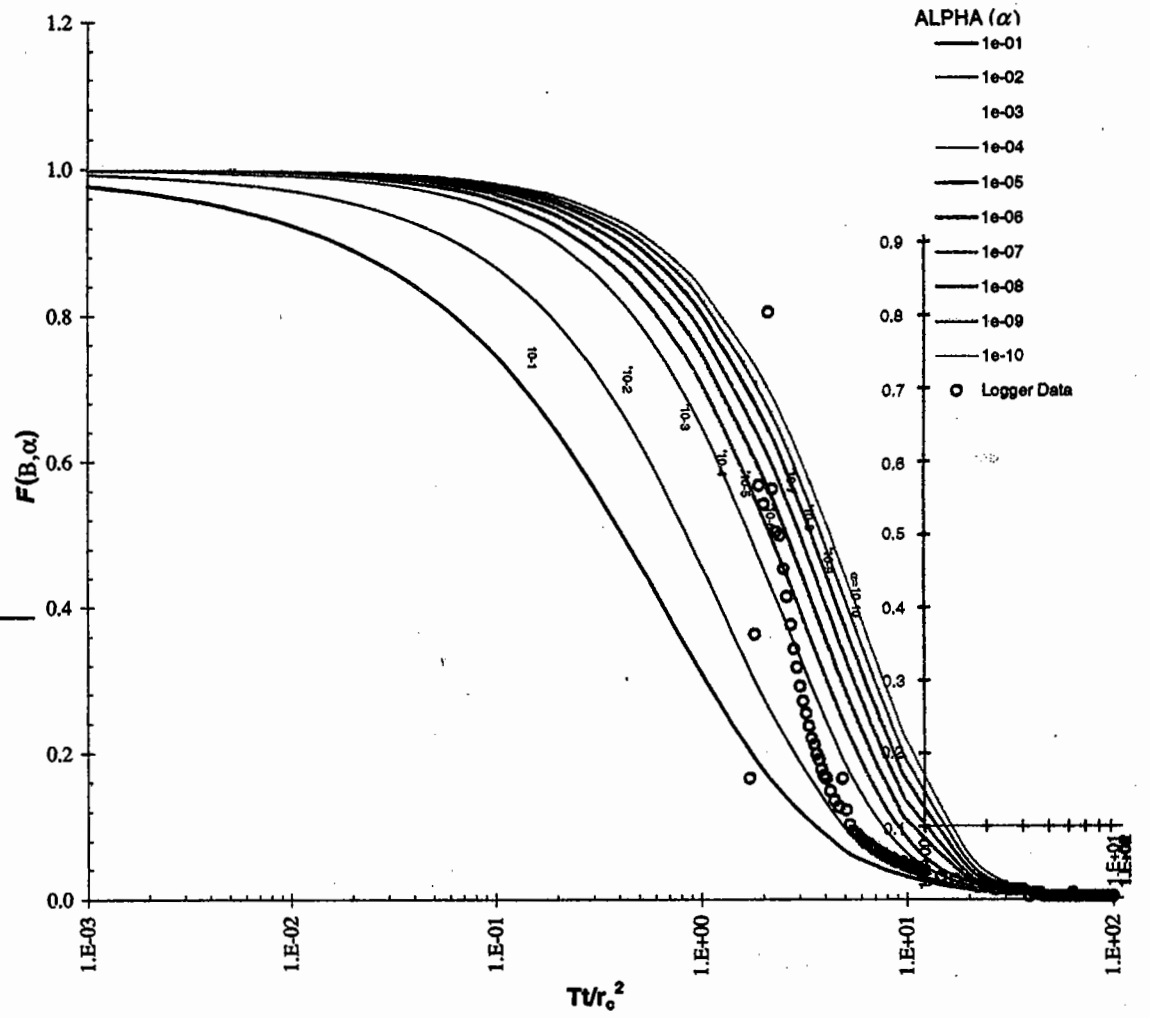
$$= 7.9E+01 \text{ cm}^2/\text{sec}$$

$$k = \frac{T}{m} = \frac{7.87E+01 \text{ cm}^2/\text{sec}}{304.8 \text{ cm}}$$

$$= 2.6E-01 \text{ cm/sec}$$

$$= 732 \text{ FT/DAY}$$

$$S = \alpha = 0.001$$



(1) Cooper, Jr., H. H., J. D. Bredehoeft and I. S. Papadopulos. 1967. "Response of a Finite-Diameter Well to an Instaneous Charge of Water". *Water Resources Research*, vol 3. no. 1, pp 263-269

(2) Papadopulos, I. S. 1973. "On the Analysis of 'Slug Test' Data' *Water Resources Research*. vol. 9, no. 4. pp. 1087-1089.

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FIGURE 1.6
CONFINED AQUIFER SLUG TEST
MONITORING WELL MW-3
INJECTION TEST

PARAMETERS

	input		calculated
Slug diameter	1.00	inches	3 cm
Slug length	6.00	feet	183 cm
(submerged length)			
Slug volume (V)			927 cm^3
Initial water level change (H_0)			46 cm
Casing diameter	2.00	inches	5.1 cm
Casing radius (r_c)			2.5 cm
Screen length	10.00	feet	305 cm
Aquifer thickness (m)	10.00	feet	305 cm
α	1.E-03		

MATCH POINT

t	11 sec
H/H_0	0.5 feet
β	187.00
$F(B,\alpha)$	0.5

CALCULATIONS[1][2]

$$T = \frac{\beta r_c^2}{t} = \frac{187.00 \times (2.54)^2}{11}$$

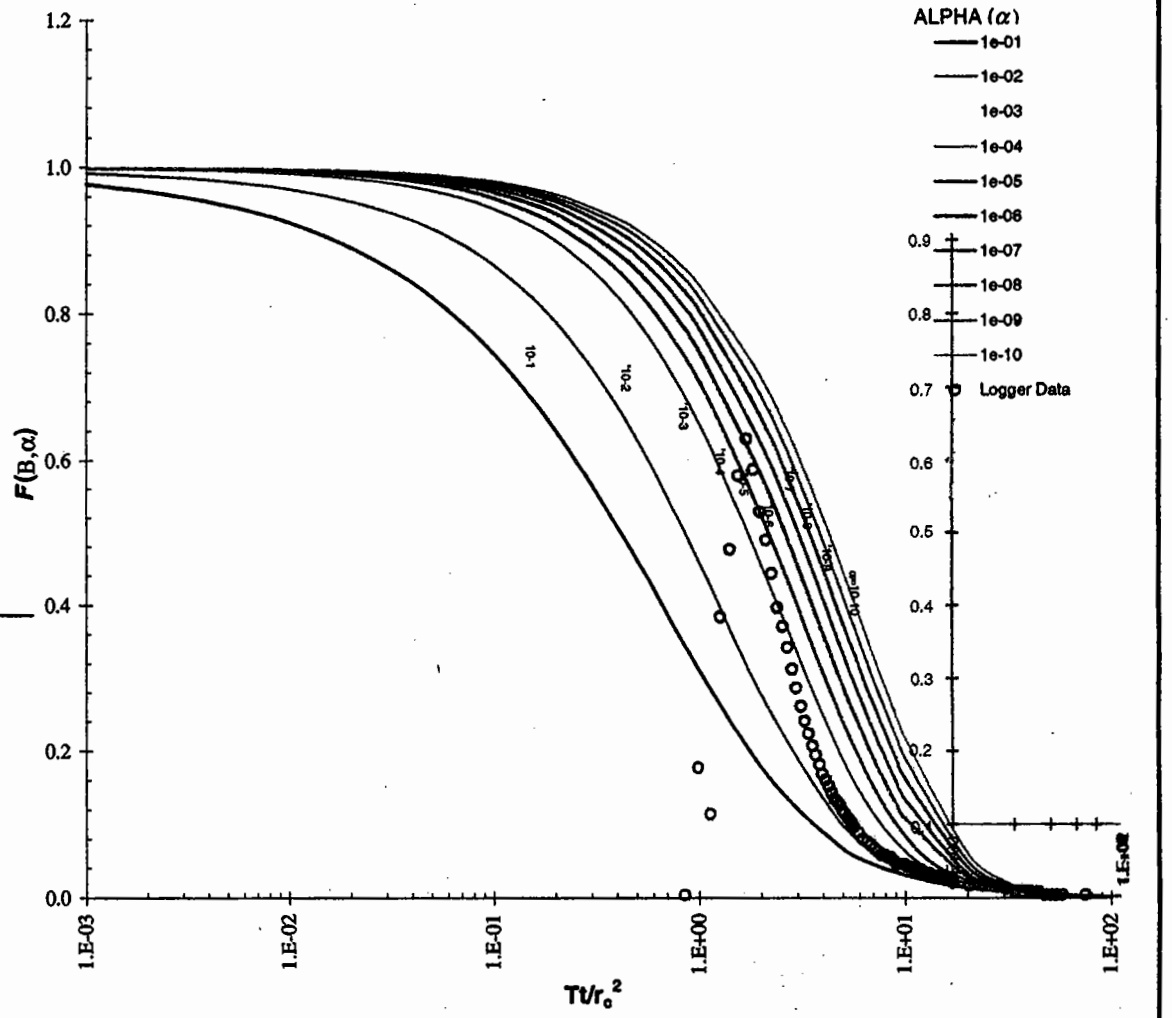
$$= 1.1E+02 \text{ cm}^2/\text{sec}$$

$$k = \frac{T}{m} = \frac{1.10E+02 \text{ cm}^2/\text{sec}}{304.8 \text{ cm}}$$

$$= 3.6E-01 \text{ cm/sec}$$

$$= 1020 \text{ FT/DAY}$$

$$S = \alpha = 0.001$$



(1) Cooper, Jr., H. H., J. D. Bredehoeft and I. S. Papadopulos. 1967. "Response of a Finite-Diameter Well to an Instaneous Charge of Water". *Water Resources Research*, vol 3. no. 1, pp 263-269

(2) Papadopulos, I. S. 1973. "On the Analysis of 'Slug Test'Data'*Water Resources Research*. vol. 9, no. 4. pp. 1087-1089.

SENECA ARMY DEPOT - SEAD 122B

PARSONS

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FIGURE 1.7
CONFINED AQUIFER SLUG TEST
MONITORING WELL MW-3
WITHDRAWAL TEST

APPENDIX B

PHOTOGRAPHIC LOGS

PHOTOGRAPHIC LOG
PARSONS

PROJECT: Seneca Airfield Small Arms Range
PROJECT #: 741401

LOCATION: Seneca Army Depot
CLIENT: USACE

Status as of: 7/9/02
Description: View of subcontractor with bulldozer clearing path on top of firing range berm for drilling rig access (Machine Gun Range).
Photo by: EJA

Status as of: 7/9/02
Description: View of subcontractor with bulldozer clearing path on top of firing range berm for drilling rig access (Machine Gun Range).
Photo by: EJA

PHOTOGRAPHIC LOG
PARSONS

PROJECT: Seneca Airfield Small Arms Range
PROJECT #: 741401

LOCATION: Seneca Army Depoit
CLIENT: USACE

Status as of: 7/9/02
Description: View of subcontractor with bulldozer clearing path on top of firing range berm for drilling rig access (Small Arms Range).
Photo by: EJA

Status as of: 7/9/02
Description: View of subcontractor with bulldozer clearing path on top of firing range berm for drilling rig access (Small Arms Range).
Photo by: EJA

PHOTOGRAPHIC LOG
PARSONS

PROJECT: Seneca Airfield Small Arms Range
PROJECT #: 741401

LOCATION: Seneca Army Depoit
CLIENT: USACE

Status as of: 7/9/02
Description: View of drillers drilling with hollow stem augers at monitoring well MW-2.
Photo by: EJA

Status as of: 7/9/02
Description: View of drillers drilling with hollow stem augers at monitoring well MW-2.
Photo by: EJA

PHOTOGRAPHIC LOG
PARSONS

PROJECT: Seneca Airfield Small Arms Range
PROJECT #: 741401

LOCATION: Seneca Army Depoit
CLIENT: USACE

Status as of: 7/9/02
Description: View of drillers collecting spilt-spoon samples during the drilling of monitoring well MW-2.
Photo by: EJA

Status as of: 7/9/02
Description: View of sand pack being installed during the installation of monitoring well MW-2.
Photo by: EJA

PHOTOGRAPHIC LOG
PARSONS

PROJECT: Seneca Airfield Small Arms Range
PROJECT #: 741401

LOCATION: Seneca Army Depoit
CLIENT: USACE

Status as of: 7/9/02
Description: View of bentonite seal being installed during the installation of monitoring well MW-2.
Photo by: EJA

Status as of: 7/9/02
Description: View of monitoring well MW-2 installed..
Photo by: EJA

PHOTOGRAPHIC LOG
PARSONS

PROJECT: Seneca Airfield Small Arms Range
PROJECT #: 741401

LOCATION: Seneca Army Depoit
CLIENT: USACE

Status as of: 7/9/02
Description: View of drillers collecting spilt-spoon samples at soil boring PSB-5 on top of small arms range.
Photo by: EJA

Status as of: 7/9/02
Description: View of path cleared by bulldozer on top of small arms range. View taken from the south.
Photo by: EJA

PHOTOGRAPHIC LOG
PARSONS

PROJECT: Seneca Airfield Small Arms Range
PROJECT #: 741401

LOCATION: Seneca Army Depoit
CLIENT: USACE

Status as of: 7/9/02
Description: View of path cleared by bulldozer on top of small arms range. View taken from the north.
Photo by: EJA

Status as of: 7/9/02
Description: View of drillers dredging monitoring well MW-3 using a Wattera pump and dedicated polyurethane tubing.
Photo by: EJA

PHOTOGRAPHIC LOG
PARSONS

PROJECT: Seneca Airfield Small Arms Range
PROJECT #: 741401

LOCATION: Seneca Army Depot
CLIENT: USACE

Status as of: 7/9/02
Description: View of monitoring well MW-1 after installation completed.
Photo by: EJA

Status as of: 7/9/02
Description: View of monitoring well MW-2 after installation completed.
Photo by: EJA

PHOTOGRAPHIC LOG
PARSONS

PROJECT: Seneca Airfield Small Arms Range
PROJECT #: 741401

LOCATION: Seneca Army Depot
CLIENT: USACE

Status as of: 7/9/02
Description: View of monitoring well MW-3 after installation completed.
Photo by: EJA

Status as of: 7/9/02
Description: View of IDW contained in 55-gallon DOT drums staged onsite (SEAD-122B) on wooden pallets.
Photo by: EJA

APPENDIX C

DATA VALIDATION REPORT AND LABORATORY CASE NARRATIVE

2002 INITIAL INVESTIGATION

Data Validation Services

120 Cobble Creek Road P. O. Box 208
North Creek, N. Y. 12853
Phone 518-251-4429
Facsimile 518-251-4428

September 14, 2002

David Babcock
Parsons Engineering Science
290 Elwood Davis Rd.
Liverpool, NY 13088

RE: Validation of Seneca Army Depot Site Data Packages
STL-VT SDG Nos.88617, 88619, 88648, 88692, 88784, 88921, 88924, and 89606
Project Number 741401

Dear Mr. Babcock:

Review has been completed for the data packages generated by Severn Trent Laboratories which pertain to samples collected at the Seneca Army Depot Site. Sixty six soil samples were processed for total lead. Four aqueous samples and twenty seven soil samples were analyzed for TAL metals. Ten of the TAL soils were also processed for TAL metals on both SPLP and TCLP leachates of the samples. Thirty eight of the samples were analyzed for TOC by Lloyd Kahn method. Rinse blanks and matrix spikes/duplicates were also processed, and the rinse blanks were analyzed through the TCLP and SPLP leachate procedures. Methodologies utilized for the metals analysis are those of the USEPA ILM04.1

Data validation was performed in accordance with the most current editions of the USEPA Region II SOPs HW-2 and HW-7, with consideration for the methodology and project requirements. The following items were reviewed:

* Data Completeness
* Narrative Discussion
* Custody Documentation
* Holding Times
* Matrix Spike Recoveries
* Laboratory and Field Duplicate Correlations
* Preparation/Calibration Blanks
* ICP Interference Check Samples
* Control Spike/Laboratory Control Samples
* Calibration Standards
* Instrument IDLs, IECFs, Linear Ranges
* Method Compliance
* Sample Result Verification

Those items showing deficiencies are discussed in the following sections of this report. All others were found to be acceptable as outlined in the above-mentioned validation procedures, and as applicable for the methodology. Unless noted specifically in the following text, reported results are substantiated by the raw data, and generated in compliance with protocol requirements.

In summary, sample processing was conducted with compliance to protocol requirements, with the exception of the holding times for TCLP mercury, which were exceeded due to client processing requirements. Most sample analyte results are usable as reported, or with minor qualification as estimated in value. The exceptions are the TCLP sodium detections, and a few of the TCLP zinc or SPLP sodium detections. These responses reflect external contamination, and are rejected as sample components.

Copies of laboratory case narratives are attached to this report, and should be reviewed in conjunction with this text. Resubmission communications, and red-ink qualified client hardcopy results tables are also included with this report.

General

Some samples were initially processed for lead only, and reanalyzed for TAL metals upon evaluation of the initial lead result. The reanalyses of these samples were reported with the same client ID in separate data packages. The field duplicates were processed for TAL metals and associated TAL matrix spikes/duplicates, and reported in a separate data package.

Accuracy and precision determinations on sample matrix spikes/duplicates showed generally acceptable results, with antimony showing consistently low recoveries. These are detailed later in this text.

There is evidence of a significant nonhomogeneous nature to the sample matrix, particularly as regards lead, copper, and antimony. This is reflected in field duplicate variances, although the laboratory duplicate correlations (which are taken from the same sample bottle) were generally good. Correlations between the "screen" lead results and the TAL lead results in a given sample are good, as expected, in that they are derived from the same digestate.

Field duplicate evaluations were performed for TAL metals in 122B-1010A and122B-1010A-DUP (the latter was also processed for lead in two different digestates), and showed more than an order of magnitude variance (13,100 ppm, 1540 ppm, and 397 ppm). Antimony also showed a large variance (109 ppm and 3 ppm). Results for those two analytes in those samples are qualified estimated ("J").

The field duplicate evaluations for TAL metals in 122B-1011A and 122B-1011A-DUP (with a second lead digestate) showed the following outlying correlations. Results for the listed analytes are qualified estimated in those samples. Caution should be used in evaluation results of samples with similar matrix to these.

Element	Values, mg/kg	%RPD
Antimony	670 and 69	174
Arsenic	85 and 20	124
Copper	5700 and 290	181
Lead	89,000, 33,000, and 14,000	146
Silver	3.4 and 120	189
Zinc	630 and 120	136

There are no field duplicate evaluations for the aqueous samples. The laboratory duplicate evaluation for that matrix showed no outlying correlations.

The metals cover pages for SDGs 88648 and 88692 were not signed by the laboratory personnel. The laboratory case narratives, which contain the same verbatim statement, were signed. The laboratory case narrative for 88648 has an incorrect list of samples reported in the data package. Some of those listed are reported in SDG 88692

Discrepancies in sample identification (SDG 88619) were resolved at sample receipt.

TAL Metals, Total Lead, and SPLP and TCLP TAL Metals Analyses

As noted above, TCLP sodium detections are rejected ("R"), as it is a preparation artifact from the leaching procedure. Sample TCLP sodium constituency is unknown, except as an extrapolation as a maximum, derived from the total soil concentrations.

The sodium detections in the SPLP leachates of 122B-1030 and 122B-1031 are likewise rejected due to detection well above CRDL in the associated rinse blank (122B-0004). Sample results are not rejected by considered

Zinc detections in the TCLP leachates of 122B-1002B, 122B-1010A, 122B-1013B, 122B-1018A, are rejected ("R") ~~per validation protocols~~ due to presence of zinc at similar concentrations in the associated leachate blank. However, although the data is "rejected," those originally reported concentrations, which are low level, can be considered as elevated reporting limits representing maximum sample concentrations. "U" per validation protocols. MK

Analytical data qualified "JN" or "R" may not be used to demonstrate compliance with Toxicity Characteristic or Land Ban Regulations.

Due to delays in client scheduling of the TCLP/SPLP fractions and resultant holding time violations, results for mercury in the TCLP leachates of the soils are qualified estimated ("J" and "UJ"), with a possible low bias.

Matrix spike/duplicate evaluations of lead in 122B-1003A, 122B-1016A, 122B-1021A, 122B-1037, and 122B-1055, and of TAL metals on 122B-2001 were acceptable, with the exception of the recovery for lead in 122B-1037 and 122B-1055 (134% and 129%, respectively). Results for lead in the samples in SDGs 88692 and 88784 are therefore qualified estimated ("J").

Matrix spike/duplicate evaluations of TAL metals in 122B-1010A-DUP and 122B-1011A-DUP show low recoveries for antimony (61% and 39%). All antimony results are qualified estimated. The recovery of arsenic in the latter is only 46%, and results for that element in seven of the samples are qualified estimated.

Laboratory duplicate correlations for TAL metals and lead were within validation guidelines, although that for lead in 122B-1016A (86%RPD) was just below the validation action level.

Serial dilution determinations for TAL metals in 122B-1024A, and 122B-2001, and for lead in 122B-1003A, 122B-1016A, 122B-1037, and 122B-1055, and for TCLP in 122B-1002B,122B-1018A, 122B-1024A, and 122B-1042, and for SPLP in 122B-1002B, 122B-1018A, 122B-1024A, and 122B-1042, produced acceptable correlation. Those for TAL metals on 122B-1001A, 122B-1010A-DUP, 122B-1011A-DUP, 122B-1026, and 122B-1040 showed outliers affecting sample results are indicated

below; results are qualified as estimated:

Copper (17%D) in soil samples reported in SDG 88617
Copper (29%D) in soil samples reported in SDG 88692
Chromium (12%D) and zinc (12%D) detections in soil samples in SDG 88921
Copper (29%D) in 122B-1040, 122B-1042, 122B-1046, 122B-1053, 122B-1059, and 122B-1063
Calcium (12%D), copper (27%D), and zinc (11%D) in 122B-1010A-DUP
Arsenic (18%D), copper (17%D), iron (11%D), nickel (12%D), zinc (11%D) in 122B-1011A-DUP

Due to outlying CRI standard recoveries, the following analyte results are qualified as estimated ("J" or "UJ"). The outlying recoveries, while outside validation action range of 80% to 120%, are above 70% and below 136%.

lead (high bias) in 122B-1021B and the SPLP leachate of 122B-1002B
lead (low bias) in 122B-1010A-DUP and 122B-1011A-DUP
selenium (low bias) in 122B-1024B, 122B-1025A, 122B-1040, 122B-1041, 122B-1042, 122B-1046
mercury (low bias) in 122B-1010A-DUP, 122B-1011A-DUP, and the TCLP and SPLP leachates of 122B-1042, 122B-1046, 122B-1059
thallium (low bias) in the TCLP and SPLP leachates of 122B-1059 and 122B-1042
nickel (high bias) in the TCLP leachates of 122B-1042 and 122B-1046, and the TCLP and SPLP leachates of 122B-1059
arsenic 122B-1026, 122B-1030, and 122B-1031
chromium (high bias) in samples in 122B-2004 and 122B-2005

Thallium showed negative responses greater than CRDL for samples 122B-1011B and 122B-1018A, and results for those are qualified estimated ("J"), with a possible low bias.

Mercury results for 122B-1010A-DUP and 122B-1011A-DUP are qualified estimated, possibly biased low, due to holding time exceedence which resulted from the delay in request for TAL processing.

Rinse blanks show either all concentrations below CRDL, or analyte concentrations at least tenfold below that of the associated samples. No qualification is required.

No validation action is taken for blank values above IDL but below CRDL. Sample detections above IDL but below CRDL are flagged "B" by the laboratory, and should be used with caution.

Soil and SPLP preparation blanks show no contamination, with the exception of an elevated SPLP mercury blank reported in SDG 88921. Associated mercury samples show no detection, and are unaffected.

The raw ICP data incorrectly denotes the lab ID of 122B-1015A as "493568" rather than "495658." The associated Form 14 shows the correct client ID.

Preparation logs for SDG 88617 are not located in that package, but are found in SDG 88619.

TOC Analyses

Review was conducted for method compliance, transcription, calculations, holding times, standard and blank acceptability, accuracy and precision, etc., as applicable to the procedure.

Matrix spike/duplicate evaluations for TOC were performed on 122B-1055, and show acceptable accuracy and precision. Only one of the multiple replicate values were used for the matrix spike evaluations, and the parent sample solids content was used in the duplicate concentration determination. Recoveries and correlations are also acceptable when utilizing multiple spike replicates and the duplicate solids content.

Many of the samples exhibited elevated correlations (>20%RSD) between multiple replicates, even with repeated analysis. This is most likely due to sample nonhomogeneity. Those results are therefore qualified estimated. Affected samples are 122B-1003A, 122B-1005B, 122B-1007B, 122B-1009B, 122B-1010A, 122B-1010B, 122B-1011B, 122B-1012B, 122B-1015A, 122B-1020B, 122B-1021B, 122B-1022B, 122B-1024A, 122B-1024B, 122B-1027, 122B-1029, 122B-1032, 122B-1033, 122B-1035, 122B-1037, 122B-1048, 122B-1050, 122B-1052, 122B-1053, 122B-1055, 122B-1059, and 122B-1061

Associated sample detections were well above that of the 7/02/02 rinse blank, and no qualification is required.

Please do not hesitate to contact me if questions or comments arise during your review of this report.

Very truly yours,

Judy Harry

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July 22, 2002

Mr. David Babcock
Parsons Engineering Science Inc.
290 Elwood Davis Road
Suite 312
Liverpol, NY 03088

Re: Laboratory Project No.: 22035
SDG: 88617

Dear Mr. Babcock:

Enclosed are the analytical results of samples received intact by Severn Trent Laboratories on June 28, 2002. Laboratory numbers have been assigned and designated as follows:

Lab ID	Client Sample ID	Sample Date	Sample Matrix
	Received: 06/28/022 ETR No:88617		
492542	122B-1001A	06/26/02	Soil
492543	122B-1001B	06/26/02	Soil
492544	122B-1002A	06/26/02	Soil
492545	122B-1002B	06/26/02	Soil
493556	122B-1002B, TCLP Extract		
493557	122B-1002B, SPLP Extract		
492546	122B-1003A	06/26/02	Soil
492546MS	122B-1003AMS	06/26/02	Soil
492546DP	122B-1003AREP	06/26/02	Soil
492547	122B-1003B	06/26/02	Soil
492548	122B-1004A	06/26/02	Soil
492549	122B-1004B	06/26/02	Soil
492550	122B-1005A	06/26/02	Soil
492551	122B-1005B	06/26/02	Soil
492552	122B-1006A	06/26/02	Soil
492553	122B-1006B	06/26/02	Soil
492554	122B-1007A	06/26/02	Soil
492555	122B-1007B	06/26/02	Soil
492556	122B-1008A	06/26/02	Soil
492557	122B-1008B	06/26/02	Soil
492558	122B-1009A	06/26/02	Soil
492559	122B-1009B	06/26/02	Soil
492560	122B-1010A	06/26/02	Soil
492561	122B-1010A-DUP	06/26/02	Soil
493558	122B-1010A, TCLP Extract		
493559	122B-1010A, SPLP Extract		

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Documentation that identifies the condition of the samples at the time of sample receipt and the issues arising at the time of sample log-in is included in the Sample Handling section of this submittal.

Total Organic Carbon by Lloyd Kahn Method
During the analysis which occurred on July 5th, the comparability between sample iterations was greater than the method guideline of 20%. Samples were reanalyzed on July 8th yielding similar results and confirming heterogeneity of samples.

Metals by CLP (ILM04.1) Method
Samples were initially screened for lead on June 28, 2002 and based on these results, additional analyses were assigned. Samples displaying relatively high concentrations of lead (as determined by the client) were subsequently logged in for the full target analyte list (TAL) of metals and / or the Toxicity Characteristic Leaching Procedure (TCLP) and Synthetic Precipitation Leaching Procedure (SPLP) followed by metals analysis. Because of this delay in assignment for TCLP extraction, the 5-day holding time between the verified time of sample receipt and the extraction procedure for mercury was not met.

Potassium and sodium were reported in relatively high concentrations during the analysis of the TCLP method prep blank. These two elements are inherent in the extraction fluid used during the leachate procedure and as such, TCLP extracts of the field samples were not reanalyzed for either of these elements if results were reported above the instrument's calibration range. These results have been flagged with an "OR" to denote that the result is over the linear range of the instrument.

Results from the serial dilution analysis of 122B-1001A were greater than the established control criteria of ±10% for copper (17.1%). Results from the serial dilution analysis of the TCLP Extract of 122B-1002B were greater than the established control criteria of ±10% for sodium (13.7%). Field sample results have been qualified with an "E" to denote what the laboratory believes to be matrix-related interference.

The TCLP preparation blank analyzed on ICP5 on July 17, 2002 yielded a result of 28.9 ug/L for zinc. Although this result does not meet control criteria under the ILM04.1 Statement of Work for preparation blanks (concentration should be less than the CRDL), it is less than the standard reporting limit for zinc in TCLP extracts (1 mg/L) as established by the laboratory.

If there are any questions regarding this submittal, please contact Jeannine McCrumb at (802) 655-1203.

This report is sequentially numbered starting with page 0001 and ending with page 0744.

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I certify that this package is in compliance with the NELAC requirements, both technically and for completeness, for other than the conditions detailed above. The release of the data contained in this hardcopy data package has been authorized by the Laboratory Director or his designee, as verified by the following signature.

Sincerely,

Michael F. Wheeler, Ph.D.
Laboratory Director

Enclosure
MFW/jta/jmm

0001-C LA:T AIHA

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July 26, 2002

Mr. David Babcock
Parsons Engineering Science Inc.
290 Elwood Davis Road
Suite 312
Liverpol, NY 03088

Re: Laboratory Project No.: 22035
SDG: 88619

Dear Mr. Babcock:

Enclosed are the analytical results of samples received intact by Severn Trent Laboratories on June 28, and 29, 2002. Laboratory numbers have been assigned and designated as follows:

Lab ID	Client Sample ID	Sample Date	Sample Matrix
	Received: 06/28/02 ETR No:88619		
492562	122B-1010B	06/26/02	Soil
492563	122B-1011A	06/26/02	Soil
493563	122B-1011A, TCLP Extract		
493564	122B-1011A, SPLP Extract		
492564	122B-1011A-DUP	06/26/02	Soil
492565	122B-1011B	06/26/02	Soil
492566	122B-1012A	06/26/02	Soil
492567	122B-1012B	06/26/02	Soil
492568	122B-1013A	06/26/02	Soil
492569	122B-1013B	06/26/02	Soil
493565	122B-1013B, TCLP Extract		
493566	122B-1013B, SPLP Extract		
	Received: 06/29/02 ETR No:88647		
492753	122B-0001	06/28/02	Water
492754	122B-0002	06/28/02	Water
492755	122B-0003	06/28/02	Water
492756	122B-1014A	06/27/02	Soil
492757	122B-1014B	06/27/02	Soil
492758	122B-1015B	06/27/02	Soil
492759	122B-1016A	06/27/02	Soil
492759MS	122B-1016AMS	06/27/02	Soil
492759DP	122B-1016AREP	06/27/02	Soil
492761	122B-1017A	06/27/02	Soil
492762	122B-1017B	06/27/02	Soil
492763	122B-1018A	06/27/02	Soil
493567	122B-1018A, TCLP Extract		

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Lab ID	Client Sample ID	Sample Date	Sample Matrix
	Received: 06/29/02 ETR No:88647 (Cont.)		
493568	122B-1018A, SPLP Extract		
492764	122B-1018B	06/27/02	Soil
492765	122B-1019A	06/27/02	Soil

Documentation that identifies the condition of the samples at the time of sample receipt and the issues arising at the time of sample log-in is included in the Sample Handling section of this submittal.

Total Organic Carbon by Lloyd Kahn Method
During the analysis which occurred on July 5th, the comparability between sample iterations was greater than the method guideline of 20%. Samples were reanalyzed on July 8th yielding similar results and confirming heterogeneity of samples.

Metals by CLP (ILM04.1) Method
Samples were initially screened for lead on July 10, 2002 and based on these results, additional analyses were assigned. Samples displaying relatively high concentrations of lead (as determined by the client) were subsequently logged in for the full target analyte list (TAL) of metals and / or the Toxicity Characteristic Leaching Procedure (TCLP) and Synthetic Precipitation Leaching Procedure (SPLP) followed by metals analysis. Because of this delay in assignment for TCLP extraction, the 5-day holding time between the verified time of sample receipt and the extraction procedure for mercury was not met.

Sodium was reported in relatively high concentrations during the analysis of the TCLP method prep blank. This element is inherent in the extraction fluid used during the leachate procedure and as such, TCLP extracts of the field samples were not reanalyzed for this element if the result was reported above the instrument's calibration range. These results have been flagged with an "OR" to denote that the result is over the linear range of the instrument.

The relative percent difference (RPD) between the lead results of the initial and duplicate analysis of sample 122B-1016A was 86%. The laboratory attributes this substandard precision to sample heterogeneity. Lead results have been flagged with an "*" to denote this anomaly.

The TCLP preparation blank analyzed on ICP5 on July 17, 2002 yielded a result of 29.8 ug/L for zinc. Although this result does not meet control criteria under the ILM04.1 Statement of Work for preparation blanks (concentration should be less than the CRDL), it is less than the standard reporting limit for zinc in TCLP extracts (1 mg/L) as established by the laboratory.

The following samples displayed a slight (reporting average of integrations between –10ppb and -20ppb) negative interference for thallium: 122B-1011B and 122B-1018A. Samples were analyzed three times and the results from each analysis confirmed this interference. Results were reported as less than the instrument detection limit.

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If there are any questions regarding this submittal, please contact Jeannine McCrumb at (802) 655-1203.

This report shall not be reproduced, except in full, without the written approval of the laboratory. This report is sequentially numbered starting with page 0001 and ending with page 0835.

I certify that this package is in compliance with the NELAC requirements, both technically and for completeness, for other than the conditions detailed above. The release of the data contained in this hardcopy data package has been authorized by the Laboratory Director or his designee, as verified by the following signature.

Sincerely,

Michael F. Wheeler, Ph.D.
Laboratory Director

Enclosure
MFW/jta/jmm

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August 2, 2002

Mr. David Babcock
Parsons Engineering Science Inc.
290 Elwood Davis Road
Suite 312
Liverpol, NY 03088

Re: Laboratory Project No.: 22035
SDG: 88648

Dear Mr. Babcock:

Enclosed are the analytical results of samples received intact by Severn Trent Laboratories on June 29, July 03, and 12, 2002. Laboratory numbers have been assigned and designated as follows:

Lab ID	Client Sample ID	Sample Date	Sample Matrix
	Received: 06/29/022 ETR No:88648		
492766	122B-1019B	06/27/02	Soil
492767	122B-1020B	06/27/02	Soil
492768	122B-1021A	06/27/02	Soil
492768MS	122B-1021AMS	06/27/02	Soil
492768DP	122B-1021AREP	06/27/02	Soil
492769	122B-1021B	06/27/02	Soil
492770	122B-1022A	06/28/02	Soil
492771	122B-1022B	06/28/02	Soil
492772	122B-1023A	06/28/02	Soil
492773	122B-1023B	06/28/02	Soil
492774	122B-1024A	06/28/02	Soil
492775	122B-1024B	06/28/02	Soil
492776	122B-1025A	06/28/02	Soil
	Received: 07/03/022 ETR No:88692		
493133	122B-1026	07/01/02	Soil
493134	122B-1027	07/01/02	Soil
493135	122B-1028	07/01/02	Soil
493136	122B-1029	07/01/02	Soil
493137	122B-1030	07/02/02	Soil
493138	122B-1031	07/02/02	Soil
493139	122B-1032	07/02/02	Soil

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Lab ID	Client Sample ID	Sample Date	Sample Matrix
	Received: 07/03/022 ETR No:88692 (Cont.)		
493140	122B-1033	07/02/02	Soil
493141	122B-0004	07/02/02	Water
493142	122B-0004,TCLP Ext.	07/02/02	TCLPExt.
493143	122B-0004,SPLP Ext.	07/02/02	SPLPExt.
	Received: 07/12/022 ETR No:88777		
493658	122B-1015A	07/11/02	Soil
493659	122B-1015A,SPLPExt.	07/11/02	SPLPExt.
493660	122B-1015A,TCLPExt.	07/11/02	TCLPExt.
493661	122B-1020A	07/11/02	Soil

Documentation that identifies the condition of the samples at the time of sample receipt and the issues arising at the time of sample log-in is included in the Sample Handling section of this submittal.

Metals by CLP (ILM04.1) Method

Sodium was reported in relatively high concentrations during the analysis of the TCLP method prep blank. This element is inherent in the extraction fluid used during the leachate procedure and as such, TCLP extracts of the field samples were not reanalyzed for this element if the result was reported above the instrument's calibration range. These results have been flagged with an "OR" to denote that the result is over the linear range of the instrument.

Total Organic Carbon by Lloyd Kahn Method

During the analyses that occurred on July 8th, the comparability between sample iterations was greater than the method guideline of 20% for several samples in this delivery group. These samples were reanalyzed on July 9th yielding similar results and confirming heterogeneity of samples. The results from the analyses that provided the better Percent Relative Standard Deviation (%RSD) have been formally presented in this case submittal. The data from the analyses that were not reported have been included in the data package as well.

If there are any questions regarding this submittal, please contact Jeannine McCrumb at (802) 655-1203.

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DMR 8/12/02

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I certify that this package is in compliance with the NELAC requirements, both technically and for completeness, for other than the conditions detailed above. The release of the data contained in this hardcopy data package has been authorized by the Laboratory Director or his designee, as verified by the following signature.

Sincerely,

Michael F. Wheeler, Ph.D.
Laboratory Director

Enclosure
MFW/jta/jmm

0001-C LAST ALPHA

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August 5, 2002

Mr. David Babcock
Parsons Engineering Science Inc.
290 Elwood Davis Road
Suite 312
Liverpol, NY 03088

Re: Laboratory Project No.: 22035
SDG: 88692

Dear Mr. Babcock:

Enclosed are the analytical results of samples received intact by Severn Trent Laboratories on July 03, 05, and 12, 2002. Laboratory numbers have been assigned and designated as follows:

Lab ID	Client Sample ID	Sample Date	Sample Matrix
	Received: 07/03/022 ETR No:88692		
493133	122B-1026	07/01/02	Soil
493134	122B-1027	07/01/02	Soil
493135	122B-1028	07/01/02	Soil
493136	122B-1029	07/01/02	Soil
493137	122B-1030	07/02/02	Soil
493818	122B-1030, TCLP Ext.		
493819	122B-1030, SPLP Ext.		
493138	122B-1031	07/02/02	Soil
493820	122B-1031, TCLP Ext.		
493821	122B-1031, SPLP Ext.		
493139	122B-1032	07/02/02	Soil
493140	122B-1033	07/02/02	Soil
493141	122B-0004	07/02/02	Water
493142	122B-0004,TCLP Ext.		
493143	122B-0004,SPLP Ext.		

Lab ID	Client Sample ID	Sample Date	Sample Matrix
	Received: 07/05/02 ETR No:88706		
493193	122B-1034	07/03/02	Soil
493194	122B-1035	07/03/02	Soil
	Client	Sample	Sample

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Lab ID	Sample ID	Date	Matrix
	Received: 07/05/02 ETR No:88706 cont.		
493195	122B-1036	07/03/02	Soil
493196	122B-1037	07/03/02	Soil
493196MS	122B-1038MS	07/03/02	Soil
493196DP	122B-1039REP	07/03/02	Soil
	Received: 07/10/02 ETR No:88733		
493359	122B-1040	07/08/02	Soil
493360	122B-1041	07/09/02	Soil
493361	122B-1042	07/09/02	Soil
	Received: 07/12/02 ETR No:88778		
493662	122B-1043	07/10/02	Soil
493663	122B-1044	07/10/02	Soil
493664	122B-1045	07/10/02	Soil
493665	122B-1046	07/10/02	Soil

Documentation that identifies the condition of the samples at the time of sample receipt and the issues arising at the time of sample log-in is included in the Sample Handling section of this submittal.

Total Organic Carbon by Lloyd Kahn Method

During the analysis which occurred on July 17th, the comparability between sample iterations was greater than the method guideline of 20%. Samples were reanalyzed on July 18th yielding similar results and confirming heterogeneity of samples.

Metals by CLP (ILM04.1) Method

Samples were initially screened for lead on July 15, 2002 and July 22, 2002. Based on these results, additional analyses were assigned. Samples displaying relatively high concentrations of lead (as determined by the client) were subsequently logged in for the full target analyte list (TAL) of metals and / or the Toxicity Characteristic Leaching Procedure (TCLP) and Synthetic Precipitation Leaching Procedure (SPLP) followed by metals analysis. Because of this delay in assignment for TCLP extraction, the 5-day holding time between the verified time of sample receipt and the extraction procedure for mercury was not met.

Sodium was reported in relatively high concentrations during the analysis of the TCLP method prep blank. This element is inherent in the extraction fluid used during the leachate procedure and as such, TCLP extracts of the field samples were not reanalyzed for this element if the result was reported above the instrument's calibration range. These results have been flagged with an "OR" to denote that the result is over the linear range of the instrument.

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Results from the serial dilution analysis of 122B-1026 were greater than the established control criteria of ±10% for copper (29.4%). Field sample results have been qualified with an "E" to denote what the laboratory believes to be matrix-related interference.

The recovery of lead from the laboratory fortified aliquot of sample 122B-1038 (134%) was above the established control range of 75-125%. Lead results have been flagged with an "N" accordingly.

If there are any questions regarding this submittal, please contact Jeannine McCrumb at (802) 655-1203.

This report shall not be reproduced, except in full, without the written approval of the laboratory. This report is sequentially numbered starting with page 0001 and ending with page 1298.

I certify that this package is in compliance with the NELAC requirements, both technically and for completeness, for other than the conditions detailed above. The release of the data contained in this hardcopy data package has been authorized by the Laboratory Director or his designee, as verified by the following signature.

Sincerely,

Michael F. Wheeler, Ph.D.
Laboratory Director

Enclosure
MFW/jta/jmm

SEVERN TRENT SERVICES

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July 31, 2002

Mr. David Babcock
Parsons Engineering Science Inc.
290 Elwood Davis Road
Suite 312
Liverpol, NY 03088

Re: Laboratory Project No.: 22035
SDG: 88784

Dear Mr. Babcock:

Enclosed are the analytical results of samples received intact by Severn Trent Laboratories on July 12, 2002. Laboratory numbers have been assigned and designated as follows:

Lab ID	Client Sample ID	Sample Date	Sample Matrix
	Received: 07/12/02 ETR No:88784		
493731	122B-1047	07/10/02	Soil
493732	122B-1048	07/10/02	Soil
493733	122B-1049	07/10/02	Soil
493734	122B-1050	07/10/02	Soil
493735	122B-1051	07/10/02	Soil
493736	122B-1052	07/10/02	Soil
493737	122B-1053	07/10/02	Soil
493738	122B-1054	07/11/02	Soil
493739	122B-1055	07/11/02	Soil
493739MS	122B-1056MS	07/11/02	Soil
493739DP	122B-1057REP	07/11/02	Soil
493740	122B-1058	07/11/02	Soil
493741	122B-1059	07/11/02	Soil
493742	122B-1060	07/11/02	Soil
493743	122B-1061	07/11/02	Soil
493744	122B-1062	07/11/02	Soil
493745	122B-1063	07/11/02	Soil
493746	122B-0005	07/10/02	Water
493788	122B-0005,TCLP Ext.	07/10/02	TCLPExt.
493789	122B-0005,SPLP Ext.	07/10/02	SPLPExt.

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Documentation that identifies the condition of the samples at the time of sample receipt and the issues arising at the time of sample log-in is included in the Sample Handling section of this submittal.

Metals by CLP (ILM04.1) Method
Sodium was reported in relatively high concentrations during the analysis of the TCLP method prep blank. This element is inherent in the extraction fluid used during the leachate procedure and as such, TCLP extracts of the field samples were not reanalyzed for this element if the result was reported above the instrument's calibration range. These results have been flagged with an "OR" to denote that the result is over the linear range of the instrument.

The Lead analysis performed for the matrix spike sample 122B-1056MS yielded a percent recovery that marginally exceeded the established control limit of 125 percent.

TCLP and SPLP extraction blank samples were prepared and analyzed in the course of this analytical work. Sample 122B-0005 was a liquid sample and required only the filtration and not the rotary extraction process. However, the extraction blank results reported from the ICP analysis reflect the entire process and not just the filtration process. Please note that no target elements were detected in the analysis of these blank samples.

Total Organic Carbon by Lloyd Kahn Method
During the analyses that occurred on July 18th, the comparability between sample iterations were greater than the method guideline of 20%. Samples were reanalyzed on July 21st yielding similar results and confirming heterogeneity of samples. The results from the initial analyses have been formally presented in this case submittal. The data from the re-analyses have been included in the data package as well.

If there are any questions regarding this submittal, please contact Jeannine McCrumb at (802) 655-1203.

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I certify that this package is in compliance with the NELAC requirements, both technically and for completeness, for other than the conditions detailed above. The release of the data contained in this hardcopy data package has been authorized by the Laboratory Director or his designee, as verified by the following signature.

Sincerely,

Michael F. Wheeler, Ph.D.
Laboratory Director

Enclosure
MFW/jta/jmm

0001-B LAST ALPHA

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August 8, 2002

Mr. David Babcock
Parsons Engineering Science Inc.
290 Elwood Davis Road
Suite 312
Liverpol, NY 03088

Re: Laboratory Project No.: 22035
SDG: 88921

Dear Mr. Babcock:

Enclosed are the analytical results of samples received intact by Severn Trent Laboratories on June 28, July 3 and July 12, 2002. Laboratory numbers have been assigned and designated as follows:

Lab ID	Client Sample ID	Sample Date	Sample Matrix
	Received: 07/24/02 ETR No:88921		
494809	122B-1040	07/08/02	Soil
494810	122B-1041	07/09/02	Soil
494811	122B-1042	07/09/02	Soil
494812	122B-1042,TCLP Ext.	07/09/02	TCLP Ext.
494813	122B-1042,SPLP Ext.	07/09/02	SPLP Ext.
494814	122B-1046	07/10/02	Soil
494815	122B-1046,TCLP Ext.	07/10/02	TCLP Ext.
494816	122B-1046,SPLP Ext.	07/10/02	SPLP Ext.
494817	122B-1053	07/10/02	Soil
494818	122B-1059	07/11/02	Soil
494919	122B-1059,TCLP Ext.	07/11/02	TCLP Ext.
494920	122B-1059,SPLP Ext.	07/11/02	SPLP Ext.
494921	122B-1063	07/11/02	Soil

This sample delivery group (SDG) consists of samples previously screened for lead on July 22nd. This report contains results for those samples assigned analyses for TAL metals, TCLP metals, and / or SPLP metals. Because TCLP assignments were made based on preliminary screen results, the 5-day holding time between the verified time of sample receipt and the extraction procedure for mercury was not met.

Metals by CLP (ILM04.1) Method
Sodium was reported in relatively high concentrations during the analysis of the TCLP samples. This element is inherent in the extraction fluid used during the leachate procedure and as such, TCLP extracts of the field samples were not reanalyzed for this element if the result was reported above the instrument's calibration range. These results have been flagged with an "OR" to denote that the result is over the linear

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range of the instrument. In evaluating the TCLP preparation blank, the laboratory noted that the sodium concentration was relatively low. The laboratory believes that the incorrect extraction fluid (extraction fluid #2) was inadvertently used for the creation of the TCLP blank.

The SPLP preparation blank for mercury analyzed on July 30, 2002 yielded a result of 0.268 ug/L. Although this result does not meet control criteria under the ILM04.1 Statement of Work for preparation blanks (concentration should be less than the CRDL), it is less than the standard reporting limit for mercury in SPLP extracts (1 mg/L) as established by the laboratory.

Results from the serial dilution analysis of 122B-1040 were greater than the established control criteria for copper, chromium and zinc. Field sample results have been qualified with an "E" to denote what the laboratory believes to be matrix-related interference.

If there are any questions regarding this submittal, please contact Jeannine McCrumb at (802) 655-1203.

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I certify that this package is in compliance with the NELAC requirements, both technically and for completeness, for other than the conditions detailed above. The release of the data contained in this hardcopy data package has been authorized by the Laboratory Director or his designee, as verified by the following signature.

Sincerely,

Michael F. Wheeler, Ph.D.
Laboratory Director

Enclosure
MFW/jta/jmm

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July 30, 2002

Mr. David Babcock
Parsons Engineering Science Inc.
290 Elwood Davis Road
Suite 312
Liverpol, NY 03088

Re: Laboratory Project No.: 22035
SDG: 88924

Dear Mr. Babcock:

Enclosed are the analytical results of samples received intact by Severn Trent Laboratories on July 24, 2002. Laboratory numbers have been assigned and designated as follows:

Lab ID	Client Sample ID	Sample Date	Sample Matrix
	Received: 07/24/02 ETR No:88924		
494826	122B-0006	07/22/02	Water
494827	122B-2000	07/22/02	Water
494828	122B-2001	07/22/02	Water
494828MS	122B-2002MS	07/22/02	Water
494828MD	122B-2003MSD	07/22/02	Water
494829	122B-2004	07/22/02	Water
494830	122B-2005	07/22/02	Water

Documentation that identifies the condition of the samples at the time of sample receipt and the issues arising at the time of sample log-in is included in the Sample Handling section of this submittal.

Metals by CLP (ILM04.1) Method
The laboratory noted no exceptions to the method quality control requirements during the metals analyses of the samples associated with this delivery group.

If there are any questions regarding this submittal, please contact Jeannine McCrumb at (802) 655-1203.

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Sincerely,

Michael F. Wheeler, Ph.D.
Laboratory Director

Enclosure
MFW/jta/jmm

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September 11, 2002

Mr. David Babcock
Parsons Engineering Science Inc.
290 Elwood Davis Road
Suite 312
Liverpol, NY 03088

Re: Laboratory Project No.: 22035
SDG: 89606

Dear Mr. Babcock:

Enclosed are the analytical results for samples received by Severn Trent on June 26, 2002. Laboratory numbers have been assigned and designated as follows:

Lab ID	Client Sample ID	Sample Date	Sample Matrix
	Received: 06/26/02 ETR No:89606		
500442	122B-1010A-DUP	06/26/02	Soil
500442MS	122B-1010A-DUPMS	06/26/02	Soil
500442DP	122B-1010A-DUPREP	06/26/02	Soil
500443	122B-1011A-DUP	06/26/02	Soil
500443MS	122B-1011A-DUPMS	06/26/02	Soil
500443DP	122B-1011A-DUPREP	06/26/02	Soil

In an email exchange dated September 4, 2002, the client requested additional metals analyses for samples 122B-1010A and 122B-1011A. These samples were originally analyzed for lead as part of sample delivery groups 88617 and 88619 and information regarding the condition of samples upon receipt can be found in those data packages.

Please note that the mercury analysis for these samples was performed beyond the maximum holding time of 26 days as specified under the New York State Analytical Services Protocol.

Metals by CLP (ILM04.1) Method
Results from the serial dilution analysis of 122B-1010A DUP were greater than the established control criteria for copper, calcium and zinc. Similarly, results from the serial dilution analysis of sample 122B-1011A DUP were above the control limits for aluminum, arsenic, calcium, copper, iron, nickel, and zinc. Field sample results have been qualified with an "E" to denote what the laboratory believes to be matrix-related interference.

The recovery of antimony from the laboratory fortified aliquot of sample 122B-1010A DUP was 60.9% which is below the control range of 75-125%. The recoveries of antimony (39.4%), arsenic (45.6%), and

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zinc (125.5%) from the laboratory fortified aliquot of sample 122B-1011A DUP were also outside of the established control range. These metals were adequately recovered from the associated post-digestate spike samples and from the laboratory control samples associated with the analytical sequence.

Reproducibility between results for lead from the initial and duplicate analysis of sample 122B-1010A DUP was poor with a relative percent difference of 62.6. Reproducibility for lead in sample 122B-1011A DUP proved acceptable. Arsenic results, however, yielded a relative percent difference just above the acceptance criteria of +/- 20 percent.

If there are any questions regarding this submittal, please contact Jeannine McCrumb at (802) 655-1203.

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I certify that this package is in compliance with the NELAC requirements, both technically and for completeness, for other than the conditions detailed above. The release of the data contained in this hardcopy data package has been authorized by the Laboratory Director or his designee, as verified by the following signature.

Sincerely,

Michael F. Wheeler, Ph.D.
Laboratory Director

Enclosure
jta/jmm

2004 TREATABILITY STUDY

PARSONS
100 Summer Street • Boston, MA • Tel: [617] 457-7900 • Fax: [617] 457-7979

INTEROFFICE MEMORANDUM

TO:	Dan Hoffner	**PROJECT NO:**	741401-04100
FROM:	Chunhua Liu	**FILE NO:**	
DATE:	March 2, 2004	**CC:**	
SUBJECT:	**Summary of Data Usability Associated with Small Arms Range Project**		

This memo presents an overall summary of data usability associated with the Small Arms Range Project. The detailed validation sheets are attached to the end of this memo. The data reviewed are from the following SDGs: 104959, 105225, 105711, 106067, and 107314 submitted by General Engineering Laboratories, LLC. Total lead was analyzed in the collected soil samples by Method 6010B.

Data Validation was performed by Parsons Corporation and completed under the guidelines set forth in the "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review", 2002; "Region 2 RCRA and CERCLA Data Validation Standard Operating Procedures", and NYSDEC Contract Laboratory Program Analytical Services Protocol, with consideration for the methodology and project requirements. The level III data evaluation included performance of a completeness audit and a review of the following parameters, where applicable: holding times, sample reservations, percentage of solids, quality control (QC) results of calibration, equipment/rinsate blanks, trip blanks, method blanks, matrix spike/matrix spike duplicate (MS/MSD) analyses, laboratory control sample performances, lab and field duplicates, ICP serial dilution, and surrogate recoveries. In performing the data validation, spot checks were conducted in accordance with the Region 2 SOP to evaluate whether there is any transcription error. The raw data for the field samples and QC samples were not evaluated.

Overall Summary of Data Usability

Parsons has reviewed data from General Engineering Laboratories, LLC. for the following SDGs: 104959, 105225, 105711, 106067, and 107314. The data reviewed were determined to be usable. There were no data rejected in these SDGs.

Technical Issues

All the samples were prepared and analyzed following the COC. All samples arrived at the laboratory in acceptable condition and were prepared and analyzed within the hold time required for the total lead analysis. With the exception of the issues specified as follows, all quality control/quality assurance results were acceptable. Please see the attached validation sheets for detailed information.

Precision

Precision is determined by evaluating the Relative Percent Difference (RPD) of the parent/field duplicate, parent/laboratory duplicate, and MS/MSD for the total lead analysis. The RPDs exceeded the limits for the following samples:

	RPD	SDG
CS-003 and its lab duplicate	187.8%	104959
CS-003MS/MSD	118.7%	104959
CS010 and its field duplicate CS010D	125%	105711

The Company-Wide Nonconformance Report issued by the laboratory indicated that the failed RPD was due to inhomogeneous characteristics of the sample and that CS-003 was a black wet soil, medium texture with rocks.

RPDs of other parent/laboratory duplicates (i.e., CS001, CS008, CS009A, SOAD SAR CS010A and their respective duplicates) were all below 100%. No other field duplicate pair was available.

Matrix Impacts

Spike sample and spike sample recoveries for CS-003 (SDG 104959) were 220.8% and 959%, respectively. The elevated MS/MSD recoveries may be due to the heterogeneity of the samples, as discussed above.

All the other spike sample and spike duplicate sample results (i.e., CS001A, CS008, CS009A, SOAD SAR CS010A) were all within the limits.

ICP Serial Dilution

All ICP serial dilution results met requirement with the following exception:

	RPD	SDG
CS-003	13.3%	104959

CRDL Standard Check

The recoveries of CRDL check standard were below 80% for the ICP runs in SDG 105225. However, as all lead results were above the potential affected range, no action was taken.

Validation Sheets

See attached validation sheets for detailed information.

DEFINITIONS OF DATA QUALIFIERS – INORGANICS

J	The associated value is an estimated quantity.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
UJ	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The data was unusable. (Note: Analyte may or may not be present.)
NA	Not analyzed.

PROJECT NAME/NO. Airfield Small Arms Range
SDG: 104959
FRACTION: Total Pb
LAB: General Engineering Laboratories, LLC
MEDIA: Soil

CRITERIA	Did Analyses Meet all criteria as specified in the SOPS?	If no, specify analysis IDs which do not meet criteria	Comments/Qualifying Actions	Qualifiers Added?
Data Completeness, Holding Times & Reservation	Yes		All three samples listed in the COC were analyzed and the results were presented in the package. Holding time met criteria. Cooler temperature was 4.6C. Solid percentage was at least 50 percent in all samples. It is not indicated on the COC whether the samples were preserved with ice, the lab receipt shows that the samples were preserved with ice, no action was taken.	No
Calibration	Yes		Calibrations available, taken avery ten samples, and within recovery limits for metals.	No
Blanks (method blank, prep blank)	Yes		ICB analyzed for lead. CCB analyzed for lead every ten samples, all samples were less than the CRDL. Preparation blank analyzed for lead and within CRDL limits.	No
Interference Check Sample	Yes		Met requirements for lead.	No
CRDL Standard	YES		CRDL Check Standard was available for each ICP run. The recovery (120%) was within the required limit of 80%~120%. No action was taken.	No
Laboratory Control Sample	Yes		Solid LCS results within limits for lead.	No
Duplicates	NO		Duplicate analysis was conducted for CS-003 and CS-003MS. RPD between CS-003 and its duplicate was 187.8% and RPD between CS-003MS and its duplicate was118.7%. Both RPDs were above the limit (i.e., 100%). J all results as all the samples in this SDG were considered similar. The Company-Wide Nonconformance Report indicated the failed RPD due to inhomogeneous characteristics of the sample. CS-003 was a black wet soil, medium texture with rocks.	YES
Spike Sample Analysis	NO		Spike sample and duplicate spike sample recoveries for CS-003 were 220.8% and 959%, repectively. The spike recoveries were above the upper limit defined in the Region II SOP (i.e., 125%). The elevated MS/MSD recoveries may be due to the heterogeneity of the samples. The Company-Wide Nonconformance Report indicated CS-003 was a black wet soil, medium texture with rocks. As a result, the data were considered usable and J all the detects. It should be noted that the field duplicate samples collected at the same site (SDG 105711) indicated the heterogeneity of the samples.	YES
ICP Serial Dilution	NO		ICP Serial Dilution was conducted for CS-003. The percentage of difference exceeded the requirement by Region II SOP (13.3% vs. 10%). As all detects>10*IDL, J all sample results.	YES
Detection Limits	YES		IDL's available and less than CRDL's. No transcription error found.	No
ICP Linear Range	YES		All lead concentrations were within the ICP linear range.	No
Solids Percentage	YES		Solid percentage for all samples greater than 50%.	No

PROJECT NAME/NO. Airfield Small Arms Range
SDG: 105225
FRACTION: Total Pb
LAB: General Engineering Laboratories, LLC
MEDIA: Soil

CRITERIA	Did Analyses Meet all criteria as specified in the SOPS?	If no, specify analysis IDs which do not meet criteria	Comments/Qualifying Actions	Qualifiers Added?
Data Completeness, Holding Times & Reservation	Yes		All six samples listed in the COC were analyzed and the results were presented in the package. Holding time met criteria. Cooler temperature was 3C. Solid percentage was at least 50 percent in all samples. It is not indicated on the COC whether the samples were preserved with ice, the lab receipt shows that the samples were preserved with ice, no action was taken.	No
Calibration	Yes		Calibrations available, taken avery ten samples, and within recovery limits for metals.	No
Blanks (method blank, prep blank)	Yes		ICB analyzed for lead. CCB analyzed for lead every ten samples, all samples were less than the CRDL. Preparation blank analyzed for lead and within CRDL limits.	No
Interference Check Sample	Yes		Met requirements for lead.	No
CRDL Standard	NO		CRDL Check Standard was available for each ICP run. The recoveries were below the lower limit (i.e., 80%) for both ICP runs. As all lead results were above the potential affected range, no action was taken.	No
Laboratory Control Sample	Yes		Solid LCS results within limits for lead.	No
Duplicates	YES		Duplicate analysis was conducted for CS001A and CS001A matrix spike samples. Duplicate results met requirements for lead (i.e., RPD<50%).	NO
Spike Sample Analysis	YES		Spike sample and duplicate spike sample results for CS001A were within the limits for lead.	NO
ICP Serial Dilution	YES		ICP Serial Dilution was conducted for CS001A. The percentage of difference met requirement (i.e., <10%).	NO
Detection Limits	YES		IDL's available and less than CRDL's. No transcription error found.	No
ICP Linear Range	YES		All lead concentrations were within the ICP linear range.	No
Solids Percentage	YES		Solid percentage for all samples greater than 50%.	No

PROJECT NAME/NO. Airfield Small Arms Range
SDG: 105711
FRACTION: Total Pb
LAB: General Engineering Laboratories, LLC
MEDIA: Soil

CRITERIA	Did Analyses Meet all criteria as specified in the SOPS?	If no, specify analysis IDs which do not meet criteria	Comments/Qualifying Actions	Qualifiers Added?
Data Completeness, Holding Times & Reservation	Yes		All samples listed in the COC were analyzed and the results were presented in the package. Holding time met criteria. Cooler temperature was 2.4C. Solid percentage was at least 50 percent in all samples. It is not indicated on the COC whether the samples were preserved with ice, the lab receipt shows that the samples were preserved with ice, no action was taken.	No
Calibration	Yes		Calibrations available, taken avery ten samples, and within recovery limits for metals.	No
Blanks (method blank, prep blank)	Yes		ICB analyzed for lead. CCB analyzed for lead every ten samples, all samples were less than the CRDL. Preparation blank analyzed for lead and within CRDL limits.	No
Interference Check Sample	Yes		Met requirements for lead.	No
CRDL Standard	Yes		CRDL Check Standard was available for the ICP run and the recovery was within the limits.	No
Laboratory Control Sample	Yes		Solid LCS results within limits for lead.	No
Duplicates	NO		Duplicate analysis was conducted for CS008. Duplicate results met requirements for lead, %D<100%. A field duplicate pair was available (CS010 and CS010D). %D was above 100%, indicating heterogeneity of the samples at the Site. J both results.	Yes
Spike Sample Analysis	YES		Spike sample and duplicate spike sample results for CS008 were within the limits for lead.	No
ICP Serial Dilution	YES		ICP Serial Dilution was conducted for CS008. The percentage of difference met requirement (i.e., <10%).	No
Detection Limits	YES		IDL's available and less than CRDL's. No transcription error found.	No
ICP Linear Range	YES		All lead concentrations were within the ICP linear range.	No
Solids Percentage	YES		Solid percentage for all samples greater than 50%.	No

PROJECT NAME/NO. Airfield Small Arms Range
SDG: 106067
FRACTION: Total Pb
LAB: General Engineering Laboratories, LLC
MEDIA: Soil

CRITERIA	Did Analyses Meet all criteria as specified in the SOPS?	If no, specify analysis IDs which do not meet criteria	Comments/Qualifying Actions	Qualifiers Added?
Data Completeness, Holding Times & Reservation	Yes		All samples listed in the COC were analyzed and the results were presented in the package. Holding time met criteria. Cooler temperature was 2.5C. Solid percentage was at least 50 percent in all samples. It is not indicated on the COC whether the samples were preserved with ice, the lab receipt shows that the samples were preserved with ice, no action was taken.	No
Calibration	Yes		Calibrations available, taken avery ten samples, and within recovery limits for metals.	No
Blanks (method blank, prep blank)	Yes		ICB analyzed for lead. CCB analyzed for lead every ten samples, all samples were less than the CRDL. Preparation blank analyzed for lead and within CRDL limits.	No
Interference Check Sample	Yes		Met requirements for lead.	No
CRDL Standard	Yes		CRDL Check Standard was available for the ICP run and the recovery was within the limits.	No
Laboratory Control Sample	Yes		Solid LCS results within limits for lead.	No
Duplicates	YES		Duplicate analysis was conducted for CS009A and its spiked sample. Duplicate results met requirements for lead, %D<100%.	No
Spike Sample Analysis	YES		Spike sample and duplicate spike sample results for CS009A were within the limits for lead.	No
ICP Serial Dilution	YES		ICP Serial Dilution was conducted for CS009A. The percentage of difference met requirement (i.e., <10%).	No
Detection Limits	YES		IDL's available and less than CRDL's. No transcription error found.	No
ICP Linear Range	YES		All lead concentrations were within the ICP linear range.	No
Solids Percentage	YES		Solid percentage for all samples greater than 50%.	No

PROJECT NAME/NO. Airfield Small Arms Range
SDG: 107314
FRACTION: Total Pb
LAB: General Engineering Laboratories, LLC
MEDIA: Soil

CRITERIA	Did Analyses Meet all criteria as specified in the SOPS?	If no, specify analysis IDs which do not meet criteria	Comments/Qualifying Actions	Qualifiers Added?
Data Completeness, Holding Times & Reservation	Yes		All samples listed in the COC were analyzed and the results were presented in the package. Holding time met criteria. Cooler temperature was 4.1C. Solid percentage was at least 50 percent in all samples. It is not indicated on the COC whether the samples were preserved with ice, the lab receipt shows that the samples were preserved with ice, no action was taken.	No
Calibration	Yes		Calibrations available, taken avery ten samples, and within recovery limits for metals.	No
Blanks (method blank, prep blank)	Yes		ICB analyzed for lead. CCB analyzed for lead every ten samples, all samples were less than the CRDL. Preparation blank analyzed for lead and within CRDL limits.	No
Interference Check Sample	Yes		Met requirements for lead.	No
CRDL Standard	Yes		CRDL Check Standard was available for the ICP run and the recovery was within the limits.	No
Laboratory Control Sample	Yes		Solid LCS results within limits for lead.	No
Duplicates	YES		Duplicate analysis was conducted for SOAD SAR CS010A and its spiked sample. Duplicate results met requirements for lead, %D<100%. It should be noted that the lab issued a company-wide nonconformance report indicating that the RPD recovery failed due to sample not homogeneous. The nonconformance report indicated SOAD SAR CS010A was a dark gray soil with some rocks throughout and in medium texture.	No
Spike Sample Analysis	YES		Spike sample and duplicate spike sample results for SOAD SAR CS010A were within the limits for lead.	No
ICP Serial Dilution	YES		ICP Serial Dilution was conducted for SOAD SAR CS010A. The percentage of difference met requirement (i.e., <10%).	No
Detection Limits	YES		IDL's available and less than CRDL's. No transcription error found.	No
ICP Linear Range	YES		All lead concentrations were within the ICP linear range.	No
Solids Percentage	YES		Solid percentage for all samples greater than 50%.	No

GC/MS Volatile Organics
Parsons Engineering Science, Inc (PARS)
SDG 104890

Method/Analysis Information

Procedure:	Volatile Organic Compounds (VOC) by Gas Chromatography/Mass Spectrometer
Analytical Method:	SW846 8260B
Prep Method:	SW846 5035
Analytical Batch Number:	302968
Prep Batch Number:	303243

Sample Analysis

The following client and quality control samples were analyzed to complete this sample delivery group/work order using the methods referenced in the Analysis Information section:

Sample ID	Client ID
104890004	SEAD-SAR-001
104890005	SEAD-SAR-002
104890006	SEAD-SAR-003
1200554535	Method Blank (MB)
1200554836	Laboratory Control Sample (LCS)
1200554842	Laboratory Control Sample (LCS)
1200554694	Laboratory Control Sample Duplicate (LCSD)

Preparation/Analytical Method Verification

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-026 REV# 9.

Calibration Information
Due to software limitations, all the data files comprising the initial calibration curve may not be listed on the initial calibration summary form. All calibration files are listed in the calibration history report in the "Standard Data" section.

Initial Calibration
All the initial calibration requirements were met.

Continuing Calibration Verification Requirements
All the continuing calibration verification (CCV) requirements were met. In addition, the CCV was evaluated in accordance with DOD QC requirements. The criteria states that all target analytes should have a %D (Difference of Drift) of ≤25%. In the following CCV(s), the following target analyte(s) did not meet this criteria:

Date of CCV	Target Analyte(s)
01/14/04	Acrolein (43.5%)
	Benzyl chloride (44.1%)
	trans-1,4-Dichloro-2-butene (39.0%)

The response factor for the target analytes in each CCV was greater than the average response factor in the initial calibration. Detection and quantitation of these analytes in samples would be considered biased high.

Quality Control (QC) Information

Method Blank Acceptance
Target analytes were not detected above the reporting limit in the blank.

Surrogate Recoveries
Surrogate recoveries, in all samples and quality control samples, were within the acceptance limits.

QC Sample Designation
Due to insufficient sample volume encountered using 5035 sampling procedures, the analysis of a matrix spike (MS) and matrix spike duplicate (MSD) was not possible. Instead, a laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) were analyzed for QC purposes.

Laboratory Control Sample Recovery Statement (LCS)
All the required analyte recoveries in the LCS(s) were within the acceptance limits, except for the high recoveries for acrolein, tran-1,4-dichloro-2-butene, and benzyl chloride in 1200554836 (VBLK01SLCS). The LCS requirements were still met, since the number of failures did not exceed the allowable marginal exceedance criteria.

Laboratory Control Sample Duplicate Recovery Statement (LCSD)
All the required analyte recoveries in the laboratory control sample duplicate were within the acceptance limits.

Relative Percent Difference Statement
The RPD between the LCS and LCSD recoveries were within the acceptance limits.

Internal Standard (ISTD) Acceptance
The internal standard responses, in all samples and quality control samples, met the required acceptance criteria.

Technical Information

Holding Time Specifications
All the samples were prepared and/or analyzed within the required holding time period.

Sample Preservation and Integrity
All samples met the sample preservation and integrity requirements.

Preparation/Analytical Method Verification
All procedures were performed as stated in the SOP.

Sample Dilutions
The samples in this sample delivery group/work order did not require dilutions.

Sample Re-prep/Re-analysis
Re-analyses were not required for samples in this sample delivery group/work order.

Miscellaneous Information

Electronic Package Comment
The following package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative of each electronic package will indicate the analyst, reviewer, and report specialist names associated with the generation of the data and package. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Nonconformance (NCR) Documentation
A nonconformance report was not required for this sample delivery group/work order.

Manual Integrations
Data files associated with the initial calibration, continuing calibration check, and samples did not require manual integrations.

TIC Comment
Tentatively identified compounds (TIC) were not required for this sample delivery group/work order.

Additional Comments
There were no additional comments.

System Configuration

The Volatile analysis was performed by Gas Chromatography/Mass Spectroscopy.

Instrument ID	System Configuration	Column ID	Column Description	P & T Trap
VOA1.I	HP6890/HP5973	RESTEK	RTX-Volatiles, 30m x 0.25 mm, 1.0um	Trap 10

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Review Validation

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer: Charles Wilson Date: 01-21-04

Metals Case Narrative
Parsons Engineering Science, Inc (PARS)
SDG 104890

Method/Analysis Information

Analytical Batch:	302206, 302138
Prep Batch :	302200, 302137
Standard Operating Procedures:	GL-MA-E-013 REV# 8, GL-MA-E-010 REV# 13, GL-MA-E-009 REV# 10
Analytical Method:	SW846 6010B, SW846 7471A
Prep Method :	SW846 3050B, SW846 7471A Prep

Sample Analysis

Sample ID	Client ID
104890001	SEAD-SAR-001
104890002	SEAD-SAR-002
104890003	SEAD-SAR-003
104890004	SEAD-SAR-001
104890005	SEAD-SAR-002
104890006	SEAD-SAR-003
1200552013	Method Blank (MB) in batch 302206
1200552018	Laboratory Control Sample (LCS) in batch 302206
1200552015	104890001(SEAD-SAR-001L) Serial Dilution (SD) in batch 302206
1200552014	104890001(SEAD-SAR-001D) Sample Duplicate (DUP) in batch 302206
1200552016	104890001(SEAD-SAR-001S) Matrix Spike (MS) in batch 302206
1200552017	104890001(SEAD-SAR-001SD) Matrix Spike Duplicate (MSD) in batch 302206
1200551842	Method Blank (MB) in batch 302138
1200551843	Laboratory Control Sample (LCS) in batch 302138
1200551844	104890004(SEAD-SAR-001D) Sample Duplicate (DUP) in batch 302138
1200551845	104890004(SEAD-SAR-001S) Matrix Spike (MS) in batch 302138
1200551846	104890004(SEAD-SAR-001SD) Matrix Spike Duplicate (MSD) in batch 302138

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by General Engineering Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

System Configuration

The ICP analysis was performed on a Thermo Jarrell Ash 61E Trace axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with a Burgener nebulizer, cyclonic spray chamber, and yttrium internal standard. Operating conditions for the Trace ICP are set at a power level of 950 watts. The instrument has a peristaltic pump flow rate of 140 RPM (2.0 mL/min sample uptake rate), argon gas flows of 15 L/min and 0.5 L/min for the torch and auxiliary gases, and a pressure setting of 26 PSI for the nebulizer.

The Mercury analysis was performed on a Perkin-Elmer Flow Injection Mercury System (FIMS-400) automated mercury analyzer. The instrument consists of a cold vapor atomic absorption spectrometer set to detect mercury at a wavelength of 254 nm. Sample introduction through the flow injection system is performed via a peristaltic pump at 9 mL/min and nitrogen carrier gas rate of 80mL/min.

Calibration Information

Instrument Calibration
The instrument calibrations are conducted using the method and instrument manufacturer's specifications. All initial calibration requirements have been met for this SDG.

CRDL Requirements
All CRDL standard(s) met the referenced advisory control limits.

Continuing Calibration Blank (CCB) Requirements
All continuing calibration blanks (CCB) bracketing this batch met the established acceptance criteria. A bracketing CCB had a concentration of Ni that was greater than the CRDL; however, the concentration of Ni in the samples was greater than ten times the concentration detected in the CCB.

Continuing Calibration Verification (CCV) Requirements
All continuing calibration verifications (CCV) bracketing this SDG met the acceptance criteria.

ICSA/ICSAB statement
All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria.

Quality Control (QC) Information

Method Blank (MB) Acceptance
The method blanks analyzed with this SDG did not contain analytes of interest at concentrations greater than the client required detection limits (CRDL).

LCS Recovery Statement
The laboratory control samples (LCS) met the recommended acceptance criteria for percent recovery (%R) for all elements of interest.

Quality Control (QC) Sample Statement
The following samples were selected as the quality control (QC) samples for this batch: 104890004 (SEAD-SAR-001) in batch 302138 and 104890001 (SEAD-SAR-001) in batch 302206.

Matrix Spike Recovery Statement
The percent recovery (%R) obtained from the matrix spike (MS) analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. All applicable analytes met the acceptance

criteria in batch 302138. All applicable analytes did not meet the acceptance criteria in batch 302206 due to possible matrix interference. See NCR #86403 located in the Miscellaneous Section.

Matrix Spike Duplicate Recovery Statement
The percent recovery (%R) obtained from the matrix spike duplicate (MSD) analyses are evaluated when the sample concentration is less than four time (4X) the spike concentration added. All applicable elements met the acceptance criteria in batch 302138. All applicable analytes did not meet the acceptance criteria in batch 302206 due to possible matrix interference. See NCR #86403 located in the Miscellaneous Section.

MSD RPD Statement
The relative percent difference (RPD) obtained from the designated matrix spike duplicate (MSD) is evaluated based on acceptance criteria of 20%. The RPD between qualifying elements results in the MS and MSD were within the acceptance limits of 20% in batch 302138. Several analytes were not within the acceptance limits in batch 302206 due to possible sample non-homogeneity. See NCR #86403 located in the Miscellaneous Section.

Duplicate RPD Statement
The relative percent difference (RPD) obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is 5X the contract required detection limit (RL). In cases were either the sample or duplicate value is less than 5X the contract required detection limit (RL), a control of +/-RL is used to evaluate the DUP results. All applicable analytes in batch 302138 met these requirements. Several analytes in batch 302206 did not meet these requirements due to possible sample non-homogeneity. See NCR #86403 located in the Miscellaneous Section.

Serial Dilution % Difference Statement
The serial dilution is used to assess interferences due to matrix suppression or enhancement. Raw element concentrations that are at least 50X the instrument detection limit (IDL) for ICP analyses and 100X the IDL for ICP-MS analyses are applicable for serial dilution assessment. K did not met the acceptance criteria, percent difference value of <10%, as per the analytical method.

Technical Information

Holding Time Specifications
GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the GELIMS system by hours. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time requirements.

Preparation/Analytical Method Verification
All procedures performed in association with this SDG followed the Standard Operating Procedure (SOP) guidelines.

Sample Dilutions
Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in soil samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. No sample dilutions were needed in this SDG.

Preparation Information
The samples in this SDG were prepared exactly according to the cited SOP.

Miscellaneous Information

Nonconformance Documentation
Nonconformance reports (NCRs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. The following NCR was generated with this SDG: #86403. A copy is included in the Miscellaneous Data section of this package.

Additional Comments
No additional comments are needed for this sample group.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Review Validation:

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer: _____ **Date:** 1/19

Metals Case Narrative
Parsons Engineering Science, Inc (PARS)
SDG 104959

Method/Analysis Information

Analytical Batch:	302440
Prep Batch :	302439
Standard Operating Procedures:	GL-MA-E-013 REV# 8, GL-MA-E-009 REV# 10
Analytical Method:	SW846 6010B
Prep Method :	SW846 3050B

Sample Analysis

Sample ID	Client ID
104959001	CS-001
104959002	CS-002
104959003	CS-003
1200552597	Method Blank (MB) **ICP**
1200552602	Laboratory Control Sample (LCS)
1200552599	104959003(CS-003L) Serial Dilution (SD)
1200552598	104959003(CS-003D) Sample Duplicate (DUP)
1200552600	104959003(CS-003S) Matrix Spike (MS)
1200552601	104959003(CS-003SD) Matrix Spike Duplicate (MSD)

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by General Engineering Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

System Configuration

The ICP analysis was performed on a Thermo Jarrell Ash 61E Trace axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with a Burgener nebulizer, cyclonic spray chamber, and yttrium internal standard. Operating conditions for the Trace ICP are set at a power level of 950 watts. The instrument has a peristaltic pump flow rate of 140 RPM (2.0 mL/min sample uptake rate), argon gas flows of 15 L/min and 0.5 L/min for the torch and auxiliary gases, and a pressure setting of 26 PSI for the nebulizer.

Calibration Information

Instrument Calibration
The instrument calibrations are conducted using the method and instrument manufacturer's specifications.

All initial calibration requirements have been met for this SDG.

CRDL Requirements
All CRDL standard(s) met the referenced advisory control limits.

ICSA/ICSAB statement
All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria.

Continuing Calibration Blank (CCB) Requirements
All continuing calibration blanks (CCB) bracketing this batch met the established acceptance criteria.

Continuing Calibration Verification (CCV) Requirements
All continuing calibration verifications (CCV) bracketing this SDG met the acceptance criteria.

Quality Control (QC) Information

Method Blank (MB) Acceptance
The method blank analyzed with this SDG did not contain analytes of interest at concentrations greater than the client required detection limits (CRDL).

LCS Recovery Statement
The laboratory control sample (LCS) met the recommended acceptance criteria for percent recovery (%R) for all elements of interest.

Quality Control (QC) Sample Statement
The following sample was selected as the quality control (QC) sample for this batch: 104959003 (CS-003).

Matrix Spike Recovery Statement
The percent recovery (%R) obtained from the MS analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. Lead did not meet the acceptance criteria, as indicated by the "N" qualifier.

Matrix Spike Duplicate Recovery Statement
The percent recovery (%R) obtained from the MSD analyses are evaluated when the sample concentration is less than four time (4X) the spike concentration added. Lead did not meet the acceptance criteria, as indicated by the "N" qualifier.

MSD RPD Statement
The relative percent difference (RPD) obtained from the designated matrix spike duplicate (MSD) is evaluated based on acceptance criteria of 20%. The RPD between qualifying lead results in the MS and MSD were not within the acceptance limits of 20%, as indicated by the "*" qualifier.

Duplicate RPD Statement
The relative percent difference (RPD) obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is >5X the contract required detection limit(RL). In cases where either the sample or duplicate value is less than 5X the RL, a control of RL is used to evaluate the DUP results. Lead did not meet met these requirements, as indicated by the "*" qualifier. Failures were possibly due to non-homogeneity of the sample. It was a wet black soil that contained some rocks.

Serial Dilution % Difference Statement
The serial dilution is used to assess interferences due to matrix suppression or enhancement. Raw element concentrations that are at least 50X the instrument detection limit (IDL) for ICP analyses and 100X the IDL for ICP-MS analyses are applicable for serial dilution assessment. Lead did not meet the acceptance criteria, percent difference value of <10 as indicated by the "E" qualifier.

Technical Information

Holding Time Specifications
GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the GELIMS system by hours. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time requirements.

Preparation/Analytical Method Verification
All procedures performed in association with this SDG followed the Standard Operating Procedure (SOP) guidelines.

Sample Dilutions
Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in soil samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. Sample 104959001 (CS-001) require a 10x dilution in order to bring lead within the linear range of the instrument.

Preparation Information
The samples in this SDG were prepared exactly according to the cited SOP.

Miscellaneous Information

Nonconformance Documentation
Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. NCR ID 86430 was generated with this SDG. A copy was included in the Miscellaneous Data section of this package.

Additional Comments
No additional comments are needed for this sample group.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Review Validation

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer: Allison M. C. **Date:** 1/15/04

Metals Case Narrative
Parsons Engineering Science, Inc (PARS)
SDG 105225

Method/Analysis Information

Analytical Batch:	303392
Prep Batch :	303391
Standard Operating Procedures:	GL-MA-E-013 REV# 8, GL-MA-E-009 REV# 10
Analytical Method:	SW846 6010B
Prep Method :	SW846 3050B

Sample Analysis

Sample ID	Client ID
105225001	CS 001A
105225002	CS 004
105225003	CS 005
105225004	CS 006
105225005	SAR 004
105225006	SAR 005
1200554796	Method Blank (MB)
1200554801	Laboratory Control Sample (LCS)
1200554798	105225001(CS 001AL) Serial Dilution (SD)
1200554797	105225001(CS 001AD) Sample Duplicate (DUP)
1200554799	105225001(CS 001AS) Matrix Spike (MS)
1200554800	105225001(CS 001ASD) Matrix Spike Duplicate (MSD)

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by General Engineering Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

System Configuration

The ICP analysis was performed on a Thermo Jarrell Ash 61E Trace axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with a Burgener nebulizer, cyclonic spray chamber, and

yttrium internal standard. Operating conditions for the Trace ICP are set at a power level of 950 watts. The instrument has a peristaltic pump flow rate of 140 RPM (2.0 mL/min sample uptake rate), argon gas flows of 15 L/min and 0.5 L/min for the torch and auxiliary gases, and a pressure setting of 26 PSI for the nebulizer.

Calibration Information

Instrument Calibration
The instrument calibrations are conducted using the method and instrument manufacturer's specifications. All initial calibration requirements have been met for this SDG.

CRDL Requirements
All CRDL standard(s) met the referenced advisory control limits.

ICSA/ICSAB statement
All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria.

Continuing Calibration Blank (CCB) Requirements
All continuing calibration blanks (CCB) bracketing this batch met the established acceptance criteria.

Continuing Calibration Verification (CCV) Requirements
All continuing calibration verifications (CCV) bracketing this SDG met the acceptance criteria.

Quality Control (QC) Information

Method Blank (MB) Acceptance
The method blank analyzed with this SDG did not contain analytes of interest at concentrations greater than the client required detection limits (CRDL).

LCS Recovery Statement
The laboratory control sample (LCS) met the recommended acceptance criteria for percent recovery (%R) for all elements of interest.

Quality Control (QC) Sample Statement
Sample 105225001 (CS 001A) was selected as the quality control (QC) sample for this SDG.

Matrix Spike Recovery Statement
The percent recovery (%R) obtained from the matrix spike (MS) analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. All applicable elements met the acceptance criteria.

Matrix Spike Duplicate Recovery Statement
The percent recovery (%R) obtained from the matrix spike duplicate (MSD) analyses are evaluated when the sample concentration is less than four time (4X) the spike concentration added. All applicable elements met the acceptance criteria.

MS/MSD RPD Statement
The relative percent difference (RPD) obtained from the designated MSD is evaluated based on acceptance criteria of 20%. The RPD between qualifying elements results in the MS and MSD were within the acceptance limits of 20%.

Duplicate RPD Statement
The relative percent difference (RPD) obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is 5X the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control of +/-RL is used to evaluate the DUP results. All applicable analytes met these requirements.

Serial Dilution % Difference Statement
The serial dilution is used to assess interferences due to matrix suppression or enhancement. Raw element concentrations that are at least 50X the instrument detection limit (IDL) for ICP analyses and 100X the IDL for ICP-MS analyses are applicable for serial dilution assessment. All applicable analytes met the acceptance criteria, percent difference value of <10%, as per the analytical method.

Technical Information

Holding Time Specifications
GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the GELIMS system by hours. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time requirements.

Preparation/Analytical Method Verification
All procedures performed in association with this SDG followed the Standard Operating Procedure (SOP) guidelines.

Sample Dilutions
Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in soil samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. The samples 105225005 (SAR 004) and 1200554801 (LCS) required dilutions in order to bring over range concentrations within the linear calibration range of the instrument.

Preparation Information
The samples in this SDG were prepared exactly according to the cited SOP.

Miscellaneous Information

Nonconformance Documentation
Nonconformance reports (NCRs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. No NCR was generated with this SDG.

Additional Comments
Additional comments are not required for this SDG.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Review Validation:

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer: _____ **Date:** 1/22/10

Metals Fractional Narrative
Parsons Engineering Science, Inc (PARS)
SDG 105711

Method/Analysis Information

Analytical Batch:	305361
Prep Batch :	305360
Standard Operating Procedures:	GL-MA-E-013 REV# 8, GL-MA-E-009 REV# 10
Analytical Method:	SW846 6010B
Prep Method :	SW846 3050B

Sample Analysis

Sample ID	Client ID
105711001	CS 005A
105711002	CS 007
105711003	CS 008
105711004	CS 009
105711005	CS 010
105711006	CS 010D
1200559064	Method Blank (MB) **ICP**
1200559069	Laboratory Control Sample (LCS)
1200559066	105711003(CS 008L) Serial Dilution (SD)
1200559065	105711003(CS 008D) Sample Duplicate (DUP)
1200559067	105711003(CS 008S) Matrix Spike (MS)
1200559068	105711003(CS 008SD) Matrix Spike Duplicate (MSD)

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by General Engineering Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

System Configuration

The ICP analysis was performed on a Thermo Jarrell Ash 61E Trace axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with a Burgener nebulizer, cyclonic spray chamber, and yttrium internal standard. Operating conditions for the Trace ICP are set at a power level of 950 watts. The instrument has a peristaltic pump flow rate of 140 RPM (2.0 mL/min sample uptake rate), argon gas flows of 15 L/min and 0.5 L/min for the torch and auxiliary gases, and a pressure setting of 26 PSI for the nebulizer.

Calibration Information

Instrument Calibration
The instrument calibrations are conducted using the method and instrument manufacturer's specifications. All initial calibration requirements have been met for this SDG.

CRDL Requirements
All CRDL standard(s) met the referenced advisory control limits.

ICSA/ICSAB statement
All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria.

Continuing Calibration Blank (CCB) Requirements
All continuing calibration blanks (CCB) bracketing this batch met the established acceptance criteria.

Continuing Calibration Verification (CCV) Requirements
All continuing calibration verifications (CCV) bracketing this SDG met the acceptance criteria.

Quality Control (QC) Information

Method Blank (MB) Acceptance
The method blank analyzed with this SDG did not contain analytes of interest at concentrations greater than the client required detection limits (CRDL).

LCS Recovery Statement
The laboratory control sample (LCS) met the recommended acceptance criteria for percent recovery (%R) for all elements of interest.

Quality Control (QC) Sample Statement
The following sample was selected as the quality control (QC) sample for this batch: 105711003 (CS 008).

Matrix Spike Recovery Statement
The percent recovery (%R) obtained from the MS analyses are evaluated when the

sample concentration is less than four times (4X) the spike concentration added. All applicable elements met the acceptance criteria.

Matrix Spike Duplicate Recovery Statement
The percent recovery (%R) obtained from the MSD analyses are evaluated when the sample concentration is less than four time (4X) the spike concentration added. All applicable elements met the acceptance criteria.

MSD RPD Statement
The relative percent difference (RPD) obtained from the designated matrix spike duplicate (MSD) is evaluated based on acceptance criteria of 20%. The RPD between qualifying elements results in the MS and MSD were within the acceptance limits of 20%.

Duplicate RPD Statement
The relative percent difference (RPD) obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is >5X the contract required detection limit(RL). In cases where either the sample or duplicate value is less than 5X the RL, a control of RL is used to evaluate the DUP results. All applicable analytes met these requirements.

Serial Dilution % Difference Statement
The serial dilution is used to assess interferences due to matrix suppression or enhancement. Raw element concentrations that are at least 50X the instrument detection limit (IDL) for ICP analyses and 100X the IDL for ICP-MS analyses are applicable for serial dilution assessment. All applicable analytes met the acceptance criteria, percent difference value of <10.

Technical Information

Holding Time Specifications
GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the GELIMS system by hours. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time requirements.

Preparation/Analytical Method Verification
All procedures performed in association with this SDG followed the Standard Operating Procedure (SOP) guidelines.

Sample Dilutions
Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in soil samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. No dilutions were necessary.

Preparation Information
The samples in this SDG were prepared exactly according to the cited SOP.

Miscellaneous Information

Nonconformance Documentation
Nonconformance reports (NCRs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. No NCR was generated with this SDG.

Additional Comments
No additional comments are needed for this sample group.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Review Validation

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer: _____ **Date:** 12/9/04

Metals Fractional Narrative
Parsons Engineering Science, Inc (PARS)
SDG 106066

Method/Analysis Information

Analytical Batch:	306939
Prep Batch :	306938
TCLP Prep Batch :	306684
Standard Operating Procedures:	GL-MA-E-013 REV# 8, GL-LB-E-006 REV# 7, GL-MA-E-008 REV# 9
Analytical Method:	SW846 6010B
Prep Method :	SW846 3010A
TCLP Prep Method :	SW846 1311

Sample Analysis

Sample ID	Client ID
106066001	SAR 006
1200562064	TCLP Blank (TB)
1200562671	Method Blank (MB) **ICP**
1200562672	Laboratory Control Sample (LCS)
1200562675	106066001(SAR 006L) Serial Dilution (SD)
1200562673	106066001(SAR 006D) Sample Duplicate (DUP)
1200562062	106066001(SAR 006S) Matrix Spike (MS)

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by General Engineering Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

System Configuration

The ICP analysis was performed on a Thermo Jarrell Ash 61E Trace axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with a Burgener nebulizer, cyclonic spray chamber, and yttrium internal standard.

Operating conditions for the Trace ICP are set at a power level of 950 watts. The instrument has a peristaltic pump flow rate of 140 RPM (2.0 mL/min sample uptake rate), argon gas flows of 15 L/min and 0.5 L/min for the torch and auxiliary gases, and a pressure setting of 26 PSI for the nebulizer.

Calibration Information

Instrument Calibration
The instrument calibrations are conducted using the method and instrument manufacturer's specifications. All initial calibration requirements have been met for this SDG.

CRDL Requirements
All CRDL standard(s) met the referenced advisory control limits.

ICSA/ICSAB statement
All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria.

Continuing Calibration Blank (CCB) Requirements
All continuing calibration blanks (CCB) bracketing this batch met the established acceptance criteria.

Continuing Calibration Verification (CCV) Requirements
All continuing calibration verifications (CCV) bracketing this SDG met the acceptance criteria.

Quality Control (QC) Information

Method Blank (MB) Acceptance
The method blank analyzed with this SDG did not contain analytes of interest at concentrations greater than the client required detection limits (CRDL).

LCS Recovery Statement
The laboratory control sample (LCS) met the recommended acceptance criteria for percent recovery (%R) for all elements of interest.

Quality Control (QC) Sample Statement
The following sample was selected as the quality control (QC) sample for this batch: 106066001 (SAR 006).

Matrix Spike Recovery Statement
The percent recovery (%R) obtained from the MS analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. All applicable elements met the acceptance criteria.

Duplicate RPD Statement
The relative percent difference (RPD) obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is >5X the contract required detection limit(RL). In cases where either the sample or duplicate value is less than 5X the RL, a control of RL is used to evaluate the DUP results. All applicable analytes met these requirements.

Serial Dilution % Difference Statement
The serial dilution is used to assess interferences due to matrix suppression or enhancement. Raw element concentrations that are at least 50X the instrument detection limit (IDL) for ICP analyses and 100X the IDL for ICP-MS analyses are applicable for serial dilution assessment. All applicable analytes met the acceptance criteria, percent difference value of <10.

Technical Information

Holding Time Specifications
GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the GELIMS system by hours. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time requirements.

Preparation/Analytical Method Verification
All procedures performed in association with this SDG followed the Standard Operating Procedure (SOP) guidelines.

Sample Dilutions
Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in soil samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. No sample dilutions were needed in this SDG.

Preparation Information
The sample and associated matrix QC were prepared at a 10x factor to minimize potential interferences arising from the high sodium content in the TCLP leaching solution.

Miscellaneous Information

Nonconformance Documentation
Nonconformance reports (NCRs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. No NCR was generated with this SDG.

Additional Comments
No additional comments are needed for this sample group.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Review Validation

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer: _____ **Date:** 2/4/04

Metals Fractional Narrative
Parsons Engineering Science, Inc (PARS)
SDG 106067

Method/Analysis Information

Analytical Batch:	306696
Prep Batch :	306692
Standard Operating Procedures:	GL-MA-E-013 REV# 8, GL-MA-E-009 REV# 10
Analytical Method:	SW846 6010B
Prep Method :	SW846 3050B

Sample Analysis

Sample ID	Client ID
106067001	CS 009A
1200562094	Method Blank (MB) **ICP**
1200562099	Laboratory Control Sample (LCS)
1200562096	106067001(CS 009AL) Serial Dilution (SD)
1200562095	106067001(CS 009AD) Sample Duplicate (DUP)
1200562097	106067001(CS 009AS) Matrix Spike (MS)
1200562098	106067001(CS 009ASD) Matrix Spike Duplicate (MSD)

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by General Engineering Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

System Configuration

The ICP analysis was performed on a Thermo Jarrell Ash 61E Trace axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with a Burgener nebulizer, cyclonic spray chamber, and yttrium internal standard. Operating conditions for the Trace ICP are set at a power level of 950 watts. The instrument has a peristaltic pump flow rate of 140 RPM (2.0 mL/min sample uptake rate), argon gas flows of 15 L/min and 0.5 L/min for the torch and auxiliary gases, and a

pressure setting of 26 PSI for the nebulizer.

Calibration Information

Instrument Calibration
The instrument calibrations are conducted using the method and instrument manufacturer's specifications. All initial calibration requirements have been met for this SDG.

CRDL Requirements
All CRDL standard(s) met the referenced advisory control limits.

ICSA/ICSAB statement
All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria.

Continuing Calibration Blank (CCB) Requirements
All continuing calibration blanks (CCB) bracketing this batch met the established acceptance criteria.

Continuing Calibration Verification (CCV) Requirements
All continuing calibration verifications (CCV) bracketing this SDG met the acceptance criteria.

Quality Control (QC) Information

Method Blank (MB) Acceptance
The method blank analyzed with this SDG did not contain analytes of interest at concentrations greater than the client required detection limits (CRDL).

LCS Recovery Statement
The laboratory control sample (LCS) met the recommended acceptance criteria for percent recovery (%R) for all elements of interest.

Quality Control (QC) Sample Statement
The following sample was selected as the quality control (QC) sample for this batch: 106067001 (CS 009A).

Matrix Spike Recovery Statement
The percent recovery (%R) obtained from the MS analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. All applicable elements met the acceptance criteria.

Matrix Spike Duplicate Recovery Statement
The percent recovery (%R) obtained from the MSD analyses are evaluated when the sample concentration is less than four time (4X) the spike concentration added. All

applicable elements met the acceptance criteria.

MSD RPD Statement
The relative percent difference (RPD) obtained from the designated matrix spike duplicate (MSD) is evaluated based on acceptance criteria of 20%. The RPD between qualifying elements results in the MS and MSD were within the acceptance limits of 20%.

Duplicate RPD Statement
The relative percent difference (RPD) obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is >5X the contract required detection limit(RL). In cases where either the sample or duplicate value is less than 5X the RL, a control of RL is used to evaluate the DUP results. Lead did not meet these requirements, as indicated by the "*" qualifier.

Serial Dilution % Difference Statement
The serial dilution is used to assess interferences due to matrix suppression or enhancement. Raw element concentrations that are at least 50X the instrument detection limit (IDL) for ICP analyses and 100X the IDL for ICP-MS analyses are applicable for serial dilution assessment. All applicable analytes met the acceptance criteria, percent difference value of <10.

Technical Information

Holding Time Specifications
GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the GELIMS system by hours. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time requirements.

Preparation/Analytical Method Verification
All procedures performed in association with this SDG followed the Standard Operating Procedure (SOP) guidelines.

Sample Dilutions
Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in soil samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. No sample dilutions were needed in this SDG.

Miscellaneous Information

Nonconformance Documentation
Nonconformance reports (NCRs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. NCR ID 90135was generated with this SDG. A copy was included in the Miscellaneous Data section of this

package.

Additional Comments
No additional comments are needed for this sample group.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Review Validation

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer: Allison M. C **Date:** 2/4/04

Metals Fractional Narrative
Parsons Engineering Science, Inc (PARS)
SDG 107312

Method/Analysis Information

Analytical Batch:	311378
Prep Batch :	311377
TCLP Prep Batch :	311053
Standard Operating Procedures:	GL-MA-E-013 REV# 8, GL-LB-E-006 REV# 7, GL-MA-E-008 REV# 10
Analytical Method:	SW846 6010B
Prep Method :	SW846 3010A
TCLP Prep Method :	SW846 1311

Sample Analysis

Sample ID	Client ID
107312001	SAR007
1200572529	TCLP Blank (TB)
1200573318	Method Blank (MB) **ICP**
1200573319	Laboratory Control Sample (LCS)
1200573322	107312001(SAR007L) Serial Dilution (SD)
1200573320	107312001(SAR007D) Sample Duplicate (DUP)
1200572527	107312001(SAR007S) Matrix Spike (MS)

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by General Engineering Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

System Configuration

The ICP analysis was performed on a Thermo Jarrell Ash 61E Trace axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with a Burgener nebulizer, cyclonic spray chamber, and yttrium internal standard.

Operating conditions for the Trace ICP are set at a power level of 950 watts. The instrument has a peristaltic pump flow rate of 140 RPM (2.0 mL/min sample uptake rate), argon gas flows of 15 L/min and 0.5 L/min for the torch and auxiliary gases, and a pressure setting of 26 PSI for the nebulizer.

Calibration Information

Instrument Calibration
All initial calibration requirements have been met for this SDG.

CRDL Requirements
All CRDL standard(s) met the referenced advisory control limits.

ICSA/ICSAB statement
All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria.

Continuing Calibration Blank (CCB) Requirements
All continuing calibration blanks (CCB) bracketing this batch met the established acceptance criteria.

Continuing Calibration Verification (CCV) Requirements
All continuing calibration verifications (CCV) bracketing this SDG met the acceptance criteria.

Quality Control (QC) Information

Method Blank (MB) Statement
The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery
The LCS spike recoveries met the acceptance limits.

Quality Control (QC) Sample Statement
The following sample was selected as the quality control (QC) sample for this batch: 107312001 (SAR007).

Matrix Spike Recovery Statement
The percent recovery (%R) obtained from the MS analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. All applicable elements met the acceptance criteria.

Duplicate Relative Percent Difference (RPD) Statement
The RPD obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is >5X the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control

of RL is used to evaluate the DUP results. All applicable analytes met these requirements.

Serial Dilution % Difference Statement
The serial dilution is used to assess interferences due to matrix suppression or enhancement. Raw element concentrations that are at least 50X the instrument detection limit (IDL) for ICP analyses and 100X the IDL for ICP-MS analyses are applicable for serial dilution assessment. All applicable analytes met the acceptance criteria, percent difference value of <10.

Technical Information

Holding Time Specifications
GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of sample receipt. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification
All procedures were performed as stated in the SOP.

Sample Dilutions
Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in soil samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. The samples in this SDG did not require dilutions.

Preparation Information
The sample and associated matrix QC were prepared at a 10x factor to minimize potential interferences arising from the high sodium content in the TCLP leaching solution.

Miscellaneous Information

Nonconformance Documentation
Nonconformance reports (NCRs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. No NCR was generated with this SDG.

Additional Comments
Additional comments were not required for this SDG.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Review Validation

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer: Allison M. Sw **Date:** 2/25/04

PROJECT NAME/NO. SAR Airfield - SEAD-122B
SDG: 114543
FRACTION: Total Pb
LAB: General Engineering Laboratories, LLC
MEDIA: Soil

CRITERIA	Did Analyses Meet all criteria as specified in the SOPS?	If no, specify analysis IDs which do not meet criteria	Comments/Qualifying Actions	Qualifiers Added?
Data Completeness, Holding Times & Reservation	Yes		The only sample in this SDG (CS-003) was collected on January 8, 2004 and was reanalyzed on June 11, 2004. The holding time was within 6 months. Cooler temperature was 4.6C upon receipt. Solid percentage was greater than 50 percent. The lab receipt shows that the sample was preserved with ice, no action was taken.	No
Calibration	Yes		Calibrations available, taken avery ten samples, and within recovery limits for metals.	No
Blanks (method blank, prep blank)	Yes		ICB analyzed for lead. CCB analyzed for lead every ten samples, all samples were less than the CRDL. Preparation blank analyzed for lead and within CRDL limits.	No
Interference Check Sample	Yes		Met requirements for lead.	No
CRDL Standard	YES		2XCRDL Check Standard was available for each ICP run. The recoveries were within the limits (i.e., 70-130%). No action was taken.	No
Laboratory Control Sample	Yes		Solid LCS results within limits for lead.	No
Duplicates	YES		Duplicate analysis was conducted for CS-003 and its spiked sample. Duplicate results met requirements for metals (i.e., RPD<50%).	NO
Spike Sample Analysis	YES		Spike sample and duplicate spike sample results for CS-003 were within the limits for lead.	NO
ICP Serial Dilution	YES		ICP Serial Dilution wes conducted for CS-003. The percentage of difference met requirement (i.e., <10%).	NO
Detection Limits	YES		IDL's available and less than CRDL's. No transcription error found.	No
ICP Linear Range	YES		All lead concentrations were within the ICP linear range.	No
Solids Percentage	YES		Solid percentage for the sample was greater than 50%.	No

Metals Fractional Narrative
Parsons Engineering Science, Inc (PARS)
SDG 114543

Method/Analysis Information

Analytical Batch:	340310
Prep Batch :	340309
Standard Operating Procedures:	GL-MA-E-013 REV# 10, GL-MA-E-009 REV# 11
Analytical Method:	SW846 6010B
Prep Method :	SW846 3050B

Sample Analysis

Sample ID	Client ID
114543001	CS-003
1200641976	Method Blank (MB) **ICP**
1200641981	Laboratory Control Sample (LCS)
1200641978	114543001(CS-003L) Serial Dilution (SD)
1200641977	114543001(CS-003D) Sample Duplicate (DUP)
1200641979	114543001(CS-003S) Matrix Spike (MS)
1200641980	114543001(CS-003SD) Matrix Spike Duplicate (MSD)

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by General Engineering Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

System Configuration

The ICP analysis was performed on a Perkin Elmer 4300 Optima radial/axial-viewing inductively coupled plasma atomic emission spectromete. The instrument is equipped with a Burgener nebulizer, cyclonic spray chamber, and yttrium or scandium internal standard. Operating conditions for the ICP are set at a power level of 1500 watts. The instrument has a peristaltic pump flow rate of 1.4L/min, argon gas flows of 15 L/min and 0.2 L/min for the torch and auxiliary gases, and a flow setting of 0.65L/min for the

nebulizer.

Calibration Information

Instrument Calibration
All initial calibration requirements have been met for this SDG.

CRDL Requirements
All CRDL standard(s) met the referenced advisory control limits.

ICSA/ICSAB statement
All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria.

Continuing Calibration Blank (CCB) Requirements
All continuing calibration blanks (CCB) bracketing this batch met the established acceptance criteria.

Continuing Calibration Verification (CCV) Requirements
All continuing calibration verifications (CCV) bracketing this SDG met the acceptance criteria.

Quality Control (QC) Information

Method Blank (MB) Statement
The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery
The LCS spike recoveries met the acceptance limits.

Quality Control (QC) Sample Statement
The following sample was selected as the quality control (QC) sample for this batch: 114543001 (CS-003)-ICP.

Matrix Spike (MS) Recovery Statement
The percent recoveries (%R) obtained from the MS analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. All applicable elements met the acceptance criteria.

Matrix Spike Duplicate (MSD) Recovery Statement
The percent recovery (%R) obtained from the MSD analyses are evaluated when the sample concentration is less than four time (4X) the spike concentration added. All applicable elements met the acceptance criteria.

MS/MSD Relative Percent Difference (RPD) Statement
The RPD(s) between the MS and MSD met the acceptance limits.

Duplicate Relative Percent Difference (RPD) Statement
The RPD obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is >5X the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control of RL is used to evaluate the DUP results. All applicable analytes met these requirements.

Serial Dilution % Difference Statement
The serial dilution is used to assess matrix suppression or enhancement. Raw element concentrations that are 25X the IDL for CVAA, 50X the IDL for ICP, and 100X the IDL for ICP-MS analyses are applicable for serial dilution assessment. All applicable analytes met the acceptance criteria of less than 10% difference (%D).

Technical Information

Holding Time Specifications
GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of sample receipt. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification
All procedures were performed as stated in the SOP.

Sample Dilutions
Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in soil samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. The samples in this SDG did not require dilutions.

Preparation Information
The sample in this SDG were prepared exactly according to the cited SOP.

Miscellaneous Information

Nonconformance Documentation
Nonconformance reports (NCRs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A NCR was not required for this SDG.

Additional Comments
Additional comments were not required for this SDG.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Review Validation

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer: _____ **Date:** 6/15/04

PROJECT NAME/NO. SAR Airfield - SEAD-122B
SDG: 115672
FRACTION: Total Pb
LAB: General Engineering Laboratories, LLC
MEDIA: Soil

CRITERIA	Did Analyses Meet all criteria as specified in the SOPS?	If no, specify analysis IDs which do not meet criteria	Comments/Qualifying Actions	Qualifiers Added?
Data Completeness, Holding Times & Reservation	No	Preservation	The only sample in this SDG (CS12) was collected on June 24, 2004 and was analyzed on June 29, 2004. The holding time was within 6 months. The sample was not preserved with ice and the cooler temperature was 22.6C upon receipt. Solid percentage was greater than 50 percent. The lab receipt shows the sample was not properly preserved with ice. As the sample was acid digested, no action was taken based on the cooler temperature based on professional judgment.	No
Calibration	Yes		Calibrations available, taken avery ten samples, and within recovery limits for metals.	No
Blanks (method blank, prep blank)	Yes		ICB analyzed for lead. CCB analyzed for lead every ten samples, all samples were less than the CRDL. Preparation blank analyzed for lead and within CRDL limits.	No
Interference Check Sample	Yes		Met requirements for lead.	No
CRDL Standard	YES		2XCRDL Check Standard was available for each ICP run. The recoveries were within the limits (i.e., 70-130%). No action was taken.	No
Laboratory Control Sample	Yes		Solid LCS results within limits for lead.	No
Duplicates	NA		Duplicate analysis was not conducted for CS12.	NO
Spike Sample Analysis	NA		Spike analysis was not conducted for CS12 in this SDG.	NO
ICP Serial Dilution	NA		ICP Serial Dilution was not conducted for CS12 in this SDG. J CS12 result.	YES
Detection Limits	YES		IDL's available and less than CRDL's. No transcription error found.	No
ICP Linear Range	YES		All lead concentrations were within the ICP linear range.	No
Solids Percentage	YES		Solid percentage for the sample was greater than 50%.	No

Metals Fractional Narrative
Parsons Engineering Science, Inc (PARS)
SDG 115672

Method/Analysis Information

Analytical Batch:	344597
Prep Batch:	344596
Standard Operating Procedures:	GL-MA-E-013 REV# 10, GL-MA-E-009 REV# 11
Analytical Method:	SW846 6010B
Prep Method:	SW846 3050B

Sample Analysis

Sample ID	Client ID
115672001	CS12
1200652384	Method Blank (MB) **ICP**
1200652389	Laboratory Control Sample (LCS)
1200652386	115655001(AM011XL) Serial Dilution (SD)
1200652385	115655001(AM011XD) Sample Duplicate (DUP)
1200652387	115655001(AM011XS) Matrix Spike (MS)
1200652388	115655001(AM011XSD) Matrix Spike Duplicate (MSD)

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by General Engineering Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

System Configuration

The ICP analysis was performed on a Thermo Jarrell Ash 61E Trace axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with a Burgener nebulizer, cyclonic spray chamber, and yttrium internal standard. Operating conditions for the Trace ICP are set at a power level of 950 watts. The instrument has a peristaltic pump flow rate of 140 RPM (2.0 mL/min sample uptake rate), argon gas flows of 15 L/min and 0.5 L/min for the torch and auxiliary gases, and a

pressure setting of 26 PSI for the nebulizer.

Calibration Information

Instrument Calibration
All initial calibration requirements have been met for this SDG.

CRDL Requirements
All CRDL standard(s) met the referenced advisory control limits.

ICSA/ICSAB statement
All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria.

Continuing Calibration Blank (CCB) Requirements
All continuing calibration blanks (CCB) bracketing this batch met the established acceptance criteria.

Continuing Calibration Verification (CCV) Requirements
All continuing calibration verifications (CCV) bracketing this SDG met the acceptance criteria.

Quality Control (QC) Information

Method Blank (MB) Statement
The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery
The LCS spike recoveries met the acceptance limits.

Quality Control (QC) Sample Statement
The following sample was selected as the quality control (QC) sample for this batch: 115655001 (AM011X) from another SDG.

Matrix Spike (MS) Recovery Statement
The percent recoveries (%R) obtained from the MS analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. All applicable elements met the acceptance criteria.

Matrix Spike Duplicate (MSD) Recovery Statement
The percent recovery (%R) obtained from the MSD analyses are evaluated when the sample concentration is less than four time (4X) the spike concentration added. All applicable elements met the acceptance criteria.

MS/MSD Relative Percent Difference (RPD) Statement
The RPD(s) between the MS and MSD met the acceptance limits.

Duplicate Relative Percent Difference (RPD) Statement
The relative percent difference (RPD) obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is >5X the contract required detection limit (RL). In cases were either the sample or duplicate value is less than 5X the contract required detection limit (RL), a control of RL is used to evaluate the DUP results. Lead did not meet these requirements. No qualifier appears because the QC sample was from another SDG.

Serial Dilution % Difference Statement
The serial dilution is used to assess matrix suppression or enhancement. Raw element concentrations that are 25X the IDL for CVAA, 50X the IDL for ICP, and 100X the IDL for ICP-MS analyses are applicable for serial dilution assessment. All applicable analytes met the acceptance criteria of less than 10% difference (%D).

Technical Information

Holding Time Specifications
GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of sample receipt. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification
All procedures were performed as stated in the SOP.

Sample Dilutions
Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in soil samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. No dilution was necessary.

Preparation Information
The sample in this SDG was prepared exactly according to the cited SOP.

Miscellaneous Information

Nonconformance Documentation
Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. NCR ID 123413 was generated with this SDG. A copy was included in the Miscellaneous Data section of this package.

Additional Comments
Additional comments were not required for this SDG.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Review Validation

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer: _____ **Date:** 7/11/04

APPENDIX D

RESPONSE TO COMMENTS

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

Subject: Draft Treatability Study Report for Airfield Parcel (SEAD-122B) Small Arms Range
Seneca Army Depot
Romulus, New York

Comments Dated: May 7, 2004

Date of Comment Response: June 22, 2004

The New York State Department of Environmental Conservation has performed a review of the above referenced document dated April 2004. Comments are as follows:

General Concerns:

Comment 1: The final verification samples collected at the site (Figure 3.2 and Tables 3.7) appear to be the same as those contained in the Treatability Study (FINAL CONFIRMATION SAMPLES, TOTAL LEAD, Table3), however the values are not the same in all cases. It appears that a few numbers may have been transposed in producing the Treatability Study Report and they need to be corrected.

Response 1: Agreed. Table 3 will be corrected to reflect the results as stated in Table 3.7 of the Final Characterization Report.

Comment 2: The Treatability Study indicates that the value obtained in CS003 is an average calculated value. Again, I think this is a transcription error since the Characterization Report indicates that the final samples are discrete sample values. Likewise the date of the CS003 sample indicates a transcription error.

Response 2: Sample CS003 was reported as an average value because the laboratory reported a laboratory generated duplicate sample result (CS003D 655ppm). CS003 was 20.6J ppm. Therefore the reported value was the average of the sample and its laboratory generated duplicate – 337.8 ppm. This is the value reported in both reports. The sample was collected on 1/8/04 on stated in both reports.

Due to the variability in the duplicate pair, the Army requested that the laboratory rerun the sample. The laboratory was instructed to ensure that the sample was well-homogenized prior to reanalysis. The result of the sample rerun (duplicate) was 24.6 ppm. The Army is confident that this result is representative of that sample location.

Comment 3: The verification samples were collected at the site during the month of January. The workplan indicated the following:

" 3.2 CONFIRMATION SAMPLING
After the proposed excavated soils are removed including soil excavated from the drainage swale and soils from the range floor under the temporary screening area, soil samples will be collected from the bottom of the excavated areas. Discrete soil samples will be collected as shown on Figure 3. Confirmation sample locations will be taken in areas that had lead greater

than 400 ppm prior to excavation and in areas affected by the treatabilty testing."

The logs in Appendix A of the Treatability Study indicate that soils were completely removed from the site on March 9, 2004. I realize that the intent of the workplan was to make sure that soil stockpiles, loading and mixing operations did not recontaminate the surface of the range after confirmational samples were collected. Therefore, I am requesting a resampling for the official confirmation samples as proposed in the procedures outlined in the workplan for the site.

Response 3: The intent of the language in the workplan "…After the proposed excavated soils are removed… soil samples will be collected from the bottom of the excavated areas." was to indicate that soil samples would be collected after the excavations were complete, not collected after all the soil was removed from the site. However, we do recognize that a soil sample was not collected from the area of the soil stockpiles after all the stockpiles had been removed. No sample was collected because the soil was stockpiled on poly. In addition, because the area was frozen during the duration of this Study, there was no migration of potential contaminants.

The Army proposes to collect one (1) sample in the area of the stockpiled soil to verify that the area was not contaminated from the operations. There is no reason to resample the other locations as these areas were not affected by the stockpiles. The results of the sampling in the stockpile area will be reported at a later date.

Comment 3: In addition to the measures normally taken at the site I would like to request that you post the Final Document on the internet and include the document address in the public notices that you send out and put in the local paper. You may include me as a contact for questions and put my email address on the web site for this document.

Response 3: At this time, the Army will not be posting documents on a website. While the BRAC office is pursuing the possibility of establishing a website; currently, there are no procedures in place, nor are their funds available, to enable the Army to complete this task.

Comment 4: I would like to know if other areas of the drainage swale or other settling areas downstream of the sampling point 1019 are contaminated by metals from the range.

Response 4: Sample point 1019 was found to be 13.7 ppm lead and well downstream of the range and therefore concluded to be the clean boundary downstream from the range.

Health Concerns:

Comment 5: Other TAL Metals Results, page 3-2 - the last sentence of the first paragraph is contradictory with the next seven sections. This sentence states that "All the other metals were detected below the NYSDEC TAGM soil cleanup objectives and the maximum SEDA-specific background levels". However, the next seven sections refer to metals that were detected above either of these two guidance levels. Clarification and revision is necessary.

Response 5: The last sentence of the first paragraph will be deleted for clarity.

Comment 6: Site Characterization Conclusions, page 3-6 - although the third bullet of this section states that the "(0)ther TAL metals were either not detected above their soil criteria or were consistent with SEDA site background values", I could not find any reference that they were tested post-treatability study nor could I find any reference to the original analytical results except in the section 3-2. Based on the comment above, this section is in need of revision also.

Response 6: There was no additional metals testing, other than lead, post treatability study, because there no exceedances other than those explained in Section 3.1.2.

Comment 7: I found no groundwater analytical data in the report. This information is necessary to evaluate the total characterization of the site.

Response 7: Groundwater analytical data is presented in Table 3.5.

Comment 8: Further data evaluation is needed. Table 3.6 indicates that Sample CS009AD and CS009 are duplicate samples, yet the analytical results are very dissimilar (22 mgkg and 736 mgkg, respectively). Should this data be qualified?

Response 8: Sample CS009AD is a duplicate of sample CS009A (16.1 mg/kg).