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May 14, 2010

Mr. John Hill
U. S. Air Force Center for Engineering and the Environment
HQ AFCEE/IWP
3300 Sidney Brooks
Brooks City-Base, TX 78235-5112

SUBJECT: Draft Completion Report for Additional Munitions Response Site Investigations at the Seneca Army Depot Activity in Romulus, NY; Contract FA8903-04-D-8675, Delivery Order 0026, CDRL A001A

Dear Mr. Hill:

Parsons Infrastructure & Technology Group, Inc. (Parsons) is pleased to submit the Draft Completion Report for Additional Munitions Response Site Investigations at the Seneca Army Depot Activity (SEDA) in Romulus, New York.

This work was performed in accordance with the Scope of Work (SOW) for Contract No. FA8903-04-D-8675, Task Order No. 0026.

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

Sincerely,

Todd Heino, P.E.
Project Manager

Enclosures

cc: S. Absolom, SEDA
K. Hoddinott, USACHPPM
R. Walton, USAEC
R. Battaglia, USACE, NY District
T. Battaglia, USACE, NY District
J. Chavez, HQ AFCEE/EXA
Air Force CDL (letter only)

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May 14, 2010

Mr. Julio Vazquez
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Albany, NY 12233-7015

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

SUBJECT: Draft Completion Report for Additional Munitions Site Investigations at the Seneca Army Depot Activity; EPA Site ID# NY0213820830 and NY Site ID# 8-50-006

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

Parsons Infrastructure & Technology Group, Inc. (Parsons) is pleased to submit the Draft Completion Report for Additional Munitions Response Site Investigations at the Seneca Army Depot Activity (SEDA) in Romulus, New York (EPA Site ID# NY0213820830 and NY Site ID# 8-50-006). This report discusses munitions response activities conducted at the Open Detonation (OD) Grounds (SEAD-45) to provide additional information pertinent to site conditions currently found at the area of concern.

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

Sincerely,

Todd Heino, P.E.
Program Manager

Enclosures
cc: J. Hill AFCEE
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US Army Corps of Engineers

Air Force Center for Engineering and the Environment

00297

Seneca Army Depot Activity
Romulus, New York

DRAFT
COMPLETION REPORT

ADDITIONAL MUNITIONS RESPONSE SITE INVESTIGATIONS
SENECA ARMY DEPOT ACTIVITY

AFCEE CONTRACT NO. FA8903-04-D-8675
TASK ORDER NO. 0026
CDRL A001A
EPA SITE ID# NY0213820830
NY SITE ID# 8-50-006

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APRIL 2010

DRAFT

COMPLETION REPORT
ADDITIONAL MUNITIONS RESPONSE SITE INVESTIGATIONS

SENECA ARMY DEPOT ACTIVITY
ROMULUS, NEW YORK

Prepared for:

AIR FORCE CENTER FOR ENGINEERING AND THE ENVIRONMENT

BROOKS CITY-BASE, TEXAS

and

SENECA ARMY DEPOT ACTIVITY
ROMULUS, NEW YORK

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Contract Number FA8903-04-D-8675
Task Order Number 0026, CDRL A001A
EPA Site ID# NY0213820830
NY Site ID# 8-50-006 **May 2010**

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1.0 INTRODUCTION

This report presents information and data developed during limited focused investigations of the Open Detonation (OD) Grounds site located at the Seneca Army Depot Activity (SEDA or the Depot) in Seneca County, New York. The focused site investigations included topographic and geophysical surveys of specific areas within the OD Grounds and the collection and analysis of soil samples from test pit and surface soil locations. The objectives of the site investigations included the following:

- Determine the volume of soil in the OD Grounds Hill;
- Estimate the bedrock surface at the OD Grounds;
- Determine and document the density of geophysical anomalies from the ground surface to lower elevations at selected areas to assess potential depth of penetration profiles at one foot elevations;
- Determine the nature of MPPEH items that are present at the OD Grounds;
- Determine the vertical and horizontal extent of metals, explosives, semivolatile organics, pesticides and herbicides, and polychlorinated biphenyls in the OD Grounds Hill and surrounding area; and,
- Assess the potential leachability of certain compounds identified at the site.

The following sections provide details of the investigation performed and a summary of the data developed.

2.0 SITE BACKGROUND

The OD Grounds is located in the northwestern corner of the Depot in Seneca County, New York and is designated as SEAD-45 (See **Figure 1**). The OD Grounds encompass approximately 60 acres and, together with the Open Burning (OB) Grounds, comprise the 90-acre demolition area at SEDA. Access into the greater OD and OB Grounds demolition area is possible via a paved road that enters the area from the southeast and roughly parallels the path of Reeder Creek along its western bank. The unnamed access road branches off North-South Baseline Road near Building 2104, which is located in the southeastern corner of the greater OD/OB Grounds complex.

The OD Grounds is used to destroy munitions. Operations at the OD Grounds began circa 1941 when the Depot was first constructed and continued at regular intervals until circa 2000 when the military mission of the Depot ceased. Detonations have occurred intermittently since the Depot closed as part of continuing munitions response activities being performed at the Depot. During operations, waste munitions are placed in a hole created in the hill with additional demolition material, covered with a minimum of 8 feet of soil, and detonated remotely. After demolition was completed, explosively displaced portions of the mound were reconstructed by bulldozing displaced and native soils back into the central earthen mound.

3.0 SITE INVESTIGATIONS

3.1 Topographic Survey

The intent of the topographic investigations was to develop an estimate of the amount of soil that comprises the Open Detonation Hill, which is a man-made earthen mound that was historically used to buffer the intensity of planned detonations.

Topographic information for the OD Grounds, including OD Hill, was last developed between 1992 and 1994 and is shown in **Figure 2**. In March 2010, a topographic survey of the earthen mound was conducted using a global positioning system (Trimble Base Station and Rover). The purpose of the GPS survey was to determine the current location and shape of the OD Hill and to provide a means to estimate the volume of soil contained in the mound, which has been periodically modified by detonations and reconstruction since the last detailed survey effort in the early 1990s.

An initial estimate of the volume of soil contained in the aboveground portion of the OD Hill mound was developed using the combination of the 1992-1994 land and aerial topographic information and GPS survey results. The estimated volume of the earthen mound above ground surface is 38,000 cubic yards (cy). The estimated volume of soil in the OD Hill above bedrock surface is 75,000 cy. **Figure 3** shows the current position, shape, and elevation of the OD Hill mound superimposed over the 1990 survey data of the greater OD Grounds area.

Using depth-to-bedrock measurements made during historic soil and monitoring well installation borings at the OD and OB sites, and recent OD Grounds test pitting operations, Parsons created a bedrock contour plan of the OD Grounds site. This information is presented in **Figure 4**. This figure shows that the thickness of soil overlying the competent bedrock surrounding the OD Hill varies from 10 to 20 feet thick; additionally, the current height of the OD Hill above bedrock ranges between approximately 40 and 50 feet thick.

Three horizontal profiles of the earthen mound, shown in **Figures 4A**, **4B**, and **4C**, present the 1994 ground surface exterior of the mound and the current ground surface of the earthen mound. The profiles show that the current ground surface at the outer edge of the existing earthen mound is 1 to 2 feet lower than the reported 1994 ground surface elevation. The difference is likely due to earth work conducted on the mound between 1994 and present day.

3.2 Geophysical Survey

Historic geophysical data developed during prior munitions response surveys of the OD Grounds were used to select the test plots where Parsons conducted intrusive operations to investigate the vertical deposition of munitions debris (MD), material potentially presenting an explosive hazard (MPPEH), and other cultural debris (CD) in soil surrounding OD Hill. As part of these intrusive operations, geophysical surveys were conducted after each 1 foot layer of soil was removed to provide further definition of the approximate number of anomalies that remained at the site. In addition, selected anomalies exhibiting electromagnetic responses in excess of 50 millivolts were investigated, recovered, and identified by UXO personnel to provide additional information pertinent

to the nature of items that remained at the test plot locations, and which may be representative of other items present in soils at the OD Grounds.

The Army selected five test plots from numerous possible locations in order to provide a preliminary assessment of the vertical deposition of MPPEH, MD, and CD located at different distances and in different directions from the detonation point (i.e., OD Hill). The test plot locations surveyed are identified as Areas 1, 2, 3, 5, and 6, and the location of each is shown on **Figure 5** relative to the position of the OD Hill. Each of the selected test plots was placed at a location where historic geophysical surveys indicated that saturated response areas (i.e., geophysical anomaly density in excess of 600 items per acre) existed.

The geophysical surveys were conducted in a multiple-step process beginning at the soil surface then progressing deeper in one-foot increments below ground surface. Each of the selected sites were initially staked out and then surveyed by UXO Safety and Avoidance personnel. Once the UXO personnel determined that it was safe to proceed, approximately one-foot of soil was excavated from the surface of the test plot and set aside to expose deeper soils. After the deeper soils were surveyed and cleared by UXO Safety and Avoidance personnel, EM surveys of the area were performed and the geophysical response results were plotted. Once the results were plotted, Army personnel selected anomalies exhibiting greater than 50 millivolts response to be investigated. Geophysical personnel reacquired and flagged the items for investigation by UXO support personnel who investigated and recovered the selected items. **Table 1** describes each anomaly recovered and identified by UXO personnel. Generally, all of the anomalies recovered by UXO personnel can be classified as Munitions Debris (MD).

If the initial geophysical survey at a test plot location continued to show high levels of geophysical anomalies, additional one-foot excavations and repeat EM surveys were conducted as directed by the Army.

Areas 1, 2, 3, and 6 were cleared to 1 foot below grade surface (bgs); Area 5 was cleared to 2 feet bgs. **Figures 6A** and **6B** show the EM response for Area 1; **Figures 7A** and **7B** for Area 2; **Figures 8A** and **8B** for Area 3; **Figures 9A**, **9B**, and **9C** for Area 5; and **Figure 10A** and **10B** for Area 6.

Data summarizing the anomaly density at each test plot depth are presented in **Table 2**. Review of the data in Table 2 indicates that anomaly densities generally decrease with depth of excavation, especially at distances greater than 100 to 200 feet from the detonation mound. At Area 3 and Area 6 anomaly densities one foot below grade are estimated to be zero, while the projected anomaly densities at Area 1 and Area 2) are below 50 items per acre at the same depth. Area 6 and Area 3 are located approximately 500 feet and 1,250 feet southeast of OD Hill, respectively, while Area 2 is located between 350 and 500 feet east, northeast of the OD Hill and Area 1 is located between approximately 750 and 1,000 feet northwest of the OD Hill.

Anomaly densities estimated at Area 5, which is within 200 feet of the OD Hill, drop with depth less significantly than those discussed above, to a level of approximately 250 anomalies per acre at one foot depth below ground surface. The anomaly density estimated for the two foot depth rises to 280

per acre, which suggests that this area may be affected by OD Hill reconstruction and repositioning efforts that have occurred over the life of the OD Grounds.

The overall assessment of the data suggest that there may be a directional component to the vertical deposition of anomalies, as is evidenced by the absence of anomalies to the southeast of the OD Hill and the presence of anomalies to the northeast and northwest at roughly comparable distances from the detonation site. Additionally, the finding of significantly more subsurface anomalies at test plot 5 would suggest that areas in close proximity to the OD Hill may have more subsurface anomalies due to the extensive amount of soil rework that was done at this site during operation.

3.3 Chemical Analysis of Soil Samples

Soil samples were collected at the OD Grounds between March 10, 2010 and April 1, 2010. Samples were submitted to Katahdin Analytical Services in Scarborough, ME, which is a New York State NELAC-certified and DOD ELAP-certified laboratory. The list of soil samples collected, with sample IDs and performed analyses, is provided in **Table 3**.

Ninety-two samples, including quality assurance/quality control (QA/QC) samples, were collected at the OD Grounds. Samples were collected from:

1) the surface of OD Hill (20 locations);
2) surface locations at cardinal, ordinal and, intermediate locations, on a series of expanding concentric rings ("Doughnut Rings") exterior to the OD Hill (37 locations), and
3) surface and subsurface locations (i.e., 0, 2.5, 5, 7.5 and 10 ft bgs) from four test pits excavated immediately adjacent to the toe of the OD Hill mound (19 locations).

Appropriate QC/QA samples, including matrix spike/matrix spike duplicate (MS/MSD), sample duplicate, and field blanks, were collected, as well.

All samples were analyzed for Target Analyte List (TAL) metals via Methods SW846 6010B/7471A; 38 were analyzed for explosives by SW846 Method 8330B; and 26 were analyzed for Target Compound List (TCL) semivolatile organic compounds (SW846 Method 8267C), pesticides/PCBs (SW846 Method 8081A/8082), and organochlorine herbicides (SW846 Method 8151). In addition, eight samples were analyzed to determine the degree to which metals in soil may leach via SW846 Method 1312 coupled with Method SW846 6010B/7471A.

Forty-seven analytes were detected in the soil samples collected from the OD Grounds. Of the total number of analytes found, four were semivolatile organics, eight were explosives compounds, 11 were organochlorine pesticides, one was a PCB, and 23 were metals. Summary results for all OD Grounds soil samples are provided in **Table 4**. Complete sample results, with values directly compared to adjusted RSLs for residential soils, are provided in **Appendix A**; complete sample results, as compared to unrestricted use SCOs are provided in **Appendix B**. Maps showing the locations of samples collected at the OD Hill, Test Pits 1, 2, 3, and 4, and at stations on the expanding concentric "Doughnut Rings" around the OD Hill are provided in **Figure 11**, **Figure 12**, **Figure 13** (inner rings), and **Figure 14** (outer rings), respectively.

Table 4 provides four different summaries of the resulting analytical data in four sets: all samples combined; OD Hill samples only; Test Pit Samples only; and radius or "Doughnut Ring" samples only. Each level of the summary table details the number of samples collected, the number of samples where analyte concentrations exceeded comparator guidance values, and a determination as to whether the 95th upper confidence level of the applicable datasets' arithmetic mean (95th UCL) exceeded applicable comparator levels assessed. Additionally, each level of the data summary summarizes the minimum, maximum, and mean concentrations detected in samples; minimum and maximum levels of detection limits; and the number of individual samples that were found with concentrations of a specific analyte in excess of an applicable comparator level.

The comparator levels against which data were compared included New York State unrestricted use soil cleanup objective (SCO) levels, an adjusted version of the U.S. Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for residential soils, and the 95th UCL of regional background soil metal concentrations. EPA RSLs for residential soil were adjusted by using full concentrations for analytes that are classified as carcinogens, and one-tenth the listed value for non-carcinogenic compounds. This data manipulation process is similar to that which would be used during the initial screening of soil data for inclusion in a human health risk assessment.

Overall, the results of the data analysis indicate that 24 analytes were found in one or more of the samples characterized at levels that exceeded one or more of the applicable comparator values. Of these 24, 22 were metals (all TAL metals except thallium), one was aroclor-1254, and one was nitroglycerin. Further, the appropriate dataset's 95th UCL for 19 metals (all except antimony, calcium, magnesium, and thallium) exceeded one or more of applicable comparator levels. No other analyte of interest exhibited a 95th UCL value in excess of comparator guidance values.

Analytical results for cadmium, copper, mercury, silver, and vanadium, which are contaminants of potential concern (COPCs) at the OD Grounds are posted on site maps provided in **Appendix A**. Four maps are provided for each COPC, arranged in order of OD Hill, Test Pits, inner doughnut ring and outer doughnut rings. The following discussion presents a discussion of the distribution of these metals found in soil.

3.3.1 Cadmium

Cadmium results are listed in **Figures C-1** through **C-4**. Cadmium levels measured at all surface locations at OD Hill exceed the NYSDEC unrestricted use SCO and exceed the maximum SEDA background concentration of cadmium. Further, 16 of the 21 samples collected from the surface of the OD Hill were detected above the EPA adjusted RSL for residential soil. The maximum concentration reported for cadmium (i.e., 1100 mg/kg) was found on the eastern face of OD Hill at S45-ODH-4-01. Analytical results for cadmium in test pits surrounding OD Hill indicate that 17 of the 20 samples contained concentrations exceeding the unrestricted use SCO for cadmium; further, each of the non-exceeding samples were located in deeper soil (i.e., S45-TP1-04 at 7.5 ft bgs, S45-TP4-03 at 5 ft bgs; and S45-TP4-04 at 7.5 ft bgs). Similarly, comparing cadmium concentrations to maximum SEDA background concentrations shows that only deeper samples (including S45-TP3-04) contain levels below 2.9 mg/kg. Comparing test pit results for cadmium to adjusted EPA RSLs for

residential soil shows more varied results, but the data still indicates that soils at depth are of potential concern.

Figures C-3 and C-4 show the lateral extent of cadmium at the inner ring (100 – 500 foot) and outer ring (500 – 1500 foot). Samples containing cadmium above the NYSDEC unrestricted use SCO and the maximum SEDA background concentration were found at each of the inner ring sample locations; however, outside of the inner ring, (i.e., at the 1,000 and 1500 foot radius rings) cadmium was generally detected below comparator concentrations. Cadmium concentrations exceeding the EPA adjusted RSL for residential soil are generally limited to the three innermost rings (i.e., 100, 200, and 300 foot radii), with occasional exceedances out to the 500 foot ring.

3.3.2 Copper

Copper results are listed in **Figures C-5** through **C-8**. The extent of copper is generally similar to the extent of cadmium. Concentrations of copper are highest in soil near OD Hill; with increasing distance from OD Hill, the concentration of copper decreases until reaching acceptable concentrations somewhere between 500 and 1000 feet away from OD Hill. However, there is evidence that several of the highest concentrations of copper, including the overall highest (i.e., 7,310 mg/kg at S45-TP1-02 at 2.5 ft bgs), are found in underground test pit samples.

The distribution of the concentrations of copper at depth is generally similar across test pits, with the highest concentrations detected between 2.5 and 7.5 feet bgs. All samples from test pits 1, 2, 3, and 4 exceeded the NYSDEC SCO and SEDA maximum background for mercury except the deepest samples at test pits 1 and 4.

3.3.3 Mercury

Mercury results are listed in **Figures C-9** through **C-12**. Mercury concentrations at all surface locations at OD Hill exceed the NYSDEC unrestricted use SCO and exceed the maximum SEDA background concentration of mercury. Further, 18 of the 21 samples collected from the surface of the OD Hill were detected above the EPA adjusted RSL for residential soil. **Figures C-11 and C-12** show the lateral extent of mercury at the inner ring (100 – 500 foot) and outer ring (500 – 1500 foot). Samples containing mercury above the NYSDEC unrestricted use SCO and the maximum SEDA background concentration were found at each of the inner ring sample locations and even further afield at the 1,000 foot radius; only one sample (i.e., the northernmost sample) on the 1,500-foot ring exceeded the NYSDEC SCO.

The distribution of the concentrations of mercury at depth is generally similar across test pits, with the highest concentrations detected at 5 feet bgs. Like the concentration of copper, all mercury samples from test pits 1, 2, 3, and 4 exceeded the NYSDEC SCO and SEDA maximum background except the deepest samples at test pits 1 and 4.

3.3.4 Silver

Silver results are listed in **Figures C-13** through **C-16**. With one exception on the western edge of OD Hill, silver concentrations at all surface locations at OD Hill exceed the NYSDEC unrestricted

use SCO and exceed the maximum SEDA background concentration of silver. Concentrations of silver that exceed the NYSDEC unrestricted use SCO are generally limited to the innermost 200 feet of the OD Hill site, however, there are two notable exceedances at 300 and 500 feet to the east and northeast of the center of the OD Hill.

The distribution of the concentrations of silver at depth varies greatly across test pits with noted exceedances at all locations. At test pit 1, the three shallowest samples exceed the NYSDEC unrestricted use SCO; at test pit 2, only the surface sample exceeds the SCO; at test pit 3, the samples at 0 feet, 2.5 feet, and 7.5 feet bgs exceed the SCO; at test pit 4, both the surface sample and the sample 2.5 feet bgs exceed the SCO. It appears that the concentration of silver at depth is highly varied across the OD Hill site.

3.3.5 Vanadium

Vanadium results are listed in **Figures C-17** through **C-20**. Vanadium concentrations at all surface locations at OD Hill exceed the EPA RSL for residential soil; however, no samples exceed the maximum SEDA background concentration of vanadium. There is no NYSDEC unrestricted use SCO for vanadium. The lateral extent of vanadium across the OD Hill site (i.e., from OD Hill and out to the 1500 foot radius) is generally consistent, ranging between 16.6 and 41.9 mg/kg which is consistent with the SEDA background maximum (i.e., 32.7 mg/kg).

The distribution of the concentrations of vanadium at depth is generally consistent across test pits with analytical results from all test pit samples being in line with the maximum SEDA background concentration yet exceeding the EPA RSL for residential soil. Analytical results for samples at depth range from 17.5 mg/kg to 28.1 mg/kg. It appears that the concentration of vanadium at depth closely matches that of vanadium across the OD Hill site.

3.3.6 Overall Results

The above discussions indicate that metal concentrations tend to be highest in samples collected in close proximity to the OD Hill, and generally decrease as distance from the hill increases. Many of the highest metal concentrations were found in the surface soils collected from the OD Hill, but as is indicated by the discussion regarding copper, other elevated concentrations may be present at depth in, and around, the OD Hill Area. However, at distances of greater than 500 feet from the OD Hill only sporadic exceedances of metals are noted.

The only other analytes detected at levels in excess of comparator guidance values in any samples were aroclor-1254 and nitroglycerin, and both of these compounds were detected in samples that were collected from the surface of the OD Hill. Other explosives, pesticides, and semivolatile organic compounds were found at lower concentrations in samples away from the OD Hill were detected at lower concentrations.

3.4 Leachability Determinations

Once all total metal concentration results were received and evaluated, eight samples were selected for leachability determinations using the synthetic precipitation leaching procedure (SPLP) (EPA

SW-846 Method 1312) in combination with EPA SW-846 Method 6010 and 7471, as appropriate for the RCRA eight metals (i.e., arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) and other metals of interest (e.g., antimony, cobalt, copper, vanadium, and zinc). Parsons wishes to note that SPLP determinations for five of the samples were performed more than 28 days after the original total metal sample was collected and submitted to the laboratory. The extended holding time is not recommended for mercury analyses, but in this analysis do not appear to lessen mercury's potential to leach from soil.

The results of these analyses are summarized in **Table 5**, where the results of the SPLP and total metal analysis for each of the eight samples are presented. Total metal analysis results presented are compared to EPA's RSLs for residential soils and New York's unrestricted use SCO values, while the SPLP results are compared to New York's GA Groundwater Effluent limitations.

Preliminary data review included attempts to plot and correlate leachate concentrations versus total soil concentrations to determine if it is possible anticipate total soil threshold concentrations that could be indicative of adverse leaching potential. This approach is recommended in several technical articles referenced in the available literature, but the collected data did not support this approach in this study.

A general review of the data indicates that all of the suspect metals, exclusive of selenium, which was not detected in total soil samples, show some potential to leach to groundwater. Two metals, mercury and lead, show the highest number of samples affected (i.e., six) at levels of potential concern, while cadmium and copper are also observed to be of potential concern when total soil concentrations move up to and above EPA's RSLs for residential soil. Barium and zinc also show leaching potential, but it appears that these may only reach levels of concern once residential and unrestricted use concentrations are surpassed. None of the reported leachate concentrations reported from the SPLP analyses approached toxicity characteristic leaching procedure regulatory levels reported in 40 CFR 261.24 which range from a low of 200 micrograms per liter for mercury to a high of 100 milligrams per liter for barium. The other six RCRA metals have levels set at either 1 milligram per liter (cadmium, selenium) or 5 milligrams per liter (arsenic, chromium, lead, or silver).

4.0 CONCLUSIONS

Based on the results of this investigation, the following conclusions are offered:

- The quantity of soil contained in the OD Hill above surrounding grade level is estimated to be 38,000 cubic yards.
- Bedrock underlying the area of the OD Hill mound is estimated to vary from 10 to 20 feet bgs.
- Geophysical anomaly densities general decrease from saturated levels (i.e., 600 anomalies per acre) at surface elevations to lower densities at depth at each test plot; this is especially true for the test plots that are further from the initial point of detonation.

- Directional and point-of-detonation distance variations may be related to the vertical distribution of geophysical anomalies in the soil surrounding the detonation site.
- Metals are the predominant contaminants that were identified at the OD Grounds, both in terms of the frequency of detection and with respect to the number of samples with concentrations that exceed applicable comparator guidance values. In addition, 95th UCL values calculated from the four assessed datasets (i.e., overall data, OD Hill only, test pit only, and radius samples only) indicate that metal contamination at levels above comparator values is distributed throughout surface and subsurface and soils at and beyond the OD Hill.
- Metal concentrations are generally greatest in soils closest to the OD Hill and decrease with distance from OD Hill. With the exception if isolated instances, at distances greater than 500 feet, metal concentrations are (aroclor-1254 and nitroglycerin) were detected at concentrations above comparator guidance levels in OD Hill surface soil samples only.
- Four metals, mercury, lead, copper, cadmium, and copper, exhibit potential to leach from soils at levels that exceed State of New York GA Groundwater Effluent Limitation levels when exposed to synthetic precipitation solutions. Other metals also are observed to leach from soils found at the OD Grounds, but not to levels that currently indicate potential problems.

TABLES

Table 1
Anomaly Identified at OD Grounds
Additional Munitions Response Investigation
Seneca Army Depot Activities

ID	Ch 3 (mV)	Easting	Northing	Depth (in)	Description
1-1	N/A	737521.1	1013177.9	4	Rocket Assisted Projectile (RAP) Round base
1-2	N/A	737530.6	1013181.3	4	Rocket Assisted Projectile (RAP) Round base
1-3	N/A	737501.0	1013262.2	2	Projectile base
2-1	N/A	738646.9	1012988.0	--	Approximately 25 steel fragments between 1" and 3" long and 1/4" to 1" thick
2-2	N/A	738656.8	1012998.1	6	Two fuze components
2-3	N/A	738693.8	1013000.5	--	Approximately 25 steel fragments between 1" and 3" long and 1/4" to 1" thick
3-1	41	739459.7	1012278.8	--	Pile of bullets
6-1	25	738745.3	1012645.3	--	Large piece of fragment
6-2	34	738770.3	1012638.1	--	One 20mm fragment round
6-3	25	738777.1	1012607.6	--	One 57mm fragement round
6-4	18	738742.5	1012557.4	--	Two 20mm fragment rounds
6-5	51	738740.1	1012529.6	--	Pieces of fragment

Table 2
Anomaly Densities at Areas 1, 2, 3, 5, and 6
Additional Munitions Response Investigation
Seneca Army Depot Activities

Grid	Clearance	Sq. Feet	Acres	Targets	Density (targets/acre)
Area 1	1 foot	9324.12	0.21	10	47
Area 2	1 foot	8651.95	0.20	5	25
Area 3	1 foot	4158.16	0.10	0	0
Area 5	1 foot	4141.89	0.10	24	252
Area 5	2 feet	1850.9	0.04	12	282
Area 6	1 foot	6993.08	0.16	0	0

Table 3
Soil Sample List
Additional Munitions Response Investigation
Seneca Army Depot Activities

Sample ID	Full Suite	Explosives	Metals	SPLP
S45-ODH-1-01	x			
S45-ODH-2-01		x	x	
S45-ODH-3-01		x	x	
S45-ODH-4-01	x			x
S45-ODH-5-01		x	x	
S45-ODH-6-01	x			
S45-ODH-7-01		x	x	
S45-ODH-8-01	x			
S45-ODH-9-01		x	x	
S45-ODH-10-01		x	x	
S45-ODH-11-01	x			
S45-ODH-12-01		x	x	
S45-ODH-13-01		x	x	
S45-ODH-14-01	x			
S45-ODH-15-01		x	x	
S45-ODH-16-01		x	x	
S45-ODH-17-01	x			
S45-ODH-18-01		x	x	
S45-ODH-19-01	x			
S45-ODH-19-01MS	x			
S45-ODH-19-01MSD	x			
S45-ODH-19-01D	x			
S45-ODH-20-01		x	x	
S45-TP-1-01	x			
S45-TP-1-02			x	x
S45-TP-1-03			x	
S45-TP-1-04			x	
S45-TP-2-01	x			
S45-TP-2-02			x	
S45-TP-2-03			x	
S45-TP-2-04			x	x
S45-TP-2-05			x	
S45-TP-3-01	x			
S45-TP-3-01MS	x			
S45-TP-3-01MSD	x			
S45-TP-3-01D	x			
S45-TP-4-01	x			
S45-TP-4-02			x	
S45-TP-4-03			x	
S45-TP-4-04			x	
S45-TP-4-05			x	
S45-TP-3-03			x	
S45-TP-3-02			x	
S45-TP-3-04			x	
S45-TP-3-05			x	
S45-R5-01	x			

Sample ID	Full Suite	Explosives	Metals	SPLP
S45-R5-02			x	
S45-R5-03	x			
S45-R5-05	x			
S45-R5-06			x	
S45-R5-07			x	
S45-R5-08			x	
S45-R5-04	x			
S45-R5-04MS	x			
S45-R5-04MSD	x			
S45-R5-04D	x			
S45-R10-01			x	
S45-R10-02			x	
S45-R10-05			x	
S45-R10-06			x	
S45-R10-07			x	
S45-R10-03			x	
S45-R10-03MS			x	
S45-R10-03MSD			x	
S45-R10-03D			x	
S45-R15-02			x	
S45-R15-06			x	
S45-R15-05			x	
S45-R15-01			x	x
S45-R10-04			x	x
S45-R15-03			x	
S45-RB-01	x			
S45-R1-01			x	
S45-R2-01			x	
S45-R3-01			x	
S45-R4-01			x	x
S45-R1-02			x	x
S45-R2-02			x	x
S45-R3-02			x	
S45-R4-02			x	
S45-R1-03			x	
S45-R2-03			x	
S45-R3-03			x	
S45-R4-03			x	
S45-R1-04			x	
S45-R1-04MS			x	
S45-R1-04MSD			x	
S45-R1-04D			x	
S45-R2-04			x	
S45-R3-04			x	
S45-R4-04			x	
S45-RB-01			x	

Table 4
Soil Sampling Summary Results
Additional Munitions Response Investigation
Seneca Army Depot Activities

		All Samples Collected																
			Detected			Not Detected		Number	Number	SEDA	Number		NYS	Number		EPA	Number	
Compound	Units	95th UCL Conc.	Maximum Conc.	Minimum Conc.	Mean Conc.	Maximum ND	Minimum ND	of Detect	of Samples	95th UCL	that Exceed	95th UCL Exceeds	Unrestricted Use	that Exceed	95th UCL Exceeds	Appropriate RSL	that Exceed	95th UCL Exceeds
Aroclor-1254	ug/Kg	--	2000	2000	2000	6.5	4.6	1	19				100	1	--	220	1	--
2,4-Dinitrotoluene	ug/Kg	333.4	1100	57	173.7	19	16	27	31				--	0	NO	1600	0	NO
Nitroglycerin	ug/Kg	--	1500	1500	1500	160	110	1	31				--	0	--	610	1	--
Aluminum	mg/Kg	18228	27900	5910	17616	--	--	81	81	14153	73	YES	--	0	NO	7700	80	YES
Antimony	mg/Kg	0.628	5.1	0.12	0.921	0.47	0.09	36	81	2.4	3	NO	--	0	NO	3.1	1	NO
Arsenic	mg/Kg	5.781	12.6	3.3	5.485	--	--	81	81	6.9	9	NO	13	0	NO	0.39	81	YES
Barium	mg/Kg	174.1	299	27.9	163.5	--	--	81	81	84.9	77	YES	350	0	NO	1500	0	NO
Beryllium	mg/Kg	0.794	1.2	0.42	0.771	--	--	81	81	0.72	59	YES	7.2	0	NO	16	0	NO
Cadmium	mg/Kg	77.8	1100	0.04	19.1	0.01	0.01	80	81	0.68	71	YES	2.5	56	YES	7	32	YES
Calcium	mg/Kg	37989	193000	2150	26247	--	--	81	81	89996	2	NO	--	0	NO	--	0	NO
Chromium	mg/Kg	217.8	2804	10.6	66.93	--	--	81	81	21.5	75	YES	30	19	YES	12000	0	NO
Cobalt	mg/Kg	12.08	26.8	6.4	11.64	--	--	81	81	12.5	19	NO	--	0	NO	2.3	81	YES
Copper	mg/Kg	1136	7310	20	473.6	--	--	81	81	23.1	79	YES	50	63	YES	310	40	YES
Iron	mg/Kg	30066	118000	7600	27820	--	--	81	81	26222	36	YES	2000	0	YES	5500	81	YES
Lead	mg/Kg	128	998	11.2	72.09	--	--	81	81	39.74	58	YES	63	23	YES	40	58	YES
Magnesium	mg/Kg	7298	15000	3630	6943	--	--	81	81	12117	2	NO	--	0	NO	--	0	NO
Manganese	mg/Kg	718.2	5040	256	622.3	--	--	81	81	687.6	10	YES	1600	1	NO	180	81	YES
Mercury	mg/Kg	4.577	9.1	0.02	2.94	--	--	81	81	0.045	77	YES	0.18	69	YES	2.3	47	YES
Nickel	mg/Kg	39.06	59.3	20	37.65	--	--	81	81	33.6	60	YES	30	67	YES	150	0	NO
Potassium	mg/Kg	2848	4880	1700	2742	--	--	81	81	1610	81	YES	--	0	NO	--	0	NO
Selenium	mg/Kg	0.587	0.92	0.56	0.742	1.03	0.19	6	81	0.42	6	YES	3.9	0	NO	39	0	NO
Silver	mg/Kg	16.33	205	0.12	6.338	0.27	0.04	64	81	0.66	49	YES	2	39	YES	39	2	NO
Sodium	mg/Kg	122.6	213	53.1	115.4	--	--	81	81	103.5	46	YES	--	0	NO	--	0	NO
Thallium	mg/Kg	0.132	0.42	0.1	0.249	0.44	0.08	9	81	0.485	0	NO	--	0	NO	--	0	NO
Vanadium	mg/Kg	29.32	41.9	16.6	28.46	--	--	81	81	22.7	71	YES	--	0	NO	0.55	81	YES
Zinc	mg/Kg	444.1	1470	66.8	322.2	--	--	81	81	76.6	79	YES	109	67	YES	2300	0	NO

Notes:
SEDA 95th UCL is computed using the Seneca Background Soil Dataset
EPA Appropriate RSL is defined as the full value for carcinogenic species and 1/10th the concentration for noncarcinogenic compounds.

Table 4
Soil Sampling Summary Results
Additional Munitions Response Investigation
Seneca Army Depot Activities

		OD Hill																
			Detected			Not Detected		Number	Number	SEDA	Number		NYS	Number		EPA	Number	
Compound	Units	95th UCL Conc.	Maximum Conc.	Minimum Conc.	Mean Conc.	Maximum ND	Minimum ND	of Detect	of Samples	95th UCL	that Exceed	95th UCL Exceeds	Unrestricted Use	that Exceed	95th UCL Exceeds	Appropriate RSL	that Exceed	95th UCL Exceeds
Aroclor-1254	ug/Kg	--	2000	2000	2000	5.6	4.7	1	9				100	1	--	220	1	--
2,4-Dinitrotoluene	ug/Kg	369.8	1100	64	161.8	--	--	21	21				--	0	NO	1600	0	NO
Nitroglycerin	ug/Kg	--	1500	1500	1500	160	120	1	21				--	0	--	610	1	--
Aluminum	mg/Kg	18923	23600	14400	18114	--	--	21	21	14153	21	YES	--	0	NO	7700	21	YES
Antimony	mg/Kg	18923	23600	14400	18114	--	--	21	21	2.4	0	YES	--	0	NO	3.1	0	YES
Arsenic	mg/Kg	7.3	12.6	4	6.3	--	--	21	21	6.9	5	YES	13	0	NO	0.39	21	YES
Barium	mg/Kg	206.8	287	138	193.4	--	--	21	21	84.9	21	YES	350	0	NO	1500	0	NO
Beryllium	mg/Kg	0.857	1.2	0.65	0.816	--	--	21	21	0.72	18	YES	7.2	0	NO	16	0	NO
Cadmium	mg/Kg	577.7	1100	4.7	60.4	--	--	21	21	0.68	21	YES	2.5	21	YES	7	15	YES
Calcium	mg/Kg	28550	43900	18600	26330	--	--	21	21	89996	0	NO	--	0	NO	--	0	NO
Chromium	mg/Kg	136.2	446	22	49.8	--	--	21	21	21.5	21	YES	30	9	YES	12000	0	NO
Cobalt	mg/Kg	12.9	14.9	9	12.4	--	--	21	21	12.5	10	YES	--	0	NO	2.3	21	YES
Copper	mg/Kg	1536	4180	209	719.5	--	--	21	21	23.1	21	YES	50	21	YES	310	20	YES
Iron	mg/Kg	42074	118000	21800	33690	--	--	21	21	26222	15	YES	2000	0	YES	5500	21	YES
Lead	mg/Kg	80.4	217	38.4	65.6	--	--	21	21	39.74	20	YES	63	5	YES	40	20	YES
Magnesium	mg/Kg	712	8740	5680	6873	--	--	21	21	12117	0	NO	--	0	NO	--	0	NO
Manganese	mg/Kg	691.1	1080	458	642.5	--	--	21	21	687.6	4	YES	1600	0	NO	180	21	YES
Mercury	mg/Kg	4.2	6.8	1.4	3.7	--	--	21	21	0.045	21	YES	0.18	21	YES	2.3	18	YES
Nickel	mg/Kg	42.8	59.3	31.4	40.6	--	--	21	21	33.6	20	YES	30	21	YES	150	0	NO
Potassium	mg/Kg	3201	4880	2160	2981	--	--	21	21	1610	21	YES	--	0	NO	--	0	NO
Selenium	mg/Kg	--	0.73	0.56	0.645	1	0.21	2	21	0.42	2	YES	3.9	0	--	39	0	--
Silver	mg/Kg	54.8	205	1.2	12.94	--	--	21	21	0.66	21	YES	2	20	YES	39	1	YES
Sodium	mg/Kg	121.6	138	103	117.3	--	--	21	21	103.5	18	YES	--	0	NO	--	0	NO
Thallium	mg/Kg	--	0.23	0.1	0.177	0.44	0.1	3	21	0.485	0	YES	--	0	--	--	0	--
Vanadium	mg/Kg	29.5	32.5	23.7	28.6	--	--	21	21	22.7	21	YES	--	0	NO	0.55	21	YES
Zinc	mg/Kg	465.6	1270	225	380	--	--	21	21	76.6	21	YES	109	21	YES	2300	0	NO

Notes:
SEDA 95th UCL is computed using the Seneca Background Soil Dataset
EPA Appropriate RSL is defined as the full value for carcinogenic species and 1/10th the concentration for noncarcinogenic compounds.

Table 4
Soil Sampling Summary Results
Additional Munitions Response Investigation
Seneca Army Depot Activities

		Radius Samples																
			Detected			Not Detected		Number	Number	SEDA	Number		NYS	Number		EPA	Number	
Compound	Units	95th UCL Conc.	Maximum Conc.	Minimum Conc.	Mean Conc.	Maximum ND	Minimum ND	of Detect	of Samples	95th UCL	that Exceed	95th UCL Exceeds	Unrestricted Use	that Exceed	95th UCL Exceeds	Appropriate RSL	that Exceed	95th UCL Exceeds
Aroclor-1254	ug/Kg	--	--	--	--	6.5	5.6	0	5				100	0	--	220	0	--
2,4-Dinitrotoluene	ug/Kg	--	840	840	840	19	16	1	5				--	0	--	1600	0	--
Nitroglycerin	ug/Kg	--	--	--	--	160	130	0	5				--	0	--	610	0	--
Aluminum	mg/Kg	19571	27900	5910	18683	--	--	40	40	14153	39	YES	--	0	NO	7700	39	YES
Antimony	mg/Kg	0.799	3.1	0.14	0.994	0.41	0.09	21	40	2.4	2	NO	--	0	NO	3.1	0	NO
Arsenic	mg/Kg	5.403	7.6	3.9	5.21	--	--	40	40	6.9	2	NO	13	0	NO	0.39	40	YES
Barium	mg/Kg	175.4	299	27.9	159.3	--	--	40	40	84.9	38	YES	350	0	NO	1500	0	NO
Beryllium	mg/Kg	0.851	1.2	0.42	0.815	--	--	40	40	0.72	33	YES	7.2	0	NO	16	0	NO
Cadmium	mg/Kg	8.52	9.1	0.33	3.531	--	--	40	40	0.68	32	YES	2.5	18	YES	7	9	YES
Calcium	mg/Kg	27614	193000	2150	20769	--	--	40	40	89996	1	NO	--	0	NO	--	0	NO
Chromium	mg/Kg	399.4	2804	10.6	96.77	--	--	40	40	21.5	39	YES	30	8	YES	12000	0	NO
Cobalt	mg/Kg	12.4	26.8	7.7	11.62	--	--	40	40	12.5	6	NO	--	0	NO	2.3	40	YES
Copper	mg/Kg	478.4	794	20	189	--	--	40	40	23.1	38	YES	50	24	YES	310	9	YES
Iron	mg/Kg	26541	35300	7600	25440	--	--	40	40	26222	15	YES	2000	0	YES	5500	40	YES
Lead	mg/Kg	193.6	998	11.9	82.69	--	--	40	40	39.74	23	YES	63	11	YES	40	23	YES
Magnesium	mg/Kg	6909	15000	3630	6354	--	--	40	40	12117	1	NO	--	0	NO	--	0	NO
Manganese	mg/Kg	862.2	5040	256	668.3	--	--	40	40	687.6	5	YES	1600	1	NO	180	40	YES
Mercury	mg/Kg	2.4	6.4	0.03	1.69	--	--	40	40	0.045	38	YES	0.18	30	YES	2.3	12	YES
Nickel	mg/Kg	38.77	56	21.4	36.5	--	--	40	40	33.6	24	YES	30	28	YES	150	0	NO
Potassium	mg/Kg	3075	4880	2140	2929	--	--	40	40	1610	40	YES	--	0	NO	--	0	NO
Selenium	mg/Kg	0.804	0.92	0.79	0.867	0.19	0.09	3	40	0.42	3	YES	3.9	0	NO	39	0	NO
Silver	mg/Kg	1.485	4.4	0.18	1.804	0.27	0.04	23	40	0.66	15	YES	2	10	NO	39	0	NO
Sodium	mg/Kg	100.5	179	53.1	93.44	--	--	40	40	103.5	11	NO	--	0	NO	--	0	NO
Thallium	mg/Kg	0.318	0.42	0.31	0.347	0.38	0.08	3	40	0.485	0	NO	--	0	NO	--	0	NO
Vanadium	mg/Kg	31.66	41.9	16.6	30.39	--	--	40	40	22.7	38	YES	--	0	NO	0.55	40	YES
Zinc	mg/Kg	326.7	1350	66.8	265.3	--	--	40	40	76.6	38	YES	109	28	YES	2300	0	NO

Notes:
SEDA 95th UCL is computed using the Seneca Background Soil Dataset
EPA Appropriate RSL is defined as the full value for carcinogenic species and 1/10th the concentration for noncarcinogenic compounds.

Table 4
Soil Sampling Summary Results
Additional Munitions Response Investigation
Seneca Army Depot Activities

		Test Pits																
			Detected			Not Detected		Number	Number	SEDA	Number		NYS	Number		EPA	Number	
Compound	Units	95th UCL Conc.	Maximum Conc.	Minimum Conc.	Mean Conc.	Maximum ND	Minimum ND	of Detect	of Samples	95th UCL	that Exceed	95th UCL Exceeds	Unrestricted Use	that Exceed	95th UCL Exceeds	Appropriate RSL	that Exceed	95th UCL Exceeds
Aroclor-1254	ug/Kg	--	--	--	--	5.4	4.6	0	5				100	0	--	220	0	--
2,4-Dinitrotoluene	ug/Kg	--	--	--	--			5	5				--	0	--	1600	1	--
Nitroglycerin	ug/Kg	--	--	--	--	140	120	0	5				--	0	--	610	0	--
Aluminum	mg/Kg	16076	21700	9690	14960	--	--	20	20	14153	13	YES	--	0	NO	7700	20	YES
Antimony	mg/Kg	0.975	5.1	0.12	1.02	0.21	0.12	8	20	2.4	1	NO	--	0	NO	3.1	1	NO
Arsenic	mg/Kg	5.7	8.7	3.3	5.18	--	--	20	20	6.9	2	NO	13	0	NO	0.39	20	YES
Barium	mg/Kg	163.8	227	71.2	148.6	--	--	20	20	84.9	18	YES	350	0	NO	1500	0	NO
Beryllium	mg/Kg	0.705	0.79	0.42	0.665	--	--	20	20	0.72	8	NO	7.2	0	NO	16	0	NO
Cadmium	mg/Kg	7.17	13.4	0.04	6.234	0.01	0.01	18	20	0.68	18	YES	2.5	17	YES	7	8	YES
Calcium	mg/Kg	45554	101000	23000	38105	--	--	20	20	89996	1	NO	--	0	NO	--	0	NO
Chromium	mg/Kg	27.4	39.2	14.4	25.3	--	--	20	20	21.5	15	YES	30	2	NO	12000	8	NO
Cobalt	mg/Kg	11.6	13.6	6.4	10.9	--	--	20	20	12.5	3	NO	--	0	NO	2.3	20	YES
Copper	mg/Kg	1605	7310	24.7	784.8	--	--	20	20	23.1	20	YES	50	18	YES	310	11	YES
Iron	mg/Kg	30231	60900	15500	26415	--	--	20	20	26222	6	YES	2000	0	YES	5500	20	YES
Lead	mg/Kg	69.9	153	11.2	57.7	--	--	20	20	39.74	15	YES	63	7	YES	40	15	YES
Magnesium	mg/Kg	9093	12500	6020	8368	--	--	20	20	12117	1	NO	--	0	NO	--	0	NO
Manganese	mg/Kg	547.2	727	379	509.4	--	--	20	20	687.6	1	NO	1600	0	NO	180	20	YES
Mercury	mg/Kg	5.7	9.1	0.02	4.62	--	--	20	20	0.045	18	YES	0.18	18	YES	2.3	17	YES
Nickel	mg/Kg	39.5	54	20	36.9	--	--	20	20	33.6	16	YES	30	18	YES	150	0	NO
Potassium	mg/Kg	2469	3500	1700	2271	--	--	20	20	1610	20	YES	--	0	NO	--	0	NO
Selenium	mg/Kg	--	0.56	--	--	0.59	0.19	1	20	0.42	1	YES	3.9	0	--	39	0	--
Silver	mg/Kg	9.7	53.7	0.12	4.6	--	--	20	20	0.66	13	YES	2	9	YES	39	1	NO
Sodium	mg/Kg	175.1	213	88.2	159.1	--	--	20	20	103.5	17	YES	--	0	NO	--	0	NO
Thallium	mg/Kg	--	0.27	0.15	0.223	0.25	0.09	3	20	0.485	0	YES	--	0	--	--	0	--
Vanadium	mg/Kg	25.8	29.8	17.5	24.8	--	--	20	20	22.7	12	YES	--	0	NO	0.55	20	YES
Zinc	mg/Kg	486.8	1470	80.1	375.4	--	--	20	20	76.6	20	YES	109	18	YES	2300	0	NO

Notes:
SEDA 95th UCL is computed using the Seneca Background Soil Dataset
EPA Appropriate RSL is defined as the full value for carcinogenic species and 1/10th the concentration for noncarcinogenic compounds.

Table 5
Comparison of Total Metal in Soil to SPLP Extract Concentrations

Seneca Army Depot

Parameter	Soil Guidance Values: EPA RSL Residential RSL mg/Kg	Soil Guidance Values: NYSDEC Unrestricted SCO mg/Kg	NYSDEC GA GW Effluent ug/L	Number of Exceedances	SEAD-45 S45-0DH-4-01 SOIL S45-0DH-4-01 X Y 3/12/2010 SA mg/Kg Value (Q)	*SEAD-45 S45-0DH-4-01 Leachate S45-0DH-4-01 X Y 3/12/2010 SA* ug/L Value (Q)	SEAD-45 S45-TP-1-02 SOIL S45-TP-1-02 X Y 3/12/2010 SA mg/Kg Value (Q)	*SEAD-45 S45-TP-1-02 Leachate S45-TP-1-02 X Y 3/12/2010 SA* ug/L Value (Q)	SEAD-45 S45-TP-2-04 SOIL S45-TP-2-04 X Y 3/12/2010 SA mg/Kg Value (Q)	SEAD-45 S45-TP-2-04 Leachate S45-TP-2-04 X Y 3/12/2010 SA ug/L Value (Q)
ALUMINUM	**7700**				**15000**		**14400**		**16500**	
ANTIMONY	3.1		*6*		0.47 U	*ND*	0.63 J	*ND*	0.29 J	*2.6 J*
ARSENIC	**0.39**	13	*50*		**12.6**	*7.4 J*	**8.7**	*1.86 U*	**4.8**	*16*
BARIUM	1500	350	*2000*		220	*495*	101	*132*	227	*1340*
BERYLLIUM	16	7.2			0.67		0.62		0.73	
CADMIUM	**7**	**2.5**	***10***	4	**1100**	***11***	**13.4**	*0.6 J*	**7.6**	***18.9***
CALCIUM					23200		62400		29500	
CHROMIUM	12000	**30**	*100*		**37.8**	*38.3*	**35**	*12.7 J*	26.7	*77.2*
COBALT	**2.3**				**14**	*10.5 J*	**12.9**	*2.3 J*	**11.3**	*32*
COPPER	**310**	**50**	***1000***	2	**1780**	*909*	**7310**	*139*	**2490**	*716*
IRON	**5500**				**118000**		**60900**		**25600**	
LEAD	**40**	**63**	***50***	6	**57.2**	***78***	22.3	*8.7*	**91**	***274***
MAGNESIUM					5680		9200		7380	
MANGANESE	**180**	1600			**648**		**574**		**407**	
MERCURY	**2.3**	**0.18**	***1.4***	6	**3.1**	***12.7 (1)***	**4.3**	*0.27 (1)*	**9.1**	***44.2 (1)***
NICKEL	150	**30**			**46.2**		**54**		**38.2**	
POTASSIUM					2160		2180		2400	
SELENIUM	39	3.9	*20*		1.03 U	*3.67 U*	0.59 U	*3.67 U*	0.4 U	*3.67 U*
SILVER	**39**	**2**	*100*		**205**	*6.2 J*	**53.7**	*0.75 J*	0.63 J	*3.5 J*
SODIUM					103		151		189	
THALLIUM					0.44 U		0.25 U		0.17 U	
VANADIUM	**0.55**				**24.4**	*50*	**22.3**	*19 J*	**26.9**	*98*
ZINC	2300	**109**	*5000 (3)*		**1270**	*767*	**150**	*100*	**1470**	*2770*

Key

0.55	**Exceeds most stringent soil criterion only**
39	**Exceeds most liberal and most stringent soil criterion**
0.7	**Exceeds most stringent groundwater criterion only**
1.4	**Exceeds most liberal and most stringent groundwater criteria**

(1) **Mercury data may be affected by holding times greater than 28 days.**
(2) **Based on Federal MCL**
(3) **NYSDEC Guidance Value, GA Freshwater Aesthetics**

Table 5
Comparison of Total Metal in Soil to SPLP Extract Concentrations

Seneca Army Depot

Parameter	Soil Guidance Values: EPA RSL Residential RSL mg/Kg	Soil Guidance Values: NYSDEC Unrestricted SCO mg/Kg	NYSDEC GA GW Effluent ug/L	Number of Exceedances	SEAD-45 S45-R4-01 SOIL S45-R4-01 0 0.2 4/1/2010 SA mg/Kg Value (Q)	SEAD-45 S45-R4-01 Leachate S45-R4-01 0 0.2 4/1/2010 SA ug/L Value (Q)	SEAD-45 S45-RI-02 SOIL S45-RI-02 0 0.2 4/1/2010 SA mg/Kg Value (Q)	SEAD-45 S45-RI-02 Leachate S45-RI-02 0 0.2 4/1/2010 SA ug/L Value (Q)	SEAD-45 S45-R2-02 SOIL S45-R2-02 0 0.2 4/1/2010 SA mg/Kg Value (Q)	SEAD-45 S45-R2-02 Leachate S45-R2-02 0 0.2 4/1/2010 SA ug/L Value (Q)
ALUMINUM	**7700**				**19000**		**16200**		**17700**	
ANTIMONY	3.1		*6*		0.18 U	*ND*	0.64 J	*ND*	0.62 J	*3.7 J*
ARSENIC	**0.39**	13	*50*		**5.7**	*11.6*	**5.1**	*13.6*	**5.4**	*18.9*
BARIUM	1500	350	*2000*		140	*562*	150	*777*	164	*940*
BERYLLIUM	16	7.2			0.88		0.72		0.86	
CADMIUM	**7**	**2.5**	***10***	4	1.1 J	*4 J*	**7.7**	***17.3***	**9.1**	***25.3***
CALCIUM					12200		25400		20300	
CHROMIUM	12000	**30**	*100*		**2804**	*52*	27.4	*73*	27.7	*99.9*
COBALT	**2.3**				**10.9**	*11.7 J*	**12.3**	*37.5*	**11.8**	*29 J*
COPPER	**310**	**50**	***1000***	2	**82.6**	*243*	**794**	***1444***	**462**	***2260***
IRON	**5500**				**24000**		**25200**		**27600**	
LEAD	**40**	**63**	***50***	6	22.5	***52***	**69.2**	***147***	**72.3**	***193***
MAGNESIUM					6750		7910		6560	
MANGANESE	**180**	1600			**428**		**676**		**618**	
MERCURY	**2.3**	**0.18**	***1.4***	6	**1.4**	***12.2***	**3.5**	***13.2***	**3**	***9.8***
NICKEL	150	**30**			**37**		**39.6**		**39.8**	
POTASSIUM					2970		2450		2920	
SELENIUM	39	3.9	*20*		0.63 U	*3.67 U*	0.7 U	*3.67 U*	0.72 U	*3.67 U*
SILVER	**39**	**2**	*100*		0.42 J	*2 J*	**3.2**	*13.6 J*	**3.6**	*19.7*
SODIUM					79 J		87.7 J		90.9 J	
THALLIUM					0.27 U		0.29 U		0.3 U	
VANADIUM	**0.55**				**33.6**	*6.8 J*	**27.3**	*93*	**30.9**	*124*
ZINC	2300	**109**	*5000 (3)*		**160**	*1030*	**1350**	*3100*	**321**	*1750*

Key

0.55	**Exceeds most stringent soil criterion only**
39	**Exceeds most liberal and most stringent soil criterion**
0.7	**Exceeds most stringent groundwater criterion only**
1.4	**Exceeds most liberal and most stringent groundwater criteria**

(1) **Mercury data may be affected by holding times greater than 28 days.**

(2) **Based on Federal MCL**

(3) **NYSDEC Guidance Value, GA Freshwater Aesthetics**

Table 5
Comparison of Total Metal in Soil to SPLP Extract Concentrations

Seneca Army Depot

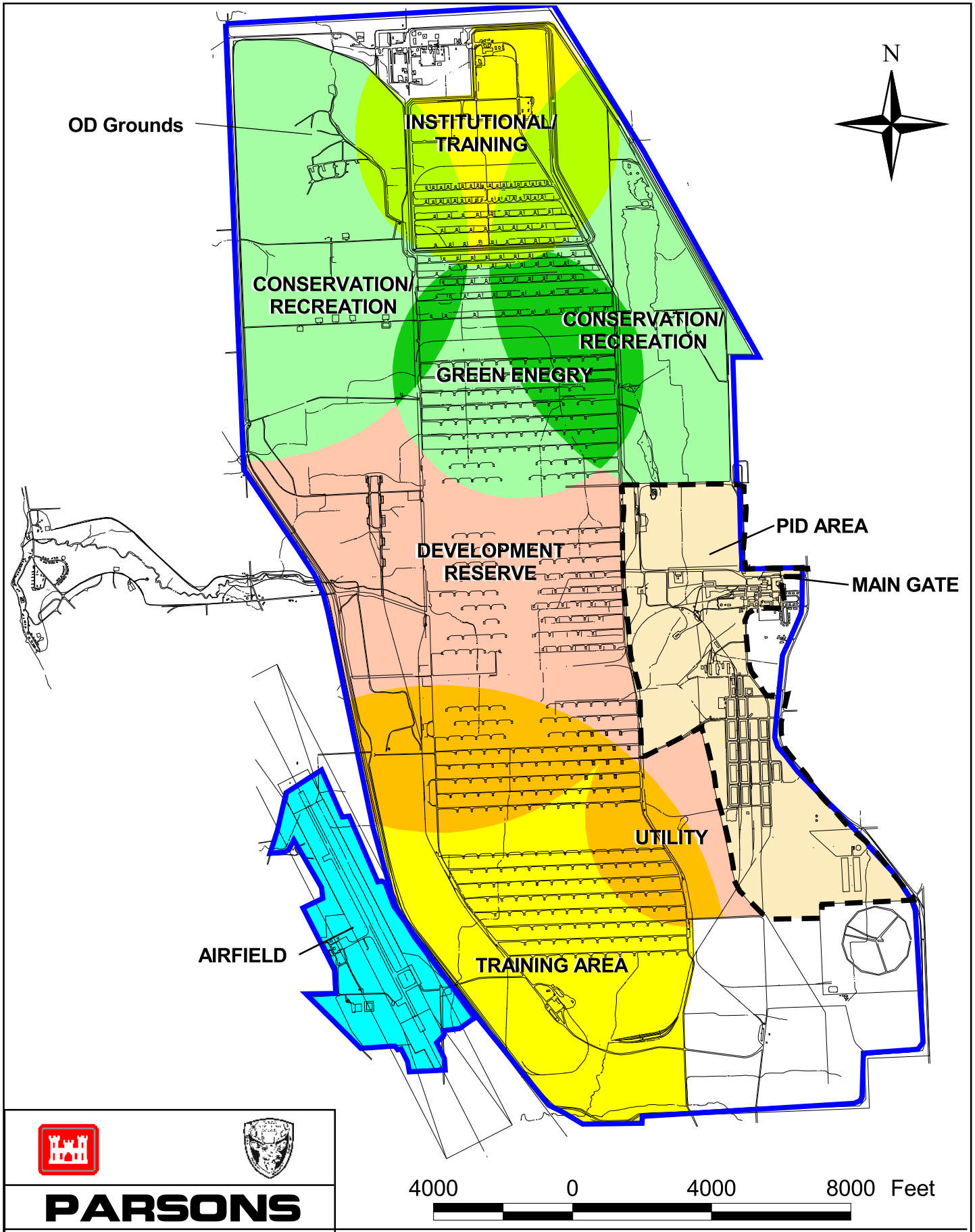
Parameter	Soil Guidance Values: EPA RSL Residential RSL mg/Kg	Soil Guidance Values: NYSDEC Unrestricted SCO mg/Kg	NYSDEC GA GW Effluent ug/L	Number of Exceedances	SEAD-45 S45-R5-05 SOIL S45-R5-05 0.2 0.8 3/16/2010 SA mg/Kg Value (Q)	SEAD-45 S45-R5-05 Leachate S45-R5-05 0.2 0.8 3/16/2010 SA ug/L Value (Q)	SEAD-45 S45-R15-01 SOIL S45-R15-01 0.2 0.8 3/16/2010 SA mg/Kg Value (Q)	SEAD-45 S45-R15-01 Leachate S45-R15-01 0.2 0.8 3/16/2010 SA ug/L Value (Q)
ALUMINUM	**7700**				**18700**		**19900**	
ANTIMONY	3.1		*6*		0.11 U	*ND*	0.25 U	*ND*
ARSENIC	**0.39**	13	*50*		**5.2**	*9.8*	**7.6**	*6.8 J*
BARIUM	1500	350	*2000*		165	*703*	287	*487*
BERYLLIUM	16	7.2			0.79		1	
CADMIUM	**7**	**2.5**	***10***	4	**5.1**	*8.7 J*	1.8 J	*1.2 J*
CALCIUM					29300		3630	
CHROMIUM	12000	**30**	*100*		26.7	*63.1*	24.6	*53.6*
COBALT	**2.3**				**10**	*16.7 J*	**26.8**	*11.9 J*
COPPER	**310**	**50**	***1000***	2	**219**	*654*	22.8	*59.5*
IRON	**5500**				**25400**		**35300**	
LEAD	**40**	**63**	***50***	6	**42.9**	***71***	22	*29*
MAGNESIUM					7140		4080	
MANGANESE	**180**	1600			**489**		**5040**	
MERCURY	**2.3**	**0.18**	***1.4***	6	**1.3**	***4.2 (1)***	**0.21**	*0.34 (1)*
NICKEL	150	**30**			**33.4**		29.8	
POTASSIUM					3220		2780	
SELENIUM	39	3.9	*20*		0.24 U	*3.67 U*	0.56 U	*3.67 U*
SILVER	**39**	**2**	*100*		0.46 J	*3.1 J*	0.17 U	*2.1 J*
SODIUM					127		87.4 J	
THALLIUM					0.1 U		0.24 U	
VANADIUM	**0.55**				**30.1**	*79*	**30.7**	*78*
ZINC	2300	**109**	*5000 (3)*		**360**	*1290*	101	*243*

Key

0.55	**Exceeds most stringent soil criterion only**
39	**Exceeds most liberal and most stringent soil criterion**
0.7	**Exceeds most stringent groundwater criterion only**
1.4	**Exceeds most liberal and most stringent groundwater criteria**

(1) **Mercury data may be affected by holding times greater than 28 days.**
(2) **Based on Federal MCL**
(3) **NYSDEC Guidance Value, GA Freshwater Aesthetics**

FIGURES



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SENECA ARMY DEPOT ACTIVITY
Additional Munitions Response Investigation

Figure 1
Site Plan

April 2010

Seneca Army Deport Boundary

Planned Industrial /Office Development
(PID) Area Boundary

O:\Seneca\Depot Survey\land_use_plan_Dec-07.apr\Fig 1 SEAD-45

N

Access Road

Reeder Creek

OD Hill

OD Grounds (SEAD-45)

Access Road

OB Grounds (SEAD-23)

0 125 250 500 750 1,000

Feet

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SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation

Figure 2
1994 Topographic Survey Results

April 2010 | Ver 1.0 | BBO

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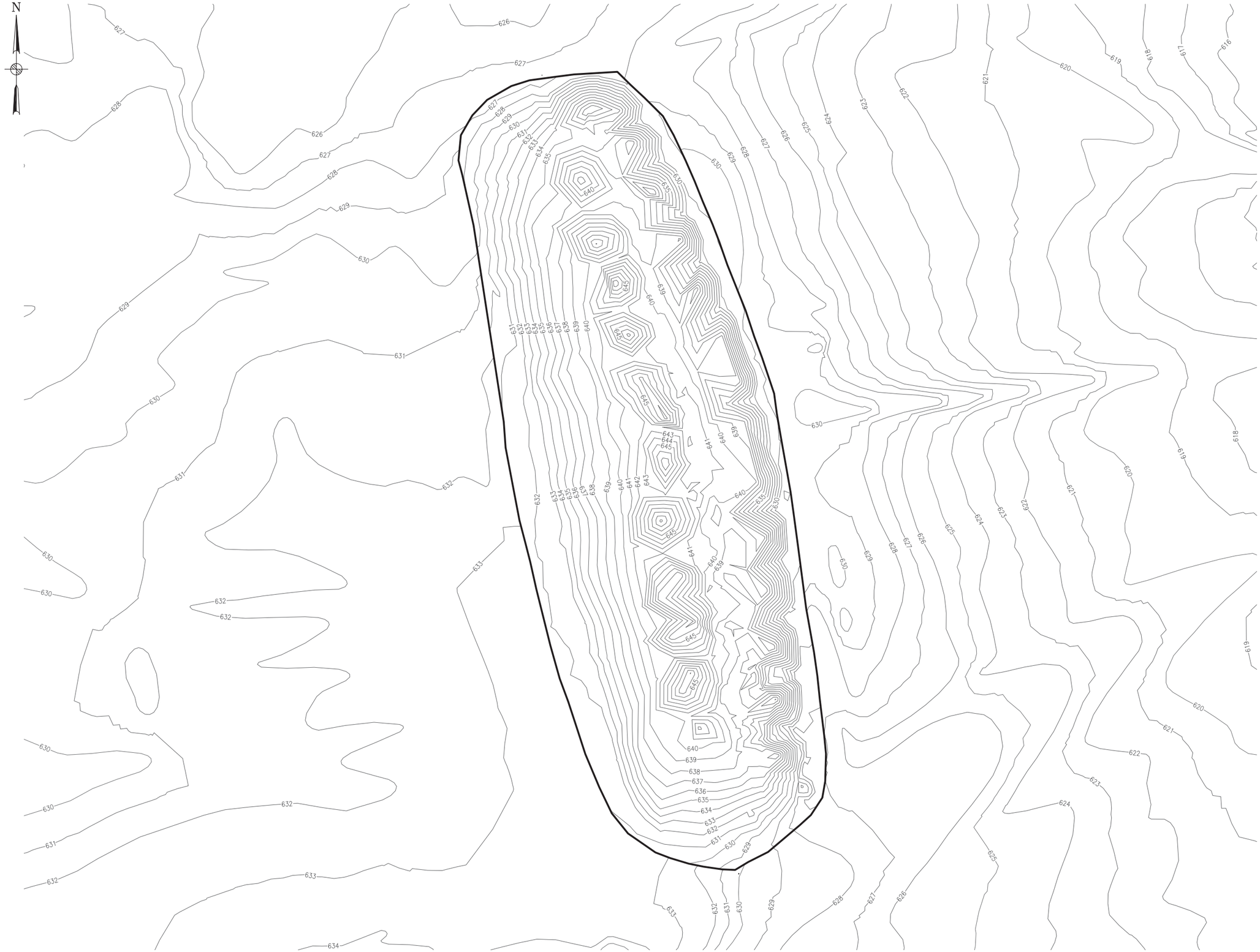

LEGEND

- LIMITS OF 2010 SURVEY
- 620 EXISTING MAJOR ELEVATION CONTOUR
- 621 EXISTING MINOR ELEVATION CONTOUR

NOTES:

1. TOPOGRAPHY OUTSIDE LIMITS OF 2010 SURVEY TAKEN FROM 1994 SURVEY.

40 20 0 40 80

HORIZONTAL SCALE (FT.)

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100 HIGH STREET, 4TH FLOOR - BOSTON, MA 02110-1713

CLIENT/PROJECT TITLE:

SENECA ARMY DEPOT ACTIVITY
ADDITIONAL MUNITIONS REPSONSE INVESTIGATION
OPEN DETONATION GROUNDS

DEPT:	JOB NO:
ENVIRONMENTAL ENGINEERING	745172-04200

FIGURE TITLE:

FIGURE 3
Current OD Hill Survey

SCALE:	DRWN:	CHKD:	APPD:	DATE:	REV:
AS NOTED	RR	JA	TH	4/16/10	–

FILE: P:\PIT\PROJECTS\SENECA MUNITIONS RESPONSE\OD GROUNDS\FIGURES\OD GROUNDS VOLUME.DWG, DATE: 04/20/2010 12:12:06PM, p0018397

N

620.50
TP-3

616.00
MW45-1

618.60
MW45-2

619.00
TP-4

625.30
MW45-4

625.10
TP-2

620.70
TP-1

613.70
MW45-3

A

A'

B

B'

C

C'

LEGEND

620 EXISTING BEDROCK ELEVATION CONTOUR

620 EXISTING MAJOR ELEVATION CONTOUR

621 EXISTING MINOR ELEVATION CONTOUR

40 20 0 40 80

HORIZONTAL SCALE (FT.)

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100 HIGH STREET, 4TH FLOOR - BOSTON, MA 02110-1713

CLIENT/PROJECT TITLE:

SENECA ARMY DEPOT ACTIVITY
ADDITIONAL MUNITIONS REPSONSE INVESTIGATION
OPEN DETONATION GROUNDS

DEPT:	JOB NO:
ENVIRONMENTAL ENGINEERING	745172-04200

FIGURE TITLE:

FIGURE 4
OD Grounds Bedrock Contour Map & OD Hill Cross-Section Locations

SCALE:	DRWN:	CHKD:	APPD:	DATE:	REV:
AS NOTED	RR	JA	TH	4/16/10	-

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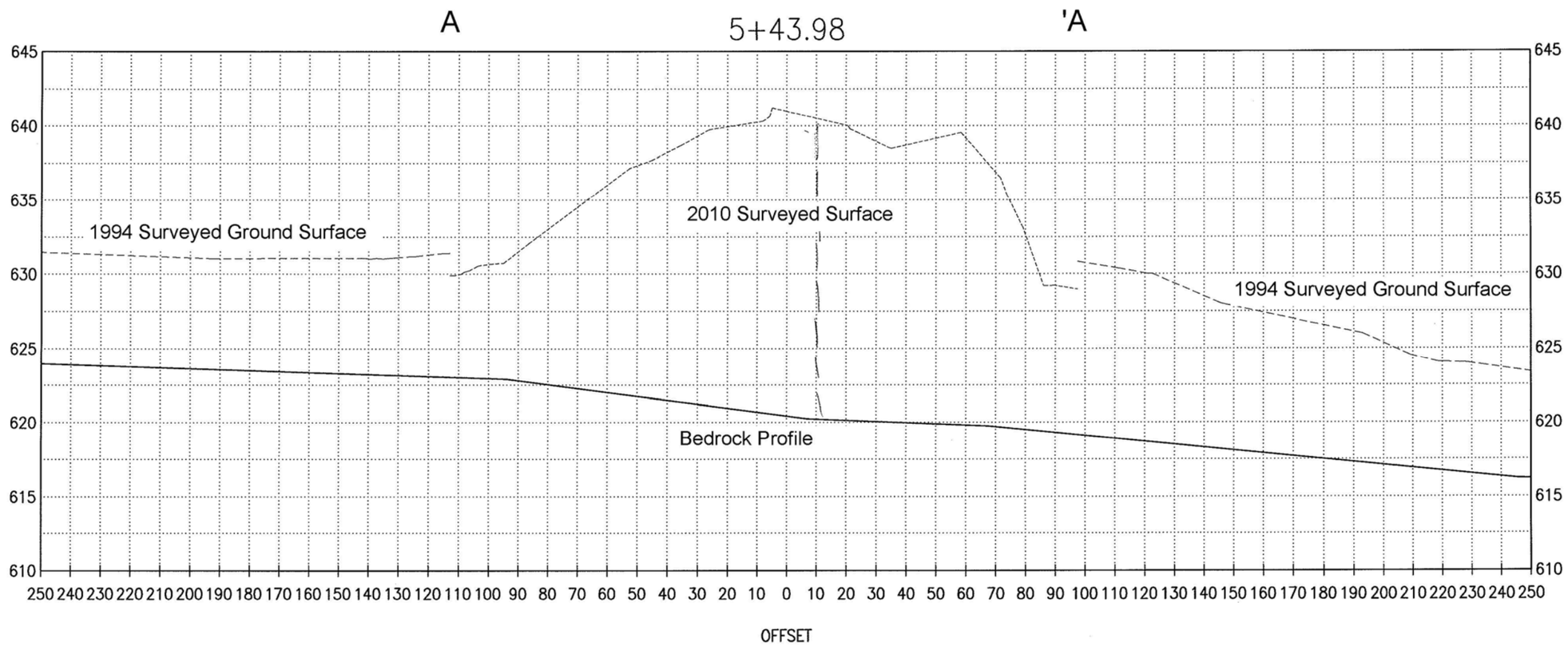

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Seneca Army Depot Activity
Additional Munitions Response
Investigation

Figure 4A
OD Hill Cross-Section : A-'A

April 2010	Ver. 1.0	BBO

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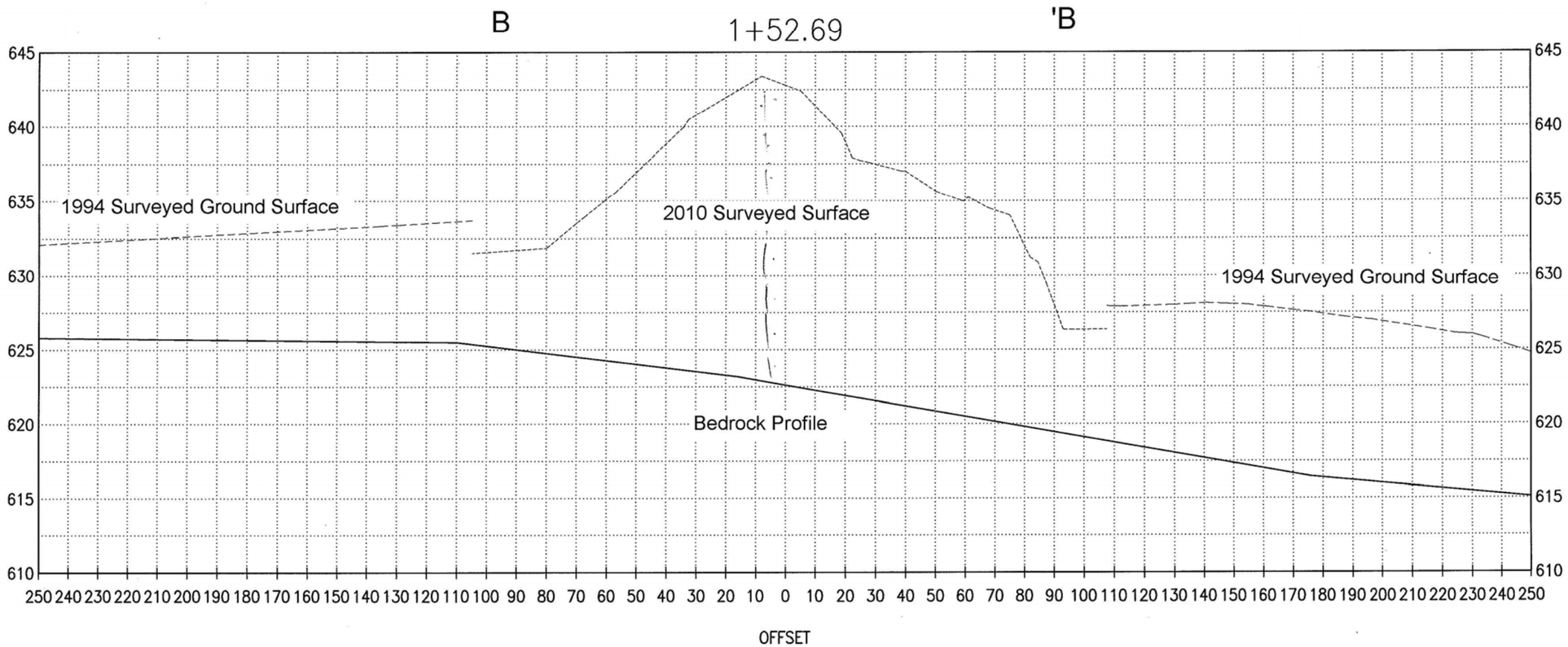

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Additional Munitions Response
Investigation

Figure 4B
OD Hill Cross-Section : B-'B

April 2010	Ver. 1.0	BBO

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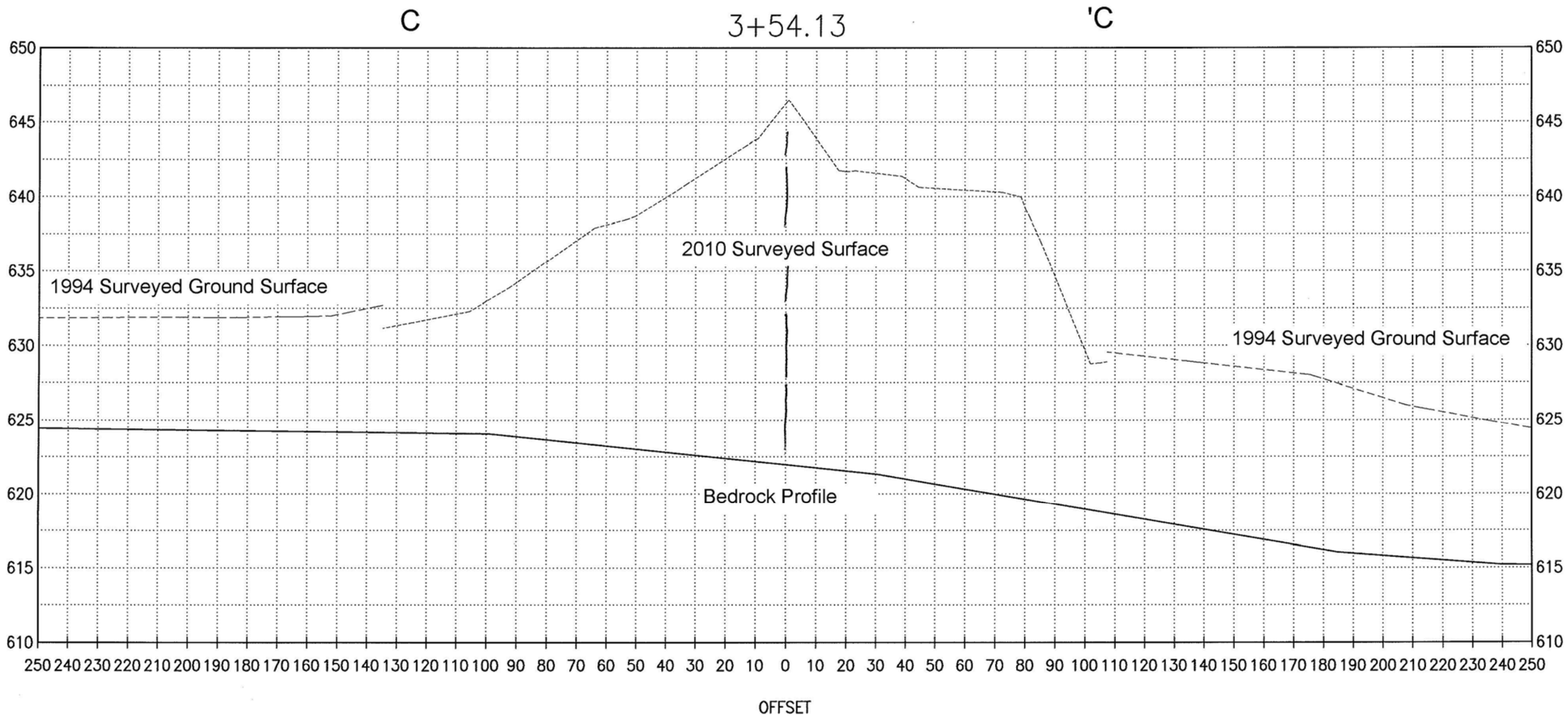

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Seneca Army Depot Activity
Additional Munitions Response Investigation

Figure 4C
OD Hill Cross-Section : C-'C

April 2010	Ver. 1.0	BBO

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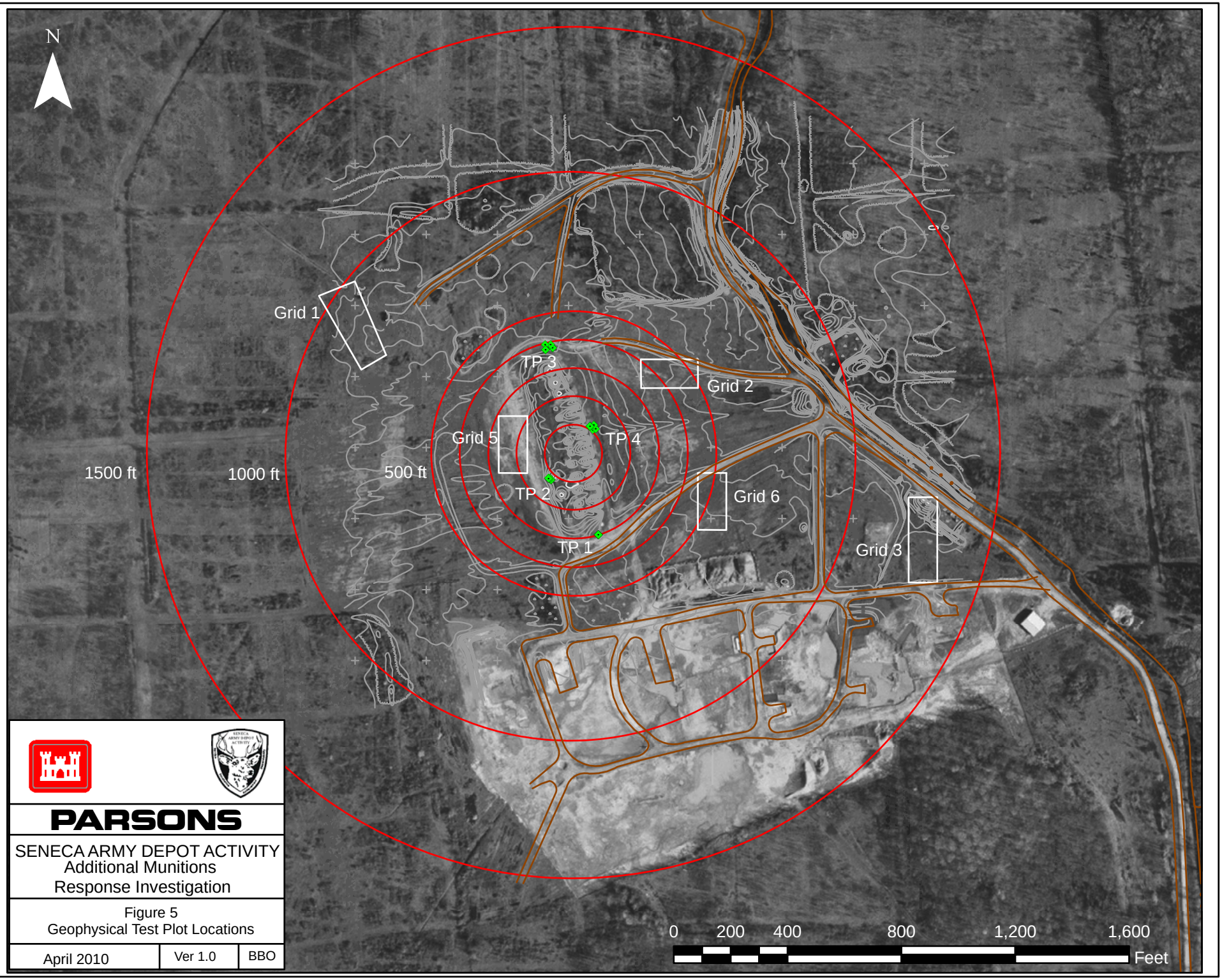

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SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation

Figure 5
Geophysical Test Plot Locations

April 2010	Ver 1.0	BBO

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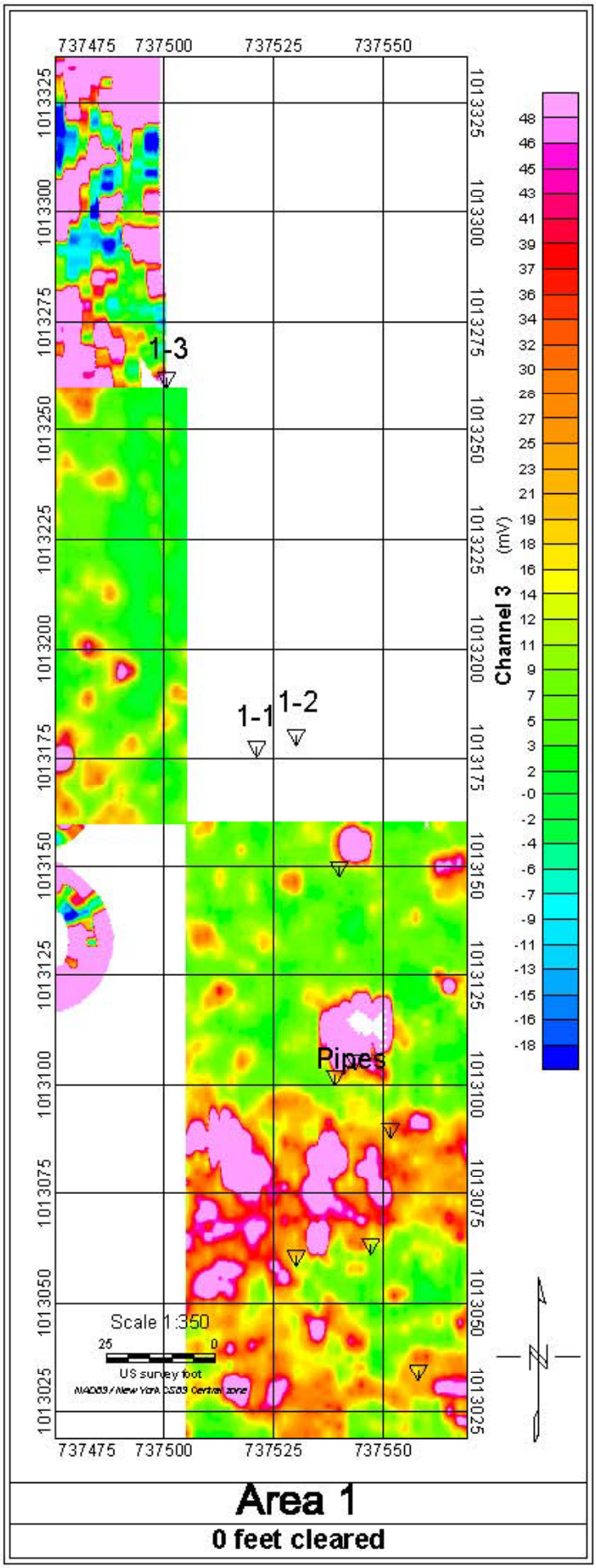

Area 1

0 feet cleared

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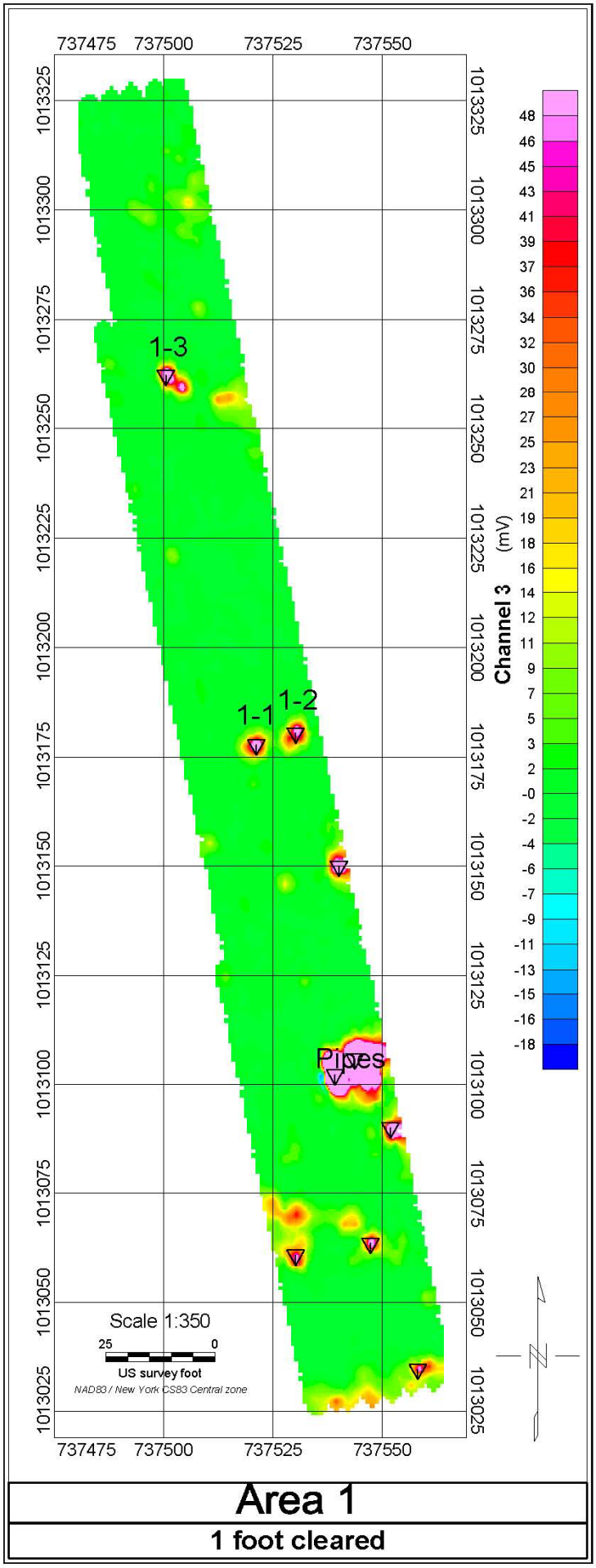
Seneca Army Depot Activity

Additional Munitions Response Investigation Report

Figure 6A
Area 1 Geophysical Survey Results
– 0 feet bgs

April 2010	Ver. 1.0	BBO



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Seneca Army Depot Activity

Additional Munitions Response Investigation Report

Figure 6B
Area 1 Geophysical Survey Results – 1 feet bgs

April 2010	Ver. 1.0	BBO

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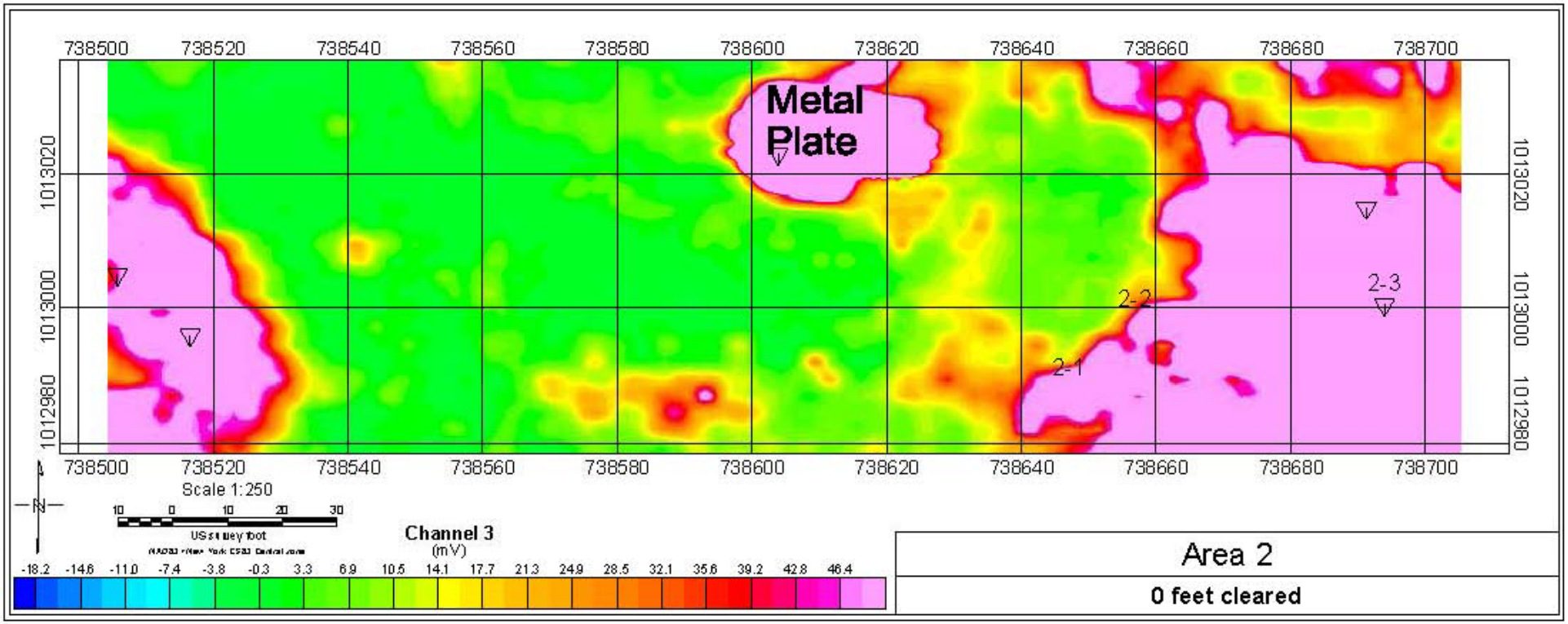

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Seneca Army Depot Activity

Additional Munitions Response Investigation Report

Figure 7A
Area 2 Geophysical Survey Results – 0 feet bgs

April 2010	Ver. 1.0	BBO

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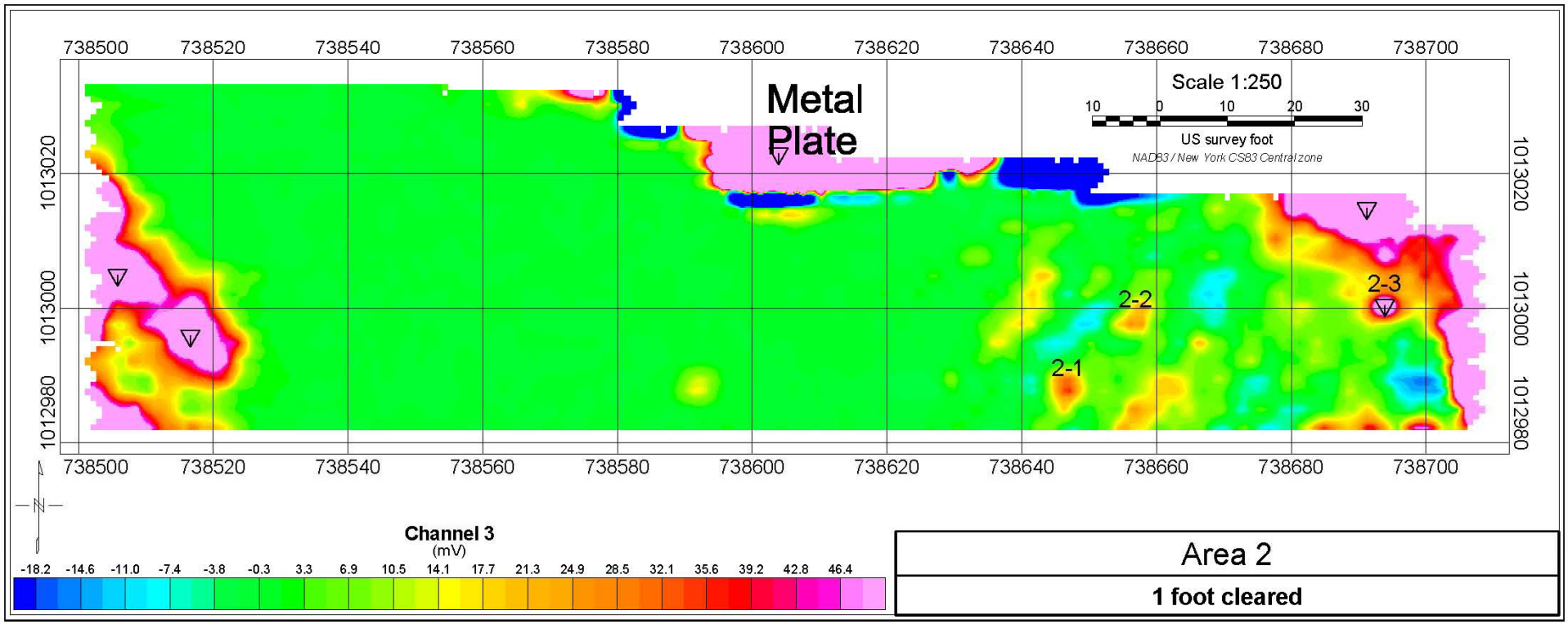

Area 2

1 foot cleared

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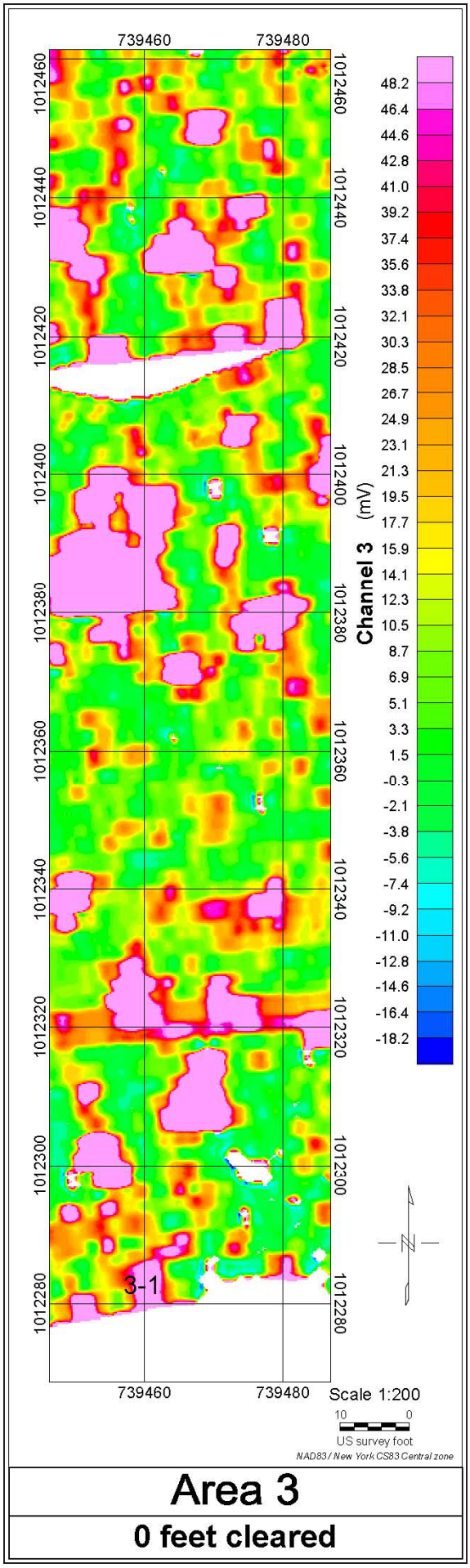
Seneca Army Depot Activity

Additional Munitions Response Investigation Report

Figure 7B
Area 2 Geophysical Survey Results
– 1 feet bgs

April 2010	Ver. 1.0	BBO



Area 3

0 feet cleared

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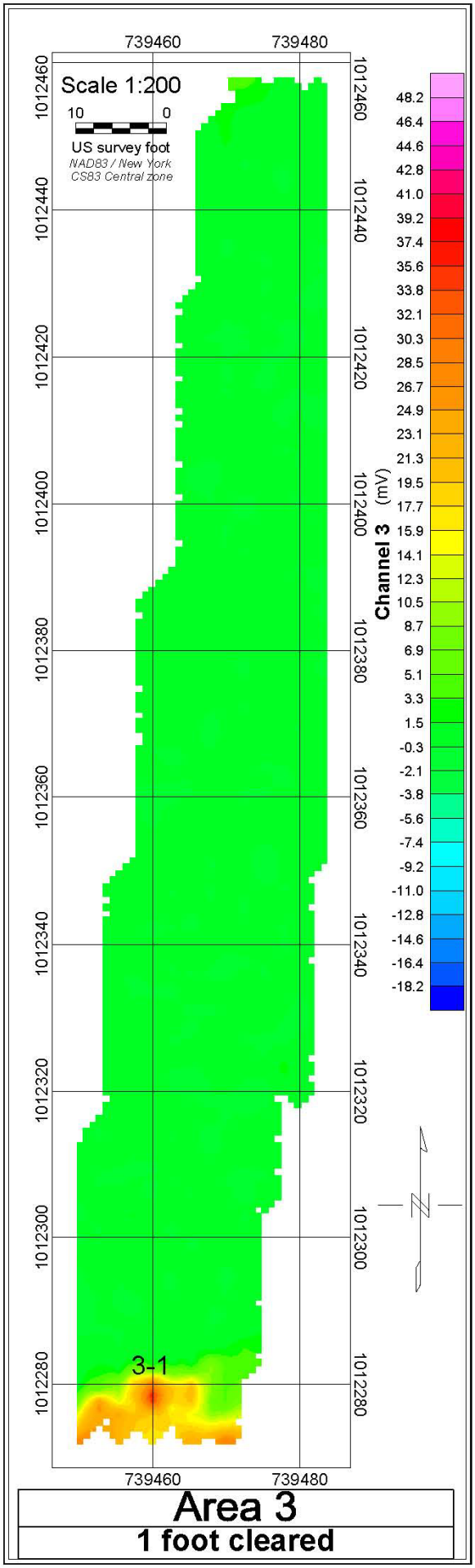
Seneca Army Depot Activity
Additional Munitions Response
Investigation Report

Figure 8A
Area 3 Geophysical Survey Results
– 0 feet bgs

April 2010	Ver. 1.0	BBO



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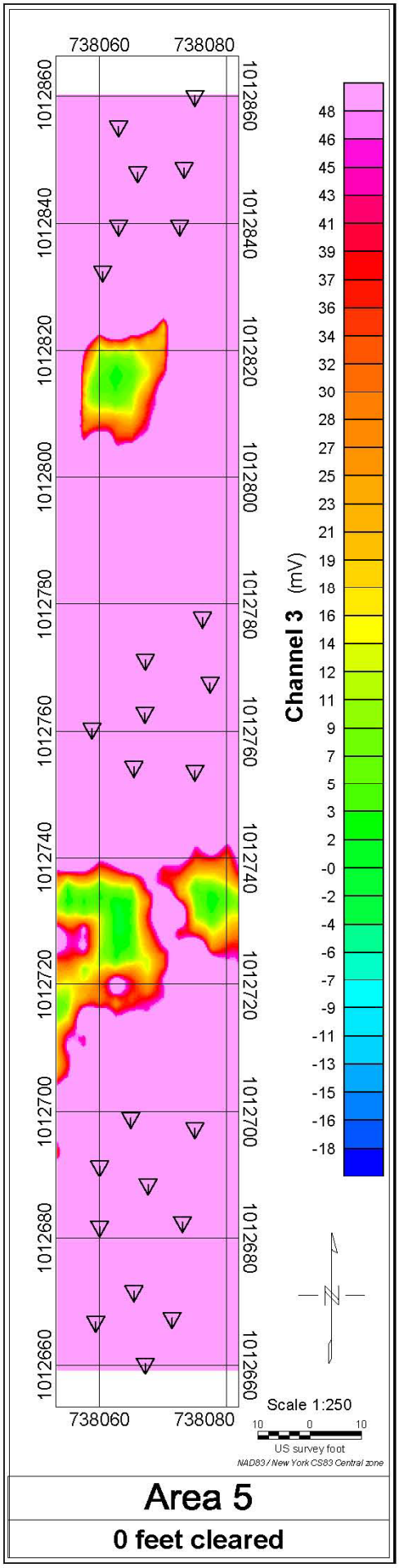
Seneca Army Depot Activity

Additional Munitions Response Investigation Report

Figure 8B
Area 3 Geophysical Survey Results – 1 feet bgs

April 2010	Ver. 1.0	BBO



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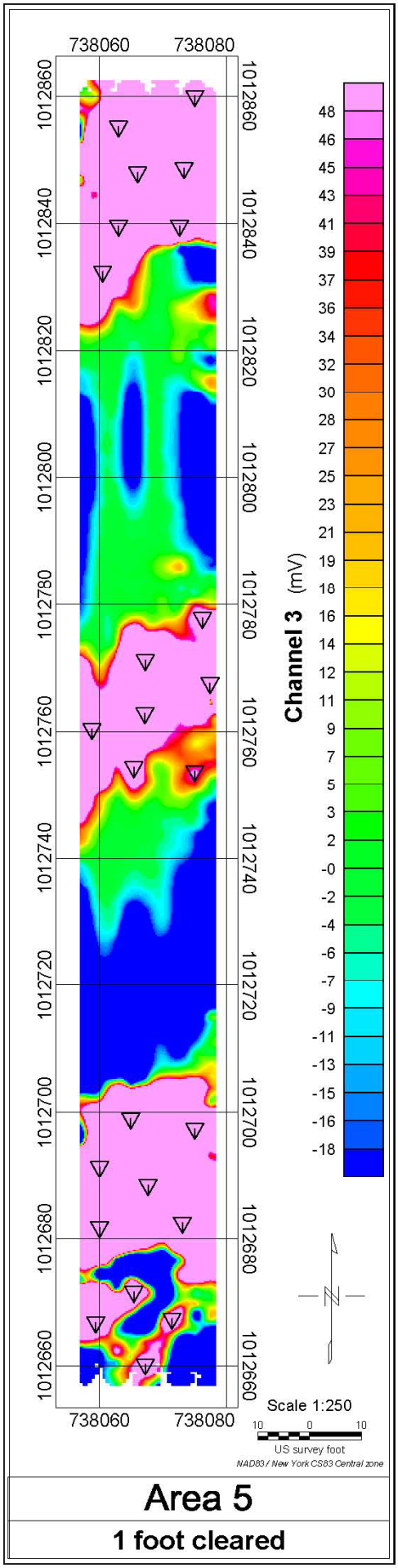
Seneca Army Depot Activity

Additional Munitions Response Investigation Report

Figure 9A
Area 5 Geophysical Survey Results
– 0 feet bgs

April 2010	Ver. 1.0	BBO



Area 5

1 foot cleared

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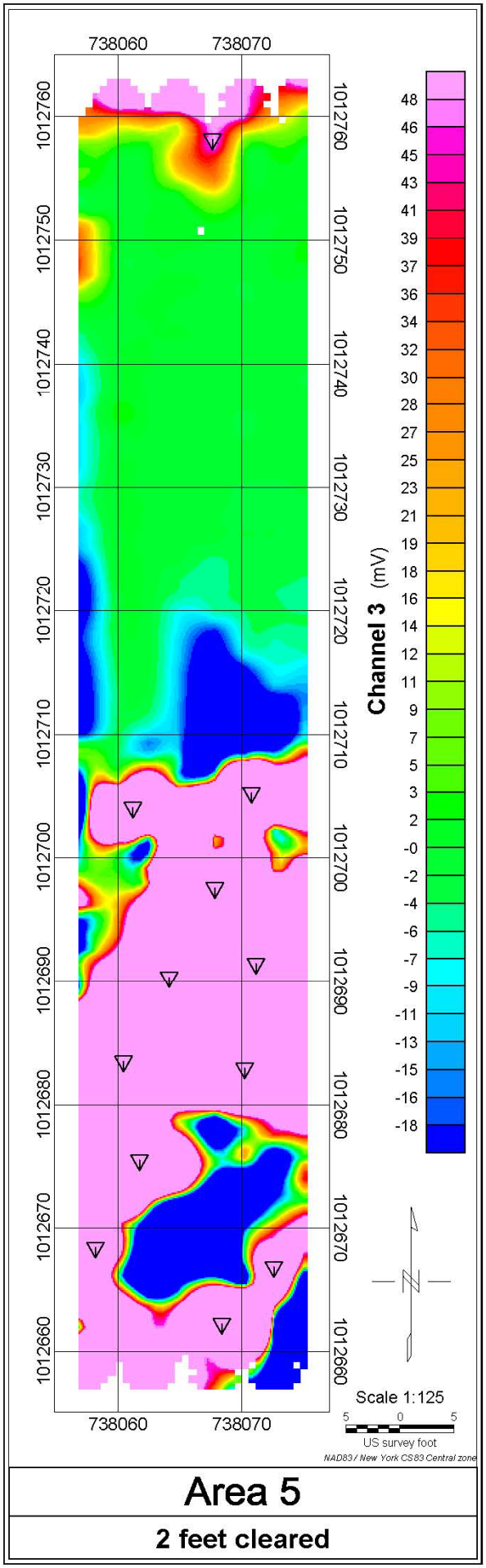
Seneca Army Depot Activity

Additional Munitions Response Investigation Report

Figure 9B
Area 5 Geophysical Survey Results
– 1 feet bgs

April 2010	Ver. 1.0	BBO



Area 5

2 feet cleared

P:\PIT\Projects\Seneca Munitions Response\OD Grounds\Report\Fig\Figures_6-8-9-10_geophysical.ppt

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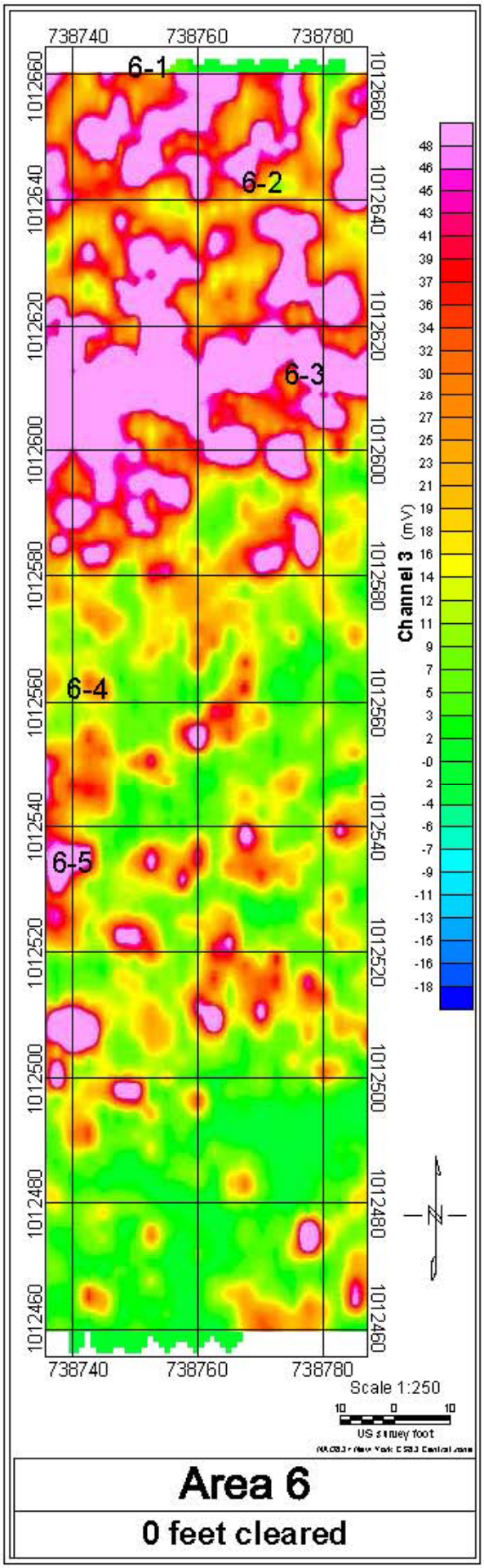
Seneca Army Depot Activity

Additional Munitions Response Investigation Report

Figure 9C
Area 5 Geophysical Survey Results
– 2 feet bgs

April 2010	Ver. 1.0	BBO



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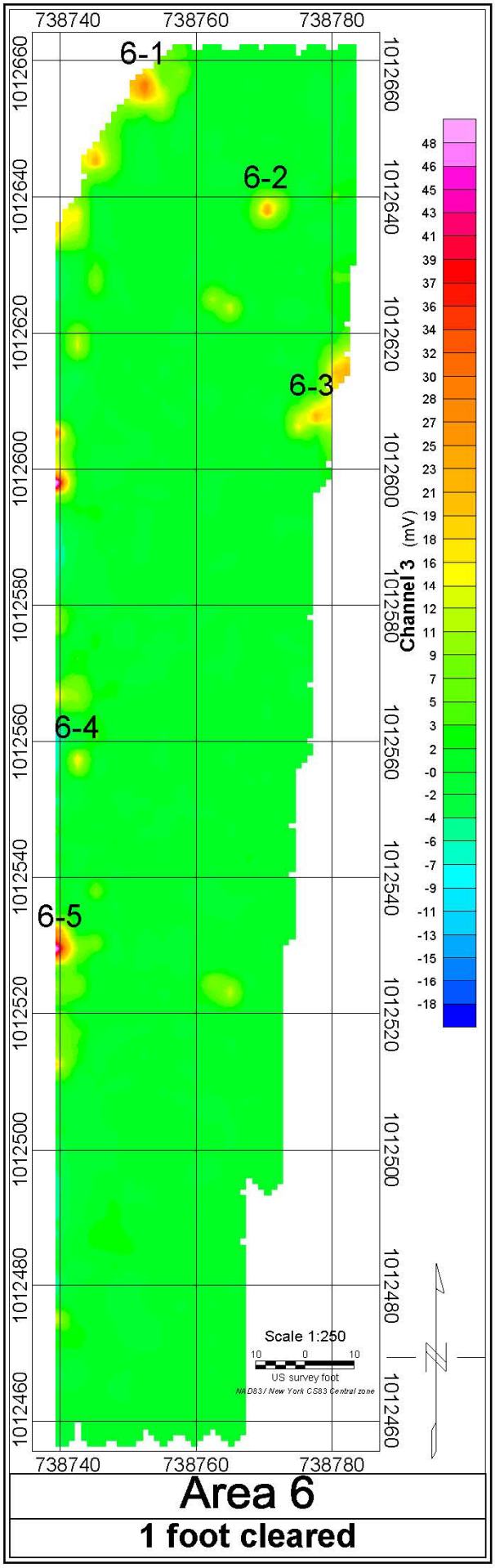
Seneca Army Depot Activity

Additional Munitions Response Investigation Report

Figure 10A
Area 6 Geophysical Survey Results
– 0 feet bgs

April 2010	Ver. 1.0	BBO



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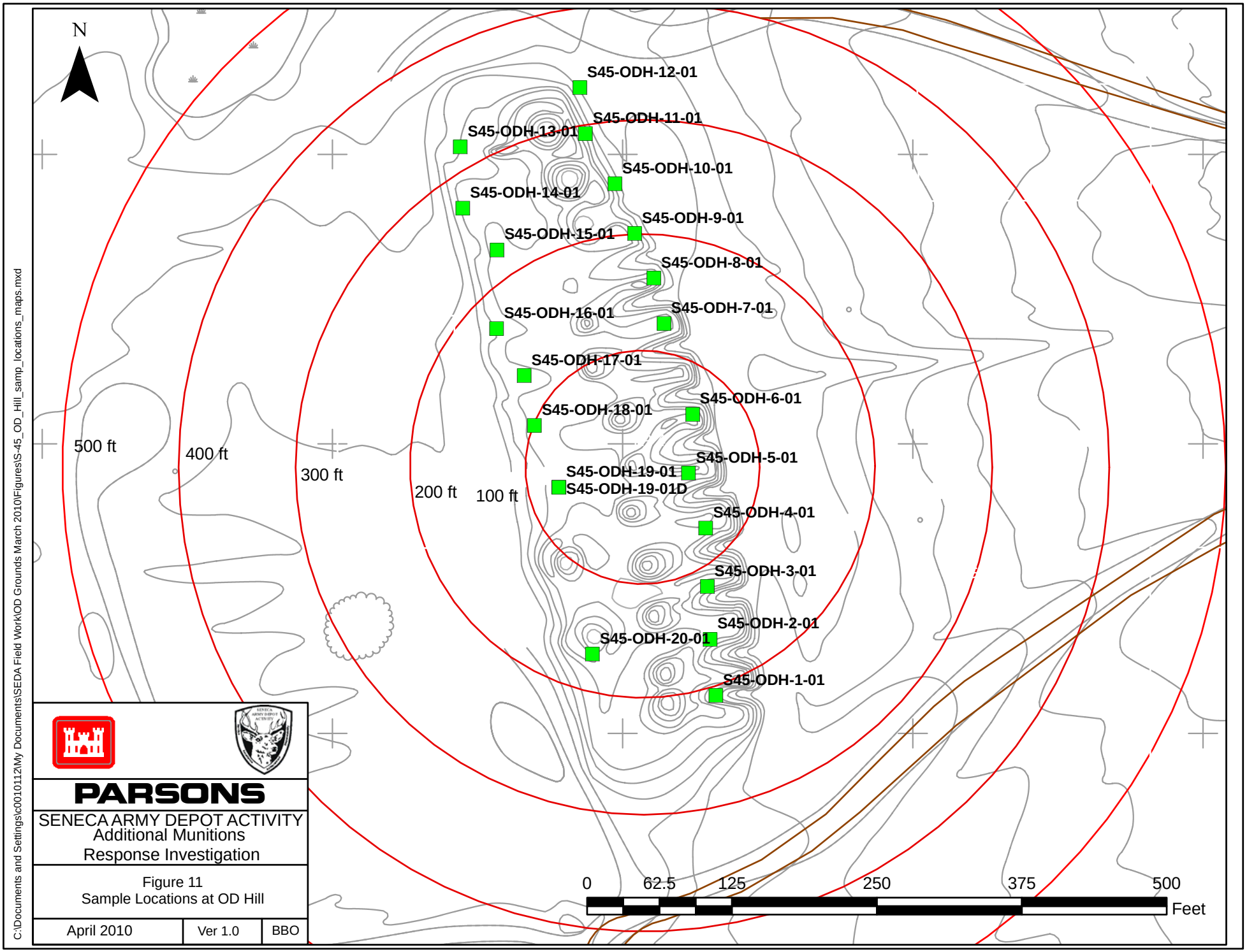
Seneca Army Depot Activity

Additional Munitions Response Investigation Report

Figure 10B
Area 6 Geophysical Survey Results
– 1 feet bgs

April 2010	Ver. 1.0	BBO


N
S45-ODH-12-01
S45-ODH-11-01
S45-ODH-13-01
S45-ODH-10-01
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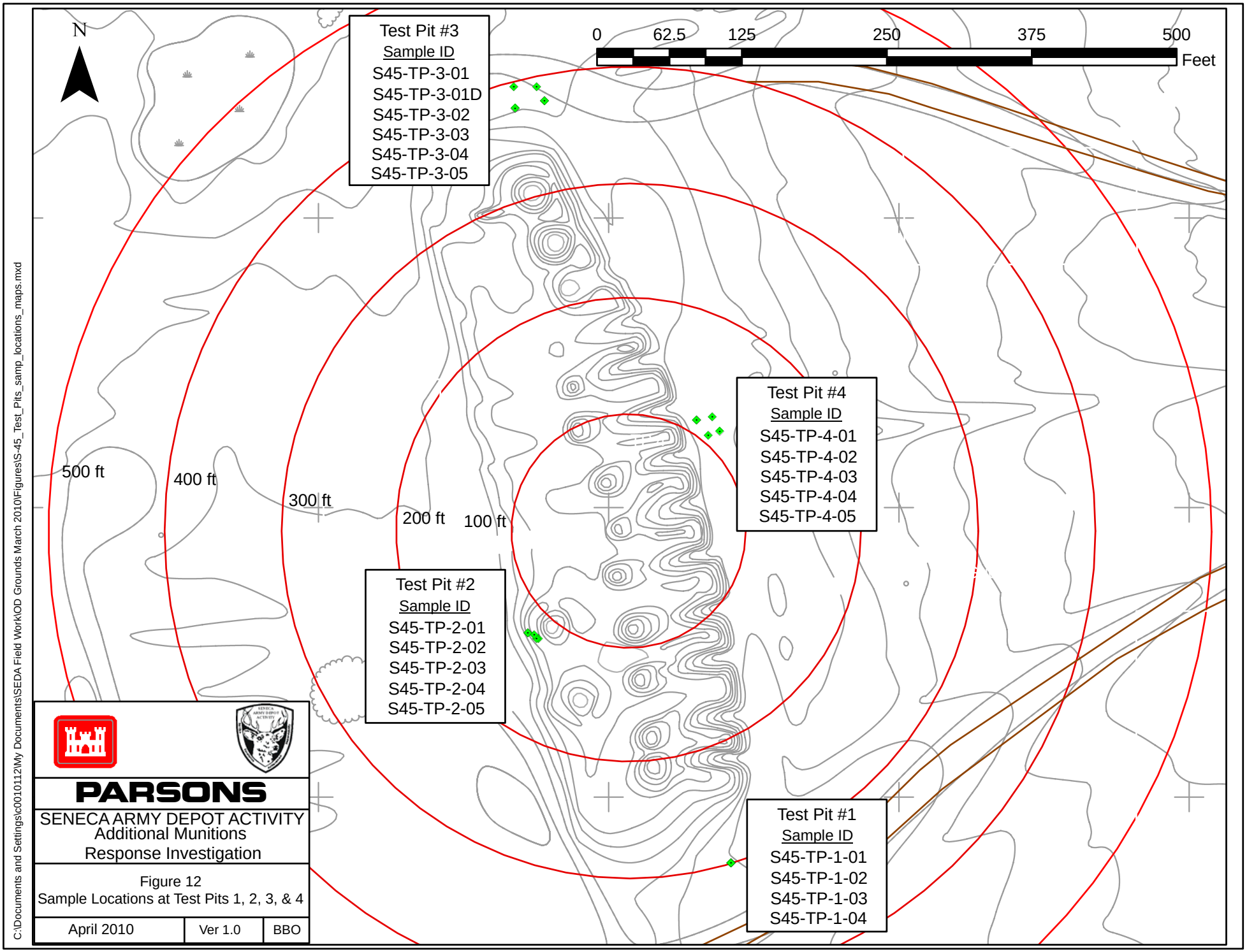
S45-ODH-19-01D
S45-ODH-4-01
S45-ODH-3-01
S45-ODH-2-01
S45-ODH-20-01
S45-ODH-1-01
500 ft
400 ft
300 ft
200 ft
100 ft
0
62.5
125
250
375
500
Feet
PARSONS
SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation
Figure 11
Sample Locations at OD Hill
April 2010
Ver 1.0
BBO
C:\Documents and Settings\c0010112\My Documents\SEDA Field Work\OD Grounds March 2010\Figures\S-45_OD_Hill_samp_locations_maps.mxd


N
0
62.5
125
250
375
500
Feet
Test Pit #3
Sample ID
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S45-TP-3-01D
S45-TP-3-02
S45-TP-3-03
S45-TP-3-04
S45-TP-3-05
Test Pit #4
Sample ID
S45-TP-4-01
S45-TP-4-02
S45-TP-4-03
S45-TP-4-04
S45-TP-4-05
Test Pit #2
Sample ID
S45-TP-2-01
S45-TP-2-02
S45-TP-2-03
S45-TP-2-04
S45-TP-2-05
Test Pit #1
Sample ID
S45-TP-1-01
S45-TP-1-02
S45-TP-1-03
S45-TP-1-04
500 ft
400 ft
300 ft
200 ft
100 ft
PARSONS
SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation
Figure 12
Sample Locations at Test Pits 1, 2, 3, & 4
April 2010
Ver 1.0
BBO
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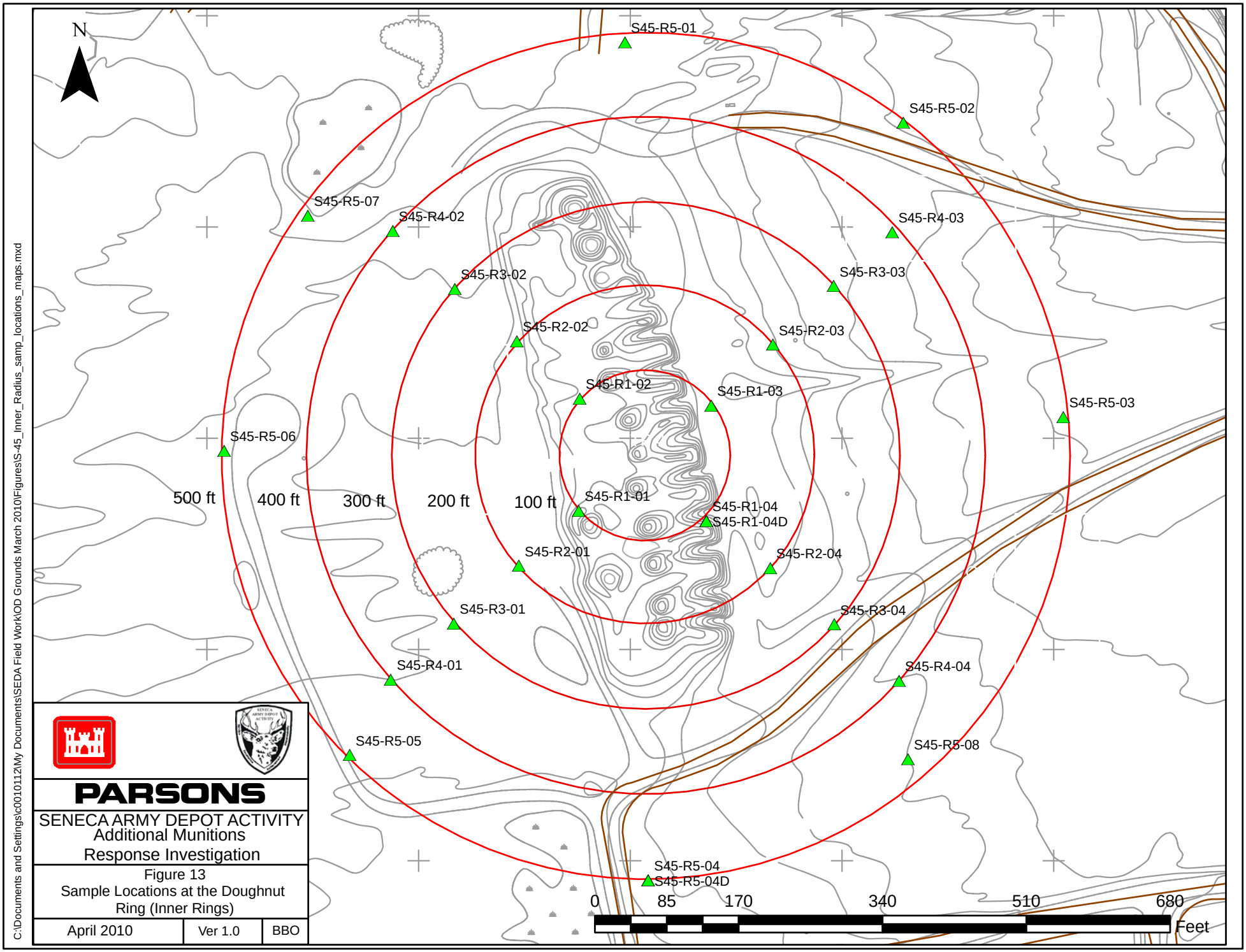
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S45-R5-01
S45-R5-02
S45-R5-07
S45-R4-02
S45-R4-03
S45-R3-02
S45-R3-03
S45-R2-02
S45-R2-03
S45-R1-02
S45-R1-03
S45-R5-03
S45-R5-06
500 ft
400 ft
300 ft
200 ft
100 ft
S45-R1-01
S45-R1-04
S45-R1-04D
S45-R2-01
S45-R2-04
S45-R3-01
S45-R3-04
S45-R4-01
S45-R4-04
S45-R5-05
S45-R5-08
S45-R5-04
S45-R5-04D
0
85
170
340
510
680
Feet
PARSONS
SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation
Figure 13
Sample Locations at the Doughnut
Ring (Inner Rings)
April 2010
Ver 1.0
BBO
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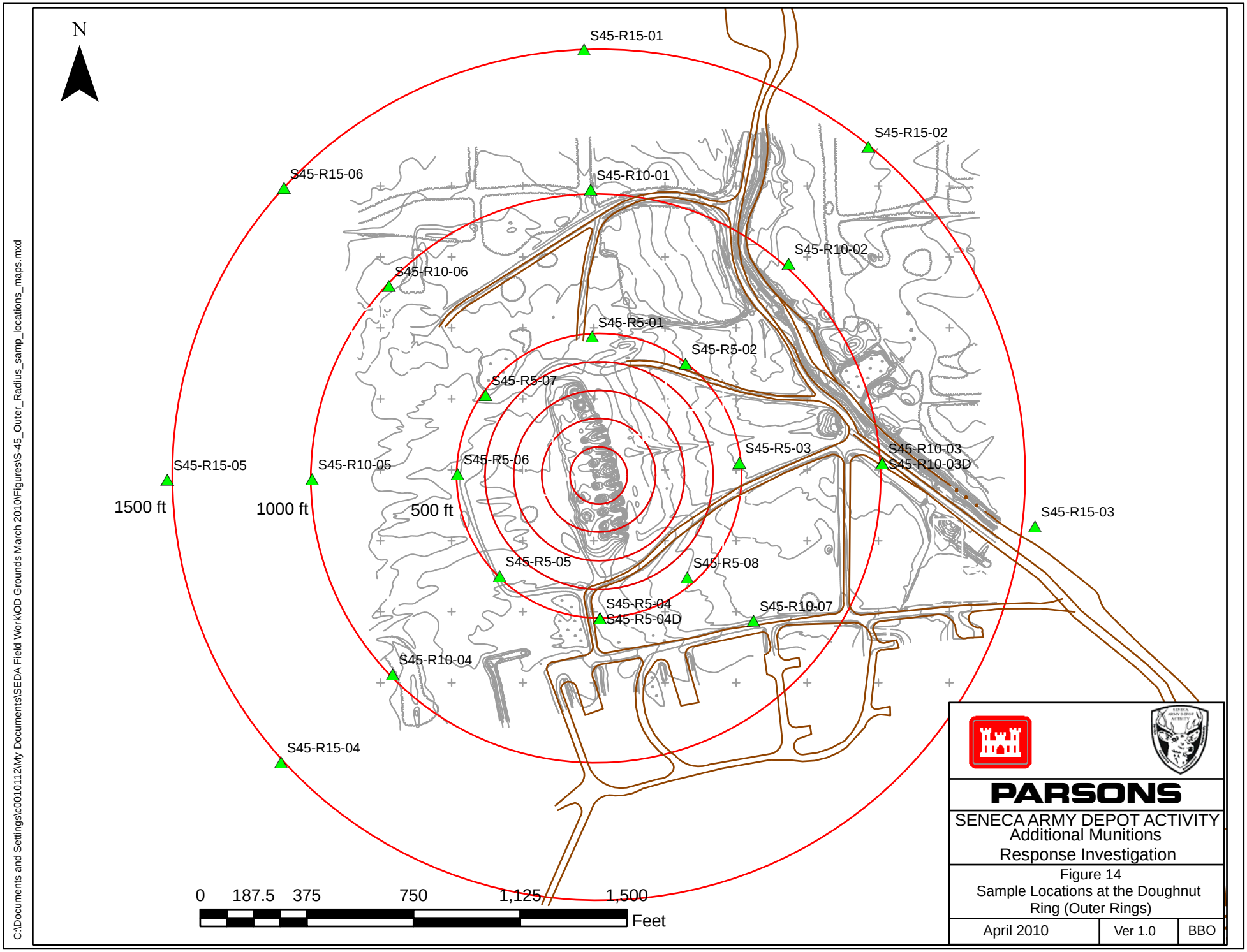
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S45-R15-01
S45-R15-02
S45-R15-03
S45-R15-04
S45-R15-05
S45-R15-06
S45-R10-01
S45-R10-02
S45-R10-03
S45-R10-03D
S45-R10-04
S45-R10-05
S45-R10-06
S45-R10-07
S45-R5-01
S45-R5-02
S45-R5-03
S45-R5-04
S45-R5-04D
S45-R5-05
S45-R5-06
S45-R5-07
S45-R5-08
1500 ft
1000 ft
500 ft
0
187.5
375
750
1,125
1,500
Feet
C:\Documents and Settings\c0010112\My Documents\SEDA Field Work\OD Grounds March 2010\Figures\S-45_Outer_Radius_samp_locations_maps.mxd
PARSONS
SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation
Figure 14
Sample Locations at the Doughnut
Ring (Outer Rings)
April 2010
Ver 1.0
BBO

APPENDICES

Appendix A Soil Sample Results compared to Unrestricted Use SCOs

Appendix B Soil Sample Results compared to RSLs for Residential Soil

Appendix C Metals Results for OD Hill, the Doughnut Rings, and Test Pits 1, 2, 3, and 4

Appendix C List of Figures

APPENDIX A

SOIL SAMPLE RESULTS COMPARED TO UNRESTRICTED USE SCOS

Table A-1A
OD Hill Limited Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-0DH-2-01	S45-0DH-3-01	S45-0DH-5-01	S45-0DH-7-01	S45-0DH-9-01	S45-0DH-10-01
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-0DH-2-01	S45-0DH-3-01	S45-0DH-5-01	S45-0DH-7-01	S45-0DH-9-01	S45-0DH-10-01
Sample Data				3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010
Sample Type				SA	SA	SA	SA	SA	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Explosives									
1,3,5-trinitrobenzene	ug/Kg	220000	0	79 J	49 J	57 JJ	65 J	68 J	55 J
1,3-dinitrobenzene	ug/Kg	610	0	6 U	6.1 U	6.8 U	7.7 U	7.1 U	7.7 U
2,4,6-trinitrotoluene	ug/Kg	19000	0	30 J	36 J	40 JJ	46 J	47 J	58 J
2,4-dinitrotoluene	ug/Kg	1600	0	98 J	120	100 J	90 J	110 J	110 J
2,6-dinitrotoluene	ug/Kg	6100	0	26 U	26 U	29 U	34 U	31 U	34 U
2-AM-DNT	ug/Kg	15000	0	120	140	160	180	220	130
2-nitrotoluene	ug/Kg	2900	0	12 U	12 U	13 U	15 U	14 U	15 U
3,5-Dinitroaniline	ug/Kg		0	3.4 U	100 U	3.8 U	120 U	110 U	120 U
3-nitrotoluene	ug/Kg	610	0	7.7 U	7.8 U	8.6 U	9.8 U	9 U	9.8 U
4-AM-DNT	ug/Kg	15000	0	120	140	160	160	220	120 J
4-nitrotoluene	ug/Kg	30000	0	26 U	26 U	29 U	34 U	31 U	34 U
HMX	ug/Kg	380000	0	100	120	120 J	150	190	87 J
nitrobenzene	ug/Kg	4800	0	21 U	22 U	24 U	27 U	25 U	27 U
NITROGLYCERIN	ug/Kg	610	1	120 U	120 U	140 U	150 U	140 U	150 U
PETN	ug/Kg		0	230 U	240 U	260 U	300 U	270 U	300 U
RDX	ug/Kg	5500	0	180	220	210	310	420	190
TETRYL	ug/Kg	24000	0	5.3 U	5.3 U	5.9 U	6.7 U	6.2 U	6.7 U
Metals									
ALUMINUM	mg/Kg	7700	21	**17500**	**17200**	**19400**	**22200**	**20300**	**18000**
ANTIMONY	mg/Kg	3.1	0	0.19 U	0.2 U	0.2 U	0.28 J	0.22 U	0.13 U
ARSENIC	mg/Kg	0.39	21	**12.4**	**11**	**5.6**	**4.8**	**5.5**	**5**
BARIUM	mg/Kg	1500	0	190	179	194	174	266	195
BERYLLIUM	mg/Kg	16	0	0.78	0.77	0.86	0.82	0.88	0.8
CADMIUM	mg/Kg	7	15	**8.7**	**8.6**	**7.5**	**8**	**8**	**8.1**
CALCIUM	mg/Kg		0	26600	43900	23400	24500	22800	24400
CHROMIUM	mg/Kg	12000	0	29.9	29.8	29.7	40.8	30.8	28.1
COBALT	mg/Kg	2.3	21	**12**	**12.9**	**12.3**	**10.6**	**12.4**	**13.5**
COPPER	mg/Kg	310	20	**433**	**477**	**411**	**648**	**490**	**448**
IRON	mg/Kg	5500	21	**34200**	**29600**	**27200**	**25900**	**27700**	**25800**
LEAD	mg/Kg	40	20	**56.3**	**59.9**	**61.9**	**59.3**	**62.5**	**62.6**
MAGNESIUM	mg/Kg		0	6720	6410	7010	6420	7090	6780
MANGANESE	mg/Kg	180	21	**610**	**642**	**618**	**557**	**601**	**742**
MERCURY	mg/Kg	2.3	18	**4.3**	**4.3**	**4.3**	**6**	**3.6**	**3.8**
NICKEL	mg/Kg	150	0	41.2	39.5	41.2	36.1	40.9	39.5
POTASSIUM	mg/Kg		0	2850	2850	3410	3200	3440	2760
SELENIUM	mg/Kg	39	0	0.42 U	0.45 U	0.44 U	0.23 U	0.73 J	0.29 U
SILVER	mg/Kg	39	1	3.4	4	3.2	3.8	4	3.6
SODIUM	mg/Kg		0	110	110	116	120	135	106
THALLIUM	mg/Kg		0	0.18 U	0.19 U	0.19 U	0.1 U	0.2 U	0.12 U
VANADIUM	mg/Kg	0.55	21	**28.5**	**28.7**	**31.7**	**28.4**	**32.5**	**29.2**
ZINC	mg/Kg	2300	0	327	368	337	433	357	359

Notes:
(1) Adjusted USEPA Regionial Screening Levels (RSL) Residential Soil. Dec 200
Carcinogenic compounds set at 1 X EPA value, non-carcinogenic compounds set at 0.1 X EPA value.
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table
(3) Number of Exceedances represents the total for the Full and Limited Suite Tables.
(4) A bolded and outlined cell indicates a concentration that exceeded the USEPA RSL Residential 1/10th Level

U = compound was not detected
J = the reported value is an estimated concentration
UJ = the compound was not detected; the associated reporting limit is approximate

Table A-1A
OD Hill Limited Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-0DH-12-01	S45-0DH-13-01	S45-0DH-15-01	S45-0DH-16-01	S45-0DH-18-01	S45-0DH-20-01
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-0DH-12-01	S45-0DH-13-01	S45-0DH-15-01	S45-0DH-16-01	S45-0DH-18-01	S45-0DH-20-01
Sample Data				3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010
Sample Type				SA	SA	SA	SA	SA	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Explosives									
1,3,5-trinitrobenzene	ug/Kg	220000	0	70 J	51 J	54 J	53 J	45 J	42 J
1,3-dinitrobenzene	ug/Kg	610	0	7 U	7.2 U	7.1 U	6.5 U	7.4 U	6.5 U
2,4,6-trinitrotoluene	ug/Kg	19000	0	48 J	40 J	42 J	41 J	62 J	51 J
2,4-dinitrotoluene	ug/Kg	1600	0	100 J	110 J	220	110	1100	220
2,6-dinitrotoluene	ug/Kg	6100	0	30 U	31 U	31 U	28 U	32 U	28 U
2-AM-DNT	ug/Kg	15000	0	190	120	150	160	160	130
2-nitrotoluene	ug/Kg	2900	0	13 U	14 U	14 U	12 U	14 U	13 U
3,5-Dinitroaniline	ug/Kg		0	4 U	120 U	110 U	3.7 U	120 U	100 U
3-nitrotoluene	ug/Kg	610	0	8.9 U	9.2 U	9 U	8.2 U	9.4 U	8.3 U
4-AM-DNT	ug/Kg	15000	0	150	120	160	180	120	120
4-nitrotoluene	ug/Kg	30000	0	30 U	31 U	31 U	28 U	32 U	28 U
HMX	ug/Kg	380000	0	100 J	79 J	98 J	100 J	87 J	68 J
nitrobenzene	ug/Kg	4800	0	25 U	26 U	25 U	23 U	26 U	23 U
NITROGLYCERIN	ug/Kg	610	1	140 U	140 U	140 U	130 U	150 U	130 U
PETN	ug/Kg		0	270 U	280 U	270 U	250 U	280 U	250 U
RDX	ug/Kg	5500	0	290	130	180	230	160	140
TETRYL	ug/Kg	24000	0	6.1 U	6.3 U	6.2 U	5.6 U	6.5 U	5.7 U
Metals									
ALUMINUM	mg/Kg	7700	21	**16500**	**19000**	**19400**	**17100**	**14400**	**18000**
ANTIMONY	mg/Kg	3.1	0	0.2 U	0.5 J	0.19 U	0.18 U	0.36 J	0.24 J
ARSENIC	mg/Kg	0.39	21	**6.2**	**4.7**	**4.7**	**4.9**	**4**	**5.3**
BARIUM	mg/Kg	1500	0	189	171	222	161	138	150
BERYLLIUM	mg/Kg	16	0	0.73	0.85	0.83	0.78	0.65	0.79
CADMIUM	mg/Kg	7	15	6.3	**7.8**	**8.6**	5	4.8	**7.4**
CALCIUM	mg/Kg		0	19400	31400	25300	22200	27600	22900
CHROMIUM	mg/Kg	12000	0	30.1	27.8	32.4	25.9	22	30
COBALT	mg/Kg	2.3	21	**10.8**	**11.2**	**12.3**	**12.6**	**9**	**12.7**
COPPER	mg/Kg	310	20	**314**	**515**	**537**	209	**323**	**434**
IRON	mg/Kg	5500	21	**27700**	**26300**	**27200**	**24200**	**21800**	**27900**
LEAD	mg/Kg	40	20	**43.1**	**51.7**	**67.8**	38.4	**41.5**	**50.8**
MAGNESIUM	mg/Kg		0	5860	7710	6760	6260	6830	7310
MANGANESE	mg/Kg	180	21	**655**	**590**	**627**	**653**	**458**	**580**
MERCURY	mg/Kg	2.3	18	**3.7**	1.6	2	1.4	**3.4**	**3.5**
NICKEL	mg/Kg	150	0	37.8	36.6	41.8	35	31.4	41.3
POTASSIUM	mg/Kg		0	2400	3320	2960	2550	2310	2580
SELENIUM	mg/Kg	39	0	0.43 U	0.24 U	0.42 U	0.4 U	0.21 U	0.35 U
SILVER	mg/Kg	39	1	2.1 J	3.6	3.5	1.2 J	2.6	3.8
SODIUM	mg/Kg		0	103	128	125	115	116	107
THALLIUM	mg/Kg		0	0.18 U	0.1 J	0.18 U	0.17 U	0.2 J	0.15 U
VANADIUM	mg/Kg	0.55	21	**25.9**	**31.7**	**29.6**	**27.6**	**23.7**	**28.7**
ZINC	mg/Kg	2300	0	225	314	321	291	290	299

Notes:
(1) Adjusted USEPA Regionial Screening Levels (RSL) Residential Soil. Dec 200
Carcinogenic compounds set at 1 X EPA value, non-carcinogenic compounds set at 0.1 X EPA value.
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table
(3) Number of Exceedances represents the total for the Full and Limited Suite Tables.
(4) A bolded and outlined cell indicates a concentration that exceeded the USEPA RSL Residential 1/10th Level

U = compound was not detected
J = the reported value is an estimated concentration
UJ = the compound was not detected; the associated reporting limit is approximate

Table A-1B
OD Hill Full Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-0DH-1-01	S45-0DH-4-01	S45-0DH-6-01	S45-0DH-8-01	S45-0DH-11-01	S45-0DH-14-01	S45-0DH-17-01	S45-0DH-19-01	S45-0DH-19-01
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-0DH-1-01	S45-0DH-4-01	S45-0DH-6-01	S45-0DH-8-01	S45-0DH-11-01	S45-0DH-14-01	S45-0DH-17-01	S45-0DH-19-01	S45-0DH-19-01D
Sample Data				3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010
Sample Type				SA	SA	SA	SA	SA	SA	SA	SA	DU
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Semivolatile Organic Compounds												
1,2,4-Trichlorobenzene	ug/Kg	22000	0	93 U	93 U	98 U	93 U	78 U	91 U	89 U	94 U	87 U
1,2-Dichlorobenzene	ug/Kg	190000	0	100 U	100 U	100 U	100 U	85 U	99 U	97 U	100 U	94 U
1,3-Dichlorobenzene	ug/Kg		0	90 U	89 U	94 U	89 U	76 U	88 U	86 U	91 U	84 U
1,4-Dichlorobenzene	ug/Kg	2400	0	99 U	98 U	100 U	98 U	83 U	97 U	94 U	100 U	92 U
2,2'-Oxybis(1-chloropropane)	ug/Kg		0	100 U	100 U	110 U	100 U	86 U	100 U	98 U	100 U	96 U
2,4,5-Trichlorophenol	ug/Kg	610000	0	180 U	180 U	190 U	180 U	150 U	170 U	170 U	180 U	170 U
2,4,6-Trichlorophenol	ug/Kg	44000	0	180 U	180 U	190 U	180 U	150 U	170 U	170 U	180 U	170 U
2,4-Dichlorophenol	ug/Kg	18000	0	170 U	170 U	180 U	170 U	140 U	170 U	160 U	180 U	160 U
2,4-Dimethylphenol	ug/Kg	120000	0	190 U	190 U	200 U	190 U	160 U	190 U	180 U	190 U	180 U
2,4-Dinitrophenol	ug/Kg	12000	0	430 U	430 U	450 U	430 U	360 U	420 U	410 U	440 U	400 U
2,4-Dinitrotoluene	ug/Kg	1600	0	98 U	97 U	100 U	97 U	82 U	96 U	260 J	280 J	91 U
2,6-Dinitrotoluene	ug/Kg	6100	0	91 U	90 U	95 U	90 U	76 U	89 U	87 U	92 U	85 U
2-Chloronaphthalene	ug/Kg	630000	0	100 U	100 U	100 U	99 U	84 U	98 U	96 U	100 U	93 U
2-Chlorophenol	ug/Kg	39000	0	190 U	190 U	200 U	190 U	160 U	180 U	180 U	190 U	180 U
2-Methylnaphthalene	ug/Kg	31000	0	100 U	100 U	110 U	100 U	89 U	100 U	100 U	110 U	99 U
2-Methylphenol	ug/Kg	310000	0	230 U	230 U	240 U	230 U	190 U	220 U	220 U	230 U	210 U
2-Nitroaniline	ug/Kg	61000	0	86 U	86 U	90 U	86 U	73 U	84 U	82 U	88 U	80 U
2-Nitrophenol	ug/Kg		0	190 U	190 U	200 U	190 U	160 U	190 U	180 U	190 U	180 U
3&4-Methylphenol	ug/Kg		0	210 U	210 U	220 U	210 U	180 U	210 U	200 U	220 U	200 U
3,3'-Dichlorobenzidine	ug/Kg	1100	0	130 U	130 U	140 U	130 U	110 U	130 U	120 U	130 U	120 U
3-Nitroaniline	ug/Kg		0	110 U	110 U	110 U	110 U	91 U	100 U	100 U	110 U	100 U
4,6-Dinitro-2-Methylpheno	ug/Kg	610	0	390 U	390 U	400 U	380 U	330 U	380 U	370 U	390 U	360 U
4-Bromophenyl-phenylether	ug/Kg		0	98 U	97 U	100 U	97 U	82 U	96 U	93 U	99 U	91 U
4-Chloro-3-Methylpheno	ug/Kg	610000	0	190 U	190 U	200 U	190 U	160 U	190 U	180 U	190 U	180 U
4-Chloroaniline	ug/Kg	2400	0	140 U	140 U	140 U	140 U	120 U	130 U	130 U	140 U	130 U
4-Chlorophenyl-phenylether	ug/Kg		0	90 U	89 U	94 U	89 U	76 U	88 U	86 U	91 U	84 U
4-Nitroaniline	ug/Kg	24000	0	150 U	150 U	160 U	150 U	130 U	150 U	150 U	160 U	140 U
4-Nitrophenol	ug/Kg		0	360 U	350 U	370 U	350 U	300 U	350 U	340 U	360 U	330 U
Acenaphthene	ug/Kg	340000	0	75 U	74 U	78 U	74 U	63 U	73 U	71 U	76 U	70 U
Acenaphthylene	ug/Kg		0	80 U	80 U	84 U	80 U	68 U	79 U	77 U	82 U	75 U
Anthracene	ug/Kg	1700000	0	96 U	96 U	100 U	96 U	81 U	95 U	92 U	98 U	90 U
Benzo(a)anthracene	ug/Kg	150	0	99 U	98 U	100 U	98 U	83 U	97 U	94 U	100 U	92 U
Benzo(a)pyrene	ug/Kg	15	0	110 U	110 U	110 U	110 U	90 U	100 U	100 U	110 U	100 U
Benzo(b)fluoranthene	ug/Kg	150	0	150 U	150 U	160 U	150 U	130 U	150 U	150 U	160 U	140 U
Benzo(g,h,i)perylene	ug/Kg		0	120 U	120 U	120 U	120 U	100 U	120 U	110 U	120 U	110 U
Benzo(k)fluoranthene	ug/Kg	1500	0	95 U	95 U	100 U	95 U	80 U	94 U	91 U	97 U	89 U
Bis(2-Chloroethoxy)methane	ug/Kg	18000	0	110 U	110 U	120 U	110 U	93 U	110 U	100 U	110 U	100 U
Bis(2-Chloroethyl)ether	ug/Kg	210	0	93 U	93 U	98 U	93 U	78 U	91 U	89 U	94 U	87 U
bis(2-Ethylhexyl)phthalate	ug/Kg	35000	0	110 U	110 U	120 U	110 U	95 U	110 U	110 U	110 U	100 U
Butylbenzylphthalate	ug/Kg	260000	0	110 U	110 U	110 U	110 U	90 U	100 U	100 U	110 U	100 U
Carbazole	ug/Kg		0	130 U	130 U	130 U	130 U	110 U	120 U	120 U	130 U	120 U
Chrysene	ug/Kg	15000	0	110 U	110 U	110 U	130 J	92 U	110 U	100 U	110 U	100 U
Dibenzo(a,h)anthracene	ug/Kg	15	0	150 U	150 U	150 U	150 U	120 U	140 U	140 U	150 U	140 U
Dibenzofuran	ug/Kg	7800	0	91 U	90 U	95 U	90 U	76 U	89 U	87 U	92 U	85 U
Diethylphthalate	ug/Kg	4900000	0	92 U	92 U	96 U	91 U	78 U	90 U	88 U	93 U	86 U
Dimethyl Phthalate	ug/Kg		0	90 U	89 U	94 U	89 U	76 U	88 U	86 U	91 U	84 U
Di-n-butylphthalate	ug/Kg	610000	0	120 U	120 U	120 U	120 U	98 U	110 U	330 J	120 U	110 U
Di-n-octylphthalate	ug/Kg		0	240 U	240 U	250 U	240 U	200 U	240 U	230 U	250 U	230 U
Fluoranthene	ug/Kg	230000	0	120 U	120 U	130 U	120 U	100 U	120 U	120 U	120 U	110 U
Fluorene	ug/Kg	230000	0	93 U	93 U	98 U	93 U	78 U	91 U	89 U	94 U	87 U
Hexachlorobenzene	ug/Kg	300	0	94 U	94 U	99 U	94 U	79 U	92 U	90 U	96 U	88 U
Hexachlorobutadiene	ug/Kg	6200	0	95 U	95 U	100 U	95 U	80 U	94 U	91 U	97 U	89 U
Hexachlorocyclopentadiene	ug/Kg	37000	0	94 U	94 U	99 U	94 U	79 U	92 U	90 U	96 U	88 U

Table A-1B
OD Hill Full Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-0DH-1-01	S45-0DH-4-01	S45-0DH-6-01	S45-0DH-8-01	S45-0DH-11-01	S45-0DH-14-01	S45-0DH-17-01	S45-0DH-19-01	S45-0DH-19-01
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-0DH-1-01	S45-0DH-4-01	S45-0DH-6-01	S45-0DH-8-01	S45-0DH-11-01	S45-0DH-14-01	S45-0DH-17-01	S45-0DH-19-01	S45-0DH-19-01D
Sample Data				3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010
Sample Type				SA	SA	SA	SA	SA	SA	SA	SA	DU
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Hexachloroethane	ug/Kg	35000	0	110 U	110 U	120 U	110 U	93 U	110 U	100 U	110 U	100 U
Indeno(1,2,3-cd)pyrene	ug/Kg	150	0	140 U	140 U	150 U	140 U	120 U	140 U	130 U	140 U	130 U
Isophorone	ug/Kg	510000	0	86 U	86 U	90 U	86 U	73 U	84 U	82 U	88 U	80 U
Naphthalene	ug/Kg	3600	0	100 U	100 U	100 U	99 U	84 U	98 U	96 U	100 U	93 U
Nitrobenzene	ug/Kg	4800	0	100 U	100 U	110 U	100 U	88 U	100 U	100 U	110 U	98 U
N-Nitroso-di-n-propylamine	ug/Kg	69	0	95 U	95 U	100 U	95 U	80 U	94 U	91 U	97 U	89 U
N-Nitrosodiphenylamine	ug/Kg	99000	0	310 J	250 U	260 U	250 U	210 U	250 U	240 U	260 U	240 U
Pentachlorophenol	ug/Kg	3000	0	270 U	270 U	280 U	270 U	230 U	270 U	260 U	280 U	250 U
Phenanthrene	ug/Kg		0	95 U	95 U	100 U	95 U	80 U	94 U	91 U	97 U	89 U
Phenol	ug/Kg	1800000	0	180 U	180 U	190 U	180 U	150 U	180 U	170 U	180 U	170 U
Pyrene	ug/Kg	170000	0	120 U	120 U	120 U	120 U	98 U	110 U	110 U	120 U	110 U
Explosives												
1,3,5-trinitrobenzene	ug/Kg	220000	0	51 J	62 J	46 J	60 J	84 J	71 J	64 J	56 J	60 J
1,3-dinitrobenzene	ug/Kg	610	0	6.7 U	7.5 U	7.2 U	5.7 U	7.3 U	7.8 U	6.7 U	7.3 U	6.5 U
2,4,6-trinitrotoluene	ug/Kg	19000	0	45 J	45 J	39 J	51 J	46 J	55 J	42 J	59 J	50 J
2,4-dinitrotoluene	ug/Kg	1600	0	150	83 J	64 J	86 J	88 J	92 J	96 J	150	100 J
2,6-dinitrotoluene	ug/Kg	6100	0	29 U	33 U	31 U	25 U	32 U	34 U	29 U	32 U	28 U
2-AM-DNT	ug/Kg	15000	0	140	160	99 J	180	170	200	140	190	220
2-nitrotoluene	ug/Kg	2900	0	13 U	14 U	14 U	11 U	14 U	15 U	13 U	14 U	13 U
3,5-Dinitroaniline	ug/Kg		0	110 U	120 U	120 U	100 U	120 U	120 U	110 U	4.2 U	3.7 U
3-nitrotoluene	ug/Kg	610	0	8.5 U	9.6 U	9.1 U	7.2 U	9.4 U	9.9 U	8.6 U	9.3 U	8.3 U
4-AM-DNT	ug/Kg	15000	0	120	150	94 J	160	150	190	140	180	220
4-nitrotoluene	ug/Kg	30000	0	29 U	33 U	31 U	25 U	32 U	34 U	29 U	32 U	28 U
HMX	ug/Kg	380000	0	72 J	100 J	62 J	150	160	190	100 J	180	92 J
nitrobenzene	ug/Kg	4800	0	24 U	27 U	25 U	20 U	26 U	28 U	24 U	26 U	23 U
NITROGLYCERIN	ug/Kg	610	1	130 U	150 U	140 U	110 U	150 U	160 U	130 U	**1500**	130 U
PETN	ug/Kg		0	260 U	290 U	280 U	220 U	280 U	300 U	260 U	280 U	250 U
RDX	ug/Kg	5500	0	170	210	120 J	340	440	350	180	540	200
TETRYL	ug/Kg	24000	0	5.8 U	6.6 U	6.2 U	5 U	6.4 U	6.8 U	5.9 U	6.4 U	5.7 U
Herbicides												
2,4,5-T	ug/Kg	0.061	0	18 U	17 U	19 U	18 U	18 U	19 U	18 U	18 U	18 U
2,4-D	ug/Kg	0.069	0	36 U	34 U	38 U	36 U	37 U	38 U	36 U	36 U	35 U
2,4-DB	ug/Kg	0.049	0	26 U	25 U	28 U	26 U	27 U	28 U	26 U	26 U	26 U
Dalapon	ug/Kg	0.18	0	9.2 U	8.7 U	9.7 U	9.2 U	9.6 U	9.7 U	9.4 U	9.2 U	9.1 U
Dicamba	ug/Kg	0.18	0	12 U	12 U	13 U	12 U	13 U	13 U	12 U	12 U	12 U
Dichloroprop	ug/Kg		0	21 U	20 U	22 U	21 U	22 U	22 U	21 U	21 U	21 U
Dinoseb	ug/Kg	0.0061	0	2.9 U	2.7 U	3 U	2.9 U	3 U	3 U	2.9 U	2.9 U	2.8 U
MCPA	ug/Kg	0.0031	0	2600 U	2400 U	2700 U	2600 U	2700 U	2700 U	2600 U	2600 U	2600 U
MCPP	ug/Kg	0.0061	0	2500 U	2300 U	2600 U	2500 U	2600 U	2600 U	2500 U	2500 U	2400 U
Silvex	ug/Kg	0.049	0	14 U	13 U	15 U	14 U	14 U	15 U	14 U	14 U	14 U
Pesticides												
4,4'-DDD	ug/Kg	2000	0	0.23 U	0.22 U	0.24 U	0.23 U	0.23 U	0.23 U	0.2 U	1.4 J	0.22 U
4,4'-DDE	ug/Kg	1400	0	0.82 J	0.21 U	0.89 J	1.1 J	1.3 J	1.2 J	0.95 J	2 J	1.6 J
4,4'-DDT	ug/Kg	1700	0	0.87 J	0.34 U	0.88 J	1.1 J	1.3 JJ	1.2 J	1.1 J	1.9 JJ	1.2 J
Aldrin	ug/Kg	29	0	0.33 U	0.31 U	0.34 U	0.33 U	0.32 U	0.33 U	0.28 U	0.33 U	0.31 U
alpha-BHC	ug/Kg	77	0	0.4 U	0.38 U	0.41 U	0.4 U	0.39 U	0.4 U	0.34 U	0.4 U	0.38 U
alpha-Chlordane	ug/Kg		0	0.24 U	0.23 U	0.25 U	0.25 U	0.24 U	0.24 U	0.21 U	0.24 U	0.24 U
beta-BHC	ug/Kg	270	0	0.38 U	0.36 U	0.4 U	0.39 U	0.38 U	0.38 U	0.33 U	0.39 U	0.37 U
delta-BHC	ug/Kg		0	0.37 U	0.35 U	0.38 U	0.38 U	0.37 U	0.37 U	0.32 U	0.37 U	0.36 U
Dieldrin	ug/Kg	30	0	0.77 J	0.24 U	0.84 J	0.87 J	1 J	0.96 J	0.22 U	0.26 U	0.25 U
Endosulfan I	ug/Kg		0	0.79 J	0.26 U	0.79 J	1 J	32 J	1 J	0.24 U	1.6 J	1.2 J
Endosulfan II	ug/Kg		0	0.4 U	0.38 U	0.41 U	0.4 U	0.39 U	0.4 U	0.34 U	0.4 U	0.88 JJ
Endosulfan sulfate	ug/Kg		0	0.68 U	0.64 U	0.7 U	0.68 U	0.67 U	0.68 U	0.58 U	0.68 U	0.65 U
Endrin	ug/Kg	1800	0	0.99 U	0.94 U	1 U	1 U	0.98 U	0.99 U	0.84 U	1 U	0.95 U

Table A-1B
OD Hill Full Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-0DH-1-01	S45-0DH-4-01	S45-0DH-6-01	S45-0DH-8-01	S45-0DH-11-01	S45-0DH-14-01	S45-0DH-17-01	S45-0DH-19-01	S45-0DH-19-01
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-0DH-1-01	S45-0DH-4-01	S45-0DH-6-01	S45-0DH-8-01	S45-0DH-11-01	S45-0DH-14-01	S45-0DH-17-01	S45-0DH-19-01	S45-0DH-19-01D
Sample Data				3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010
Sample Type				SA	SA	SA	SA	SA	SA	SA	SA	DU
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Endrin Aldehyde	ug/Kg		0	0.57 U	0.54 U	0.59 U	0.57 U	0.56 U	0.57 U	0.49 U	0.57 U	0.55 U
Endrin Ketone	ug/Kg		0	0.46 U	0.44 U	0.48 U	0.47 U	0.58 J	0.47 U	0.4 U	0.47 U	0.45 U
gamma BHC	ug/Kg	520	0	0.31 U	0.3 U	0.32 U	0.32 U	0.31 U	0.31 U	0.27 U	0.32 U	0.3 U
gamma-Chlordane	ug/Kg		0	0.27 U	0.25 U	0.28 U	0.27 U	0.26 U	0.27 U	0.75 J	0.27 U	0.26 U
Heptachlor	ug/Kg	110	0	0.34 U	0.32 U	0.35 U	0.34 U	0.33 U	0.34 U	0.29 U	0.34 U	0.32 U
Heptachlor Epoxide	ug/Kg	53	0	0.26 U	0.24 U	0.26 U	0.26 U	0.25 U	0.26 U	0.22 U	0.26 U	0.25 U
Methoxychlor	ug/Kg	31000	0	0.58 U	45	0.6 U	0.59 U	0.57 U	0.58 U	0.5 U	0.58 U	0.56 U
Toxaphene	ug/Kg	440	0	8.2 U	7.7 U	8.4 U	8.2 U	8 U	8.2 U	7 U	8.2 U	7.8 U
PCBs												
Aroclor-1016	ug/Kg	390	0	7 U	6.6 U	7.2 U	7 U	6.9 U	7 U	6 U	7 U	6.7 U
Aroclor-1221	ug/Kg	140	0	16 U	15 U	17 U	16 U	16 U	16 U	14 U	16 U	16 U
Aroclor-1232	ug/Kg	140	0	11 U	10 U	11 U	11 U	11 U	11 U	9.2 U	11 U	10 U
Aroclor-1242	ug/Kg	220	0	6.8 U	6.4 U	7 U	6.8 U	6.7 U	6.8 U	5.8 U	6.8 U	6.5 U
Aroclor-1248	ug/Kg	220	0	7.1 U	6.8 U	7.3 U	7.2 U	7 U	7.1 U	6.1 U	7.1 U	6.8 U
Aroclor-1254	ug/Kg	220	1	5.5 U	**2000**	5.6 U	5.5 U	5.4 U	5.5 U	4.7 U	5.5 U	5.3 U
Aroclor-1260	ug/Kg	220	0	7 U	6.6 U	7.2 U	7 U	6.9 U	7 U	6 U	7 U	6.7 U
Metals												
ALUMINUM	mg/Kg	7700	21	**19100**	**15000**	**18000**	**17700**	**17900**	**23600**	**16000**	**17500**	**16600**
ANTIMONY	mg/Kg	3.1	0	0.16 J	0.47 U	0.19 U	0.2 U	0.2 U	0.19 U	0.15 U	0.21 U	1.6
ARSENIC	mg/Kg	0.39	21	**5.1**	**12.6**	**4.6**	**4.9**	**8.6**	**4.6**	**4.9**	**5.6**	**7.3**
BARIUM	mg/Kg	1500	0	186	220	163	187	193	182	160	176	203
BERYLLIUM	mg/Kg	16	0	0.85	0.67	0.8	0.81	0.79	0.8	0.71	0.8	0.79
CADMIUM	mg/Kg	7	15	7	**1100**	6.9	**8.9**	**23.6**	**7.4**	4.7	**10.1**	**10.6**
CALCIUM	mg/Kg		0	27800	23200	25500	23300	23200	26700	26000	24400	18600
CHROMIUM	mg/Kg	12000	0	28.5	37.8	28	30.9	446	30.5	25.3	28.8	32
COBALT	mg/Kg	2.3	21	**11.2**	**14**	**11.9**	**14**	**13.1**	**12.6**	**11.2**	**14.2**	**14.9**
COPPER	mg/Kg	310	20	**436**	**1780**	**4180**	**442**	**1060**	**633**	**393**	**411**	**536**
IRON	mg/Kg	5500	21	**27200**	**118000**	**24700**	**28000**	**53100**	**26500**	**24700**	**35100**	**44700**
LEAD	mg/Kg	40	20	**55.6**	**57.2**	**217**	**61.2**	**64**	**56.7**	**54.8**	**81.4**	**74.9**
MAGNESIUM	mg/Kg		0	7140	5680	7190	6870	7040	7000	6220	6430	6180
MANGANESE	mg/Kg	180	21	**581**	**648**	**582**	**710**	**799**	**624**	**555**	**581**	**1080**
MERCURY	mg/Kg	2.3	18	**4**	**3.1**	**3.6**	**3**	**4.5**	**4.4**	**6.8**	**3.3**	**3.6**
NICKEL	mg/Kg	150	0	37.3	46.2	37	43.4	59.3	39.6	35.1	41.9	49.6
POTASSIUM	mg/Kg		0	3400	2160	3190	2700	2880	2980	2460	2720	2430
SELENIUM	mg/Kg	39	0	0.25 U	1.03 U	0.41 U	0.45 U	0.44 U	0.43 U	0.32 U	0.56 J	0.36 U
SILVER	mg/Kg	39	1	3.8	**205**	2.4 J	3.4	5	3.5	2.6	3.3	4
SODIUM	mg/Kg		0	131	103	121	110	112	135	106	114	103
THALLIUM	mg/Kg		0	0.23 J	0.44 U	0.17 U	0.19 U	0.19 U	0.18 U	0.14 U	0.2 U	0.15 U
VANADIUM	mg/Kg	0.55	21	**31.4**	**24.4**	**29.4**	**27.8**	**30.6**	**29.8**	**27.7**	**27.4**	**26.9**
ZINC	mg/Kg	2300	0	327	1270	319	356	421	312	356	369	330

Notes:
(1) Adjusted USEPA Regionial Screening Levels (RSL) Residential Soil. Dec 2009
Carcinogenic compounds set at 1 X EPA value, non-carcinogenic compounds set at 0.1 X EPA value.
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table
(3) Number of Exceedances represents the total for the Full and Limited Suite Tables.
(4) A bolded and outlined cell indicates a concentration that exceeded the USEPA RSL Residential 1/10th Levels

U = compound was not detected
J = the reported value is an estimated concentration
UJ = the compound was not detected; the associated reporting limit is approximate

Table A-2A
Test Pit Limited Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-TP-1-02	S45-TP-1-03	S45-TP-1-04	S45-TP-2-02	S45-TP-2-03	S45-TP-2-04	S45-TP-2-05	S45-TP-3-02
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-TP-1-02	S45-TP-1-03	S45-TP-1-04	S45-TP-2-02	S45-TP-2-03	S45-TP-2-04	S45-TP-2-05	S45-TP-3-02
Sample Data				3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/13/2010
Sample Type				SA	SA	SA	SA	SA	SA	SA	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Metals											
ALUMINUM	mg/Kg	7700	20	**14400**	**17800**	**13000**	**16400**	**12500**	**16500**	**12500**	**16500**
ANTIMONY	mg/Kg	3.1	1	0.63 J	0.2 U	0.13 U	0.2 U	1.5	0.29 J	0.38 J	0.2 U
ARSENIC	mg/Kg	0.39	20	**8.7**	**7.9**	**4.2**	**5.5**	**4.2**	**4.8**	**5.8**	**4.7**
BARIUM	mg/Kg	1500	0	101	171	71.2	126	190	227	191	158
BERYLLIUM	mg/Kg	16	0	0.62	0.78	0.63	0.79	0.55	0.73	0.6	0.75
CADMIUM	mg/Kg	7	8	**13.4**	**8.7**	0.04 J	3.5	4.6	**7.6**	6.1	**7.9**
CALCIUM	mg/Kg		0	62400	25700	53200	28900	101000	29500	30900	23000
CHROMIUM	mg/Kg	12000	0	35	39.2	23.5	26.2	21.3	26.7	19.7	28.1
COBALT	mg/Kg	2.3	20	**12.9**	**13.6**	**13.3**	**12.5**	**10**	**11.3**	**9.6**	**12.1**
COPPER	mg/Kg	310	11	**7310**	**882**	44.4	132	165	**2490**	172	**378**
IRON	mg/Kg	5500	20	**60900**	**37600**	**22100**	**27800**	**20300**	**25600**	**23000**	**26900**
LEAD	mg/Kg	40	15	22.3	**63.8**	15.9	33.4	**62.8**	**91**	**83.6**	**58.3**
MAGNESIUM	mg/Kg		0	9200	7030	10800	7010	7450	7380	6020	7310
MANGANESE	mg/Kg	180	20	**574**	**635**	**409**	**616**	**727**	**407**	**389**	**580**
MERCURY	mg/Kg	2.3	17	**4.3**	**5.2**	0.02 J	1.1	**6**	**9.1**	**7.6**	**2.6**
NICKEL	mg/Kg	150	0	54	43.5	45.4	37.1	31	38.2	30	40.8
POTASSIUM	mg/Kg		0	2180	2700	2240	2140	1780	2400	1780	2310
SELENIUM	mg/Kg	39	0	0.59 U	0.43 U	0.28 U	0.43 U	0.32 U	0.4 U	0.23 U	0.44 U
SILVER	mg/Kg	39	1	**53.7**	7.3	0.14 J	0.72 J	0.31 J	0.63 J	0.78 J	2.5 J
SODIUM	mg/Kg		0	151	122	120	199	213	189	199	101
THALLIUM	mg/Kg		0	0.25 U	0.18 U	0.12 U	0.18 U	0.14 U	0.17 U	0.25 J	0.18 U
VANADIUM	mg/Kg	0.55	20	**22.3**	**29.8**	**21.3**	**26.5**	**20.8**	**26.9**	**20.6**	**27.6**
ZINC	mg/Kg	2300	0	150	335	84.4	198	463	1470	535	315

Notes:
(1) Adjusted USEPA Regionial Screening Levels (RSL) Residential Soil. Dec 200
Carcinogenic compounds set at 1 X EPA value, non-carcinogenic compounds set at 0.1 X EPA value
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table
(3) Number of Exceedances represents the total for the Full and Limited Suite Tables.
(4) A bolded and outlined cell indicates a concentration that exceeded the USEPA RSL Residential 1/10th Level

U = compound was not detected
J = the reported value is an estimated concentration
UJ = the compound was not detected; the associated reporting limit is approximate

Table A-2A
Test Pit Limited Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-TP-3-03	S45-TP-3-04	S45-TP-3-05	S45-TP-4-02	S45-TP-4-03	S45-TP-4-04	S45-TP-4-05
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-TP-3-03	S45-TP-3-04	S45-TP-3-05	S45-TP-4-02	S45-TP-4-03	S45-TP-4-04	S45-TP-4-05
Sample Data				3/13/2010	3/13/2010	3/13/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010
Sample Type				SA	SA	SA	SA	SA	SA	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Metals										
ALUMINUM	mg/Kg	7700	20	**21700**	**17400**	**14400**	**15000**	**12700**	**9690**	**10800**
ANTIMONY	mg/Kg	3.1	1	**5.1**	0.38 J	0.12 J	0.58 J	0.19 U	0.16 J	0.14 U
ARSENIC	mg/Kg	0.39	20	**4.6**	**4.6**	**3.9**	**5.7**	**5**	**3.3**	**5.4**
BARIUM	mg/Kg	1500	0	173	154	126	153	151	108	76.1
BERYLLIUM	mg/Kg	16	0	0.7	0.74	0.62	0.7	0.58	0.42 J	0.54
CADMIUM	mg/Kg	7	8	6.9	6.1	2.8	**8.1**	4.5	1.8	0.01 U
CALCIUM	mg/Kg		0	34100	28800	37700	30900	41800	40400	53900
CHROMIUM	mg/Kg	12000	0	26.7	26	22.8	25	22.8	14.4	18.8
COBALT	mg/Kg	2.3	20	**9.2**	**9.4**	**10**	**11.3**	**10.4**	**6.4**	**11**
COPPER	mg/Kg	310	11	**716**	**311**	266	**416**	240	115	24.7
IRON	mg/Kg	5500	20	**23400**	**24300**	**21500**	**24800**	**25300**	**15500**	**19000**
LEAD	mg/Kg	40	15	**153**	**45.7**	**42.7**	**57.4**	**50.9**	30.3	11.2
MAGNESIUM	mg/Kg		0	7810	9350	8470	12100	10300	12500	8380
MANGANESE	mg/Kg	180	20	**566**	**502**	**420**	**577**	**466**	**380**	**379**
MERCURY	mg/Kg	2.3	17	**8**	**3.2**	**3.2**	**4.4**	**9.1**	**6.7**	0.04
NICKEL	mg/Kg	150	0	39	33.9	34.8	35.8	35.5	20	34.3
POTASSIUM	mg/Kg		0	3220	3510	2590	2010	1890	1870	1790
SELENIUM	mg/Kg	39	0	0.22 U	0.21 U	0.19 U	0.41 U	0.56 J	0.22 U	0.3 U
SILVER	mg/Kg	39	1	0.33 J	2.9	0.68 J	3.6	1.4 J	0.38 J	0.12 J
SODIUM	mg/Kg		0	149	101	137	195	196	166	188
THALLIUM	mg/Kg		0	0.09 U	0.09 U	0.08 U	0.17 U	0.18 U	0.09 U	0.15 J
VANADIUM	mg/Kg	0.55	20	**29**	**28.3**	**23**	**25.7**	**21.7**	**17.5**	**18.5**
ZINC	mg/Kg	2300	0	585	294	241	304	371	336	80.1

Notes:
(1) Adjusted USEPA Regionial Screening Levels (RSL) Residential Soil. Dec 200
Carcinogenic compounds set at 1 X EPA value, non-carcinogenic compounds set at 0.1 X EPA value
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table
(3) Number of Exceedances represents the total for the Full and Limited Suite Tables.
(4) A bolded and outlined cell indicates a concentration that exceeded the USEPA RSL Residential 1/10th Level

U = compound was not detected
J = the reported value is an estimated concentration
UJ = the compound was not detected; the associated reporting limit is approximate

Table A-2B
Test Pit Full Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-TP-1-01	S45-TP-2-01	S45-TP-3-01	S45-TP-3-01D	S45-TP-4-01
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-TP-1-01	S45-TP-2-01	S45-TP-3-01	S45-TP-3-01D	S45-TP-4-01
Sample Data				3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010
Sample Type				SA	SA	SA	DU	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Semivolatile Organic Compounds								
1,2,4-Trichlorobenzene	ug/Kg	22000	0	92 U	90 U	83 U	89 U	94 U
1,2-Dichlorobenzene	ug/Kg	190000	0	100 U	98 U	90 U	97 U	100 U
1,3-Dichlorobenzene	ug/Kg		0	88 U	87 U	80 U	86 U	90 U
1,4-Dichlorobenzene	ug/Kg	2400	0	97 U	96 U	88 U	95 U	100 U
2,2'-Oxybis(1-chloropropane)	ug/Kg		0	100 U	99 U	91 U	98 U	100 U
2,4,5-Trichlorophenol	ug/Kg	610000	0	180 U	170 U	160 U	170 U	180 U
2,4,6-Trichlorophenol	ug/Kg	44000	0	180 U	170 U	160 U	170 U	180 U
2,4-Dichlorophenol	ug/Kg	18000	0	170 U	170 U	150 U	160 U	170 U
2,4-Dimethylphenol	ug/Kg	120000	0	190 U	180 U	170 U	180 U	190 U
2,4-Dinitrophenol	ug/Kg	12000	0	430 U	420 U	390 U	410 U	440 U
2,4-Dinitrotoluene	ug/Kg	1600	1	96 U	94 U	87 U	94 U	**2500**
2,6-Dinitrotoluene	ug/Kg	6100	0	90 U	88 U	81 U	87 U	92 U
2-Chloronaphthalene	ug/Kg	630000	0	99 U	97 U	89 U	96 U	100 U
2-Chlorophenol	ug/Kg	39000	0	180 U	180 U	170 U	180 U	190 U
2-Methylnaphthalene	ug/Kg	31000	0	100 U	100 U	94 U	100 U	110 U
2-Methylphenol	ug/Kg	310000	0	230 U	220 U	200 U	220 U	230 U
2-Nitroaniline	ug/Kg	61000	0	85 U	83 U	77 U	82 U	87 U
2-Nitrophenol	ug/Kg		0	190 U	180 U	170 U	180 U	190 U
3&4-Methylphenol	ug/Kg		0	210 U	210 U	190 U	200 U	220 U
3,3'-Dichlorobenzidine	ug/Kg	1100	0	130 U	130 U	120 U	120 U	130 U
3-Nitroaniline	ug/Kg		0	110 U	100 U	96 U	100 U	110 U
4,6-Dinitro-2-Methylphenol	ug/Kg	610	0	380 U	370 U	340 U	370 U	390 U
4-Bromophenyl-phenylether	ug/Kg		0	96 U	94 U	87 U	94 U	99 U
4-Chloro-3-Methylphenol	ug/Kg	610000	0	190 U	180 U	170 U	180 U	190 U
4-Chloroaniline	ug/Kg	2400	0	130 U	130 U	120 U	130 U	140 U
4-Chlorophenyl-phenylether	ug/Kg		0	88 U	87 U	80 U	86 U	90 U
4-Nitroaniline	ug/Kg	24000	0	150 U	150 U	140 U	150 U	160 U
4-Nitrophenol	ug/Kg		0	350 U	340 U	320 U	340 U	360 U
Acenaphthene	ug/Kg	340000	0	74 U	72 U	67 U	72 U	75 U
Acenaphthylene	ug/Kg		0	79 U	78 U	72 U	77 U	81 U
Anthracene	ug/Kg	1700000	0	95 U	93 U	86 U	92 U	97 U
Benzo(a)anthracene	ug/Kg	150	0	97 U	96 U	88 U	95 U	100 U
Benzo(a)pyrene	ug/Kg	15	0	100 U	100 U	95 U	100 U	110 U
Benzo(b)fluoranthene	ug/Kg	150	0	150 U	150 U	140 U	150 U	160 U
Benzo(g,h,i)perylene	ug/Kg		0	120 U	120 U	110 U	110 U	120 U
Benzo(k)fluoranthene	ug/Kg	1500	0	94 U	92 U	85 U	91 U	96 U
Bis(2-Chloroethoxy)methane	ug/Kg	18000	0	110 U	110 U	98 U	100 U	110 U
Bis(2-Chloroethyl)ether	ug/Kg	210	0	92 U	90 U	83 U	89 U	94 U
bis(2-Ethylhexyl)phthalate	ug/Kg	35000	0	110 U	110 U	100 U	110 U	110 U
Butylbenzylphthalate	ug/Kg	260000	0	100 U	100 U	95 U	100 U	110 U
Carbazole	ug/Kg		0	120 U	120 U	110 U	120 U	130 U
Chrysene	ug/Kg	15000	0	100 U	100 U	97 U	100 U	110 U
Dibenzo(a,h)anthracene	ug/Kg	15	0	140 U	140 U	130 U	140 U	150 U
Dibenzofuran	ug/Kg	7800	0	90 U	88 U	81 U	87 U	92 U
Diethylphthalate	ug/Kg	4900000	0	91 U	89 U	82 U	88 U	93 U
Dimethyl Phthalate	ug/Kg		0	88 U	87 U	80 U	86 U	90 U
Di-n-butylphthalate	ug/Kg	610000	0	410	110 U	100 U	110 U	2600
Di-n-octylphthalate	ug/Kg		0	240 U	230 U	220 U	230 U	240 U
Fluoranthene	ug/Kg	230000	0	120 U	120 U	110 U	120 U	120 U
Fluorene	ug/Kg	230000	0	92 U	90 U	83 U	89 U	94 U
Hexachlorobenzene	ug/Kg	300	0	93 U	91 U	110 J	90 U	95 U

Table A-2B
Test Pit Full Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-TP-1-01	S45-TP-2-01	S45-TP-3-01	S45-TP-3-01D	S45-TP-4-01
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-TP-1-01	S45-TP-2-01	S45-TP-3-01	S45-TP-3-01D	S45-TP-4-01
Sample Data				3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010
Sample Type				SA	SA	SA	DU	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Hexachlorobutadiene	ug/Kg	6200	0	94 U	92 U	85 U	91 U	96 U
Hexachlorocyclopentadiene	ug/Kg	37000	0	93 U	91 U	84 U	90 U	95 U
Hexachloroethane	ug/Kg	35000	0	110 U	110 U	98 U	100 U	110 U
Indeno(1,2,3-cd)pyrene	ug/Kg	150	0	140 U	140 U	120 U	130 U	140 U
Isophorone	ug/Kg	510000	0	85 U	83 U	77 U	82 U	87 U
Naphthalene	ug/Kg	3600	0	99 U	97 U	89 U	96 U	100 U
Nitrobenzene	ug/Kg	4800	0	100 U	100 U	93 U	100 U	100 U
N-Nitroso-di-n-propylamine	ug/Kg	69	0	94 U	92 U	85 U	91 U	96 U
N-Nitrosodiphenylamine	ug/Kg	99000	0	250 U	240 U	220 U	240 U	320 J
Pentachlorophenol	ug/Kg	3000	0	270 U	260 U	240 U	260 U	280 U
Phenanthrene	ug/Kg		0	94 U	92 U	85 U	91 U	96 U
Phenol	ug/Kg	1800000	0	180 U	170 U	160 U	170 U	180 U
Pyrene	ug/Kg	170000	0	110 U	110 U	100 U	110 U	120 U
Explosives								
1,3,5-trinitrobenzene	ug/Kg	220000	0	55 J	59 J	7.1 U	50 J	45 J
1,3-dinitrobenzene	ug/Kg	610	0	7.1 U	6.6 U	6.6 U	6 U	6.4 U
2,4,6-trinitrotoluene	ug/Kg	19000	0	44 J	50 J	68 J	49 J	37 J
2,4-dinitrotoluene	ug/Kg	1600	0	98 J	91 J	120	57 J	86 J
2,6-dinitrotoluene	ug/Kg	6100	0	31 U	29 U	28 U	26 U	28 U
2-AM-DNT	ug/Kg	15000	0	170	190	330	110	150
2-nitrotoluene	ug/Kg	2900	0	14 U	13 U	13 U	12 U	12 U
3,5-Dinitroaniline	ug/Kg		0	120 U	110 U	100 U	100 U	100 U
3-nitrotoluene	ug/Kg	610	0	9.1 U	8.5 U	8.4 U	7.6 U	8.2 U
4-AM-DNT	ug/Kg	15000	0	180	200	500	150	150
4-nitrotoluene	ug/Kg	30000	0	31 U	29 U	28 U	26 U	28 U
HMX	ug/Kg	380000	0	97 J	160	9.1 U	43 J	180
nitrobenzene	ug/Kg	4800	0	25 U	24 U	23 U	21 U	23 U
NITROGLYCERIN	ug/Kg	610	0	140 U	130 U	130 U	120 U	130 U
PETN	ug/Kg		0	280 U	260 U	250 U	230 U	250 U
RDX	ug/Kg	5500	0	190	220	230	75 J	310
TETRYL	ug/Kg	24000	0	6.2 U	5.8 U	5.7 U	5.2 U	5.6 U
Herbicides								
2,4,5-T	ug/Kg	0.061	0	36 U	36 U	34 U	38 U	36 U
2,4-D	ug/Kg	0.069	0	36 U	36 U	34 U	38 U	36 U
2,4-DB	ug/Kg	0.049	0	36 U	36 U	34 U	38 U	36 U
Dalapon	ug/Kg	0.18	0	180 U	180 U	170 U	190 U	190 U
Dicamba	ug/Kg	0.18	0	36 U	36 U	34 U	38 U	36 U
Dichloroprop	ug/Kg		0	72 U	73 U	69 U	76 U	74 U
Dinoseb	ug/Kg	0.0061	0	180 U	180 U	170 U	190 U	190 U
MCPA	ug/Kg	0.0031	0	5400 U	5400 U	5100 U	5700 U	5500 U
MCPP	ug/Kg	0.0061	0	3600 U	3600 U	3400 U	3800 U	3600 U
Silvex	ug/Kg	0.049	0	36 U	36 U	34 U	38 U	36 U
Pesticides								
4,4'-DDD	ug/Kg	2000	0	0.23 U	2.4 JJ	0.2 U	0.23 U	0.24 U
4,4'-DDE	ug/Kg	1400	0	1.2 J	1.5 J	1.1 J	0.67 J	0.9 J
4,4'-DDT	ug/Kg	1700	0	1 J	2.2 JJ	0.31 U	0.68 J	0.77 J
Aldrin	ug/Kg	29	0	0.32 U	0.31 U	0.28 U	0.32 U	0.33 U
alpha-BHC	ug/Kg	77	0	0.39 U	0.38 U	0.34 U	0.39 U	0.4 U
alpha-Chlordane	ug/Kg		0	0.59 J	0.24 U	0.21 U	0.24 U	0.25 U
beta-BHC	ug/Kg	270	0	0.38 U	0.37 U	0.33 U	0.38 U	0.39 U
delta-BHC	ug/Kg		0	0.37 U	0.36 U	0.32 U	0.37 U	0.38 U
Dieldrin	ug/Kg	30	0	0.25 U	1.2 J	0.22 U	0.81 J	0.79 J

Table A-2B
Test Pit Full Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-TP-1-01	S45-TP-2-01	S45-TP-3-01	S45-TP-3-01D	S45-TP-4-01
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-TP-1-01	S45-TP-2-01	S45-TP-3-01	S45-TP-3-01D	S45-TP-4-01
Sample Data				3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010
Sample Type				SA	SA	SA	DU	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Endosulfan I	ug/Kg		0	0.8 J	1.3 J	1.2 J	0.77 J	0.74 J
Endosulfan II	ug/Kg		0	0.39 U	0.38 U	0.34 U	0.39 U	0.4 U
Endosulfan sulfate	ug/Kg		0	0.66 U	0.65 U	0.57 U	0.67 U	0.68 U
Endrin	ug/Kg	1800	0	0.97 U	3.6 J	0.84 U	0.98 U	1 U
Endrin Aldehyde	ug/Kg		0	0.56 U	0.55 U	0.48 U	0.56 U	0.58 U
Endrin Ketone	ug/Kg		0	0.46 U	0.45 U	0.4 U	0.46 U	0.47 U
gamma BHC	ug/Kg	520	0	0.31 U	0.3 U	0.27 U	0.31 U	0.32 U
gamma-Chlordane	ug/Kg		0	0.68 J	1.1 J	0.23 U	0.26 U	0.27 U
Heptachlor	ug/Kg	110	0	0.33 U	0.32 U	0.29 U	0.33 U	0.34 U
Heptachlor Epoxide	ug/Kg	53	0	0.25 U	0.25 U	0.22 U	0.25 U	0.26 U
Methoxychlor	ug/Kg	31000	0	0.57 U	0.56 U	0.5 U	0.58 U	0.59 U
Toxaphene	ug/Kg	440	0	8 U	7.8 U	6.9 U	8 U	8.2 U
PCBs								
Aroclor-1016	ug/Kg	390	0	6.9 U	6.7 U	5.9 U	6.9 U	7.1 U
Aroclor-1221	ug/Kg	140	0	16 U	16 U	14 U	16 U	16 U
Aroclor-1232	ug/Kg	140	0	11 U	10 U	9.2 U	11 U	11 U
Aroclor-1242	ug/Kg	220	0	6.6 U	6.5 U	5.7 U	6.7 U	6.8 U
Aroclor-1248	ug/Kg	220	0	7 U	6.8 U	6 U	7 U	7.2 U
Aroclor-1254	ug/Kg	220	0	5.4 U	5.3 U	4.6 U	5.4 U	5.5 U
Aroclor-1260	ug/Kg	220	0	6.9 U	6.7 U	5.9 U	6.9 U	7.1 U
Metals								
ALUMINUM	mg/Kg	7700	20	**14400**	**16700**	**11900**	**17100**	**17800**
ANTIMONY	mg/Kg	3.1	1	0.14 U	0.21 U	0.15 U	0.2 U	0.12 U
ARSENIC	mg/Kg	0.39	20	**5.4**	**5.5**	**4.3**	**5.1**	**5**
BARIUM	mg/Kg	1500	0	134	146	159	187	170
BERYLLIUM	mg/Kg	16	0	0.67	0.79	0.53	0.76	0.79
CADMIUM	mg/Kg	7	8	**9**	6.8	5.6	**7.7**	**7.3**
CALCIUM	mg/Kg		0	34600	25200	24400 *	28100	27600
CHROMIUM	mg/Kg	12000	0	25.4	27.9	20.9	27.3	27.4
COBALT	mg/Kg	2.3	20	**11.8**	**12.3**	**9.3**	**11.4**	**10.8**
COPPER	mg/Kg	310	11	**853**	**365**	143	**330**	**343**
IRON	mg/Kg	5500	20	**24800**	**30200**	**22200**	**25600**	**27500**
LEAD	mg/Kg	40	15	**54.3**	**54.6**	**86.3**	**70.9**	**64.9**
MAGNESIUM	mg/Kg		0	8140	6780	6170	7980	7170
MANGANESE	mg/Kg	180	20	**519**	**572**	**423**	**515**	**531**
MERCURY	mg/Kg	2.3	17	**2.9**	**2.7**	**7**	**6.8**	**2.4**
NICKEL	mg/Kg	150	0	37.7	40.7	30.6	37.7	37.9
POTASSIUM	mg/Kg		0	1820	2090	1700	2680	2710
SELENIUM	mg/Kg	39	0	0.32 U	0.46 U	0.33 U	0.45 U	0.26 U
SILVER	mg/Kg	39	1	8.7	3 J	0.56 J	2.2 J	2.4
SODIUM	mg/Kg		0	113	88.2 J	146	211	198
THALLIUM	mg/Kg		0	0.27 J	0.19 U	0.14 U	0.19 U	0.11 U
VANADIUM	mg/Kg	0.55	20	**23.8**	**26.9**	**20.8**	**28.5**	**28.1**
ZINC	mg/Kg	2300	0	272	336	387	434	317

Notes:
(1) Adjusted USEPA Regionial Screening Levels (RSL) Residential Soil. Dec 2009
Carcinogenic compounds set at 1 X EPA value, non-carcinogenic compounds set at 0.1 X EPA value.
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table.
(3) Number of Exceedances represents the total for the Full and Limited Suite Tables.
(4) A bolded and outlined cell indicates a concentration that exceeded the USEPA RSL Residential 1/10th Levels

U = compound was not detected
J = the reported value is an estimated concentration
UJ = the compound was not detected; the associated reporting limit is approximate

Table A-3A
Radius Limited Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-R1-01	S45-RI-02	S45-R1-03	S45-R1-04	S45-R1-04	S45-R2-01	S45-R2-02	S45-R2-03	S45-R2-04
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-R1-01	S45-RI-02	S45-R1-03	S45-R1-04	S45-R1-04D	S45-R2-01	S45-R2-02	S45-R2-03	S45-R2-04
Sample Data				4/1/2010	4/1/2010	4/1/2010	4/1/2010	4/1/2010	4/1/2010	4/1/2010	4/1/2010	4/1/2010
Sample Type				SA	SA	SA	SA	DU	SA	SA	SA	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Metals												
ALUMINUM	mg/Kg	7700	39	**17200**	**16200**	**18200**	**16800**	**20200**	**17800**	**17700**	**19000**	**17900**
ANTIMONY	mg/Kg	3.1	0	0.52 J	0.64 J	0.65 J	0.81 J	0.37 J	0.26 J	0.62 J	0.98 J	0.32 J
ARSENIC	mg/Kg	0.39	40	**5.9**	**5.1**	**5.5**	**4.9**	**5.5**	**6.3**	**5.4**	**5.1**	**5.2**
BARIUM	mg/Kg	1500	0	259	150	168	161	182	144	164	166	150
BERYLLIUM	mg/Kg	16	0	0.75	0.72	0.81	0.76 J	0.85	0.77	0.86	0.83	0.78
CADMIUM	mg/Kg	7	9	**7.6**	**7.7**	**8.2**	**7.9**	**8.1**	4.2	**9.1**	6.6	6.4
CALCIUM	mg/Kg		0	21900	25400	20700	40600	21100	26000	20300	16100	21400
CHROMIUM	mg/Kg	12000	0	35.3	27.4	30.3	27	30.7	27.2	27.7	28.6	29.3
COBALT	mg/Kg	2.3	40	**12.2**	**12.3**	**12.7**	**11.4**	**12.2**	**12**	**11.8**	**12.3**	**11.7**
COPPER	mg/Kg	310	9	**475**	**794**	**478**	**467**	**433**	192	**462**	217	**364**
IRON	mg/Kg	5500	40	**31400**	**25200**	**25800**	**26700**	**28100**	**24400**	**27600**	**26600**	**26500**
LEAD	mg/Kg	40	23	**54.7**	**69.2**	**62.2**	**63.8**	**58**	**50**	**72.3**	**51**	**52.9**
MAGNESIUM	mg/Kg		0	6460	7910	6520	6890	6920	7290	6560	6530	7100
MANGANESE	mg/Kg	180	40	**657**	**676**	**664**	**557**	**561**	**581**	**618**	**676**	**518**
MERCURY	mg/Kg	2.3	12	**5.5**	**3.5**	**3.5**	**3.1**	**4.4**	1.2	**3**	**3.1**	**5.3**
NICKEL	mg/Kg	150	0	43	39.6	41.8	37	40.5	39.9	39.8	40.1	41.4
POTASSIUM	mg/Kg		0	2590	2450	2690	2600	3370	2540	2920	3240	2920
SELENIUM	mg/Kg	39	0	0.89 J	0.7 U	0.75 U	0.7 U	0.85 U	0.59 U	0.72 U	0.81 U	0.69 U
SILVER	mg/Kg	39	0	4.4	3.2	4	3.9	3.2 J	1.4 J	3.6	2.5 J	3
SODIUM	mg/Kg		0	81.2 J	87.7 J	95.6	93.3	86.8 J	99.2	90.9 J	77 J	90.2
THALLIUM	mg/Kg		0	0.28 U	0.29 U	0.32 U	0.3 U	0.36 U	0.25 U	0.3 U	0.34 U	0.29 U
VANADIUM	mg/Kg	0.55	40	**28.5**	**27.3**	**29.8**	**28.3**	**32.8**	**29.7**	**30.9**	**31.7**	**28.6**
ZINC	mg/Kg	2300	0	319	1350	328	404	347	382	321	274	324

Notes:
(1) Adjusted USEPA Regionial Screening Levels (RSL) Residential Soil. Dec 200
Carcinogenic compounds set at 1 X EPA value, non-carcinogenic compounds set at 0.1 X EPA value
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table
(3) Number of Exceedances represents the total for the Full and Limited Suite Tables
(4) A bolded and outlined cell indicates a concentration that exceeded the USEPA RSL Residential 1/10th Levels

U = compound was not detected
J = the reported value is an estimated concentration
UJ = the compound was not detected; the associated reporting limit is approximate

Table A-3A
Radius Limited Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-R3-01	S45-R3-02	S45-R3-03	S45-R3-04	S45-R4-01	S45-R4-02	S45-R4-03	S45-R4-04	S45-R5-02
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-R3-01	S45-R3-02	S45-R3-03	S45-R3-04	S45-R4-01	S45-R4-02	S45-R4-03	S45-R4-04	S45-R5-02
Sample Data				4/1/2010	4/1/2010	4/1/2010	4/1/2010	4/1/2010	4/1/2010	4/1/2010	4/1/2010	3/16/2010
Sample Type				SA	SA	SA	SA	SA	SA	SA	SA	SA
Study ID			**Number of**	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Metals												
ALUMINUM	mg/Kg	7700	39	**20800**	**16800**	**24600**	**18500**	**19000**	**21300**	**19400**	5910	**16700**
ANTIMONY	mg/Kg	3.1	0	0.24 J	0.87 J	0.68 J	0.13 U	0.18 U	0.42 J	0.11 U	2.2	3.1
ARSENIC	mg/Kg	0.39	40	**5.7**	**5.2**	**5.1**	**4.2**	**5.7**	**5**	**4.6**	**4**	**5.1**
BARIUM	mg/Kg	1500	0	140	194	205	122	140	299	89.7	27.9	257
BERYLLIUM	mg/Kg	16	0	0.78	0.72	1	0.78	0.88	0.81	0.69	0.42 J	0.71
CADMIUM	mg/Kg	7	9	6	**8.3**	**8.2**	0.72 J	1.1 J	4.1	0.56 J	0.34 J	3.3
CALCIUM	mg/Kg		0	30000	35000	17500	8950	12200	38500	2900	193000	17100
CHROMIUM	mg/Kg	12000	0	27.9	27.4	35.4	24.7	2804	29.7	25.1	10.6	25.6
COBALT	mg/Kg	2.3	40	**12**	**10.8**	**12.6**	**9.8**	**10.9**	**11.4**	**9.4**	**9.5**	**10**
COPPER	mg/Kg	310	9	284	233	**429**	41.3	82.6	263	39.1	38.9	289
IRON	mg/Kg	5500	40	**25300**	**25400**	**29100**	**22900**	**24000**	**26500**	**23100**	**7600**	**24300**
LEAD	mg/Kg	40	23	**48.9**	**70.3**	**69.4**	28.2	22.5	28.3	21	29.7	**352**
MAGNESIUM	mg/Kg		0	7260	9130	7340	4720	6750	7880	4460	15000	6870
MANGANESE	mg/Kg	180	40	**651**	**530**	**470**	**549**	**428**	**606**	**361**	**363**	**438**
MERCURY	mg/Kg	2.3	12	1.7	**6.4**	**4.2**	2.2	1.4	0.9	0.48	0.15	1.6
NICKEL	mg/Kg	150	0	37.4	38.3	46.6	28.9	37	42.5	26.2	23.8	32.5
POTASSIUM	mg/Kg		0	2980	2550	4020	2260	2970	2880	2610	2620	2470
SELENIUM	mg/Kg	39	0	0.79 J	0.76 U	0.9 U	0.45 U	0.63 U	0.82 U	0.4 U	0.34 U	0.23 U
SILVER	mg/Kg	39	0	0.82 J	1.9 J	3 J	0.29 J	0.42 J	0.47 J	0.23 J	0.04 U	0.75 J
SODIUM	mg/Kg		0	92.2	120	93.7 J	66.2 J	79 J	112	59.1 J	179	110
THALLIUM	mg/Kg		0	0.28 U	0.32 U	0.38 U	0.19 U	0.27 U	0.35 U	0.17 U	0.14 U	0.1 U
VANADIUM	mg/Kg	0.55	40	**30.2**	**27**	**38.9**	**30.8**	**33.6**	**29.5**	**32.2**	**16.6**	**27.5**
ZINC	mg/Kg	2300	0	392	588	421	91.2	160	938	99.2	66.8	335

Notes:
(1) Adjusted USEPA Regionial Screening Levels (RSL) Residential Soil. Dec 200
Carcinogenic compounds set at 1 X EPA value, non-carcinogenic compounds set at 0.1 X EPA value
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table
(3) Number of Exceedances represents the total for the Full and Limited Suite Tables
(4) A bolded and outlined cell indicates a concentration that exceeded the USEPA RSL Residential 1/10th Levels

U = compound was not detected
J = the reported value is an estimated concentration
UJ = the compound was not detected; the associated reporting limit is approximate

Table A-3A
Radius Limited Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-R5-06	S45-R5-07	S45-R5-08	S45-R10-01	S45-R10-02	S45-R10-03	S45-R10-03D	S45-R10-04	S45-R10-05
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-R5-06	S45-R5-07	S45-R5-08	S45-R10-01	S45-R10-02	S45-R10-03	S45-R10-03D	S45-R10-04	S45-R10-05
Sample Data				3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010
Sample Type				SA	SA	SA	SA	SA	SA	DU	SA	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Metals												
ALUMINUM	mg/Kg	7700	39	**21600**	**16100**	**27900**	**20700**	**22100**	**18100**	**16700**	**19100**	**19900**
ANTIMONY	mg/Kg	3.1	0	0.11 U	0.18 J	2.8	0.12 U	0.13 U	0.88 J	2.4	0.09 U	0.14 U
ARSENIC	mg/Kg	0.39	40	**5.2**	**5.1**	**6.4**	**5.3**	**5.1**	**5.1**	**5**	**4.8**	**4.6**
BARIUM	mg/Kg	1500	0	148	111	229	141	109	167	256	108	134
BERYLLIUM	mg/Kg	16	0	0.86	0.75	1.2	0.87	0.88	0.8	0.76	0.77	0.86
CADMIUM	mg/Kg	7	9	0.62 J	**8.3**	1.1	1 J	0.79 J	1.8	1.6 J	0.7 J	1.1 J
CALCIUM	mg/Kg		0	5100	41300	14800	3790	2750	27800	28500	2840	4100
CHROMIUM	mg/Kg	12000	0	28.8	25.6	33.3	24.1	29.6	31.4	29.2	23.9	25.5
COBALT	mg/Kg	2.3	40	**9.2**	**11.8**	**12.5**	**8.9**	**9.9**	**12.4**	**12.5**	**10.5**	**9.6**
COPPER	mg/Kg	310	9	44.4	210	142	32.8	47.2	92.6	132	24.9	44.7
IRON	mg/Kg	5500	40	**25200**	**26800**	**30600**	**22500**	**24900**	**28300**	**28800**	**21900**	**22700**
LEAD	mg/Kg	40	23	12.9	**44.6**	**998**	19.4	**46.4**	**123**	**189**	21.7	25.2
MAGNESIUM	mg/Kg		0	5740	8440	8740	4320	4480	7560	6880	3630	4050
MANGANESE	mg/Kg	180	40	**395**	**591**	**506**	**682**	**256**	**437**	**436**	**999**	**627**
MERCURY	mg/Kg	2.3	12	0.23	1	0.17	0.38	0.28	0.79	1	0.17	0.45
NICKEL	mg/Kg	150	0	29.8	38.9	38.6	23.5	32.2	49.7	46.9	21.6	27.1
POTASSIUM	mg/Kg		0	4140	2640	4880	2920	3400	2950	2610	2580	3250
SELENIUM	mg/Kg	39	0	0.25 U	0.25 U	0.21 U	0.26 U	0.28 U	0.38 U	0.34 U	0.21 U	0.3 U
SILVER	mg/Kg	39	0	0.18 J	0.29 J	0.06 U	0.08 U	0.18 J	0.11 U	0.1 U	0.06 U	0.09 U
SODIUM	mg/Kg		0	98.6 J	132	113	138	76.6 J	126	110	58.7 J	73 J
THALLIUM	mg/Kg		0	0.11 U	0.1 U	0.09 U	0.11 U	0.42 J	0.31 J	0.14 U	0.09 U	0.13 U
VANADIUM	mg/Kg	0.55	40	**37.3**	**25**	**40**	**33.3**	**37.8**	**26.9**	**25.3**	**32.4**	**33**
ZINC	mg/Kg	2300	0	89.5	230	153	85.6	140	185	298	85.7	130

Notes:
(1) Adjusted USEPA Regionial Screening Levels (RSL) Residential Soil. Dec 200
Carcinogenic compounds set at 1 X EPA value, non-carcinogenic compounds set at 0.1 X EPA value
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table
(3) Number of Exceedances represents the total for the Full and Limited Suite Tables
(4) A bolded and outlined cell indicates a concentration that exceeded the USEPA RSL Residential 1/10th Levels

U = compound was not detected
J = the reported value is an estimated concentration
UJ = the compound was not detected; the associated reporting limit is approximate

Table A-3A
Radius Limited Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-R10-06	S45-R10-07	S45-R15-01	S45-R15-02	S45-R15-03	S45-R15-04	S45-R15-05	S45-R15-06
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-R10-06	S45-R10-07	S45-R15-01	S45-R15-02	S45-R15-03	S45-R15-04	S45-R15-05	S45-R15-06
Sample Data				3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/17/2010	3/16/2010	3/16/2010	3/16/2010
Sample Type				SA	SA	SA	SA	SA	SA	SA	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Metals											
ALUMINUM	mg/Kg	7700	39	**17400**	**16500**	**19900**	**25000**	**14200**	**18700**	**17000**	**20700**
ANTIMONY	mg/Kg	3.1	0	0.11 U	1.8	0.25 U	0.12 U	0.41 U	0.1 U	0.09 U	0.12 U
ARSENIC	mg/Kg	0.39	40	**4**	**4.5**	**7.6**	**5.4**	**4.9**	**4.8**	**3.9**	**5.1**
BARIUM	mg/Kg	1500	0	107	263	287	175	55.4	108	107	135
BERYLLIUM	mg/Kg	16	0	0.68	0.76	1	1	0.65	0.85	0.77	1
CADMIUM	mg/Kg	7	9	1.1 J	1.5 J	1.8 J	0.74 J	0.45 J	0.55 J	0.52 J	0.86 J
CALCIUM	mg/Kg		0	3700	14500	3630	4370	9010	2150	3560	2340
CHROMIUM	mg/Kg	12000	0	22.4	29.2	24.6	30.8	26.6	24.2	23.3	27.5
COBALT	mg/Kg	2.3	40	**7.7**	**12.1**	**26.8**	**10**	**12.1**	**10.1**	**9.1**	**12.9**
COPPER	mg/Kg	310	9	64	129	22.8	25.6	43.1	20	23.4	23.3
IRON	mg/Kg	5500	40	**20500**	**27500**	**35300**	**26200**	**26000**	**22500**	**20400**	**24000**
LEAD	mg/Kg	40	23	35.4	**198**	22	26.6	**53.2**	20.6	22.8	27.9
MAGNESIUM	mg/Kg		0	3650	6640	4080	4460	6180	3770	3800	4210
MANGANESE	mg/Kg	180	40	**446**	**393**	**5040**	**552**	**328**	**735**	**466**	**1080**
MERCURY	mg/Kg	2.3	12	0.71	0.38	0.21	0.1	0.1	0.06	0.09	0.1
NICKEL	mg/Kg	150	0	21.4	47.4	29.8	27.1	52.1	24.8	29.4	32.7
POTASSIUM	mg/Kg		0	2320	2400	2780	3850	2140	2740	2780	3410
SELENIUM	mg/Kg	39	0	0.25 U	0.92 J	0.56 U	0.27 U	0.9 U	0.21 U	0.21 U	0.26 U
SILVER	mg/Kg	39	0	0.08 U	0.11 U	0.17 U	0.08 U	0.27 U	0.06 U	0.06 U	0.08 U
SODIUM	mg/Kg		0	70.3 J	97.1	87.4 J	87 J	73.8 J	61.6 J	53.1 J	67.5 J
THALLIUM	mg/Kg		0	0.11 U	0.31 J	0.24 U	0.12 U	0.38 U	0.09 U	0.09 U	0.11 U
VANADIUM	mg/Kg	0.55	40	**29.6**	**24.5**	**30.7**	**41.9**	**22.5**	**31.3**	**27.1**	**33.8**
ZINC	mg/Kg	2300	0	136	237	101	104	114	76	80	114

Notes:
(1) Adjusted USEPA Regionial Screening Levels (RSL) Residential Soil. Dec 200
Carcinogenic compounds set at 1 X EPA value, non-carcinogenic compounds set at 0.1 X EPA value
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table
(3) Number of Exceedances represents the total for the Full and Limited Suite Tables
(4) A bolded and outlined cell indicates a concentration that exceeded the USEPA RSL Residential 1/10th Levels

U = compound was not detected
J = the reported value is an estimated concentration
UJ = the compound was not detected; the associated reporting limit is approximate

Table A-3B
Radius Full Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-R5-01	S45-R5-03	S45-R5-04	S45-R5-04D	S45-R5-05
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-R5-01	S45-R5-03	S45-R5-04	S45-R5-04D	S45-R5-05
Sample Data				3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010
Sample Type				SA	SA	SA	DU	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Semivolatile Organic Compounds								
1,2,4-Trichlorobenzene	ug/Kg	22000	0	100 U	100 U	98 U	100 U	97 U
1,2-Dichlorobenzene	ug/Kg	190000	0	110 U	110 U	110 U	110 U	100 U
1,3-Dichlorobenzene	ug/Kg		0	98 U	100 U	94 U	97 U	93 U
1,4-Dichlorobenzene	ug/Kg	2400	0	110 U	110 U	100 U	110 U	100 U
2,2'-Oxybis(1-chloropropane)	ug/Kg		0	110 U	120 U	110 U	110 U	110 U
2,4,5-Trichlorophenol	ug/Kg	610000	0	200 U	200 U	190 U	190 U	180 U
2,4,6-Trichlorophenol	ug/Kg	44000	0	200 U	200 U	190 U	190 U	180 U
2,4-Dichlorophenol	ug/Kg	18000	0	190 U	190 U	180 U	190 U	180 U
2,4-Dimethylphenol	ug/Kg	120000	0	210 U	210 U	200 U	200 U	200 U
2,4-Dinitrophenol	ug/Kg	12000	0	470 U	490 U	450 U	470 U	450 U
2,4-Dinitrotoluene	ug/Kg	1600	0	110 U	110 U	100 U	110 U	100 U
2,6-Dinitrotoluene	ug/Kg	6100	0	99 U	100 U	95 U	99 U	95 U
2-Chloronaphthalene	ug/Kg	630000	0	110 U	110 U	100 U	110 U	100 U
2-Chlorophenol	ug/Kg	39000	0	210 U	210 U	200 U	200 U	200 U
2-Methylnaphthalene	ug/Kg	31000	0	120 U	120 U	110 U	110 U	110 U
2-Methylphenol	ug/Kg	310000	0	250 U	260 U	240 U	250 U	240 U
2-Nitroaniline	ug/Kg	61000	0	94 U	97 U	90 U	94 U	90 U
2-Nitrophenol	ug/Kg		0	210 U	220 U	200 U	210 U	200 U
3&4-Methylphenol	ug/Kg		0	240 U	240 U	220 U	230 U	220 U
3,3'-Dichlorobenzidine	ug/Kg	1100	0	140 U	150 U	140 U	140 U	140 U
3-Nitroaniline	ug/Kg		0	120 U	120 U	110 U	120 U	110 U
4,6-Dinitro-2-Methylphenol	ug/Kg	610	0	420 U	440 U	410 U	420 U	400 U
4-Bromophenyl-phenylether	ug/Kg		0	110 U	110 U	100 U	110 U	100 U
4-Chloro-3-Methylphenol	ug/Kg	610000	0	210 U	220 U	200 U	210 U	200 U
4-Chloroaniline	ug/Kg	2400	0	150 U	150 U	140 U	150 U	140 U
4-Chlorophenyl-phenylether	ug/Kg		0	98 U	100 U	94 U	97 U	93 U
4-Nitroaniline	ug/Kg	24000	0	170 U	170 U	160 U	170 U	160 U
4-Nitrophenol	ug/Kg		0	390 U	400 U	370 U	380 U	370 U
Acenaphthene	ug/Kg	340000	0	82 U	84 U	78 U	81 U	78 U
Acenaphthylene	ug/Kg		0	88 U	91 U	84 U	87 U	84 U
Anthracene	ug/Kg	1700000	0	100 U	110 U	100 U	100 U	100 U
Benzo(a)anthracene	ug/Kg	150	0	110 U	110 U	100 U	110 U	100 U
Benzo(a)pyrene	ug/Kg	15	0	120 U	120 U	110 U	120 U	110 U
Benzo(b)fluoranthene	ug/Kg	150	0	170 U	170 U	160 U	170 U	160 U
Benzo(g,h,i)perylene	ug/Kg		0	130 U	130 U	120 U	130 U	120 U
Benzo(k)fluoranthene	ug/Kg	1500	0	100 U	110 U	100 U	100 U	99 U
Bis(2-Chloroethoxy)methane	ug/Kg	18000	0	120 U	120 U	120 U	120 U	120 U
Bis(2-Chloroethyl)ether	ug/Kg	210	0	100 U	100 U	98 U	100 U	97 U
bis(2-Ethylhexyl)phthalate	ug/Kg	35000	0	120 U	130 U	120 U	120 U	120 U
Butylbenzylphthalate	ug/Kg	260000	0	120 U	120 U	110 U	120 U	110 U
Carbazole	ug/Kg		0	140 U	140 U	130 U	140 U	130 U
Chrysene	ug/Kg	15000	0	120 U	120 U	110 U	120 U	110 U
Dibenzo(a,h)anthracene	ug/Kg	15	0	160 U	170 U	150 U	160 U	150 U
Dibenzofuran	ug/Kg	7800	0	99 U	100 U	95 U	99 U	95 U
Diethylphthalate	ug/Kg	4900000	0	100 U	100 U	96 U	100 U	96 U
Dimethyl Phthalate	ug/Kg		0	98 U	100 U	94 U	97 U	93 U
Di-n-butylphthalate	ug/Kg	610000	0	130 U	130 U	120 U	130 U	120 U
Di-n-octylphthalate	ug/Kg		0	260 U	270 U	250 U	260 U	250 U
Fluoranthene	ug/Kg	230000	0	130 U	140 U	130 U	130 U	130 U
Fluorene	ug/Kg	230000	0	100 U	100 U	98 U	100 U	97 U
Hexachlorobenzene	ug/Kg	300	0	100 U	110 U	99 U	100 U	98 U

Table A-3B
Radius Full Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-R5-01	S45-R5-03	S45-R5-04	S45-R5-04D	S45-R5-05
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-R5-01	S45-R5-03	S45-R5-04	S45-R5-04D	S45-R5-05
Sample Data				3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010
Sample Type				SA	SA	SA	DU	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Hexachlorobutadiene	ug/Kg	6200	0	100 U	110 U	100 U	100 U	99 U
Hexachlorocyclopentadiene	ug/Kg	37000	0	100 U	110 U	99 U	100 U	98 U
Hexachloroethane	ug/Kg	35000	0	120 U	120 U	120 U	120 U	120 U
Indeno(1,2,3-cd)pyrene	ug/Kg	150	0	150 U	160 U	150 U	150 U	150 U
Isophorone	ug/Kg	510000	0	94 U	97 U	90 U	94 U	90 U
Naphthalene	ug/Kg	3600	0	110 U	110 U	100 U	110 U	100 U
Nitrobenzene	ug/Kg	4800	0	110 U	120 U	110 U	110 U	110 U
N-Nitroso-di-n-propylamine	ug/Kg	69	0	100 U	110 U	100 U	100 U	99 U
N-Nitrosodiphenylamine	ug/Kg	99000	0	280 U	280 U	260 U	270 U	260 U
Pentachlorophenol	ug/Kg	3000	0	300 U	310 U	280 U	300 U	280 U
Phenanthrene	ug/Kg		0	100 U	110 U	100 U	100 U	99 U
Phenol	ug/Kg	1800000	0	200 U	200 U	190 U	190 U	190 U
Pyrene	ug/Kg	170000	0	130 U	130 U	120 U	130 U	120 U
Explosives								
1,3,5-trinitrobenzene	ug/Kg	220000	0	8.5 U	8 U	7.4 U	7.5 U	7.3 U
1,3-dinitrobenzene	ug/Kg	610	0	7.9 U	7.4 U	6.8 U	6.9 U	6.7 U
2,4,6-trinitrotoluene	ug/Kg	19000	0	8.5 U	8 U	7.4 U	7.5 U	470
2,4-dinitrotoluene	ug/Kg	1600	0	19 U	18 U	16 U	17 U	840
2,6-dinitrotoluene	ug/Kg	6100	0	34 U	32 U	30 U	30 U	29 U
2-AM-DNT	ug/Kg	15000	0	27 U	25 U	23 U	23 U	23 U
2-nitrotoluene	ug/Kg	2900	0	15 U	14 U	13 U	13 U	13 U
3,5-Dinitroaniline	ug/Kg		0	4.5 U	4.2 U	3.9 U	3.9 U	3.8 U
3-nitrotoluene	ug/Kg	610	0	10 U	9.5 U	8.7 U	8.8 U	8.6 U
4-AM-DNT	ug/Kg	15000	0	22 U	20 U	19 U	19 U	18 U
4-nitrotoluene	ug/Kg	30000	0	34 U	32 U	30 U	30 U	29 U
HMX	ug/Kg	380000	0	11 U	10 U	9.5 U	9.6 U	9.3 U
nitrobenzene	ug/Kg	4800	0	28 U	26 U	24 U	24 U	24 U
NITROGLYCERIN	ug/Kg	610	0	160 U	150 U	140 U	140 U	130 U
PETN	ug/Kg		0	300 U	290 U	260 U	270 U	260 U
RDX	ug/Kg	5500	0	8.6 U	8.2 U	7.5 U	7.6 U	7.4 U
TETRYL	ug/Kg	24000	0	6.9 U	6.5 U	6 U	6 U	5.9 U
Herbicides								
2,4,5-T	ug/Kg	0.061	0	20 U	21 U	20 U	19 U	18 U
2,4-D	ug/Kg	0.069	0	40 U	43 U	41 U	38 U	37 U
2,4-DB	ug/Kg	0.049	0	29 U	31 U	30 U	28 U	27 U
Dalapon	ug/Kg	0.18	0	10 U	11 U	10 U	9.8 U	9.5 U
Dicamba	ug/Kg	0.18	0	14 U	15 U	14 U	13 U	13 U
Dichloroprop	ug/Kg		0	23 U	25 U	24 U	22 U	22 U
Dinoseb	ug/Kg	0.0061	0	3.2 U	3.4 U	3.3 U	3 U	3 U
MCPA	ug/Kg	0.0031	0	2900 U	3100 U	3000 U	2800 U	2700 U
MCPP	ug/Kg	0.0061	0	2800 U	2900 U	2800 U	2600 U	2500 U
Silvex	ug/Kg	0.049	0	16 U	17 U	16 U	15 U	14 U
Pesticides								
4,4'-DDD	ug/Kg	2000	0	0.24 U	0.28 U	0.24 U	0.26 U	0.24 U
4,4'-DDE	ug/Kg	1400	0	1.6 J	1.7 J	0.23 U	0.24 U	0.85 J
4,4'-DDT	ug/Kg	1700	0	0.38 U	1.2 J	0.37 U	0.4 U	0.37 U
Aldrin	ug/Kg	29	0	0.34 U	0.38 U	0.33 U	0.36 U	0.34 U
alpha-BHC	ug/Kg	77	0	0.42 U	0.47 U	0.4 U	0.44 U	0.41 U
alpha-Chlordane	ug/Kg		0	0.26 U	0.29 U	0.25 U	0.27 U	0.25 U
beta-BHC	ug/Kg	270	0	0.4 U	0.45 U	0.39 U	0.42 U	0.4 U
delta-BHC	ug/Kg		0	0.39 U	0.44 U	0.38 U	0.41 U	0.38 U
Dieldrin	ug/Kg	30	0	0.96 J	1.1 J	0.26 U	0.28 U	0.79 JJ

Table A-3B
Radius Full Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-R5-01	S45-R5-03	S45-R5-04	S45-R5-04D	S45-R5-05
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-R5-01	S45-R5-03	S45-R5-04	S45-R5-04D	S45-R5-05
Sample Data				3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010
Sample Type				SA	SA	SA	DU	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Endosulfan I	ug/Kg		0	23 J	1.3 JJ	0.28 U	55 J	0.29 U
Endosulfan II	ug/Kg		0	0.42 U	0.47 U	0.4 U	0.44 U	0.41 U
Endosulfan sulfate	ug/Kg		0	0.71 U	0.8 U	0.69 U	0.74 U	0.69 U
Endrin	ug/Kg	1800	0	1 U	1.2 U	1 U	1.1 U	1 U
Endrin Aldehyde	ug/Kg		0	0.6 U	0.68 U	0.58 U	0.63 U	0.59 U
Endrin Ketone	ug/Kg		0	0.49 U	0.55 U	0.48 U	0.51 U	0.48 U
gamma BHC	ug/Kg	520	0	0.33 U	0.37 U	0.32 U	0.35 U	0.32 U
gamma-Chlordane	ug/Kg		0	0.28 U	0.32 U	0.27 U	0.3 U	0.28 U
Heptachlor	ug/Kg	110	0	0.36 U	0.4 U	0.34 U	0.37 U	0.35 U
Heptachlor Epoxide	ug/Kg	53	0	0.27 U	0.3 U	0.26 U	0.28 U	0.26 U
Methoxychlor	ug/Kg	31000	0	0.61 U	0.69 U	0.6 U	0.64 U	0.6 U
Toxaphene	ug/Kg	440	0	8.6 U	9.6 U	8.3 U	9 U	8.4 U
PCBs								
Aroclor-1016	ug/Kg	390	0	7.4 U	8.3 U	7.1 U	7.7 U	7.2 U
Aroclor-1221	ug/Kg	140	0	17 U	19 U	17 U	18 U	17 U
Aroclor-1232	ug/Kg	140	0	11 U	13 U	11 U	12 U	11 U
Aroclor-1242	ug/Kg	220	0	7.1 U	8 U	6.9 U	7.4 U	6.9 U
Aroclor-1248	ug/Kg	220	0	7.5 U	8.4 U	7.3 U	7.8 U	7.3 U
Aroclor-1254	ug/Kg	220	0	5.8 U	6.5 U	5.6 U	6 U	5.6 U
Aroclor-1260	ug/Kg	220	0	7.4 U	8.3 U	7.1 U	7.7 U	7.2 U
Metals								
ALUMINUM	mg/Kg	7700	39	**17200**	**18900**	**18100**	**18800**	**18700**
ANTIMONY	mg/Kg	3.1	0	0.14 J	0.15 U	0.09 U	0.12 U	0.11 U
ARSENIC	mg/Kg	0.39	40	**5**	**5.4**	**5.5**	**7**	**5.2**
BARIUM	mg/Kg	1500	0	152	177	106	114	165
BERYLLIUM	mg/Kg	16	0	0.74	0.85	0.9	0.95	0.79
CADMIUM	mg/Kg	7	9	6	6.4	0.33 J	0.46 J	5.1
CALCIUM	mg/Kg		0	31200	20600	3290	3490	29300
CHROMIUM	mg/Kg	12000	0	26.1	29.7	26.4	28	26.7
COBALT	mg/Kg	2.3	40	**11.1**	**13.4**	**11**	**16.4**	**10**
COPPER	mg/Kg	310	9	221	**350**	31.5	33.6	219
IRON	mg/Kg	5500	40	**26000**	**25400**	**25800**	**30400**	**25400**
LEAD	mg/Kg	40	23	**86.2**	**60**	11.9	15.4	**42.9**
MAGNESIUM	mg/Kg		0	7210	7260	4980	5330	7140
MANGANESE	mg/Kg	180	40	**583**	**662**	**336**	**787**	**489**
MERCURY	mg/Kg	2.3	12	**3.7**	**4.7**	0.03 J	0.04 J	1.3
NICKEL	mg/Kg	150	0	38.1	40.1	43	56	33.4
POTASSIUM	mg/Kg		0	2780	3060	2670	2960	3220
SELENIUM	mg/Kg	39	0	0.23 U	0.33 U	0.19 U	0.26 U	0.24 U
SILVER	mg/Kg	39	0	0.71 J	2.6	0.06 U	0.08 U	0.46 J
SODIUM	mg/Kg		0	135	103	65.8 J	70.2 J	127
THALLIUM	mg/Kg		0	0.1 U	0.14 U	0.08 U	0.11 U	0.1 U
VANADIUM	mg/Kg	0.55	40	**26.7**	**31.8**	**29.7**	**31.2**	**30.1**
ZINC	mg/Kg	2300	0	284	304	80.2	83.9	360

Notes:
(1) Adjusted USEPA Regionial Screening Levels (RSL) Residential Soil. Dec 2009
Carcinogenic compounds set at 1 X EPA value, non-carcinogenic compounds set at 0.1 X EPA value.
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table.
(3) Number of Exceedances represents the total for the Full and Limited Suite Tables.
(4) A bolded and outlined cell indicates a concentration that exceeded the USEPA RSL Residential 1/10th Levels

U = compound was not detected
J = the reported value is an estimated concentration
UJ = the compound was not detected; the associated reporting limit is approximate

APPENDIX B

SOIL SAMPLE RESULTS COMPARED TO RSLS FOR RESIDENTIAL SOIL

Table B-1A
OD Hill Limited Suite Samples Compared to NYS Unrestricted Use SCO
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-0DH-2-01	S45-0DH-3-01	S45-0DH-5-01	S45-0DH-7-01	S45-0DH-9-01	S45-0DH-10-01
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-0DH-2-01	S45-0DH-3-01	S45-0DH-5-01	S45-0DH-7-01	S45-0DH-9-01	S45-0DH-10-01
Sample Data				3/12/2010	3/12/2010		3/12/2010	3/12/2010	3/12/2010
Sample Type				SA	SA	SA	SA	SA	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Explosives									
1,3,5-trinitrobenzene	ug/Kg		0	79 J	49 J	57 JJ	65 J	68 J	55 J
1,3-dinitrobenzene	ug/Kg		0	6 U	6.1 U	6.8 U	7.7 U	7.1 U	7.7 U
2,4,6-trinitrotoluene	ug/Kg		0	30 J	36 J	40 JJ	46 J	47 J	58 J
2,4-dinitrotoluene	ug/Kg		0	98 J	120	100 J	90 J	110 J	110 J
2,6-dinitrotoluene	ug/Kg		0	26 U	26 U	29 U	34 U	31 U	34 U
2-AM-DNT	ug/Kg		0	120	140	160	180	220	130
2-nitrotoluene	ug/Kg		0	12 U	12 U	13 U	15 U	14 U	15 U
3,5-Dinitroaniline	ug/Kg		0	3.4 U	100 U	3.8 U	120 U	110 U	120 U
3-nitrotoluene	ug/Kg		0	7.7 U	7.8 U	8.6 U	9.8 U	9 U	9.8 U
4-AM-DNT	ug/Kg		0	120	140	160	160	220	120 J
4-nitrotoluene	ug/Kg		0	26 U	26 U	29 U	34 U	31 U	34 U
HMX	ug/Kg		0	100	120	120 J	150	190	87 J
nitrobenzene	ug/Kg		0	21 U	22 U	24 U	27 U	25 U	27 U
NITROGLYCERIN	ug/Kg		0	120 U	120 U	140 U	150 U	140 U	150 U
PETN	ug/Kg		0	230 U	240 U	260 U	300 U	270 U	300 U
RDX	ug/Kg		0	180	220	210	310	420	190
TETRYL	ug/Kg		0	5.3 U	5.3 U	5.9 U	6.7 U	6.2 U	6.7 U
Metals									
ALUMINUM	mg/Kg		0	17500	17200	19400	22200	20300	18000
ANTIMONY	mg/Kg		0	0.19 U	0.2 U	0.2 U	0.28 J	0.22 U	0.13 U
ARSENIC	mg/Kg	13	0	12.4	11	5.6	4.8	5.5	5
BARIUM	mg/Kg	350	0	190	179	194	174	266	195
BERYLLIUM	mg/Kg	7.2	0	0.78	0.77	0.86	0.82	0.88	0.8
CADMIUM	mg/Kg	2.5	21	**8.7**	**8.6**	**7.5**	**8**	**8**	**8.1**
CALCIUM	mg/Kg		0	26600	43900	23400	24500	22800	24400
CHROMIUM	mg/Kg	30	9	29.9	29.8	29.7	**40.8**	**30.8**	28.1
COBALT	mg/Kg		0	12	12.9	12.3	10.6	12.4	13.5
COPPER	mg/Kg	50	21	**433**	**477**	**411**	**648**	**490**	**448**
IRON	mg/Kg		0	34200	29600	27200	25900	27700	25800
LEAD	mg/Kg	63	5	56.3	59.9	61.9	59.3	62.5	62.6
MAGNESIUM	mg/Kg		0	6720	6410	7010	6420	7090	6780
MANGANESE	mg/Kg	1600	0	610	642	618	557	601	742
MERCURY	mg/Kg	0.18	21	**4.3**	**4.3**	**4.3**	**6**	**3.6**	**3.8**
NICKEL	mg/Kg	30	21	**41.2**	**39.5**	**41.2**	**36.1**	**40.9**	**39.5**
POTASSIUM	mg/Kg		0	2850	2850	3410	3200	3440	2760
SELENIUM	mg/Kg	3.9	0	0.42 U	0.45 U	0.44 U	0.23 U	0.73 J	0.29 U
SILVER	mg/Kg	2	20	**3.4**	**4**	**3.2**	**3.8**	**4**	**3.6**
SODIUM	mg/Kg		0	110	110	116	120	135	106
THALLIUM	mg/Kg		0	0.18 U	0.19 U	0.19 U	0.1 U	0.2 U	0.12 U
VANADIUM	mg/Kg		0	28.5	28.7	31.7	28.4	32.5	29.2
ZINC	mg/Kg	109	21	**327**	**368**	**337**	**433**	**357**	**359**

Notes:
(1) NYSDEC's Unrestricted Use Soil Cleanup Objective, 6 NYCRR Part 375-6.8(a)
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table
(3) Number of Exceedances represents the total for the Full and Limited Suite Tables
(4) A bolded and outlined cell indicates a concentration that exceeded the NYS Unrestricted Use SC(

U = compound was not detected
J = the reported value is an estimated concentration
UJ = the compound was not detected; the associated reporting limit is approximate

Table B-1A
OD Hill Limited Suite Samples Compared to NYS Unrestricted Use SCO
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-0DH-12-01	S45-0DH-13-01	S45-0DH-15-01	S45-0DH-16-01	S45-0DH-18-01	S45-0DH-20-01
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-0DH-12-01	S45-0DH-13-01	S45-0DH-15-01	S45-0DH-16-01	S45-0DH-18-01	S45-0DH-20-01
Sample Data				3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010
Sample Type				SA	SA	SA	SA	SA	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Explosives									
1,3,5-trinitrobenzene	ug/Kg		0	70 J	51 J	54 J	53 J	45 J	42 J
1,3-dinitrobenzene	ug/Kg		0	7 U	7.2 U	7.1 U	6.5 U	7.4 U	6.5 U
2,4,6-trinitrotoluene	ug/Kg		0	48 J	40 J	42 J	41 J	62 J	51 J
2,4-dinitrotoluene	ug/Kg		0	100 J	110 J	220	110	1100	220
2,6-dinitrotoluene	ug/Kg		0	30 U	31 U	31 U	28 U	32 U	28 U
2-AM-DNT	ug/Kg		0	190	120	150	160	160	130
2-nitrotoluene	ug/Kg		0	13 U	14 U	14 U	12 U	14 U	13 U
3,5-Dinitroaniline	ug/Kg		0	4 U	120 U	110 U	3.7 U	120 U	100 U
3-nitrotoluene	ug/Kg		0	8.9 U	9.2 U	9 U	8.2 U	9.4 U	8.3 U
4-AM-DNT	ug/Kg		0	150	120	160	180	120	120
4-nitrotoluene	ug/Kg		0	30 U	31 U	31 U	28 U	32 U	28 U
HMX	ug/Kg		0	100 J	79 J	98 J	100 J	87 J	68 J
nitrobenzene	ug/Kg		0	25 U	26 U	25 U	23 U	26 U	23 U
NITROGLYCERIN	ug/Kg		0	140 U	140 U	140 U	130 U	150 U	130 U
PETN	ug/Kg		0	270 U	280 U	270 U	250 U	280 U	250 U
RDX	ug/Kg		0	290	130	180	230	160	140
TETRYL	ug/Kg		0	6.1 U	6.3 U	6.2 U	5.6 U	6.5 U	5.7 U
Metals									
ALUMINUM	mg/Kg		0	16500	19000	19400	17100	14400	18000
ANTIMONY	mg/Kg		0	0.2 U	0.5 J	0.19 U	0.18 U	0.36 J	0.24 J
ARSENIC	mg/Kg	13	0	6.2	4.7	4.7	4.9	4	5.3
BARIUM	mg/Kg	350	0	189	171	222	161	138	150
BERYLLIUM	mg/Kg	7.2	0	0.73	0.85	0.83	0.78	0.65	0.79
CADMIUM	mg/Kg	2.5	21	**6.3**	**7.8**	**8.6**	**5**	**4.8**	**7.4**
CALCIUM	mg/Kg		0	19400	31400	25300	22200	27600	22900
CHROMIUM	mg/Kg	30	9	**30.1**	27.8	**32.4**	25.9	22	30
COBALT	mg/Kg		0	10.8	11.2	12.3	12.6	9	12.7
COPPER	mg/Kg	50	21	**314**	**515**	**537**	**209**	**323**	**434**
IRON	mg/Kg		0	27700	26300	27200	24200	21800	27900
LEAD	mg/Kg	63	5	43.1	51.7	**67.8**	38.4	41.5	50.8
MAGNESIUM	mg/Kg		0	5860	7710	6760	6260	6830	7310
MANGANESE	mg/Kg	1600	0	655	590	627	653	458	580
MERCURY	mg/Kg	0.18	21	**3.7**	**1.6**	**2**	**1.4**	**3.4**	**3.5**
NICKEL	mg/Kg	30	21	**37.8**	**36.6**	**41.8**	**35**	**31.4**	**41.3**
POTASSIUM	mg/Kg		0	2400	3320	2960	2550	2310	2580
SELENIUM	mg/Kg	3.9	0	0.43 U	0.24 U	0.42 U	0.4 U	0.21 U	0.35 U
SILVER	mg/Kg	2	20	**2.1** J	**3.6**	**3.5**	1.2 J	**2.6**	**3.8**
SODIUM	mg/Kg		0	103	128	125	115	116	107
THALLIUM	mg/Kg		0	0.18 U	0.1 J	0.18 U	0.17 U	0.2 J	0.15 U
VANADIUM	mg/Kg		0	25.9	31.7	29.6	27.6	23.7	28.7
ZINC	mg/Kg	109	21	**225**	**314**	**321**	**291**	**290**	**299**

Notes:
(1) NYSDEC's Unrestricted Use Soil Cleanup Objective, 6 NYCRR Part 375-6.8(a)
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table
(3) Number of Exceedances represents the total for the Full and Limited Suite Tables
(4) A bolded and outlined cell indicates a concentration that exceeded the NYS Unrestricted Use SC(

U = compound was not detected
J = the reported value is an estimated concentration
UJ = the compound was not detected; the associated reporting limit is approximate

Table B-1B
OD Hill Full Suite Samples Compared to NYS Unrestricted Use SCO
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-0DH-1-01	S45-0DH-4-01	S45-0DH-6-01	S45-0DH-8-01	S45-0DH-11-01	S45-0DH-14-01	S45-0DH-17-01	S45-0DH-19-01	S45-0DH-19-01
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-0DH-1-01	S45-0DH-4-01	S45-0DH-6-01	S45-0DH-8-01	S45-0DH-11-01	S45-0DH-14-01	S45-0DH-17-01	S45-0DH-19-01	S45-0DH-19-01D
Sample Data				3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010
Sample Type				SA	SA	SA	SA	SA	SA	SA	SA	DU
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Semivolatile Organic Compounds												
1,2,4-Trichlorobenzene	ug/Kg		0	93 U	93 U	98 U	93 U	78 U	91 U	89 U	94 U	87 U
1,2-Dichlorobenzene	ug/Kg		0	100 U	100 U	100 U	100 U	85 U	99 U	97 U	100 U	94 U
1,3-Dichlorobenzene	ug/Kg		0	90 U	89 U	94 U	89 U	76 U	88 U	86 U	91 U	84 U
1,4-Dichlorobenzene	ug/Kg		0	99 U	98 U	100 U	98 U	83 U	97 U	94 U	100 U	92 U
2,2'-Oxybis(1-chloropropane)	ug/Kg		0	100 U	100 U	110 U	100 U	86 U	100 U	98 U	100 U	96 U
2,4,5-Trichlorophenol	ug/Kg		0	180 U	180 U	190 U	180 U	150 U	170 U	170 U	180 U	170 U
2,4,6-Trichlorophenol	ug/Kg		0	180 U	180 U	190 U	180 U	150 U	170 U	170 U	180 U	170 U
2,4-Dichlorophenol	ug/Kg		0	170 U	170 U	180 U	170 U	140 U	170 U	160 U	180 U	160 U
2,4-Dimethylphenol	ug/Kg		0	190 U	190 U	200 U	190 U	160 U	190 U	180 U	190 U	180 U
2,4-Dinitrophenol	ug/Kg		0	430 U	430 U	450 U	430 U	360 U	420 U	410 U	440 U	400 U
2,4-Dinitrotoluene	ug/Kg		0	98 U	97 U	100 U	97 U	82 U	96 U	260 J	280 J	91 U
2,6-Dinitrotoluene	ug/Kg		0	91 U	90 U	95 U	90 U	76 U	89 U	87 U	92 U	85 U
2-Chloronaphthalene	ug/Kg		0	100 U	100 U	100 U	99 U	84 U	98 U	96 U	100 U	93 U
2-Chlorophenol	ug/Kg		0	190 U	190 U	200 U	190 U	160 U	180 U	180 U	190 U	180 U
2-Methylnaphthalene	ug/Kg		0	100 U	100 U	110 U	100 U	89 U	100 U	100 U	110 U	99 U
2-Methylphenol	ug/Kg	330	0	230 U	230 U	240 U	230 U	190 U	220 U	220 U	230 U	210 U
2-Nitroaniline	ug/Kg		0	86 U	86 U	90 U	86 U	73 U	84 U	82 U	88 U	80 U
2-Nitrophenol	ug/Kg		0	190 U	190 U	200 U	190 U	160 U	190 U	180 U	190 U	180 U
3&4-Methylphenol	ug/Kg		0	210 U	210 U	220 U	210 U	180 U	210 U	200 U	220 U	200 U
3,3'-Dichlorobenzidine	ug/Kg		0	130 U	130 U	140 U	130 U	110 U	130 U	120 U	130 U	120 U
3-Nitroaniline	ug/Kg		0	110 U	110 U	110 U	110 U	91 U	100 U	100 U	110 U	100 U
4,6-Dinitro-2-Methylpheno	ug/Kg		0	390 U	390 U	400 U	380 U	330 U	380 U	370 U	390 U	360 U
4-Bromophenyl-phenylether	ug/Kg		0	98 U	97 U	100 U	97 U	82 U	96 U	93 U	99 U	91 U
4-Chloro-3-Methylpheno	ug/Kg		0	190 U	190 U	200 U	190 U	160 U	190 U	180 U	190 U	180 U
4-Chloroaniline	ug/Kg		0	140 U	140 U	140 U	140 U	120 U	130 U	130 U	140 U	130 U
4-Chlorophenyl-phenylether	ug/Kg		0	90 U	89 U	94 U	89 U	76 U	88 U	86 U	91 U	84 U
4-Nitroaniline	ug/Kg		0	150 U	150 U	160 U	150 U	130 U	150 U	150 U	160 U	140 U
4-Nitrophenol	ug/Kg		0	360 U	350 U	370 U	350 U	300 U	350 U	340 U	360 U	330 U
Acenaphthene	ug/Kg	20000	0	75 U	74 U	78 U	74 U	63 U	73 U	71 U	76 U	70 U
Acenaphthylene	ug/Kg	100000	0	80 U	80 U	84 U	80 U	68 U	79 U	77 U	82 U	75 U
Anthracene	ug/Kg	100000	0	96 U	96 U	100 U	96 U	81 U	95 U	92 U	98 U	90 U
Benzo(a)anthracene	ug/Kg	1000	0	99 U	98 U	100 U	98 U	83 U	97 U	94 U	100 U	92 U
Benzo(a)pyrene	ug/Kg	1000	0	110 U	110 U	110 U	110 U	90 U	100 U	100 U	110 U	100 U
Benzo(b)fluoranthene	ug/Kg	1000	0	150 U	150 U	160 U	150 U	130 U	150 U	150 U	160 U	140 U
Benzo(g,h,i)perylene	ug/Kg	100000	0	120 U	120 U	120 U	120 U	100 U	120 U	110 U	120 U	110 U
Benzo(k)fluoranthene	ug/Kg	800	0	95 U	95 U	100 U	95 U	80 U	94 U	91 U	97 U	89 U
Bis(2-Chloroethoxy)methane	ug/Kg		0	110 U	110 U	120 U	110 U	93 U	110 U	100 U	110 U	100 U
Bis(2-Chloroethyl)ether	ug/Kg		0	93 U	93 U	98 U	93 U	78 U	91 U	89 U	94 U	87 U
bis(2-Ethylhexyl)phthalate	ug/Kg		0	110 U	110 U	120 U	110 U	95 U	110 U	110 U	110 U	100 U
Butylbenzylphthalate	ug/Kg		0	110 U	110 U	110 U	110 U	90 U	100 U	100 U	110 U	100 U
Carbazole	ug/Kg		0	130 U	130 U	130 U	130 U	110 U	120 U	120 U	130 U	120 U
Chrysene	ug/Kg	1000	0	110 U	110 U	110 U	130 J	92 U	110 U	100 U	110 U	100 U
Dibenzo(a,h)anthracene	ug/Kg	330	0	150 U	150 U	150 U	150 U	120 U	140 U	140 U	150 U	140 U
Dibenzofuran	ug/Kg	7000	0	91 U	90 U	95 U	90 U	76 U	89 U	87 U	92 U	85 U
Diethylphthalate	ug/Kg		0	92 U	92 U	96 U	91 U	78 U	90 U	88 U	93 U	86 U
Dimethyl Phthalate	ug/Kg		0	90 U	89 U	94 U	89 U	76 U	88 U	86 U	91 U	84 U
Di-n-butylphthalate	ug/Kg		0	120 U	120 U	120 U	120 U	98 U	110 U	330 J	120 U	110 U
Di-n-octylphthalate	ug/Kg		0	240 U	240 U	250 U	240 U	200 U	240 U	230 U	250 U	230 U
Fluoranthene	ug/Kg	100000	0	120 U	120 U	130 U	120 U	100 U	120 U	120 U	120 U	110 U
Fluorene	ug/Kg	30000	0	93 U	93 U	98 U	93 U	78 U	91 U	89 U	94 U	87 U
Hexachlorobenzene	ug/Kg	330	0	94 U	94 U	99 U	94 U	79 U	92 U	90 U	96 U	88 U
Hexachlorobutadiene	ug/Kg		0	95 U	95 U	100 U	95 U	80 U	94 U	91 U	97 U	89 U
Hexachlorocyclopentadiene	ug/Kg		0	94 U	94 U	99 U	94 U	79 U	92 U	90 U	96 U	88 U

Table B-1B
OD Hill Full Suite Samples Compared to NYS Unrestricted Use SCO
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-0DH-1-01	S45-0DH-4-01	S45-0DH-6-01	S45-0DH-8-01	S45-0DH-11-01	S45-0DH-14-01	S45-0DH-17-01	S45-0DH-19-01	S45-0DH-19-01
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-0DH-1-01	S45-0DH-4-01	S45-0DH-6-01	S45-0DH-8-01	S45-0DH-11-01	S45-0DH-14-01	S45-0DH-17-01	S45-0DH-19-01	S45-0DH-19-01D
Sample Data				3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010
Sample Type				SA	SA	SA	SA	SA	SA	SA	SA	DU
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Hexachloroethane	ug/Kg		0	110 U	110 U	120 U	110 U	93 U	110 U	100 U	110 U	100 U
Indeno(1,2,3-cd)pyrene	ug/Kg	500	0	140 U	140 U	150 U	140 U	120 U	140 U	130 U	140 U	130 U
Isophorone	ug/Kg		0	86 U	86 U	90 U	86 U	73 U	84 U	82 U	88 U	80 U
Naphthalene	ug/Kg	12000	0	100 U	100 U	100 U	99 U	84 U	98 U	96 U	100 U	93 U
Nitrobenzene	ug/Kg		0	100 U	100 U	110 U	100 U	88 U	100 U	100 U	110 U	98 U
N-Nitroso-di-n-propylamine	ug/Kg		0	95 U	95 U	100 U	95 U	80 U	94 U	91 U	97 U	89 U
N-Nitrosodiphenylamine	ug/Kg		0	310 J	250 U	260 U	250 U	210 U	250 U	240 U	260 U	240 U
Pentachlorophenol	ug/Kg	800	0	270 U	270 U	280 U	270 U	230 U	270 U	260 U	280 U	250 U
Phenanthrene	ug/Kg	100000	0	95 U	95 U	100 U	95 U	80 U	94 U	91 U	97 U	89 U
Phenol	ug/Kg	330	0	180 U	180 U	190 U	180 U	150 U	180 U	170 U	180 U	170 U
Pyrene	ug/Kg	100000	0	120 U	120 U	120 U	120 U	98 U	110 U	110 U	120 U	110 U
Explosives												
1,3,5-trinitrobenzene	ug/Kg		0	51 J	62 J	46 J	60 J	84 J	71 J	64 J	56 J	60 J
1,3-dinitrobenzene	ug/Kg		0	6.7 U	7.5 U	7.2 U	5.7 U	7.3 U	7.8 U	6.7 U	7.3 U	6.5 U
2,4,6-trinitrotoluene	ug/Kg		0	45 J	45 J	39 J	51 J	46 J	55 J	42 J	59 J	50 J
2,4-dinitrotoluene	ug/Kg		0	150	83 J	64 J	86 J	88 J	92 J	96 J	150	100 J
2,6-dinitrotoluene	ug/Kg		0	29 U	33 U	31 U	25 U	32 U	34 U	29 U	32 U	28 U
2-AM-DNT	ug/Kg		0	140	160	99 J	180	170	200	140	190	220
2-nitrotoluene	ug/Kg		0	13 U	14 U	14 U	11 U	14 U	15 U	13 U	14 U	13 U
3,5-Dinitroaniline	ug/Kg		0	110 U	120 U	120 U	100 U	120 U	120 U	110 U	4.2 U	3.7 U
3-nitrotoluene	ug/Kg		0	8.5 U	9.6 U	9.1 U	7.2 U	9.4 U	9.9 U	8.6 U	9.3 U	8.3 U
4-AM-DNT	ug/Kg		0	120	150	94 J	160	150	190	140	180	220
4-nitrotoluene	ug/Kg		0	29 U	33 U	31 U	25 U	32 U	34 U	29 U	32 U	28 U
HMX	ug/Kg		0	72 J	100 J	62 J	150	160	190	100 J	180	92 J
nitrobenzene	ug/Kg		0	24 U	27 U	25 U	20 U	26 U	28 U	24 U	26 U	23 U
NITROGLYCERIN	ug/Kg		0	130 U	150 U	140 U	110 U	150 U	160 U	130 U	1500	130 U
PETN	ug/Kg		0	260 U	290 U	280 U	220 U	280 U	300 U	260 U	280 U	250 U
RDX	ug/Kg		0	170	210	120 J	340	440	350	180	540	200
TETRYL	ug/Kg		0	5.8 U	6.6 U	6.2 U	5 U	6.4 U	6.8 U	5.9 U	6.4 U	5.7 U
Herbicides												
2,4,5-T	ug/Kg		0	18 U	17 U	19 U	18 U	18 U	19 U	18 U	18 U	18 U
2,4-D	ug/Kg		0	36 U	34 U	38 U	36 U	37 U	38 U	36 U	36 U	35 U
2,4-DB	ug/Kg		0	26 U	25 U	28 U	26 U	27 U	28 U	26 U	26 U	26 U
Dalapon	ug/Kg		0	9.2 U	8.7 U	9.7 U	9.2 U	9.6 U	9.7 U	9.4 U	9.2 U	9.1 U
Dicamba	ug/Kg		0	12 U	12 U	13 U	12 U	13 U	13 U	12 U	12 U	12 U
Dichloroprop	ug/Kg		0	21 U	20 U	22 U	21 U	22 U	22 U	21 U	21 U	21 U
Dinoseb	ug/Kg		0	2.9 U	2.7 U	3 U	2.9 U	3 U	3 U	2.9 U	2.9 U	2.8 U
MCPA	ug/Kg		0	2600 U	2400 U	2700 U	2600 U	2700 U	2700 U	2600 U	2600 U	2600 U
MCPP	ug/Kg		0	2500 U	2300 U	2600 U	2500 U	2600 U	2600 U	2500 U	2500 U	2400 U
Silvex	ug/Kg		0	14 U	13 U	15 U	14 U	14 U	15 U	14 U	14 U	14 U
Pesticides												
4,4'-DDD	ug/Kg	3.3	0	0.23 U	0.22 U	0.24 U	0.23 U	0.23 U	0.23 U	0.2 U	1.4 J	0.22 U
4,4'-DDE	ug/Kg	3.3	0	0.82 J	0.21 U	0.89 J	1.1 J	1.3 J	1.2 J	0.95 J	2 J	1.6 J
4,4'-DDT	ug/Kg	3.3	0	0.87 J	0.34 U	0.88 J	1.1 J	1.3 JJ	1.2 J	1.1 J	1.9 JJ	1.2 J
Aldrin	ug/Kg	5	0	0.33 U	0.31 U	0.34 U	0.33 U	0.32 U	0.33 U	0.28 U	0.33 U	0.31 U
alpha-BHC	ug/Kg	20	0	0.4 U	0.38 U	0.41 U	0.4 U	0.39 U	0.4 U	0.34 U	0.4 U	0.38 U
alpha-Chlordane	ug/Kg	94	0	0.24 U	0.23 U	0.25 U	0.25 U	0.24 U	0.24 U	0.21 U	0.24 U	0.24 U
beta-BHC	ug/Kg	36	0	0.38 U	0.36 U	0.4 U	0.39 U	0.38 U	0.38 U	0.33 U	0.39 U	0.37 U
delta-BHC	ug/Kg	40	0	0.37 U	0.35 U	0.38 U	0.38 U	0.37 U	0.37 U	0.32 U	0.37 U	0.36 U
Dieldrin	ug/Kg	5	0	0.77 J	0.24 U	0.84 J	0.87 J	1 J	0.96 J	0.22 U	0.26 U	0.25 U
Endosulfan I	ug/Kg	2400	0	0.79 J	0.26 U	0.79 J	1 J	32 J	1 J	0.24 U	1.6 J	1.2 J
Endosulfan II	ug/Kg	2400	0	0.4 U	0.38 U	0.41 U	0.4 U	0.39 U	0.4 U	0.34 U	0.4 U	0.88 JJ
Endosulfan sulfate	ug/Kg	2400	0	0.68 U	0.64 U	0.7 U	0.68 U	0.67 U	0.68 U	0.58 U	0.68 U	0.65 U
Endrin	ug/Kg	14	0	0.99 U	0.94 U	1 U	1 U	0.98 U	0.99 U	0.84 U	1 U	0.95 U

Table B-1B
OD Hill Full Suite Samples Compared to NYS Unrestricted Use SCO
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-0DH-1-01	S45-0DH-4-01	S45-0DH-6-01	S45-0DH-8-01	S45-0DH-11-01	S45-0DH-14-01	S45-0DH-17-01	S45-0DH-19-01	S45-0DH-19-01
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-0DH-1-01	S45-0DH-4-01	S45-0DH-6-01	S45-0DH-8-01	S45-0DH-11-01	S45-0DH-14-01	S45-0DH-17-01	S45-0DH-19-01	S45-0DH-19-01D
Sample Data				3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010
Sample Type				SA	SA	SA	SA	SA	SA	SA	SA	DU
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Endrin Aldehyde	ug/Kg		0	0.57 U	0.54 U	0.59 U	0.57 U	0.56 U	0.57 U	0.49 U	0.57 U	0.55 U
Endrin Ketone	ug/Kg		0	0.46 U	0.44 U	0.48 U	0.47 U	0.58 J	0.47 U	0.4 U	0.47 U	0.45 U
gamma BHC	ug/Kg	100	0	0.31 U	0.3 U	0.32 U	0.32 U	0.31 U	0.31 U	0.27 U	0.32 U	0.3 U
gamma-Chlordane	ug/Kg		0	0.27 U	0.25 U	0.28 U	0.27 U	0.26 U	0.27 U	0.75 J	0.27 U	0.26 U
Heptachlor	ug/Kg	42	0	0.34 U	0.32 U	0.35 U	0.34 U	0.33 U	0.34 U	0.29 U	0.34 U	0.32 U
Heptachlor Epoxide	ug/Kg		0	0.26 U	0.24 U	0.26 U	0.26 U	0.25 U	0.26 U	0.22 U	0.26 U	0.25 U
Methoxychlor	ug/Kg		0	0.58 U	45	0.6 U	0.59 U	0.57 U	0.58 U	0.5 U	0.58 U	0.56 U
Toxaphene	ug/Kg		0	8.2 U	7.7 U	8.4 U	8.2 U	8 U	8.2 U	7 U	8.2 U	7.8 U
PCBs												
Aroclor-1016	ug/Kg	100	0	7 U	6.6 U	7.2 U	7 U	6.9 U	7 U	6 U	7 U	6.7 U
Aroclor-1221	ug/Kg	100	0	16 U	15 U	17 U	16 U	16 U	16 U	14 U	16 U	16 U
Aroclor-1232	ug/Kg	100	0	11 U	10 U	11 U	11 U	11 U	11 U	9.2 U	11 U	10 U
Aroclor-1242	ug/Kg	100	0	6.8 U	6.4 U	7 U	6.8 U	6.7 U	6.8 U	5.8 U	6.8 U	6.5 U
Aroclor-1248	ug/Kg	100	0	7.1 U	6.8 U	7.3 U	7.2 U	7 U	7.1 U	6.1 U	7.1 U	6.8 U
Aroclor-1254	ug/Kg	100	1	5.5 U	**2000**	5.6 U	5.5 U	5.4 U	5.5 U	4.7 U	5.5 U	5.3 U
Aroclor-1260	ug/Kg	100	0	7 U	6.6 U	7.2 U	7 U	6.9 U	7 U	6 U	7 U	6.7 U
Metals												
ALUMINUM	mg/Kg		0	19100	15000	18000	17700	17900	23600	16000	17500	16600
ANTIMONY	mg/Kg		0	0.16 J	0.47 U	0.19 U	0.2 U	0.2 U	0.19 U	0.15 U	0.21 U	1.6
ARSENIC	mg/Kg	13	0	5.1	12.6	4.6	4.9	8.6	4.6	4.9	5.6	7.3
BARIUM	mg/Kg	350	0	186	220	163	187	193	182	160	176	203
BERYLLIUM	mg/Kg	7.2	0	0.85	0.67	0.8	0.81	0.79	0.8	0.71	0.8	0.79
CADMIUM	mg/Kg	2.5	21	**7**	**1100**	**6.9**	**8.9**	**23.6**	**7.4**	**4.7**	**10.1**	**10.6**
CALCIUM	mg/Kg		0	27800	23200	25500	23300	23200	26700	26000	24400	18600
CHROMIUM	mg/Kg	30	9	28.5	**37.8**	28	**30.9**	**446**	**30.5**	25.3	28.8	**32**
COBALT	mg/Kg		0	11.2	14	11.9	14	13.1	12.6	11.2	14.2	14.9
COPPER	mg/Kg	50	21	**436**	**1780**	**4180**	**442**	**1060**	**633**	**393**	**411**	**536**
IRON	mg/Kg		0	27200	118000	24700	28000	53100	26500	24700	35100	44700
LEAD	mg/Kg	63	5	55.6	57.2	**217**	61.2	**64**	56.7	54.8	**81.4**	**74.9**
MAGNESIUM	mg/Kg		0	7140	5680	7190	6870	7040	7000	6220	6430	6180
MANGANESE	mg/Kg	1600	0	581	648	582	710	799	624	555	581	1080
MERCURY	mg/Kg	0.18	21	**4**	**3.1**	**3.6**	**3**	**4.5**	**4.4**	**6.8**	**3.3**	**3.6**
NICKEL	mg/Kg	30	21	**37.3**	**46.2**	**37**	**43.4**	**59.3**	**39.6**	**35.1**	**41.9**	**49.6**
POTASSIUM	mg/Kg		0	3400	2160	3190	2700	2880	2980	2460	2720	2430
SELENIUM	mg/Kg	3.9	0	0.25 U	1.03 U	0.41 U	0.45 U	0.44 U	0.43 U	0.32 U	0.56 J	0.36 U
SILVER	mg/Kg	2	20	**3.8**	**205**	**2.4** J	**3.4**	**5**	**3.5**	**2.6**	**3.3**	**4**
SODIUM	mg/Kg		0	131	103	121	110	112	135	106	114	103
THALLIUM	mg/Kg		0	0.23 J	0.44 U	0.17 U	0.19 U	0.19 U	0.18 U	0.14 U	0.2 U	0.15 U
VANADIUM	mg/Kg		0	31.4	24.4	29.4	27.8	30.6	29.8	27.7	27.4	26.9
ZINC	mg/Kg	109	21	**327**	**1270**	**319**	**356**	**421**	**312**	**356**	**369**	**330**

Notes:
(1) NYSDEC's Unrestricted Use Soil Cleanup Objective, 6 NYCRR Part 375-6.8(a).
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table
(3) Number of Exceedances represents the total for the Full and Limited Suite Tables.
(4) A bolded and outlined cell indicates a concentration that exceeded the NYS Unrestricted Use SCO

U = compound was not detected
J = the reported value is an estimated concentration
UJ = the compound was not detected; the associated reporting limit is approximate

Table B-2A
Test Pit Limited Suite Samples Compared to NYS Unrestricted Use SCO
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-TP-1-02	S45-TP-1-03	S45-TP-1-04	S45-TP-2-02	S45-TP-2-03	S45-TP-2-04	S45-TP-2-05	S45-TP-3-02
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-TP-1-02	S45-TP-1-03	S45-TP-1-04	S45-TP-2-02	S45-TP-2-03	S45-TP-2-04	S45-TP-2-05	S45-TP-3-02
Sample Data				3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/13/2010
Sample Type				SA	SA	SA	SA	SA	SA	SA	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Metals											
ALUMINUM	mg/Kg		0	14400	17800	13000	16400	12500	16500	12500	16500
ANTIMONY	mg/Kg		0	0.63 J	0.2 U	0.13 U	0.2 U	1.5	0.29 J	0.38 J	0.2 U
ARSENIC	mg/Kg	13	0	8.7	7.9	4.2	5.5	4.2	4.8	5.8	4.7
BARIUM	mg/Kg	350	0	101	171	71.2	126	190	227	191	158
BERYLLIUM	mg/Kg	7.2	0	0.62	0.78	0.63	0.79	0.55	0.73	0.6	0.75
CADMIUM	mg/Kg	2.5	17	**13.4**	**8.7**	0.04 J	**3.5**	**4.6**	**7.6**	**6.1**	**7.9**
CALCIUM	mg/Kg		0	62400	25700	53200	28900	101000	29500	30900	23000
CHROMIUM	mg/Kg	30	2	**35**	**39.2**	23.5	26.2	21.3	26.7	19.7	28.1
COBALT	mg/Kg		0	12.9	13.6	13.3	12.5	10	11.3	9.6	12.1
COPPER	mg/Kg	50	18	**7310**	**882**	44.4	**132**	**165**	**2490**	**172**	**378**
IRON	mg/Kg		0	60900	37600	22100	27800	20300	25600	23000	26900
LEAD	mg/Kg	63	7	22.3	**63.8**	15.9	33.4	62.8	**91**	**83.6**	58.3
MAGNESIUM	mg/Kg		0	9200	7030	10800	7010	7450	7380	6020	7310
MANGANESE	mg/Kg	1600	0	574	635	409	616	727	407	389	580
MERCURY	mg/Kg	0.18	18	**4.3**	**5.2**	0.02 J	**1.1**	**6**	**9.1**	**7.6**	**2.6**
NICKEL	mg/Kg	30	18	**54**	**43.5**	**45.4**	**37.1**	**31**	**38.2**	30	**40.8**
POTASSIUM	mg/Kg		0	2180	2700	2240	2140	1780	2400	1780	2310
SELENIUM	mg/Kg	3.9	0	0.59 U	0.43 U	0.28 U	0.43 U	0.32 U	0.4 U	0.23 U	0.44 U
SILVER	mg/Kg	2	9	**53.7**	**7.3**	0.14 J	0.72 J	0.31 J	0.63 J	0.78 J	**2.5** J
SODIUM	mg/Kg		0	151	122	120	199	213	189	199	101
THALLIUM	mg/Kg		0	0.25 U	0.18 U	0.12 U	0.18 U	0.14 U	0.17 U	0.25 J	0.18 U
VANADIUM	mg/Kg		0	22.3	29.8	21.3	26.5	20.8	26.9	20.6	27.6
ZINC	mg/Kg	109	18	**150**	**335**	84.4	**198**	**463**	**1470**	**535**	**315**

Notes:
(1) NYSDEC's Unrestricted Use Soil Cleanup Objective, 6 NYCRR Part 375-6.8(a).
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table.
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(4) A bolded and outlined cell indicates a concentration that exceeded the NYS Unrestricted Use SCO

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Table B-2A
Test Pit Limited Suite Samples Compared to NYS Unrestricted Use SCO
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-TP-3-03	S45-TP-3-04	S45-TP-3-05	S45-TP-4-02	S45-TP-4-03	S45-TP-4-04	S45-TP-4-05
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-TP-3-03	S45-TP-3-04	S45-TP-3-05	S45-TP-4-02	S45-TP-4-03	S45-TP-4-04	S45-TP-4-05
Sample Data				3/13/2010	3/13/2010	3/13/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010
Sample Type				SA	SA	SA	SA	SA	SA	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Metals										
ALUMINUM	mg/Kg		0	21700	17400	14400	15000	12700	9690	10800
ANTIMONY	mg/Kg		0	5.1	0.38 J	0.12 J	0.58 J	0.19 U	0.16 J	0.14 U
ARSENIC	mg/Kg	13	0	4.6	4.6	3.9	5.7	5	3.3	5.4
BARIUM	mg/Kg	350	0	173	154	126	153	151	108	76.1
BERYLLIUM	mg/Kg	7.2	0	0.7	0.74	0.62	0.7	0.58	0.42 J	0.54
CADMIUM	mg/Kg	2.5	17	**6.9**	**6.1**	**2.8**	**8.1**	**4.5**	1.8	0.01 U
CALCIUM	mg/Kg		0	34100	28800	37700	30900	41800	40400	53900
CHROMIUM	mg/Kg	30	2	26.7	26	22.8	25	22.8	14.4	18.8
COBALT	mg/Kg		0	9.2	9.4	10	11.3	10.4	6.4	11
COPPER	mg/Kg	50	18	**716**	**311**	**266**	**416**	**240**	**115**	24.7
IRON	mg/Kg		0	23400	24300	21500	24800	25300	15500	19000
LEAD	mg/Kg	63	7	**153**	45.7	42.7	57.4	50.9	30.3	11.2
MAGNESIUM	mg/Kg		0	7810	9350	8470	12100	10300	12500	8380
MANGANESE	mg/Kg	1600	0	566	502	420	577	466	380	379
MERCURY	mg/Kg	0.18	18	**8**	**3.2**	**3.2**	**4.4**	**9.1**	**6.7**	0.04
NICKEL	mg/Kg	30	18	**39**	**33.9**	**34.8**	**35.8**	**35.5**	20	**34.3**
POTASSIUM	mg/Kg		0	3220	3510	2590	2010	1890	1870	1790
SELENIUM	mg/Kg	3.9	0	0.22 U	0.21 U	0.19 U	0.41 U	0.56 J	0.22 U	0.3 U
SILVER	mg/Kg	2	9	0.33 J	**2.9**	0.68 J	**3.6**	1.4 J	0.38 J	0.12 J
SODIUM	mg/Kg		0	149	101	137	195	196	166	188
THALLIUM	mg/Kg		0	0.09 U	0.09 U	0.08 U	0.17 U	0.18 U	0.09 U	0.15 J
VANADIUM	mg/Kg		0	29	28.3	23	25.7	21.7	17.5	18.5
ZINC	mg/Kg	109	18	**585**	**294**	**241**	**304**	**371**	**336**	80.1

Notes:
(1) NYSDEC's Unrestricted Use Soil Cleanup Objective, 6 NYCRR Part 375-6.8(a).
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table.
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(4) A bolded and outlined cell indicates a concentration that exceeded the NYS Unrestricted Use SCO

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Table B-2B
Test Pit Full Suite Samples Compared to NYS Unrestricted Use SCO
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-TP-1-01	S45-TP-2-01	S45-TP-3-01	S45-TP-3-01D	S45-TP-4-01
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-TP-1-01	S45-TP-2-01	S45-TP-3-01	S45-TP-3-01D	S45-TP-4-01
Sample Data				3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010
Sample Type				SA	SA	SA	DU	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Semivolatile Organic Compounds								
1,2,4-Trichlorobenzene	ug/Kg		0	92 U	90 U	83 U	89 U	94 U
1,2-Dichlorobenzene	ug/Kg		0	100 U	98 U	90 U	97 U	100 U
1,3-Dichlorobenzene	ug/Kg		0	88 U	87 U	80 U	86 U	90 U
1,4-Dichlorobenzene	ug/Kg		0	97 U	96 U	88 U	95 U	100 U
2,2'-Oxybis(1-chloropropane)	ug/Kg		0	100 U	99 U	91 U	98 U	100 U
2,4,5-Trichlorophenol	ug/Kg		0	180 U	170 U	160 U	170 U	180 U
2,4,6-Trichlorophenol	ug/Kg		0	180 U	170 U	160 U	170 U	180 U
2,4-Dichlorophenol	ug/Kg		0	170 U	170 U	150 U	160 U	170 U
2,4-Dimethylphenol	ug/Kg		0	190 U	180 U	170 U	180 U	190 U
2,4-Dinitrophenol	ug/Kg		0	430 U	420 U	390 U	410 U	440 U
2,4-Dinitrotoluene	ug/Kg		0	96 U	94 U	87 U	94 U	2500
2,6-Dinitrotoluene	ug/Kg		0	90 U	88 U	81 U	87 U	92 U
2-Chloronaphthalene	ug/Kg		0	99 U	97 U	89 U	96 U	100 U
2-Chlorophenol	ug/Kg		0	180 U	180 U	170 U	180 U	190 U
2-Methylnaphthalene	ug/Kg		0	100 U	100 U	94 U	100 U	110 U
2-Methylphenol	ug/Kg	330	0	230 U	220 U	200 U	220 U	230 U
2-Nitroaniline	ug/Kg		0	85 U	83 U	77 U	82 U	87 U
2-Nitrophenol	ug/Kg		0	190 U	180 U	170 U	180 U	190 U
3&4-Methylphenol	ug/Kg		0	210 U	210 U	190 U	200 U	220 U
3,3'-Dichlorobenzidine	ug/Kg		0	130 U	130 U	120 U	120 U	130 U
3-Nitroaniline	ug/Kg		0	110 U	100 U	96 U	100 U	110 U
4,6-Dinitro-2-Methylphenol	ug/Kg		0	380 U	370 U	340 U	370 U	390 U
4-Bromophenyl-phenylether	ug/Kg		0	96 U	94 U	87 U	94 U	99 U
4-Chloro-3-Methylphenol	ug/Kg		0	190 U	180 U	170 U	180 U	190 U
4-Chloroaniline	ug/Kg		0	130 U	130 U	120 U	130 U	140 U
4-Chlorophenyl-phenylether	ug/Kg		0	88 U	87 U	80 U	86 U	90 U
4-Nitroaniline	ug/Kg		0	150 U	150 U	140 U	150 U	160 U
4-Nitrophenol	ug/Kg		0	350 U	340 U	320 U	340 U	360 U
Acenaphthene	ug/Kg	20000	0	74 U	72 U	67 U	72 U	75 U
Acenaphthylene	ug/Kg	100000	0	79 U	78 U	72 U	77 U	81 U
Anthracene	ug/Kg	100000	0	95 U	93 U	86 U	92 U	97 U
Benzo(a)anthracene	ug/Kg	1000	0	97 U	96 U	88 U	95 U	100 U
Benzo(a)pyrene	ug/Kg	1000	0	100 U	100 U	95 U	100 U	110 U
Benzo(b)fluoranthene	ug/Kg	1000	0	150 U	150 U	140 U	150 U	160 U
Benzo(g,h,i)perylene	ug/Kg	100000	0	120 U	120 U	110 U	110 U	120 U
Benzo(k)fluoranthene	ug/Kg	800	0	94 U	92 U	85 U	91 U	96 U
Bis(2-Chloroethoxy)methane	ug/Kg		0	110 U	110 U	98 U	100 U	110 U
Bis(2-Chloroethyl)ether	ug/Kg		0	92 U	90 U	83 U	89 U	94 U
bis(2-Ethylhexyl)phthalate	ug/Kg		0	110 U	110 U	100 U	110 U	110 U
Butylbenzylphthalate	ug/Kg		0	100 U	100 U	95 U	100 U	110 U
Carbazole	ug/Kg		0	120 U	120 U	110 U	120 U	130 U
Chrysene	ug/Kg	1000	0	100 U	100 U	97 U	100 U	110 U
Dibenzo(a,h)anthracene	ug/Kg	330	0	140 U	140 U	130 U	140 U	150 U
Dibenzofuran	ug/Kg	7000	0	90 U	88 U	81 U	87 U	92 U
Diethylphthalate	ug/Kg		0	91 U	89 U	82 U	88 U	93 U
Dimethyl Phthalate	ug/Kg		0	88 U	87 U	80 U	86 U	90 U
Di-n-butylphthalate	ug/Kg		0	410	110 U	100 U	110 U	2600
Di-n-octylphthalate	ug/Kg		0	240 U	230 U	220 U	230 U	240 U
Fluoranthene	ug/Kg	100000	0	120 U	120 U	110 U	120 U	120 U
Fluorene	ug/Kg	30000	0	92 U	90 U	83 U	89 U	94 U
Hexachlorobenzene	ug/Kg	330	0	93 U	91 U	110 J	90 U	95 U

Table B-2B
Test Pit Full Suite Samples Compared to NYS Unrestricted Use SCO
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-TP-1-01	S45-TP-2-01	S45-TP-3-01	S45-TP-3-01D	S45-TP-4-01
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-TP-1-01	S45-TP-2-01	S45-TP-3-01	S45-TP-3-01D	S45-TP-4-01
Sample Data				3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010
Sample Type				SA	SA	SA	DU	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Hexachlorobutadiene	ug/Kg		0	94 U	92 U	85 U	91 U	96 U
Hexachlorocyclopentadiene	ug/Kg		0	93 U	91 U	84 U	90 U	95 U
Hexachloroethane	ug/Kg		0	110 U	110 U	98 U	100 U	110 U
Indeno(1,2,3-cd)pyrene	ug/Kg	500	0	140 U	140 U	120 U	130 U	140 U
Isophorone	ug/Kg		0	85 U	83 U	77 U	82 U	87 U
Naphthalene	ug/Kg	12000	0	99 U	97 U	89 U	96 U	100 U
Nitrobenzene	ug/Kg		0	100 U	100 U	93 U	100 U	100 U
N-Nitroso-di-n-propylamine	ug/Kg		0	94 U	92 U	85 U	91 U	96 U
N-Nitrosodiphenylamine	ug/Kg		0	250 U	240 U	220 U	240 U	320 J
Pentachlorophenol	ug/Kg	800	0	270 U	260 U	240 U	260 U	280 U
Phenanthrene	ug/Kg	100000	0	94 U	92 U	85 U	91 U	96 U
Phenol	ug/Kg	330	0	180 U	170 U	160 U	170 U	180 U
Pyrene	ug/Kg	100000	0	110 U	110 U	100 U	110 U	120 U
Explosives								
1,3,5-trinitrobenzene	ug/Kg		0	55 J	59 J	7.1 U	50 J	45 J
1,3-dinitrobenzene	ug/Kg		0	7.1 U	6.6 U	6.6 U	6 U	6.4 U
2,4,6-trinitrotoluene	ug/Kg		0	44 J	50 J	68 J	49 J	37 J
2,4-dinitrotoluene	ug/Kg		0	98 J	91 J	120	57 J	86 J
2,6-dinitrotoluene	ug/Kg		0	31 U	29 U	28 U	26 U	28 U
2-AM-DNT	ug/Kg		0	170	190	330	110	150
2-nitrotoluene	ug/Kg		0	14 U	13 U	13 U	12 U	12 U
3,5-Dinitroaniline	ug/Kg		0	120 U	110 U	100 U	100 U	100 U
3-nitrotoluene	ug/Kg		0	9.1 U	8.5 U	8.4 U	7.6 U	8.2 U
4-AM-DNT	ug/Kg		0	180	200	500	150	150
4-nitrotoluene	ug/Kg		0	31 U	29 U	28 U	26 U	28 U
HMX	ug/Kg		0	97 J	160	9.1 U	43 J	180
nitrobenzene	ug/Kg		0	25 U	24 U	23 U	21 U	23 U
NITROGLYCERIN	ug/Kg		0	140 U	130 U	130 U	120 U	130 U
PETN	ug/Kg		0	280 U	260 U	250 U	230 U	250 U
RDX	ug/Kg		0	190	220	230	75 J	310
TETRYL	ug/Kg		0	6.2 U	5.8 U	5.7 U	5.2 U	5.6 U
Herbicides								
2,4,5-T	ug/Kg		0	36 U	36 U	34 U	38 U	36 U
2,4-D	ug/Kg		0	36 U	36 U	34 U	38 U	36 U
2,4-DB	ug/Kg		0	36 U	36 U	34 U	38 U	36 U
Dalapon	ug/Kg		0	180 U	180 U	170 U	190 U	190 U
Dicamba	ug/Kg		0	36 U	36 U	34 U	38 U	36 U
Dichloroprop	ug/Kg		0	72 U	73 U	69 U	76 U	74 U
Dinoseb	ug/Kg		0	180 U	180 U	170 U	190 U	190 U
MCPA	ug/Kg		0	5400 U	5400 U	5100 U	5700 U	5500 U
MCPP	ug/Kg		0	3600 U	3600 U	3400 U	3800 U	3600 U
Silvex	ug/Kg		0	36 U	36 U	34 U	38 U	36 U
Pesticides								
4,4'-DDD	ug/Kg	3.3	0	0.23 U	2.4 JJ	0.2 U	0.23 U	0.24 U
4,4'-DDE	ug/Kg	3.3	0	1.2 J	1.5 J	1.1 J	0.67 J	0.9 J
4,4'-DDT	ug/Kg	3.3	0	1 J	2.2 JJ	0.31 U	0.68 J	0.77 J
Aldrin	ug/Kg	5	0	0.32 U	0.31 U	0.28 U	0.32 U	0.33 U
alpha-BHC	ug/Kg	20	0	0.39 U	0.38 U	0.34 U	0.39 U	0.4 U
alpha-Chlordane	ug/Kg	94	0	0.59 J	0.24 U	0.21 U	0.24 U	0.25 U
beta-BHC	ug/Kg	36	0	0.38 U	0.37 U	0.33 U	0.38 U	0.39 U
delta-BHC	ug/Kg	40	0	0.37 U	0.36 U	0.32 U	0.37 U	0.38 U
Dieldrin	ug/Kg	5	0	0.25 U	1.2 J	0.22 U	0.81 J	0.79 J

Table B-2B
Test Pit Full Suite Samples Compared to NYS Unrestricted Use SCO
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-TP-1-01	S45-TP-2-01	S45-TP-3-01	S45-TP-3-01D	S45-TP-4-01
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-TP-1-01	S45-TP-2-01	S45-TP-3-01	S45-TP-3-01D	S45-TP-4-01
Sample Data				3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010
Sample Type				SA	SA	SA	DU	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Endosulfan I	ug/Kg	2400	0	0.8 J	1.3 J	1.2 J	0.77 J	0.74 J
Endosulfan II	ug/Kg	2400	0	0.39 U	0.38 U	0.34 U	0.39 U	0.4 U
Endosulfan sulfate	ug/Kg	2400	0	0.66 U	0.65 U	0.57 U	0.67 U	0.68 U
Endrin	ug/Kg	14	0	0.97 U	3.6 J	0.84 U	0.98 U	1 U
Endrin Aldehyde	ug/Kg		0	0.56 U	0.55 U	0.48 U	0.56 U	0.58 U
Endrin Ketone	ug/Kg		0	0.46 U	0.45 U	0.4 U	0.46 U	0.47 U
gamma BHC	ug/Kg	100	0	0.31 U	0.3 U	0.27 U	0.31 U	0.32 U
gamma-Chlordane	ug/Kg		0	0.68 J	1.1 J	0.23 U	0.26 U	0.27 U
Heptachlor	ug/Kg	42	0	0.33 U	0.32 U	0.29 U	0.33 U	0.34 U
Heptachlor Epoxide	ug/Kg		0	0.25 U	0.25 U	0.22 U	0.25 U	0.26 U
Methoxychlor	ug/Kg		0	0.57 U	0.56 U	0.5 U	0.58 U	0.59 U
Toxaphene	ug/Kg		0	8 U	7.8 U	6.9 U	8 U	8.2 U
PCBs								
Aroclor-1016	ug/Kg	100	0	6.9 U	6.7 U	5.9 U	6.9 U	7.1 U
Aroclor-1221	ug/Kg	100	0	16 U	16 U	14 U	16 U	16 U
Aroclor-1232	ug/Kg	100	0	11 U	10 U	9.2 U	11 U	11 U
Aroclor-1242	ug/Kg	100	0	6.6 U	6.5 U	5.7 U	6.7 U	6.8 U
Aroclor-1248	ug/Kg	100	0	7 U	6.8 U	6 U	7 U	7.2 U
Aroclor-1254	ug/Kg	100	0	5.4 U	5.3 U	4.6 U	5.4 U	5.5 U
Aroclor-1260	ug/Kg	100	0	6.9 U	6.7 U	5.9 U	6.9 U	7.1 U
Metals								
ALUMINUM	mg/Kg		0	14400	16700	11900	17100	17800
ANTIMONY	mg/Kg		0	0.14 U	0.21 U	0.15 U	0.2 U	0.12 U
ARSENIC	mg/Kg	13	0	5.4	5.5	4.3	5.1	5
BARIUM	mg/Kg	350	0	134	146	159	187	170
BERYLLIUM	mg/Kg	7.2	0	0.67	0.79	0.53	0.76	0.79
CADMIUM	mg/Kg	2.5	17	**9**	**6.8**	**5.6**	**7.7**	**7.3**
CALCIUM	mg/Kg		0	34600	25200	24400 *	28100	27600
CHROMIUM	mg/Kg	30	2	25.4	27.9	20.9	27.3	27.4
COBALT	mg/Kg		0	11.8	12.3	9.3	11.4	10.8
COPPER	mg/Kg	50	18	**853**	**365**	**143**	**330**	**343**
IRON	mg/Kg		0	24800	30200	22200	25600	27500
LEAD	mg/Kg	63	7	54.3	54.6	**86.3**	**70.9**	**64.9**
MAGNESIUM	mg/Kg		0	8140	6780	6170	7980	7170
MANGANESE	mg/Kg	1600	0	519	572	423	515	531
MERCURY	mg/Kg	0.18	18	**2.9**	**2.7**	**7**	**6.8**	**2.4**
NICKEL	mg/Kg	30	18	**37.7**	**40.7**	**30.6**	**37.7**	**37.9**
POTASSIUM	mg/Kg		0	1820	2090	1700	2680	2710
SELENIUM	mg/Kg	3.9	0	0.32 U	0.46 U	0.33 U	0.45 U	0.26 U
SILVER	mg/Kg	2	9	**8.7**	**3** J	0.56 J	**2.2** J	**2.4**
SODIUM	mg/Kg		0	113	88.2 J	146	211	198
THALLIUM	mg/Kg		0	0.27 J	0.19 U	0.14 U	0.19 U	0.11 U
VANADIUM	mg/Kg		0	23.8	26.9	20.8	28.5	28.1
ZINC	mg/Kg	109	18	**272**	**336**	**387**	**434**	**317**

Notes:
(1) NYSDEC's Unrestricted Use Soil Cleanup Objective, 6 NYCRR Part 375-6.8(a).
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table.
(3) Number of Exceedances represents the total for the Full and Limited Suite Tables.
(4) A bolded and outlined cell indicates a concentration that exceeded the NYS Unrestricted Use SCO

U = compound was not detected
J = the reported value is an estimated concentration
UJ = the compound was not detected; the associated reporting limit is approximate

Table B-3A
Radius Limited Suite Samples Compared to NYS Unrestricted Use SCO
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-R1-01	S45-RI-02	S45-R1-03	S45-R1-04	S45-R1-04	S45-R2-01	S45-R2-02	S45-R2-03	S45-R2-04
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-R1-01	S45-RI-02	S45-R1-03	S45-R1-04	S45-R1-04D	S45-R2-01	S45-R2-02	S45-R2-03	S45-R2-04
Sample Data				4/1/2010	4/1/2010	4/1/2010	4/1/2010	4/1/2010	4/1/2010	4/1/2010	4/1/2010	4/1/2010
Sample Type				SA	SA	SA	SA	DU	SA	SA	SA	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of xceedance**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Metals												
ALUMINUM	mg/Kg		0	17200	16200	18200	16800	20200	17800	17700	19000	17900
ANTIMONY	mg/Kg		0	0.52 J	0.64 J	0.65 J	0.81 J	0.37 J	0.26 J	0.62 J	0.98 J	0.32 J
ARSENIC	mg/Kg	13	0	5.9	5.1	5.5	4.9	5.5	6.3	5.4	5.1	5.2
BARIUM	mg/Kg	350	0	259	150	168	161	182	144	164	166	150
BERYLLIUM	mg/Kg	7.2	0	0.75	0.72	0.81	0.76 J	0.85	0.77	0.86	0.83	0.78
CADMIUM	mg/Kg	2.5	18	**7.6**	**7.7**	**8.2**	**7.9**	**8.1**	**4.2**	**9.1**	**6.6**	**6.4**
CALCIUM	mg/Kg		0	21900	25400	20700	40600	21100	26000	20300	16100	21400
CHROMIUM	mg/Kg	30	8	**35.3**	27.4	**30.3**	27	**30.7**	27.2	27.7	28.6	29.3
COBALT	mg/Kg		0	12.2	12.3	12.7	11.4	12.2	12	11.8	12.3	11.7
COPPER	mg/Kg	50	24	**475**	**794**	**478**	**467**	**433**	**192**	**462**	**217**	**364**
IRON	mg/Kg		0	31400	25200	25800	26700	28100	24400	27600	26600	26500
LEAD	mg/Kg	63	11	54.7	**69.2**	62.2	**63.8**	58	50	**72.3**	51	52.9
MAGNESIUM	mg/Kg		0	6460	7910	6520	6890	6920	7290	6560	6530	7100
MANGANESE	mg/Kg	1600	1	657	676	664	557	561	581	618	676	518
MERCURY	mg/Kg	0.18	30	**5.5**	**3.5**	**3.5**	**3.1**	**4.4**	**1.2**	**3**	**3.1**	**5.3**
NICKEL	mg/Kg	30	28	**43**	**39.6**	**41.8**	**37**	**40.5**	**39.9**	**39.8**	**40.1**	**41.4**
POTASSIUM	mg/Kg		0	2590	2450	2690	2600	3370	2540	2920	3240	2920
SELENIUM	mg/Kg	3.9	0	0.89 J	0.7 U	0.75 U	0.7 U	0.85 U	0.59 U	0.72 U	0.81 U	0.69 U
SILVER	mg/Kg	2	10	**4.4**	**3.2**	**4**	**3.9**	**3.2** J	1.4 J	**3.6**	**2.5** J	**3**
SODIUM	mg/Kg		0	81.2 J	87.7 J	95.6	93.3	86.8 J	99.2	90.9 J	77 J	90.2
THALLIUM	mg/Kg		0	0.28 U	0.29 U	0.32 U	0.3 U	0.36 U	0.25 U	0.3 U	0.34 U	0.29 U
VANADIUM	mg/Kg		0	28.5	27.3	29.8	28.3	32.8	29.7	30.9	31.7	28.6
ZINC	mg/Kg	109	28	**319**	**1350**	**328**	**404**	**347**	**382**	**321**	**274**	**324**

Notes:
(1) NYSDEC's Unrestricted Use Soil Cleanup Objective, 6 NYCRR Part 375-6.8(a).
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table.
(3) Number of Exceedances represents the total for the Full and Limited Suite Tables.
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U = compound was not detected
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Table B-3A
Radius Limited Suite Samples Compared to NYS Unrestricted Use SCO
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-R3-01	S45-R3-02	S45-R3-03	S45-R3-04	S45-R4-01	S45-R4-02	S45-R4-03	S45-R4-04	S45-R5-02
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-R3-01	S45-R3-02	S45-R3-03	S45-R3-04	S45-R4-01	S45-R4-02	S45-R4-03	S45-R4-04	S45-R5-02
Sample Data				4/1/2010	4/1/2010	4/1/2010	4/1/2010	4/1/2010	4/1/2010	4/1/2010	4/1/2010	3/16/2010
Sample Type				SA	SA	SA	SA	SA	SA	SA	SA	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of xceedance**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Metals												
ALUMINUM	mg/Kg		0	20800	16800	24600	18500	19000	21300	19400	5910	16700
ANTIMONY	mg/Kg		0	0.24 J	0.87 J	0.68 J	0.13 U	0.18 U	0.42 J	0.11 U	2.2	3.1
ARSENIC	mg/Kg	13	0	5.7	5.2	5.1	4.2	5.7	5	4.6	4	5.1
BARIUM	mg/Kg	350	0	140	194	205	122	140	299	89.7	27.9	257
BERYLLIUM	mg/Kg	7.2	0	0.78	0.72	1	0.78	0.88	0.81	0.69	0.42 J	0.71
CADMIUM	mg/Kg	2.5	18	**6**	**8.3**	**8.2**	0.72 J	1.1 J	**4.1**	0.56 J	0.34 J	**3.3**
CALCIUM	mg/Kg		0	30000	35000	17500	8950	12200	38500	2900	193000	17100
CHROMIUM	mg/Kg	30	8	27.9	27.4	**35.4**	24.7	**2804**	29.7	25.1	10.6	25.6
COBALT	mg/Kg		0	12	10.8	12.6	9.8	10.9	11.4	9.4	9.5	10
COPPER	mg/Kg	50	24	**284**	**233**	**429**	41.3	**82.6**	**263**	39.1	38.9	**289**
IRON	mg/Kg		0	25300	25400	29100	22900	24000	26500	23100	7600	24300
LEAD	mg/Kg	63	11	48.9	**70.3**	**69.4**	28.2	22.5	28.3	21	29.7	**352**
MAGNESIUM	mg/Kg		0	7260	9130	7340	4720	6750	7880	4460	15000	6870
MANGANESE	mg/Kg	1600	1	651	530	470	549	428	606	361	363	438
MERCURY	mg/Kg	0.18	30	**1.7**	**6.4**	**4.2**	**2.2**	**1.4**	**0.9**	**0.48**	0.15	**1.6**
NICKEL	mg/Kg	30	28	**37.4**	**38.3**	**46.6**	28.9	**37**	**42.5**	26.2	23.8	**32.5**
POTASSIUM	mg/Kg		0	2980	2550	4020	2260	2970	2880	2610	2620	2470
SELENIUM	mg/Kg	3.9	0	0.79 J	0.76 U	0.9 U	0.45 U	0.63 U	0.82 U	0.4 U	0.34 U	0.23 U
SILVER	mg/Kg	2	10	0.82 J	1.9 J	**3** J	0.29 J	0.42 J	0.47 J	0.23 J	0.04 U	0.75 J
SODIUM	mg/Kg		0	92.2	120	93.7 J	66.2 J	79 J	112	59.1 J	179	110
THALLIUM	mg/Kg		0	0.28 U	0.32 U	0.38 U	0.19 U	0.27 U	0.35 U	0.17 U	0.14 U	0.1 U
VANADIUM	mg/Kg		0	30.2	27	38.9	30.8	33.6	29.5	32.2	16.6	27.5
ZINC	mg/Kg	109	28	**392**	**588**	**421**	91.2	**160**	**938**	99.2	66.8	**335**

Notes:
(1) NYSDEC's Unrestricted Use Soil Cleanup Objective, 6 NYCRR Part 375-6.8(a).
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table.
(3) Number of Exceedances represents the total for the Full and Limited Suite Tables.
(4) A bolded and outlined cell indicates a concentration that exceeded the NYS Unrestricted Use SCO

U = compound was not detected
J = the reported value is an estimated concentration
UJ = the compound was not detected; the associated reporting limit is approximate

Table B-3A
Radius Limited Suite Samples Compared to NYS Unrestricted Use SCO
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-R5-06	S45-R5-07	S45-R5-08	S45-R10-01	S45-R10-02	S45-R10-03	S45-R10-03D	S45-R10-04	S45-R10-05
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-R5-06	S45-R5-07	S45-R5-08	S45-R10-01	S45-R10-02	S45-R10-03	S45-R10-03D	S45-R10-04	S45-R10-05
Sample Data				3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010
Sample Type				SA	SA	SA	SA	SA	SA	DU	SA	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of xceedance**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Metals												
ALUMINUM	mg/Kg		0	21600	16100	27900	20700	22100	18100	16700	19100	19900
ANTIMONY	mg/Kg		0	0.11 U	0.18 J	2.8	0.12 U	0.13 U	0.88 J	2.4	0.09 U	0.14 U
ARSENIC	mg/Kg	13	0	5.2	5.1	6.4	5.3	5.1	5.1	5	4.8	4.6
BARIUM	mg/Kg	350	0	148	111	229	141	109	167	256	108	134
BERYLLIUM	mg/Kg	7.2	0	0.86	0.75	1.2	0.87	0.88	0.8	0.76	0.77	0.86
CADMIUM	mg/Kg	2.5	18	0.62 J	**8.3**	1.1	1 J	0.79 J	1.8	1.6 J	0.7 J	1.1 J
CALCIUM	mg/Kg		0	5100	41300	14800	3790	2750	27800	28500	2840	4100
CHROMIUM	mg/Kg	30	8	28.8	25.6	**33.3**	24.1	29.6	**31.4**	29.2	23.9	25.5
COBALT	mg/Kg		0	9.2	11.8	12.5 E	8.9	9.9	12.4	12.5	10.5	9.6
COPPER	mg/Kg	50	24	44.4	**210**	**142**	32.8	47.2	**92.6**	**132**	24.9	44.7
IRON	mg/Kg		0	25200	26800	30600	22500	24900	28300	28800	21900	22700
LEAD	mg/Kg	63	11	12.9	44.6	**998** N*	19.4	46.4	**123**	**189**	21.7	25.2
MAGNESIUM	mg/Kg		0	5740	8440	8740	4320	4480	7560	6880	3630	4050
MANGANESE	mg/Kg	1600	1	395	591	506 *E	682	256	437	436	999	627
MERCURY	mg/Kg	0.18	30	**0.23**	**1**	0.17	**0.38**	**0.28**	**0.79**	**1**	0.17	**0.45**
NICKEL	mg/Kg	30	28	29.8	**38.9**	**38.6**	23.5	**32.2**	**49.7**	**46.9**	21.6	27.1
POTASSIUM	mg/Kg		0	4140	2640	4880	2920	3400	2950	2610	2580	3250
SELENIUM	mg/Kg	3.9	0	0.25 U	0.25 U	0.21 U	0.26 U	0.28 U	0.38 U	0.34 U	0.21 U	0.3 U
SILVER	mg/Kg	2	10	0.18 J	0.29 J	0.06 U	0.08 U	0.18 J	0.11 U	0.1 U	0.06 U	0.09 U
SODIUM	mg/Kg		0	98.6 J	132	113	138	76.6 J	126	110	58.7 J	73 J
THALLIUM	mg/Kg		0	0.11 U	0.1 U	0.09 U	0.11 U	0.42 J	0.31 J	0.14 U	0.09 U	0.13 U
VANADIUM	mg/Kg		0	37.3	25	40	33.3	37.8	26.9	25.3	32.4	33
ZINC	mg/Kg	109	28	89.5	**230**	**153**	85.6	**140**	**185**	**298**	85.7	**130**

Notes:
(1) NYSDEC's Unrestricted Use Soil Cleanup Objective, 6 NYCRR Part 375-6.8(a).
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table.
(3) Number of Exceedances represents the total for the Full and Limited Suite Tables.
(4) A bolded and outlined cell indicates a concentration that exceeded the NYS Unrestricted Use SCO

U = compound was not detected
J = the reported value is an estimated concentration
UJ = the compound was not detected; the associated reporting limit is approximate

Table B-3A
Radius Limited Suite Samples Compared to NYS Unrestricted Use SCO
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-R10-06	S45-R10-07	S45-R15-01	S45-R15-02	S45-R15-03	S45-R15-04	S45-R15-05	S45-R15-06
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-R10-06	S45-R10-07	S45-R15-01	S45-R15-02	S45-R15-03	S45-R15-04	S45-R15-05	S45-R15-06
Sample Data				3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/17/2010	3/16/2010	3/16/2010	3/16/2010
Sample Type				SA	SA	SA	SA	SA	SA	SA	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of xceedance**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Metals											
ALUMINUM	mg/Kg		0	17400	16500	19900	25000	14200	18700	17000	20700
ANTIMONY	mg/Kg		0	0.11 U	1.8	0.25 U	0.12 U	0.41 U	0.1 U	0.09 U	0.12 U
ARSENIC	mg/Kg	13	0	4	4.5	7.6	5.4	4.9	4.8	3.9	5.1
BARIUM	mg/Kg	350	0	107	263	287	175	55.4	108	107	135
BERYLLIUM	mg/Kg	7.2	0	0.68	0.76	1	1	0.65	0.85	0.77	1
CADMIUM	mg/Kg	2.5	18	1.1 J	1.5 J	1.8 J	0.74 J	0.45 J	0.55 J	0.52 J	0.86 J
CALCIUM	mg/Kg		0	3700	14500	3630	4370	9010	2150	3560	2340
CHROMIUM	mg/Kg	30	8	22.4	29.2	24.6	**30.8**	26.6	24.2	23.3	27.5
COBALT	mg/Kg		0	7.7	12.1	26.8	10	12.1	10.1	9.1	12.9
COPPER	mg/Kg	50	24	**64**	**129**	22.8	25.6	43.1	20	23.4	23.3
IRON	mg/Kg		0	20500	27500	35300	26200	26000	22500	20400	24000
LEAD	mg/Kg	63	11	35.4	**198**	22	26.6	53.2	20.6	22.8	27.9
MAGNESIUM	mg/Kg		0	3650	6640	4080	4460	6180	3770	3800	4210
MANGANESE	mg/Kg	1600	1	446	393	**5040**	552	328	735	466	1080
MERCURY	mg/Kg	0.18	30	**0.71**	**0.38**	**0.21**	0.1	0.1	0.06	0.09	0.1
NICKEL	mg/Kg	30	28	21.4	**47.4**	29.8	27.1	**52.1**	24.8	29.4	**32.7**
POTASSIUM	mg/Kg		0	2320	2400	2780	3850	2140	2740	2780	3410
SELENIUM	mg/Kg	3.9	0	0.25 U	0.92 J	0.56 U	0.27 U	0.9 U	0.21 U	0.21 U	0.26 U
SILVER	mg/Kg	2	10	0.08 U	0.11 U	0.17 U	0.08 U	0.27 U	0.06 U	0.06 U	0.08 U
SODIUM	mg/Kg		0	70.3 J	97.1	87.4 J	87 J	73.8 J	61.6 J	53.1 J	67.5 J
THALLIUM	mg/Kg		0	0.11 U	0.31 J	0.24 U	0.12 U	0.38 U	0.09 U	0.09 U	0.11 U
VANADIUM	mg/Kg		0	29.6	24.5	30.7	41.9	22.5	31.3	27.1	33.8
ZINC	mg/Kg	109	28	**136**	**237**	101	104	**114**	76	80	**114**

Notes:
(1) NYSDEC's Unrestricted Use Soil Cleanup Objective, 6 NYCRR Part 375-6.8(a).
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table.
(3) A bolded and outlined cell indicates a concentration that exceeded the NYS Unrestricted Use SCO

U = compound was not detected
J = the reported value is an estimated concentration
UJ = the compound was not detected; the associated reporting limit is approximate
R = the analytical result was rejected during data validation.

Table B-3B
Radius Full Suite Samples Compared to NYS Unrestricted Use SCO
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-R5-01	S45-R5-03	S45-R5-04	S45-R5-04D	S45-R5-05
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-R5-01	S45-R5-03	S45-R5-04	S45-R5-04D	S45-R5-05
Sample Data				3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010
Sample Type				SA	SA	SA	DU	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Semivolatile Organic Compounds								
1,2,4-Trichlorobenzene	ug/Kg		0	100 U	100 U	98 U	100 U	97 U
1,2-Dichlorobenzene	ug/Kg		0	110 U	110 U	110 U	110 U	100 U
1,3-Dichlorobenzene	ug/Kg		0	98 U	100 U	94 U	97 U	93 U
1,4-Dichlorobenzene	ug/Kg		0	110 U	110 U	100 U	110 U	100 U
2,2'-Oxybis(1-chloropropane)	ug/Kg		0	110 U	120 U	110 U	110 U	110 U
2,4,5-Trichlorophenol	ug/Kg		0	200 U	200 U	190 U	190 U	180 U
2,4,6-Trichlorophenol	ug/Kg		0	200 U	200 U	190 U	190 U	180 U
2,4-Dichlorophenol	ug/Kg		0	190 U	190 U	180 U	190 U	180 U
2,4-Dimethylphenol	ug/Kg		0	210 U	210 U	200 U	200 U	200 U
2,4-Dinitrophenol	ug/Kg		0	470 U	490 U	450 U	470 U	450 U
2,4-Dinitrotoluene	ug/Kg		0	110 U	110 U	100 U	110 U	100 U
2,6-Dinitrotoluene	ug/Kg		0	99 U	100 U	95 U	99 U	95 U
2-Chloronaphthalene	ug/Kg		0	110 U	110 U	100 U	110 U	100 U
2-Chlorophenol	ug/Kg		0	210 U	210 U	200 U	200 U	200 U
2-Methylnaphthalene	ug/Kg		0	120 U	120 U	110 U	110 U	110 U
2-Methylphenol	ug/Kg	330	0	250 U	260 U	240 U	250 U	240 U
2-Nitroaniline	ug/Kg		0	94 U	97 U	90 U	94 U	90 U
2-Nitrophenol	ug/Kg		0	210 U	220 U	200 U	210 U	200 U
3&4-Methylphenol	ug/Kg		0	240 U	240 U	220 U	230 U	220 U
3,3'-Dichlorobenzidine	ug/Kg		0	140 U	150 U	140 U	140 U	140 U
3-Nitroaniline	ug/Kg		0	120 U	120 U	110 U	120 U	110 U
4,6-Dinitro-2-Methylphenol	ug/Kg		0	420 U	440 U	410 U	420 U	400 U
4-Bromophenyl-phenylether	ug/Kg		0	110 U	110 U	100 U	110 U	100 U
4-Chloro-3-Methylphenol	ug/Kg		0	210 U	220 U	200 U	210 U	200 U
4-Chloroaniline	ug/Kg		0	150 U	150 U	140 U	150 U	140 U
4-Chlorophenyl-phenylether	ug/Kg		0	98 U	100 U	94 U	97 U	93 U
4-Nitroaniline	ug/Kg		0	170 U	170 U	160 U	170 U	160 U
4-Nitrophenol	ug/Kg		0	390 U	400 U	370 U	380 U	370 U
Acenaphthene	ug/Kg	20000	0	82 U	84 U	78 U	81 U	78 U
Acenaphthylene	ug/Kg	100000	0	88 U	91 U	84 U	87 U	84 U
Anthracene	ug/Kg	100000	0	100 U	110 U	100 U	100 U	100 U
Benzo(a)anthracene	ug/Kg	1000	0	110 U	110 U	100 U	110 U	100 U
Benzo(a)pyrene	ug/Kg	1000	0	120 U	120 U	110 U	120 U	110 U
Benzo(b)fluoranthene	ug/Kg	1000	0	170 U	170 U	160 U	170 U	160 U
Benzo(g,h,i)perylene	ug/Kg	100000	0	130 U	130 U	120 U	130 U	120 U
Benzo(k)fluoranthene	ug/Kg	800	0	100 U	110 U	100 U	100 U	99 U
Bis(2-Chloroethoxy)methane	ug/Kg		0	120 U	120 U	120 U	120 U	120 U
Bis(2-Chloroethyl)ether	ug/Kg		0	100 U	100 U	98 U	100 U	97 U
bis(2-Ethylhexyl)phthalate	ug/Kg		0	120 U	130 U	120 U	120 U	120 U
Butylbenzylphthalate	ug/Kg		0	120 U	120 U	110 U	120 U	110 U
Carbazole	ug/Kg		0	140 U	140 U	130 U	140 U	130 U
Chrysene	ug/Kg	1000	0	120 U	120 U	110 U	120 U	110 U
Dibenzo(a,h)anthracene	ug/Kg	330	0	160 U	170 U	150 U	160 U	150 U
Dibenzofuran	ug/Kg	7000	0	99 U	100 U	95 U	99 U	95 U
Diethylphthalate	ug/Kg		0	100 U	100 U	96 U	100 U	96 U
Dimethyl Phthalate	ug/Kg		0	98 U	100 U	94 U	97 U	93 U
Di-n-butylphthalate	ug/Kg		0	130 U	130 U	120 U	130 U	120 U
Di-n-octylphthalate	ug/Kg		0	260 U	270 U	250 U	260 U	250 U
Fluoranthene	ug/Kg	100000	0	130 U	140 U	130 U	130 U	130 U
Fluorene	ug/Kg	30000	0	100 U	100 U	98 U	100 U	97 U
Hexachlorobenzene	ug/Kg	330	0	100 U	110 U	99 U	100 U	98 U

Table B-3B
Radius Full Suite Samples Compared to NYS Unrestricted Use SCO
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-R5-01	S45-R5-03	S45-R5-04	S45-R5-04D	S45-R5-05
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-R5-01	S45-R5-03	S45-R5-04	S45-R5-04D	S45-R5-05
Sample Data				3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010
Sample Type				SA	SA	SA	DU	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Hexachlorobutadiene	ug/Kg		0	100 U	110 U	100 U	100 U	99 U
Hexachlorocyclopentadiene	ug/Kg		0	100 U	110 U	99 U	100 U	98 U
Hexachloroethane	ug/Kg		0	120 U	120 U	120 U	120 U	120 U
Indeno(1,2,3-cd)pyrene	ug/Kg	500	0	150 U	160 U	150 U	150 U	150 U
Isophorone	ug/Kg		0	94 U	97 U	90 U	94 U	90 U
Naphthalene	ug/Kg	12000	0	110 U	110 U	100 U	110 U	100 U
Nitrobenzene	ug/Kg		0	110 U	120 U	110 U	110 U	110 U
N-Nitroso-di-n-propylamine	ug/Kg		0	100 U	110 U	100 U	100 U	99 U
N-Nitrosodiphenylamine	ug/Kg		0	280 U	280 U	260 U	270 U	260 U
Pentachlorophenol	ug/Kg	800	0	300 U	310 U	280 U	300 U	280 U
Phenanthrene	ug/Kg	100000	0	100 U	110 U	100 U	100 U	99 U
Phenol	ug/Kg	330	0	200 U	200 U	190 U	190 U	190 U
Pyrene	ug/Kg	100000	0	130 U	130 U	120 U	130 U	120 U
Explosives								
1,3,5-trinitrobenzene	ug/Kg		0	8.5 U	8 U	7.4 U	7.5 U	7.3 U
1,3-dinitrobenzene	ug/Kg		0	7.9 U	7.4 U	6.8 U	6.9 U	6.7 U
2,4,6-trinitrotoluene	ug/Kg		0	8.5 U	8 U	7.4 U	7.5 U	470
2,4-dinitrotoluene	ug/Kg		0	19 U	18 U	16 U	17 U	840
2,6-dinitrotoluene	ug/Kg		0	34 U	32 U	30 U	30 U	29 U
2-AM-DNT	ug/Kg		0	27 U	25 U	23 U	23 U	23 U
2-nitrotoluene	ug/Kg		0	15 U	14 U	13 U	13 U	13 U
3,5-Dinitroaniline	ug/Kg		0	4.5 U	4.2 U	3.9 U	3.9 U	3.8 U
3-nitrotoluene	ug/Kg		0	10 U	9.5 U	8.7 U	8.8 U	8.6 U
4-AM-DNT	ug/Kg		0	22 U	20 U	19 U	19 U	18 U
4-nitrotoluene	ug/Kg		0	34 U	32 U	30 U	30 U	29 U
HMX	ug/Kg		0	11 U	10 U	9.5 U	9.6 U	9.3 U
nitrobenzene	ug/Kg		0	28 U	26 U	24 U	24 U	24 U
NITROGLYCERIN	ug/Kg		0	160 U	150 U	140 U	140 U	130 U
PETN	ug/Kg		0	300 U	290 U	260 U	270 U	260 U
RDX	ug/Kg		0	8.6 U	8.2 U	7.5 U	7.6 U	7.4 U
TETRYL	ug/Kg		0	6.9 U	6.5 U	6 U	6 U	5.9 U
Herbicides								
2,4,5-T	ug/Kg		0	20 U	21 U	20 U	19 U	18 U
2,4-D	ug/Kg		0	40 U	43 U	41 U	38 U	37 U
2,4-DB	ug/Kg		0	29 U	31 U	30 U	28 U	27 U
Dalapon	ug/Kg		0	10 U	11 U	10 U	9.8 U	9.5 U
Dicamba	ug/Kg		0	14 U	15 U	14 U	13 U	13 U
Dichloroprop	ug/Kg		0	23 U	25 U	24 U	22 U	22 U
Dinoseb	ug/Kg		0	3.2 U	3.4 U	3.3 U	3 U	3 U
MCPA	ug/Kg		0	2900 U	3100 U	3000 U	2800 U	2700 U
MCPP	ug/Kg		0	2800 U	2900 U	2800 U	2600 U	2500 U
Silvex	ug/Kg		0	16 U	17 U	16 U	15 U	14 U
Pesticides								
4,4'-DDD	ug/Kg	3.3	0	0.24 U	0.28 U	0.24 U	0.26 U	0.24 U
4,4'-DDE	ug/Kg	3.3	0	1.6 J	1.7 J	0.23 U	0.24 U	0.85 J
4,4'-DDT	ug/Kg	3.3	0	0.38 U	1.2 J	0.37 U	0.4 U	0.37 U
Aldrin	ug/Kg	5	0	0.34 U	0.38 U	0.33 U	0.36 U	0.34 U
alpha-BHC	ug/Kg	20	0	0.42 U	0.47 U	0.4 U	0.44 U	0.41 U
alpha-Chlordane	ug/Kg	94	0	0.26 U	0.29 U	0.25 U	0.27 U	0.25 U
beta-BHC	ug/Kg	36	0	0.4 U	0.45 U	0.39 U	0.42 U	0.4 U
delta-BHC	ug/Kg	40	0	0.39 U	0.44 U	0.38 U	0.41 U	0.38 U
Dieldrin	ug/Kg	5	0	0.96 J	1.1 J	0.26 U	0.28 U	0.79 JJ

Table B-3B
Radius Full Suite Samples Compared to NYS Unrestricted Use SCO
Additional Munitions Response Investigation
Seneca Army Depot Activities

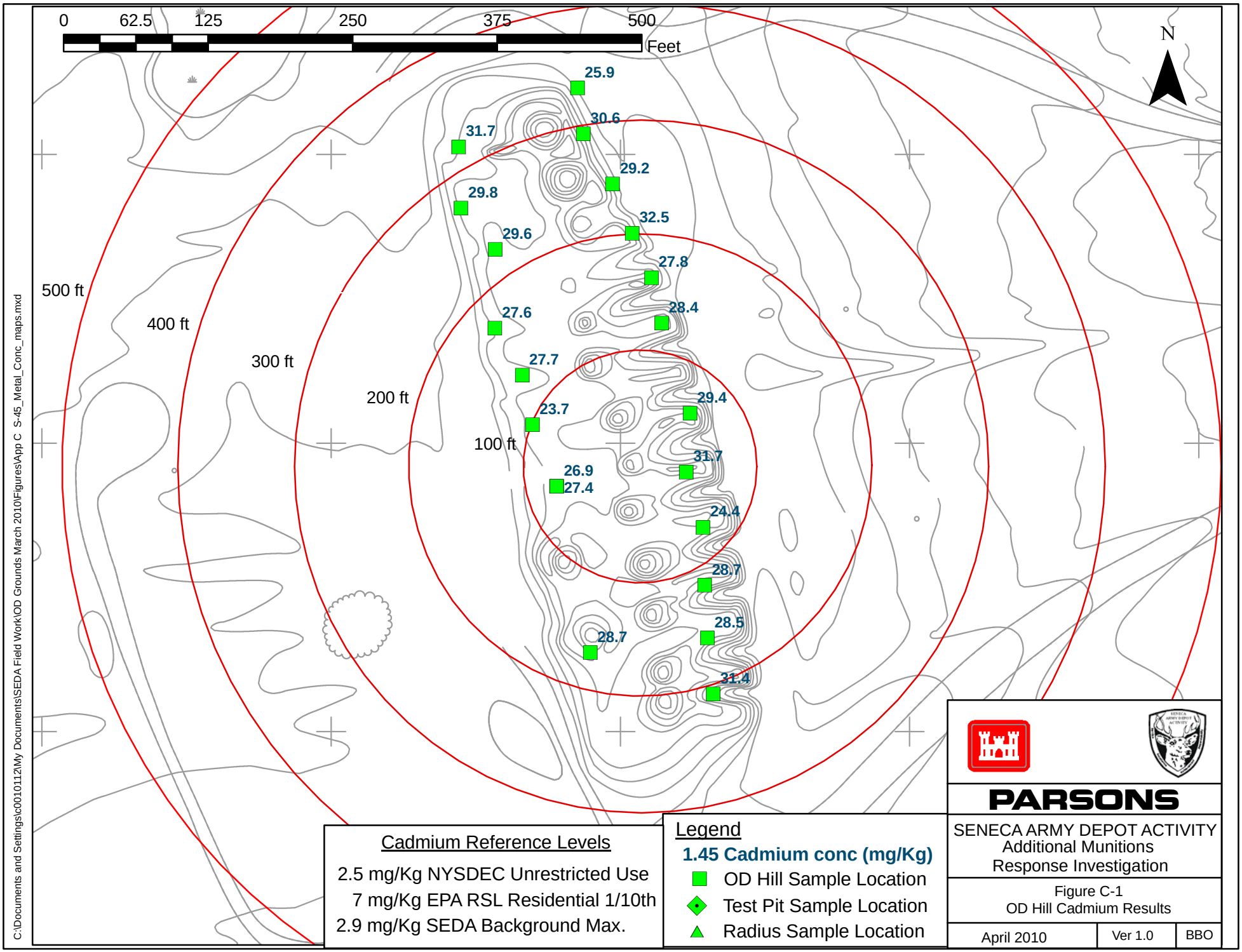
Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-R5-01	S45-R5-03	S45-R5-04	S45-R5-04D	S45-R5-05
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-R5-01	S45-R5-03	S45-R5-04	S45-R5-04D	S45-R5-05
Sample Data				3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010
Sample Type				SA	SA	SA	DU	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Endosulfan I	ug/Kg	2400	0	23 J	1.3 JJ	0.28 U	55 J	0.29 U
Endosulfan II	ug/Kg	2400	0	0.42 U	0.47 U	0.4 U	0.44 U	0.41 U
Endosulfan sulfate	ug/Kg	2400	0	0.71 U	0.8 U	0.69 U	0.74 U	0.69 U
Endrin	ug/Kg	14	0	1 U	1.2 U	1 U	1.1 U	1 U
Endrin Aldehyde	ug/Kg		0	0.6 U	0.68 U	0.58 U	0.63 U	0.59 U
Endrin Ketone	ug/Kg		0	0.49 U	0.55 U	0.48 U	0.51 U	0.48 U
gamma BHC	ug/Kg	100	0	0.33 U	0.37 U	0.32 U	0.35 U	0.32 U
gamma-Chlordane	ug/Kg		0	0.28 U	0.32 U	0.27 U	0.3 U	0.28 U
Heptachlor	ug/Kg	42	0	0.36 U	0.4 U	0.34 U	0.37 U	0.35 U
Heptachlor Epoxide	ug/Kg		0	0.27 U	0.3 U	0.26 U	0.28 U	0.26 U
Methoxychlor	ug/Kg		0	0.61 U	0.69 U	0.6 U	0.64 U	0.6 U
Toxaphene	ug/Kg		0	8.6 U	9.6 U	8.3 U	9 U	8.4 U
PCBs								
Aroclor-1016	ug/Kg	100	0	7.4 U	8.3 U	7.1 U	7.7 U	7.2 U
Aroclor-1221	ug/Kg	100	0	17 U	19 U	17 U	18 U	17 U
Aroclor-1232	ug/Kg	100	0	11 U	13 U	11 U	12 U	11 U
Aroclor-1242	ug/Kg	100	0	7.1 U	8 U	6.9 U	7.4 U	6.9 U
Aroclor-1248	ug/Kg	100	0	7.5 U	8.4 U	7.3 U	7.8 U	7.3 U
Aroclor-1254	ug/Kg	100	0	5.8 U	6.5 U	5.6 U	6 U	5.6 U
Aroclor-1260	ug/Kg	100	0	7.4 U	8.3 U	7.1 U	7.7 U	7.2 U
Metals								
ALUMINUM	mg/Kg		0	17200	18900	18100	18800	18700
ANTIMONY	mg/Kg		0	0.14 J	0.15 U	0.09 U	0.12 U	0.11 U
ARSENIC	mg/Kg	13	0	5	5.4	5.5	7	5.2
BARIUM	mg/Kg	350	0	152	177	106	114	165
BERYLLIUM	mg/Kg	7.2	0	0.74	0.85	0.9	0.95	0.79
CADMIUM	mg/Kg	2.5	18	**6**	**6.4**	0.33 J	0.46 J	**5.1**
CALCIUM	mg/Kg		0	31200	20600	3290	3490	29300
CHROMIUM	mg/Kg	30	8	26.1	29.7	26.4	28	26.7
COBALT	mg/Kg		0	11.1	13.4	11	16.4	10
COPPER	mg/Kg	50	24	**221**	**350**	31.5	33.6	**219**
IRON	mg/Kg		0	26000	25400	25800	30400	25400
LEAD	mg/Kg	63	11	**86.2**	60	11.9	15.4	42.9
MAGNESIUM	mg/Kg		0	7210	7260	4980	5330	7140
MANGANESE	mg/Kg	1600	1	583	662	336	787	489
MERCURY	mg/Kg	0.18	30	**3.7**	**4.7**	0.03 J	0.04 J	**1.3**
NICKEL	mg/Kg	30	28	**38.1**	**40.1**	**43**	**56**	**33.4**
POTASSIUM	mg/Kg		0	2780	3060	2670	2960	3220
SELENIUM	mg/Kg	3.9	0	0.23 U	0.33 U	0.19 U	0.26 U	0.24 U
SILVER	mg/Kg	2	10	0.71 J	**2.6**	0.06 U	0.08 U	0.46 J
SODIUM	mg/Kg		0	135	103	65.8 J	70.2 J	127
THALLIUM	mg/Kg		0	0.1 U	0.14 U	0.08 U	0.11 U	0.1 U
VANADIUM	mg/Kg		0	26.7	31.8	29.7	31.2	30.1
ZINC	mg/Kg	109	28	**284**	**304**	80.2	83.9	**360**

Notes:
(1) NYSDEC's Unrestricted Use Soil Cleanup Objective, 6 NYCRR Part 375-6.8(a).
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table.
(3) Number of Exceedances represents the total for the Full and Limited Suite Tables.
(4) A bolded and outlined cell indicates a concentration that exceeded the NYS Unrestricted Use SCO

U = compound was not detected
J = the reported value is an estimated concentration
UJ = the compound was not detected; the associated reporting limit is approximate

APPENDIX C

METALS RESULTS FOR OD HILL, THE DOUGHNUT RINGS, AND TEST PITS 1, 2, 3, AND 4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125
250
375
500
Feet
N
25.9
30.6
31.7
29.2
29.8
32.5
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27.8
27.6
28.4
27.7
29.4
23.7
31.7
26.9
27.4
24.4
28.7
28.5
28.7
31.4
500 ft
400 ft
300 ft
200 ft
100 ft
Cadmium Reference Levels
2.5 mg/Kg NYSDEC Unrestricted Use
7 mg/Kg EPA RSL Residential 1/10th
2.9 mg/Kg SEDA Background Max.
Legend
1.45 Cadmium conc (mg/Kg)
OD Hill Sample Location
Test Pit Sample Location
Radius Sample Location
PARSONS
SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation
Figure C-1
OD Hill Cadmium Results
April 2010
Ver 1.0
BBO
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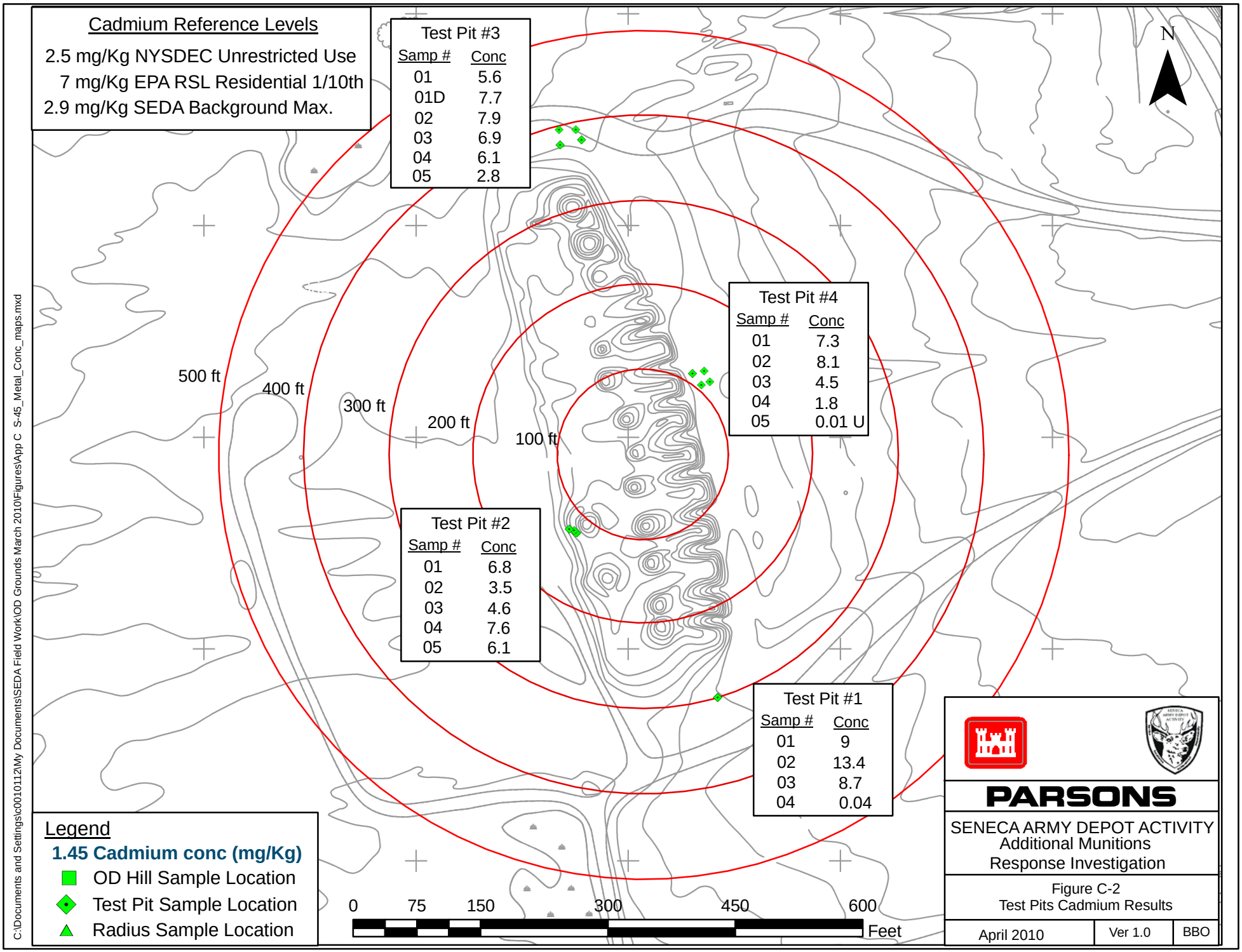
Cadmium Reference Levels
2.5 mg/Kg NYSDEC Unrestricted Use
7 mg/Kg EPA RSL Residential 1/10th
2.9 mg/Kg SEDA Background Max.
Test Pit #3
Samp # Conc
01 5.6
01D 7.7
02 7.9
03 6.9
04 6.1
05 2.8
Test Pit #4
Samp # Conc
01 7.3
02 8.1
03 4.5
04 1.8
05 0.01 U
Test Pit #2
Samp # Conc
01 6.8
02 3.5
03 4.6
04 7.6
05 6.1
Test Pit #1
Samp # Conc
01 9
02 13.4
03 8.7
04 0.04
500 ft
400 ft
300 ft
200 ft
100 ft
N
Legend
1.45 Cadmium conc (mg/Kg)
OD Hill Sample Location
Test Pit Sample Location
Radius Sample Location
0 75 150 300 450 600
Feet
PARSONS
SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation
Figure C-2
Test Pits Cadmium Results
April 2010
Ver 1.0
BBO
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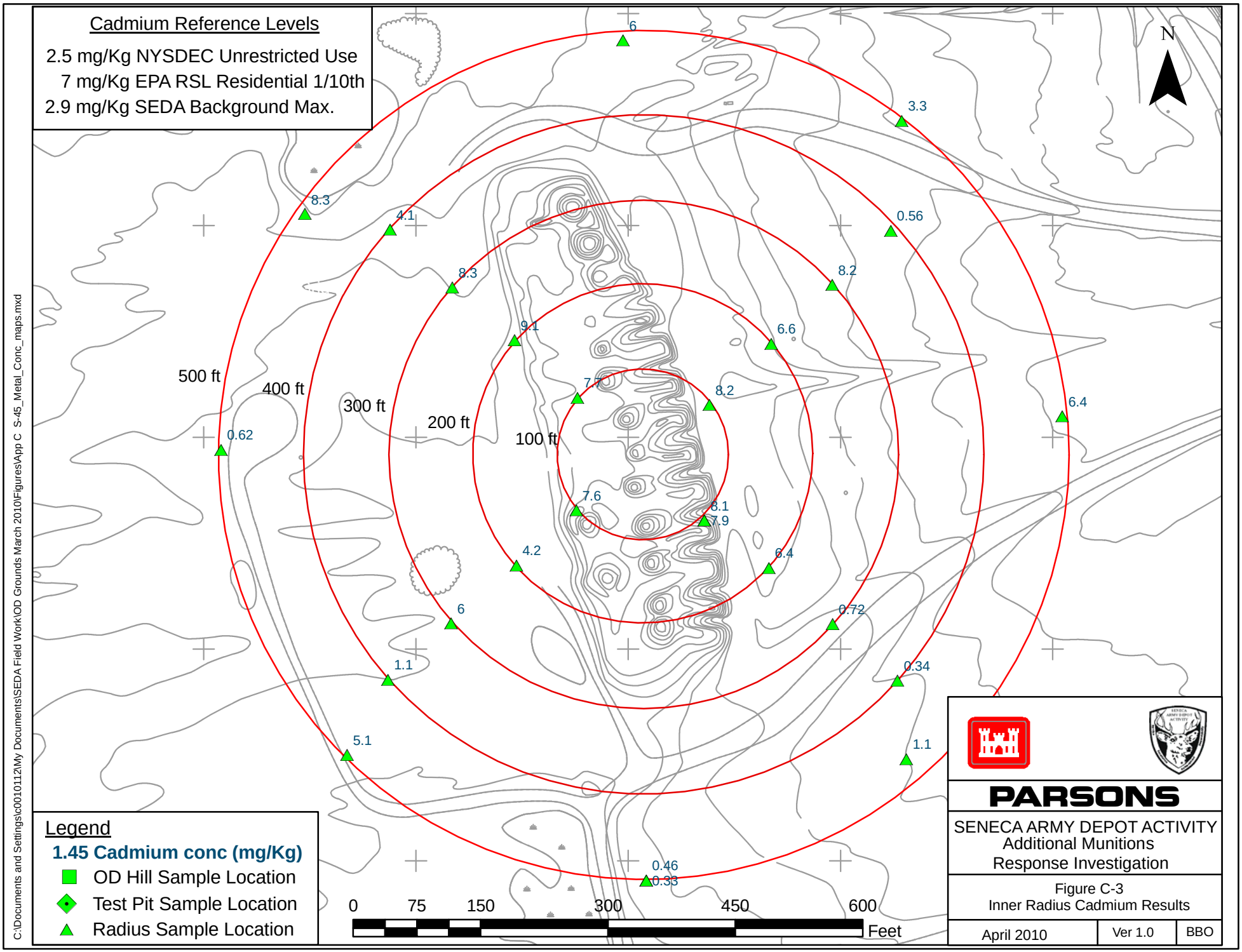
Cadmium Reference Levels
2.5 mg/Kg NYSDEC Unrestricted Use
7 mg/Kg EPA RSL Residential 1/10th
2.9 mg/Kg SEDA Background Max.
N
500 ft
400 ft
300 ft
200 ft
100 ft
6
3.3
8.3
4.1
0.56
8.3
8.2
9.1
6.6
7.7
8.2
6.4
0.62
7.6
8.1
7.9
4.2
6.4
6
0.72
1.1
0.34
5.1
1.1
0.46
0.33
0
75
150
300
450
600
Feet
Legend
1.45 Cadmium conc (mg/Kg)
OD Hill Sample Location
Test Pit Sample Location
Radius Sample Location
PARSONS
SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation
Figure C-3
Inner Radius Cadmium Results
April 2010
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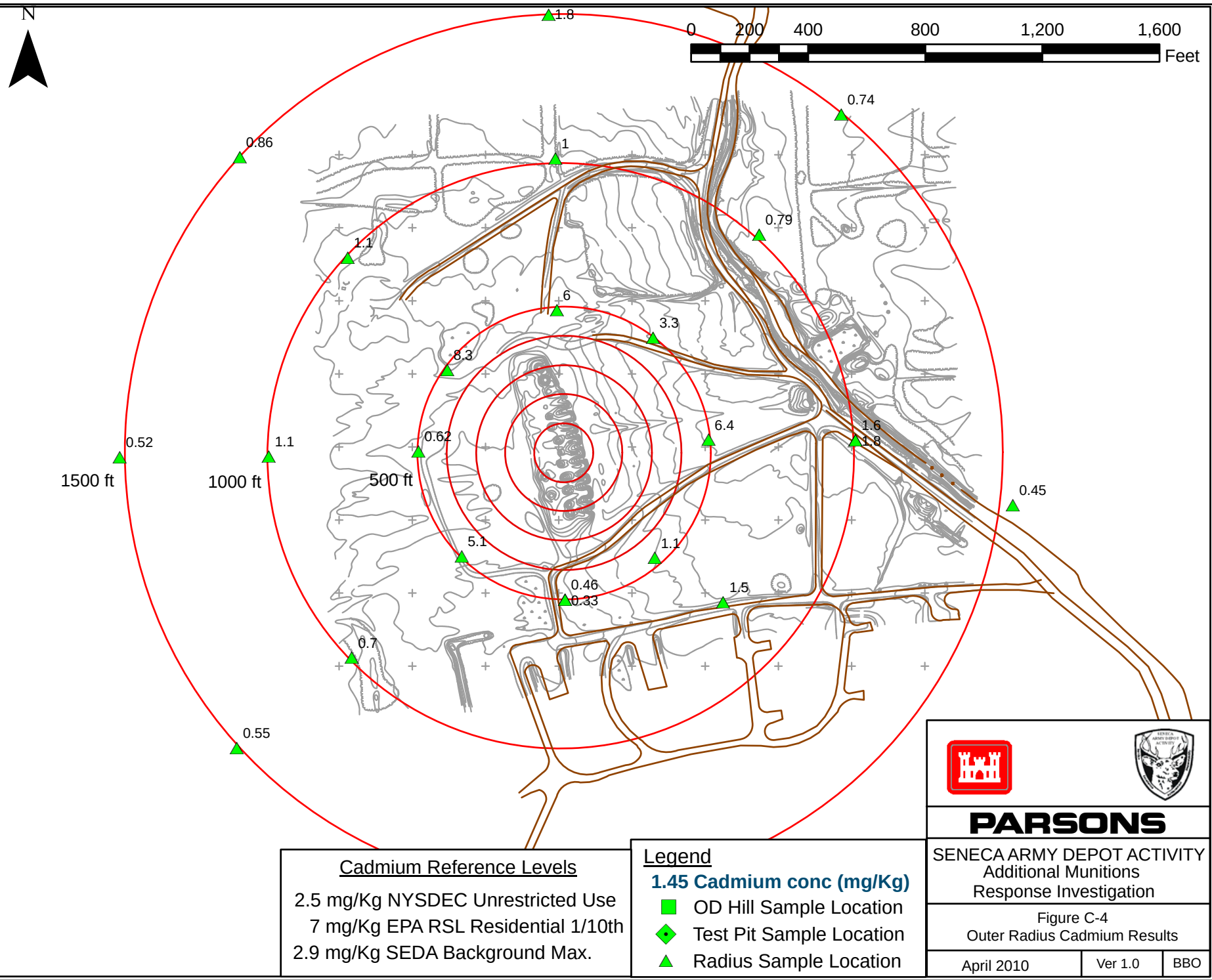
N
0
200
400
800
1,200
1,600
Feet
1.8
0.74
0.86
1
0.79
1.1
6
3.3
8.3
0.52
1.1
0.62
6.4
1.6
1.8
1500 ft
1000 ft
500 ft
0.45
5.1
1.1
0.46
0.33
1.5
0.7
0.55
Cadmium Reference Levels
2.5 mg/Kg NYSDEC Unrestricted Use
7 mg/Kg EPA RSL Residential 1/10th
2.9 mg/Kg SEDA Background Max.
Legend
1.45 Cadmium conc (mg/Kg)
OD Hill Sample Location
Test Pit Sample Location
Radius Sample Location
PARSONS
SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation
Figure C-4
Outer Radius Cadmium Results
April 2010
Ver 1.0
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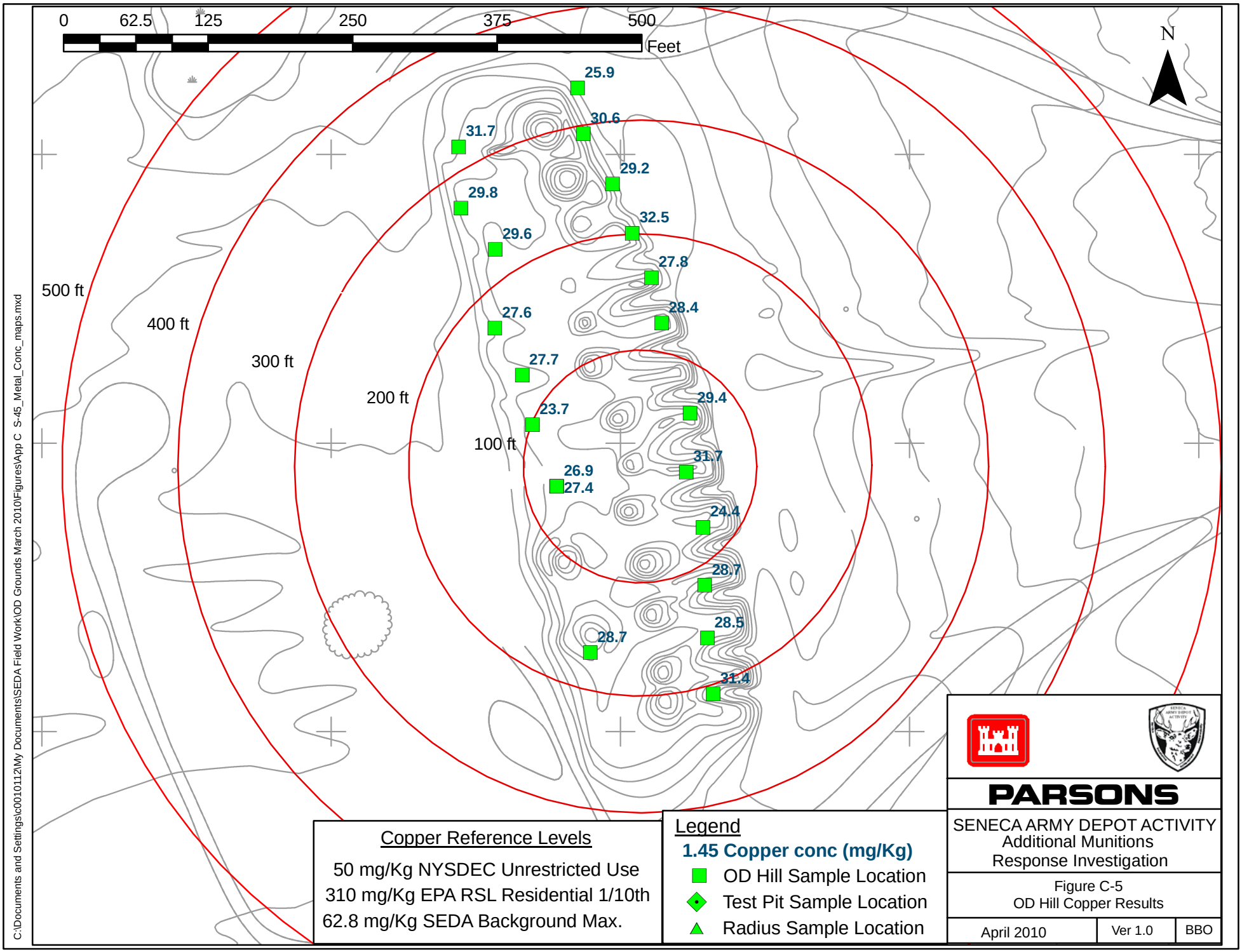
0
62.5
125
250
375
500
Feet
N
500 ft
400 ft
300 ft
200 ft
100 ft
25.9
30.6
31.7
29.2
29.8
32.5
29.6
27.8
27.6
28.4
27.7
29.4
23.7
31.7
26.9
27.4
24.4
28.7
28.5
28.7
31.4
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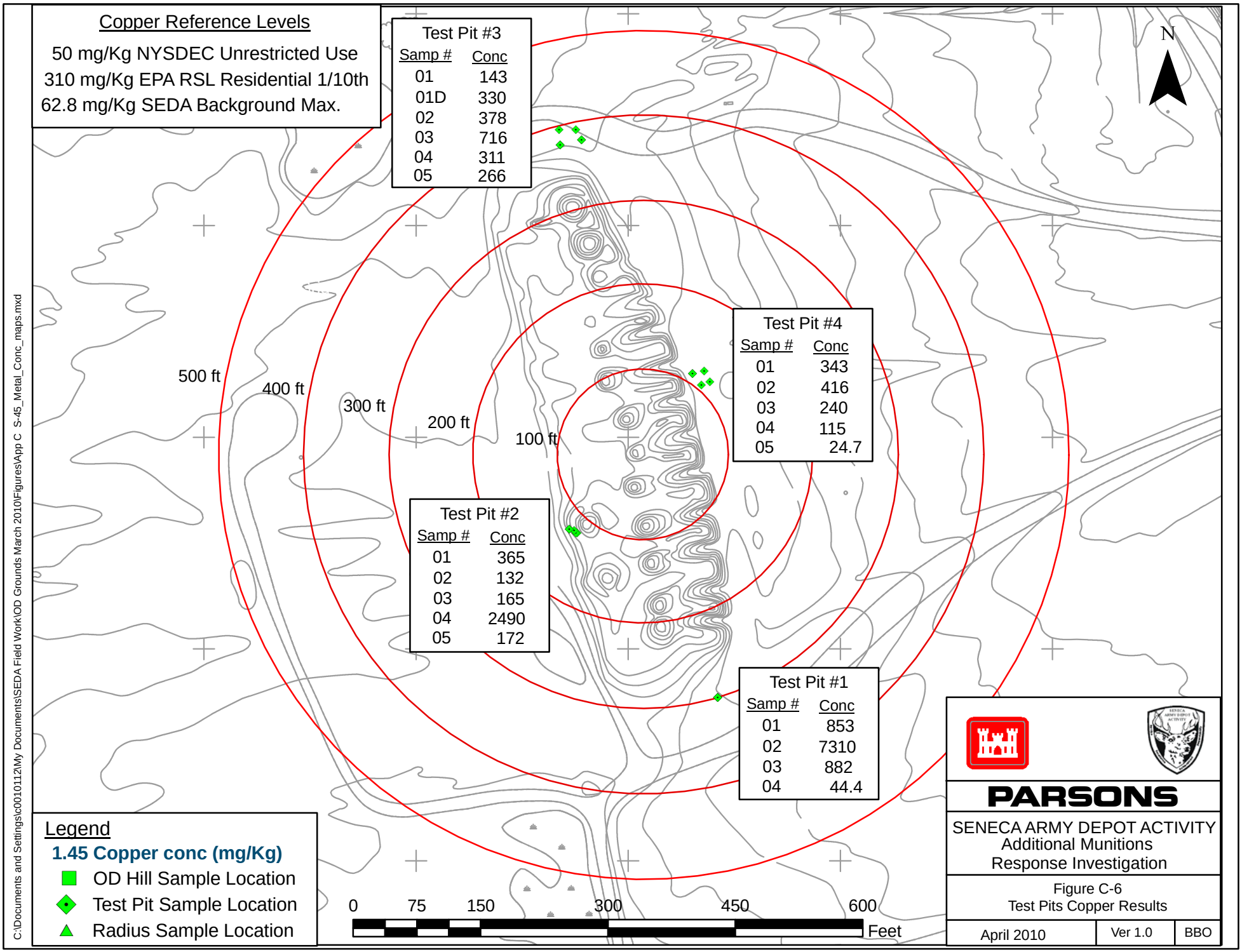
Copper Reference Levels
50 mg/Kg NYSDEC Unrestricted Use
310 mg/Kg EPA RSL Residential 1/10th
62.8 mg/Kg SEDA Background Max.
Legend
1.45 Copper conc (mg/Kg)
OD Hill Sample Location
Test Pit Sample Location
Radius Sample Location
PARSONS
SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation
Figure C-5
OD Hill Copper Results
April 2010
Ver 1.0
BBO


Copper Reference Levels
50 mg/Kg NYSDEC Unrestricted Use
310 mg/Kg EPA RSL Residential 1/10th
62.8 mg/Kg SEDA Background Max.
Test Pit #3
Samp # Conc
01 143
01D 330
02 378
03 716
04 311
05 266
Test Pit #4
Samp # Conc
01 343
02 416
03 240
04 115
05 24.7
Test Pit #2
Samp # Conc
01 365
02 132
03 165
04 2490
05 172
Test Pit #1
Samp # Conc
01 853
02 7310
03 882
04 44.4
500 ft
400 ft
300 ft
200 ft
100 ft
N
Legend
1.45 Copper conc (mg/Kg)
OD Hill Sample Location
Test Pit Sample Location
Radius Sample Location
0 75 150 300 450 600
Feet
PARSONS
SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation
Figure C-6
Test Pits Copper Results
April 2010
Ver 1.0
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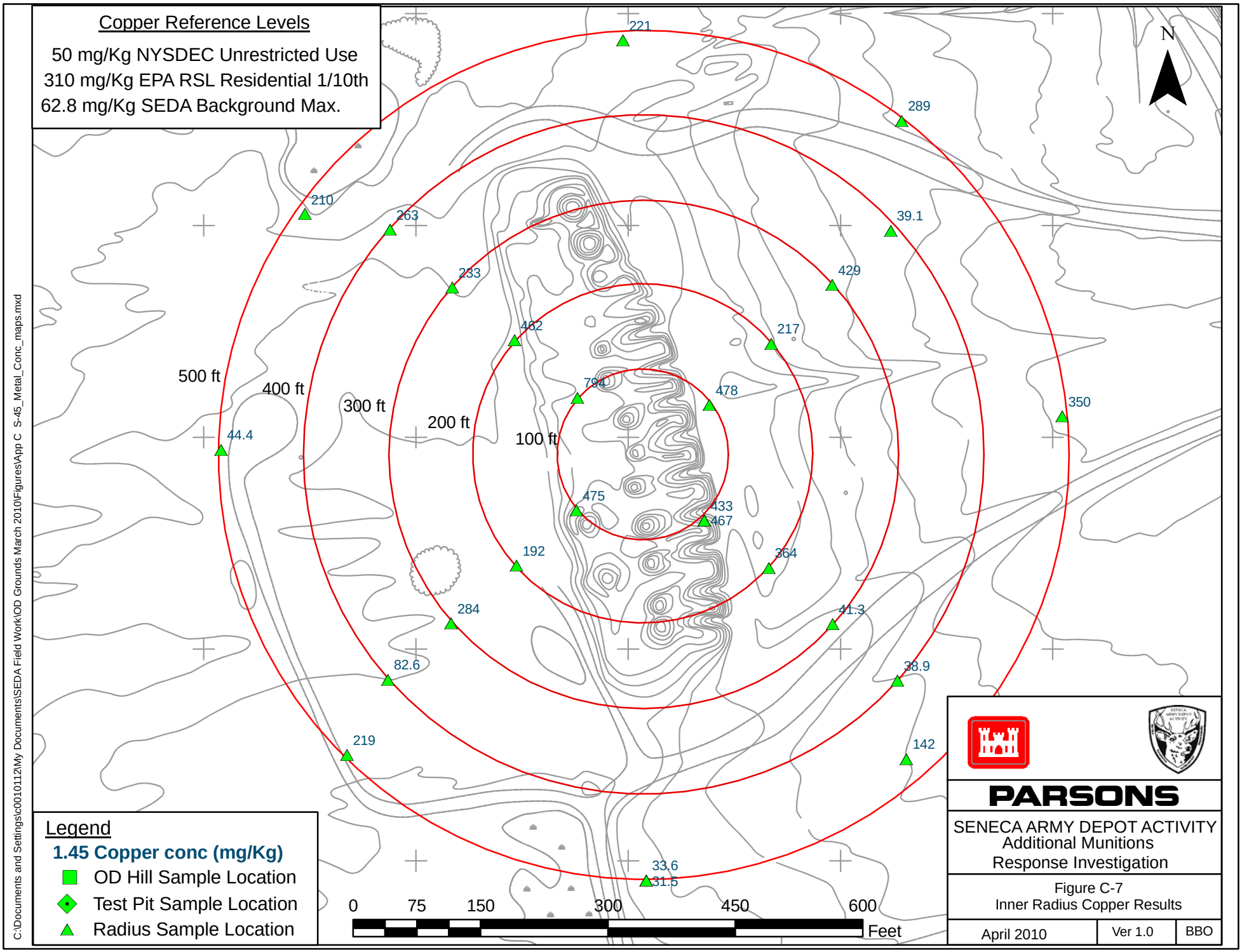
Copper Reference Levels
50 mg/Kg NYSDEC Unrestricted Use
310 mg/Kg EPA RSL Residential 1/10th
62.8 mg/Kg SEDA Background Max.
N
500 ft
400 ft
300 ft
200 ft
100 ft
221
289
210
263
39.1
233
429
462
217
794
478
350
44.4
475
433
467
192
364
284
41.3
82.6
38.9
219
142
33.6
31.5
0
75
150
300
450
600
Feet
Legend
1.45 Copper conc (mg/Kg)
OD Hill Sample Location
Test Pit Sample Location
Radius Sample Location
PARSONS
SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation
Figure C-7
Inner Radius Copper Results
April 2010
Ver 1.0
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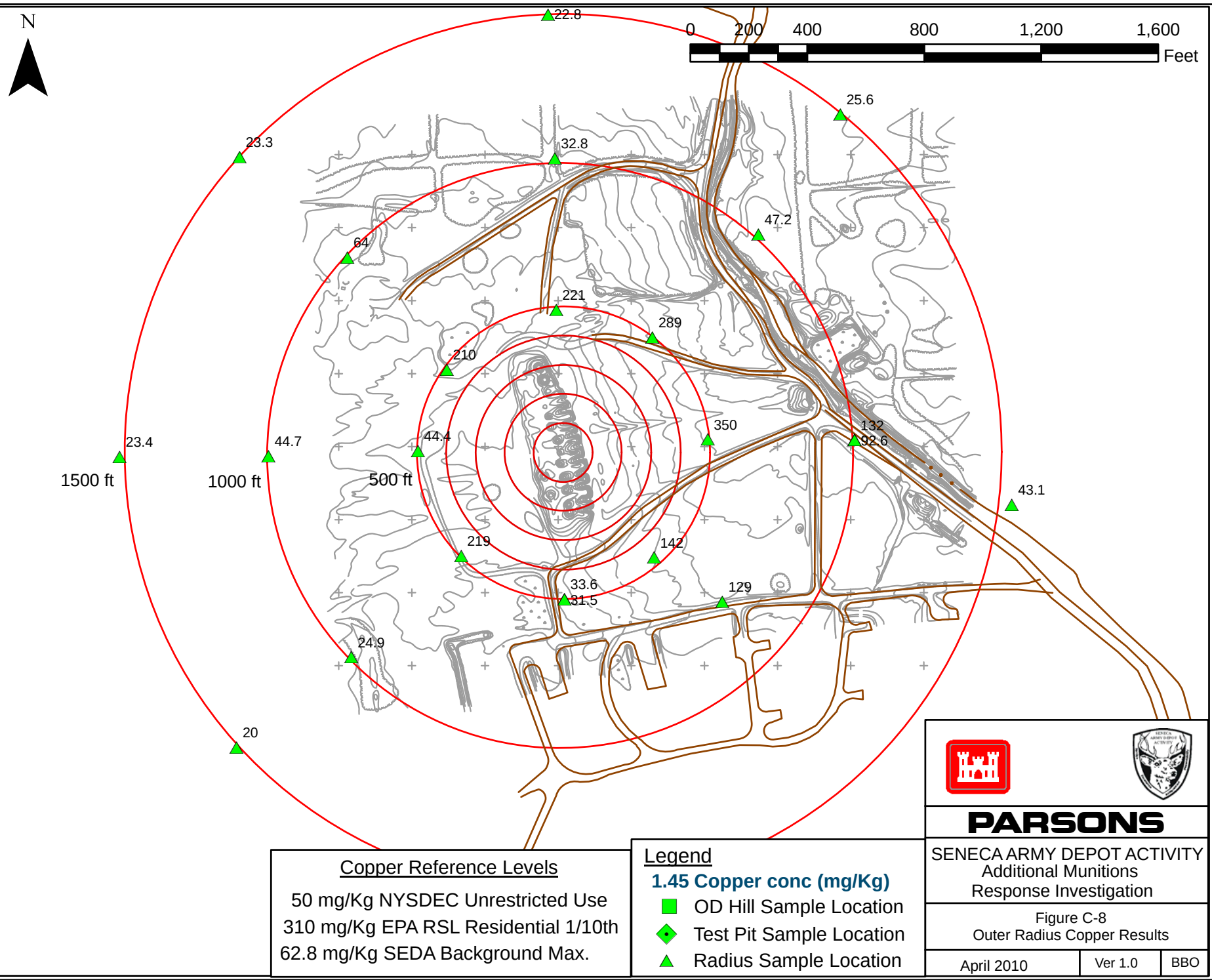
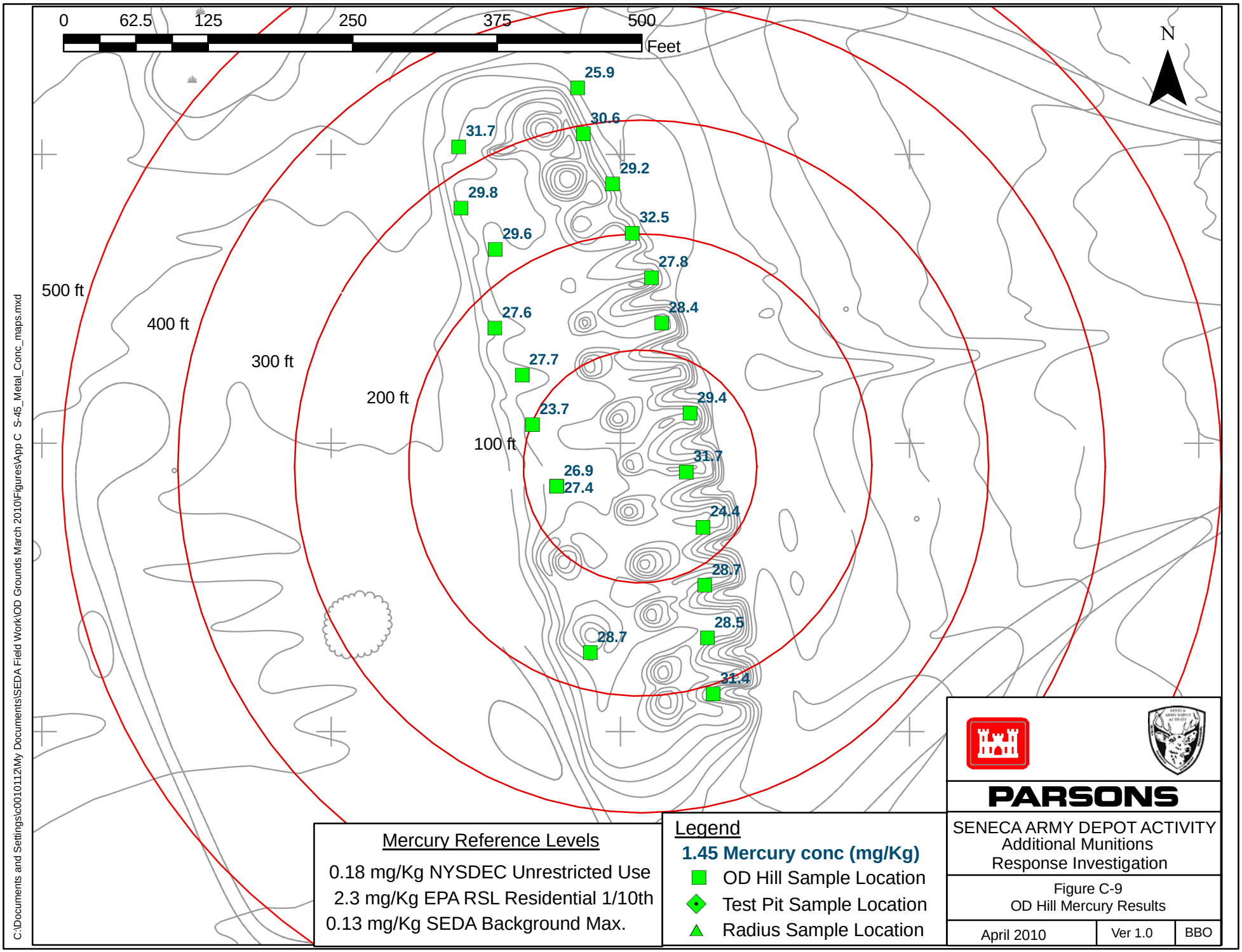

N
0 200 400 800 1,200 1,600
Feet
22.8
25.6
23.3
32.8
47.2
64
221
289
210
350
132
92.6
23.4
44.7
44.4
1500 ft
1000 ft
500 ft
43.1
219
142
33.6
31.5
129
24.9
20
Copper Reference Levels
50 mg/Kg NYSDEC Unrestricted Use
310 mg/Kg EPA RSL Residential 1/10th
62.8 mg/Kg SEDA Background Max.
Legend
1.45 Copper conc (mg/Kg)
OD Hill Sample Location
Test Pit Sample Location
Radius Sample Location
PARSONS
SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation
Figure C-8
Outer Radius Copper Results
April 2010
Ver 1.0
BBO
C:\Documents and Settings\c0010112\My Documents\SEDA Field Work\OD Grounds March 2010\FiguresVApp C S-45_Metal_Conc_maps.mxd


0
62.5
125
250
375
500
Feet
N
25.9
30.6
31.7
29.2
29.8
32.5
29.6
27.8
28.4
27.6
27.7
29.4
23.7
31.7
26.9
27.4
24.4
28.7
28.5
28.7
31.4
500 ft
400 ft
300 ft
200 ft
100 ft
Mercury Reference Levels
0.18 mg/Kg NYSDEC Unrestricted Use
2.3 mg/Kg EPA RSL Residential 1/10th
0.13 mg/Kg SEDA Background Max.
Legend
1.45 Mercury conc (mg/Kg)
OD Hill Sample Location
Test Pit Sample Location
Radius Sample Location
PARSONS
SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation
Figure C-9
OD Hill Mercury Results
April 2010
Ver 1.0
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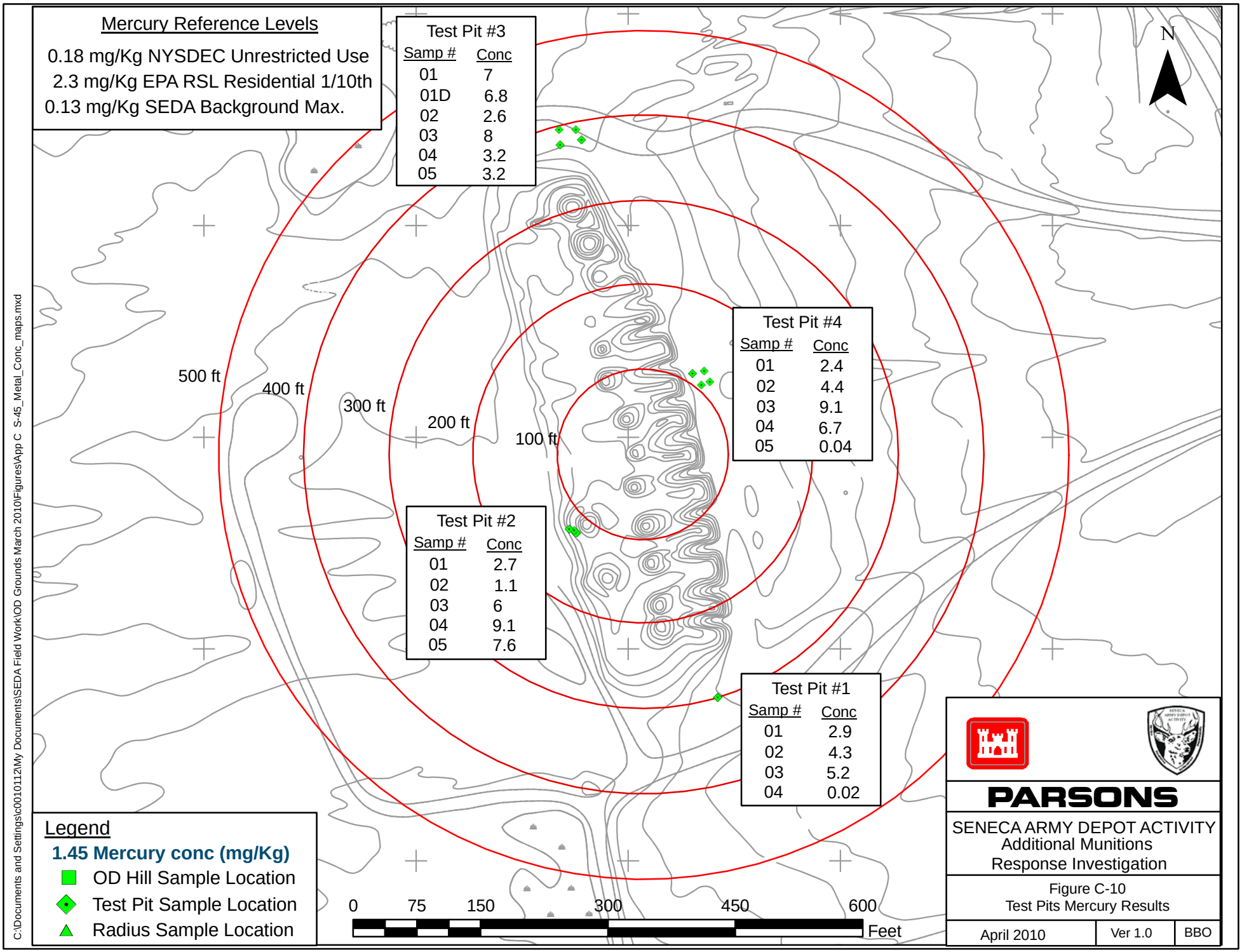
Mercury Reference Levels
0.18 mg/Kg NYSDEC Unrestricted Use
2.3 mg/Kg EPA RSL Residential 1/10th
0.13 mg/Kg SEDA Background Max.
Test Pit #3
Samp # Conc
01 7
01D 6.8
02 2.6
03 8
04 3.2
05 3.2
Test Pit #4
Samp # Conc
01 2.4
02 4.4
03 9.1
04 6.7
05 0.04
Test Pit #2
Samp # Conc
01 2.7
02 1.1
03 6
04 9.1
05 7.6
Test Pit #1
Samp # Conc
01 2.9
02 4.3
03 5.2
04 0.02
500 ft
400 ft
300 ft
200 ft
100 ft
N
Legend
1.45 Mercury conc (mg/Kg)
OD Hill Sample Location
Test Pit Sample Location
Radius Sample Location
0 75 150 300 450 600
Feet
PARSONS
SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation
Figure C-10
Test Pits Mercury Results
April 2010
Ver 1.0
BBO
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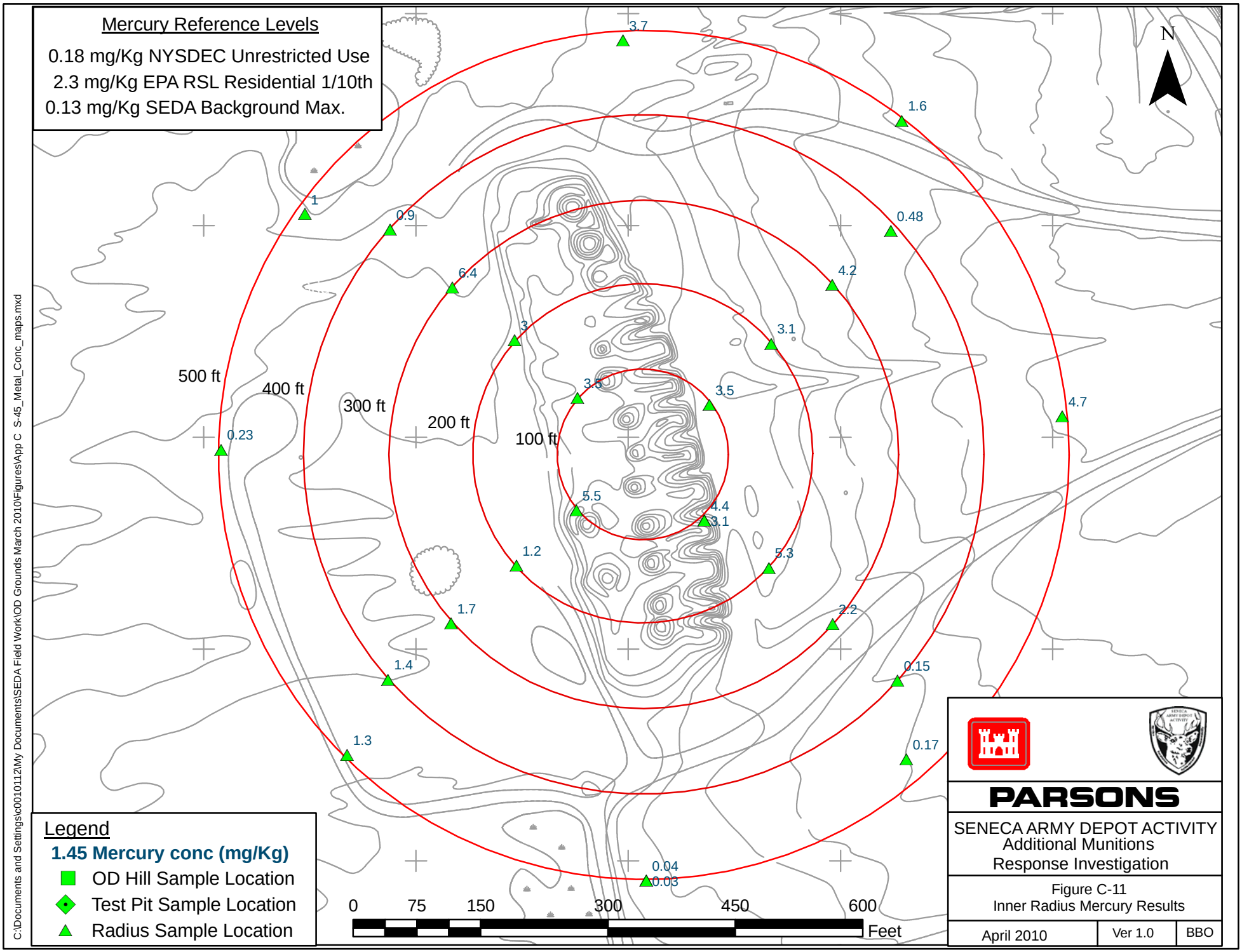
Mercury Reference Levels
0.18 mg/Kg NYSDEC Unrestricted Use
2.3 mg/Kg EPA RSL Residential 1/10th
0.13 mg/Kg SEDA Background Max.
N
500 ft
400 ft
300 ft
200 ft
100 ft
3.7
1.6
1
0.9
0.48
6.4
4.2
3
3.1
3.5
3.5
4.7
0.23
5.5
4.4
3.1
1.2
5.3
1.7
2.2
1.4
0.15
1.3
0.17
0.04
0.03
Legend
1.45 Mercury conc (mg/Kg)
OD Hill Sample Location
Test Pit Sample Location
Radius Sample Location
0
75
150
300
450
600
Feet
PARSONS
SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation
Figure C-11
Inner Radius Mercury Results
April 2010
Ver 1.0
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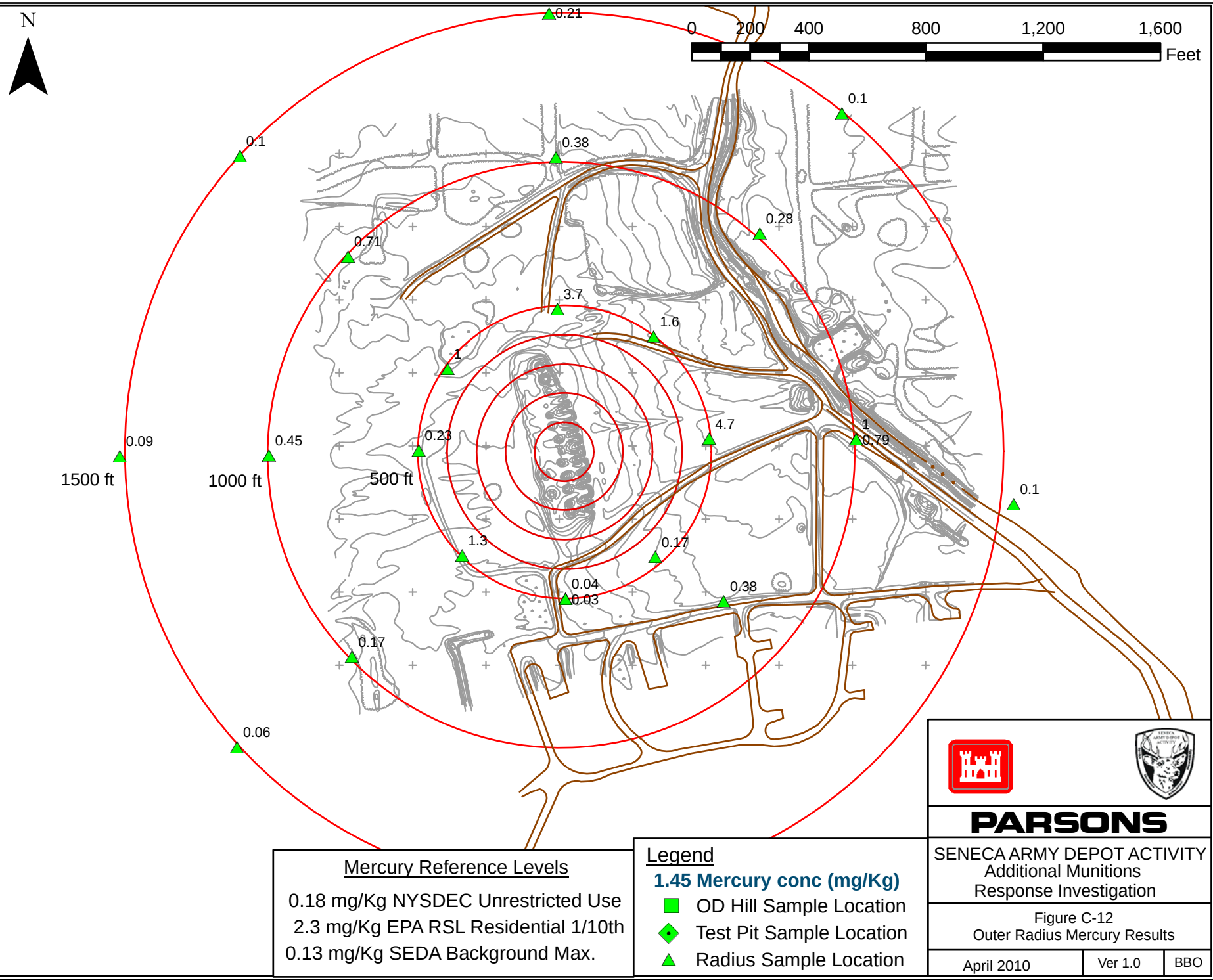
N
0
200
400
800
1,200
1,600
Feet
0.21
0.1
0.38
0.1
0.71
0.28
3.7
1.6
1
0.09
0.45
0.23
4.7
1
0.79
1500 ft
1000 ft
500 ft
0.1
1.3
0.17
0.04
0.03
0.38
0.17
0.06
Mercury Reference Levels
0.18 mg/Kg NYSDEC Unrestricted Use
2.3 mg/Kg EPA RSL Residential 1/10th
0.13 mg/Kg SEDA Background Max.
Legend
1.45 Mercury conc (mg/Kg)
OD Hill Sample Location
Test Pit Sample Location
Radius Sample Location
PARSONS
SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation
Figure C-12
Outer Radius Mercury Results
April 2010
Ver 1.0
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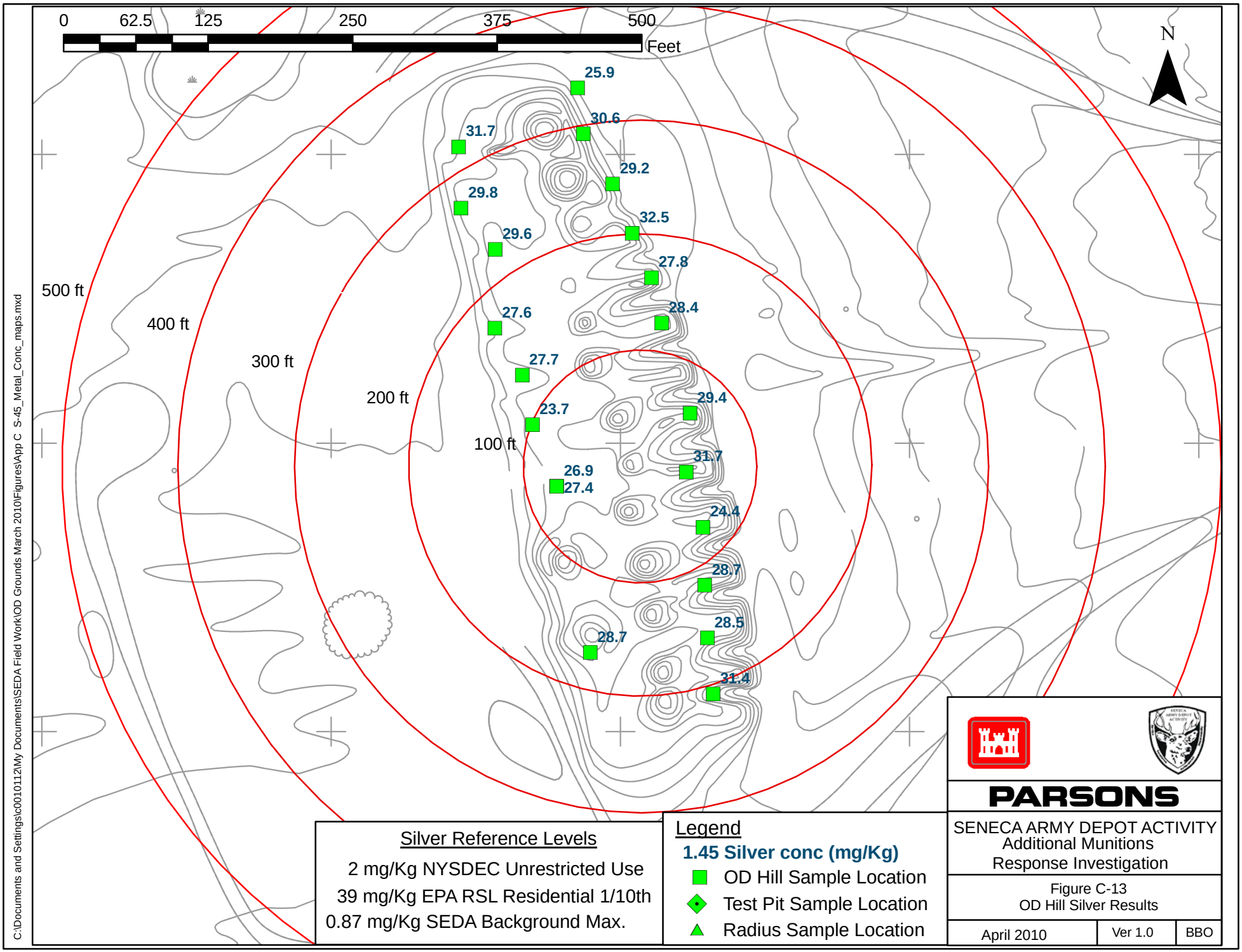
0
62.5
125
250
375
500
Feet
N
500 ft
400 ft
300 ft
200 ft
100 ft
25.9
30.6
31.7
29.2
29.8
32.5
29.6
27.8
27.6
28.4
27.7
29.4
23.7
31.7
26.9
27.4
24.4
28.7
28.5
28.7
31.4
C:\Documents and Settings\c0010112\My Documents\SEDA Field Work\OD Grounds March 2010\FiguresVApp C S-45_Metal_Conc_maps.mxd
Silver Reference Levels
2 mg/Kg NYSDEC Unrestricted Use
39 mg/Kg EPA RSL Residential 1/10th
0.87 mg/Kg SEDA Background Max.
Legend
1.45 Silver conc (mg/Kg)
OD Hill Sample Location
Test Pit Sample Location
Radius Sample Location
PARSONS
SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation
Figure C-13
OD Hill Silver Results
April 2010
Ver 1.0
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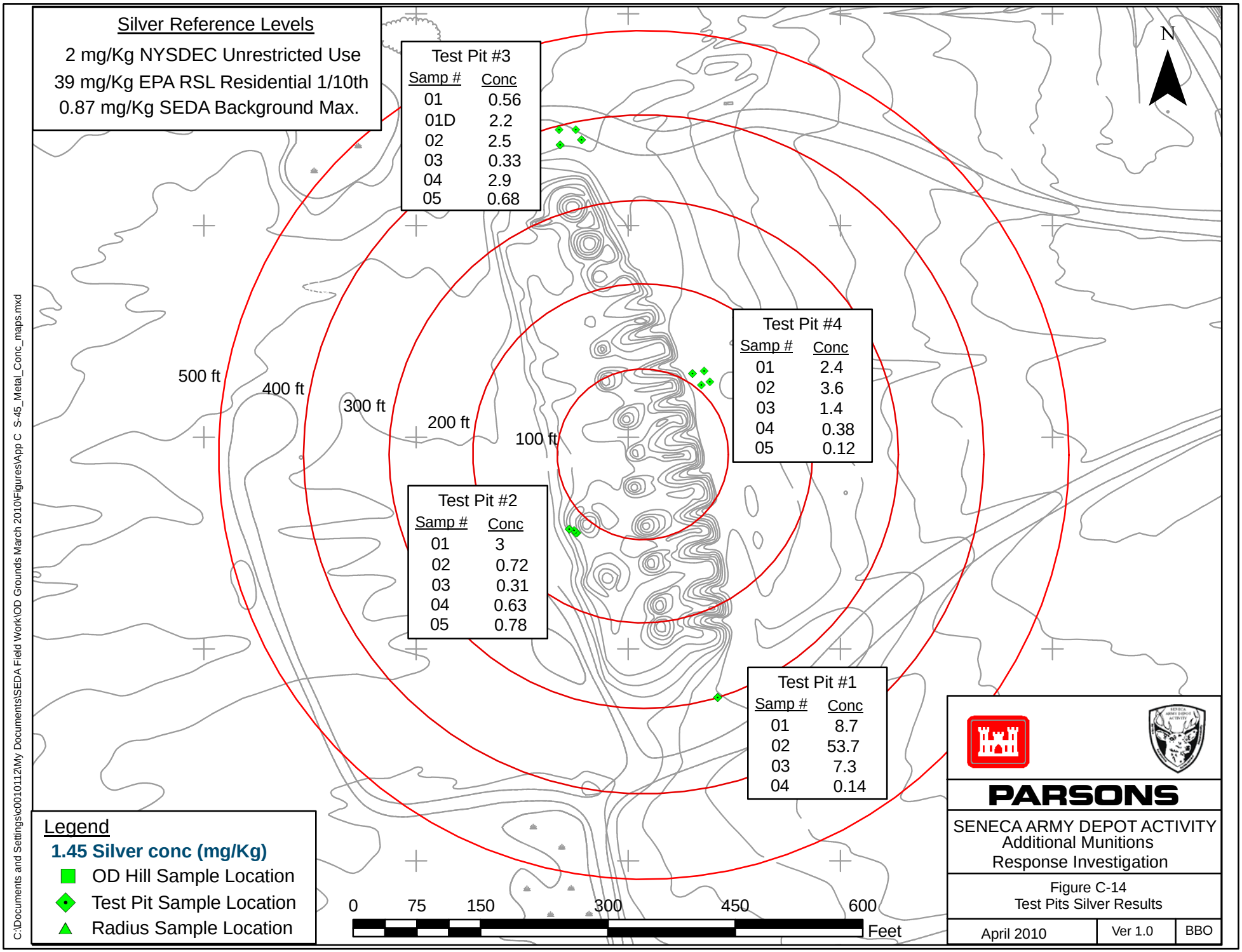
Silver Reference Levels
2 mg/Kg NYSDEC Unrestricted Use
39 mg/Kg EPA RSL Residential 1/10th
0.87 mg/Kg SEDA Background Max.
Test Pit #3
Samp # Conc
01 0.56
01D 2.2
02 2.5
03 0.33
04 2.9
05 0.68
Test Pit #4
Samp # Conc
01 2.4
02 3.6
03 1.4
04 0.38
05 0.12
Test Pit #2
Samp # Conc
01 3
02 0.72
03 0.31
04 0.63
05 0.78
Test Pit #1
Samp # Conc
01 8.7
02 53.7
03 7.3
04 0.14
500 ft
400 ft
300 ft
200 ft
100 ft
N
Legend
1.45 Silver conc (mg/Kg)
OD Hill Sample Location
Test Pit Sample Location
Radius Sample Location
0 75 150 300 450 600
Feet
PARSONS
SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation
Figure C-14
Test Pits Silver Results
April 2010
Ver 1.0
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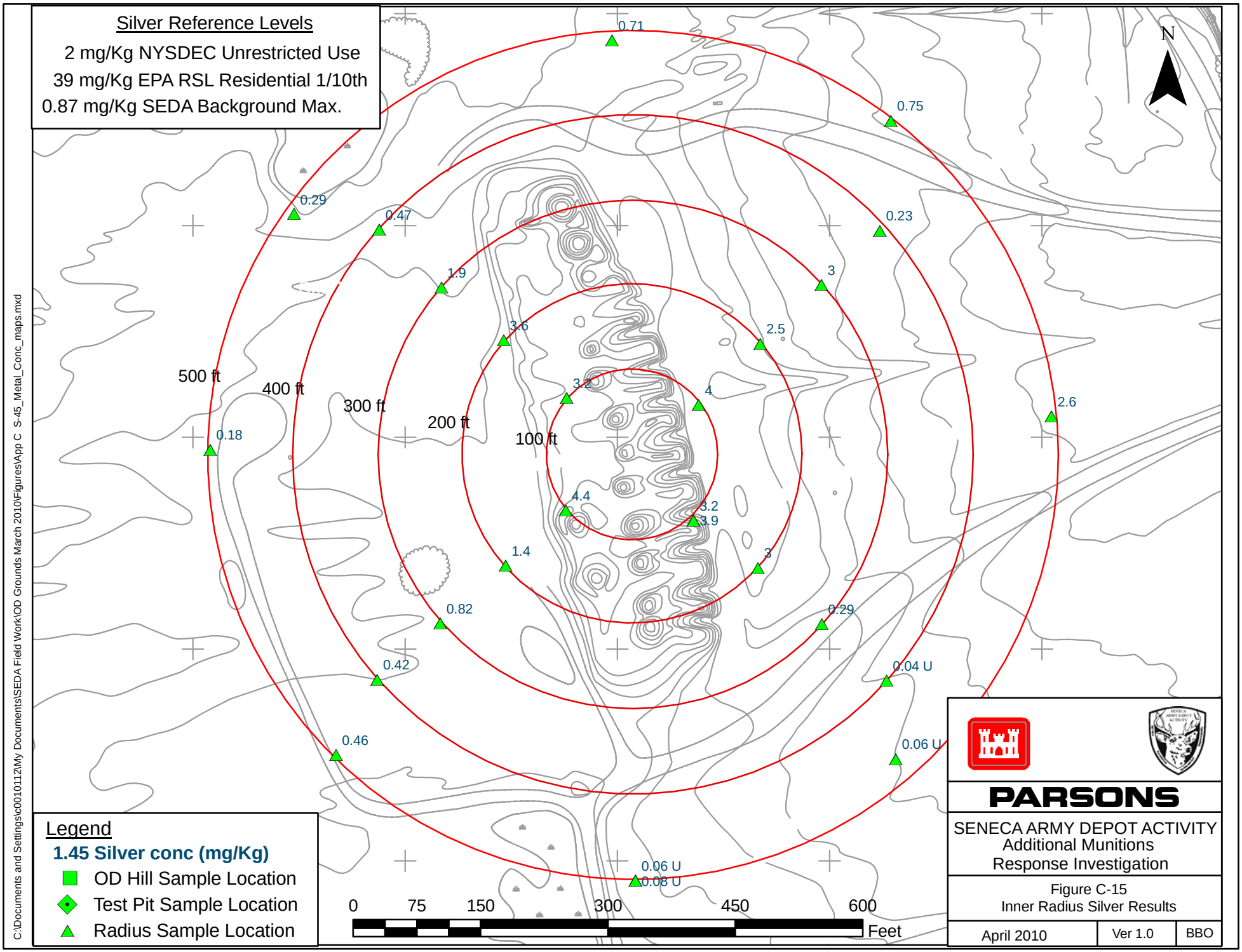
Silver Reference Levels
2 mg/Kg NYSDEC Unrestricted Use
39 mg/Kg EPA RSL Residential 1/10th
0.87 mg/Kg SEDA Background Max.
N
0.71
0.75
0.29
0.47
0.23
1.9
3
3.6
2.5
500 ft
400 ft
300 ft
200 ft
100 ft
3.2
4
2.6
0.18
4.4
3.2
3.9
1.4
3
0.82
0.29
0.42
0.04 U
0.46
0.06 U
0.06 U
0.08 U
0
75
150
300
450
600
Feet
Legend
1.45 Silver conc (mg/Kg)
OD Hill Sample Location
Test Pit Sample Location
Radius Sample Location
PARSONS
SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation
Figure C-15
Inner Radius Silver Results
April 2010
Ver 1.0
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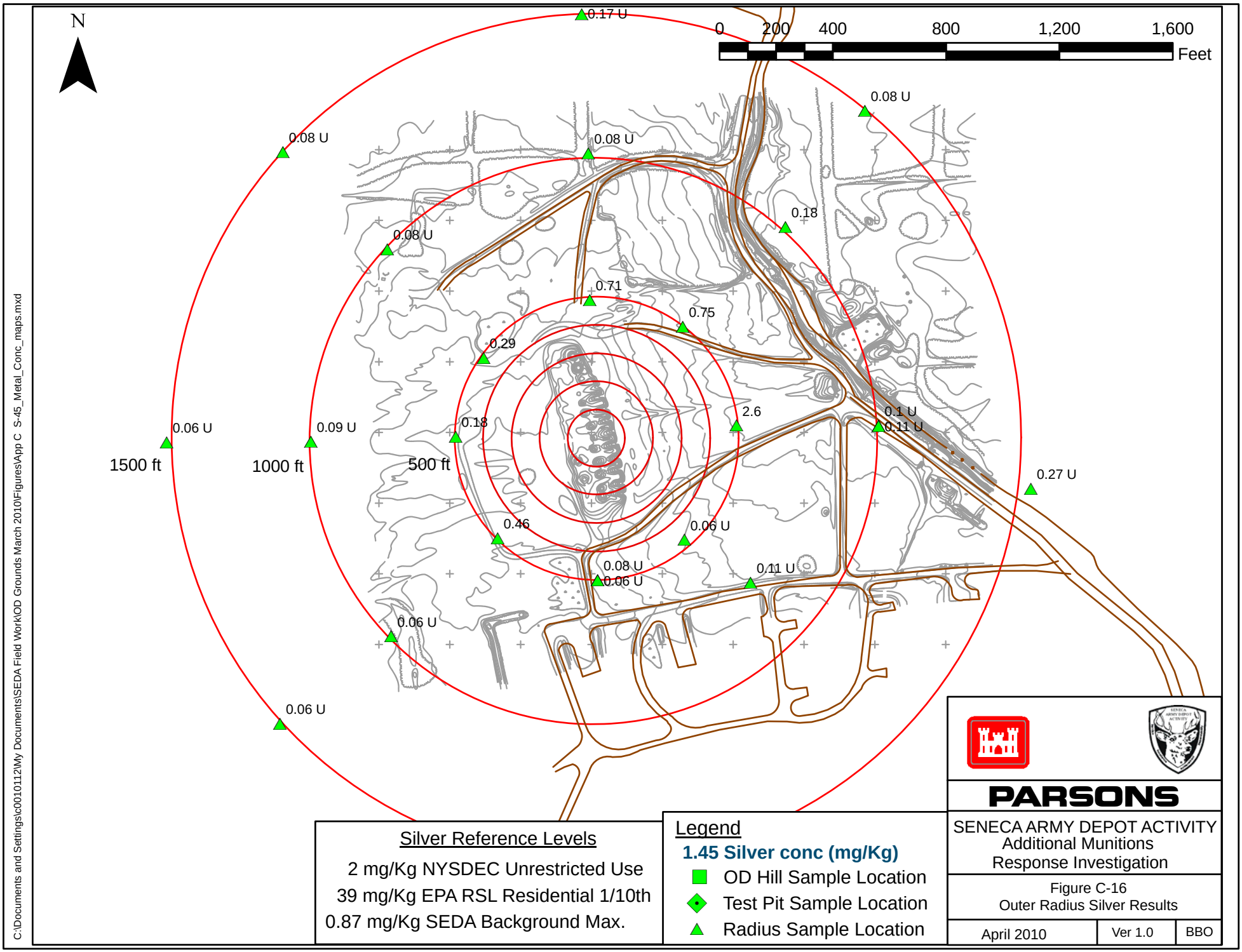
N
0
200
400
800
1,200
1,600
Feet
0.17 U
0.08 U
0.08 U
0.08 U
0.08 U
0.18
0.71
0.75
0.29
0.06 U
0.09 U
0.18
2.6
0.1 U
0.11 U
1500 ft
1000 ft
500 ft
0.27 U
0.46
0.06 U
0.08 U
0.06 U
0.11 U
0.06 U
0.06 U
Silver Reference Levels
2 mg/Kg NYSDEC Unrestricted Use
39 mg/Kg EPA RSL Residential 1/10th
0.87 mg/Kg SEDA Background Max.
Legend
1.45 Silver conc (mg/Kg)
OD Hill Sample Location
Test Pit Sample Location
Radius Sample Location
PARSONS
SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation
Figure C-16
Outer Radius Silver Results
April 2010
Ver 1.0
BBO
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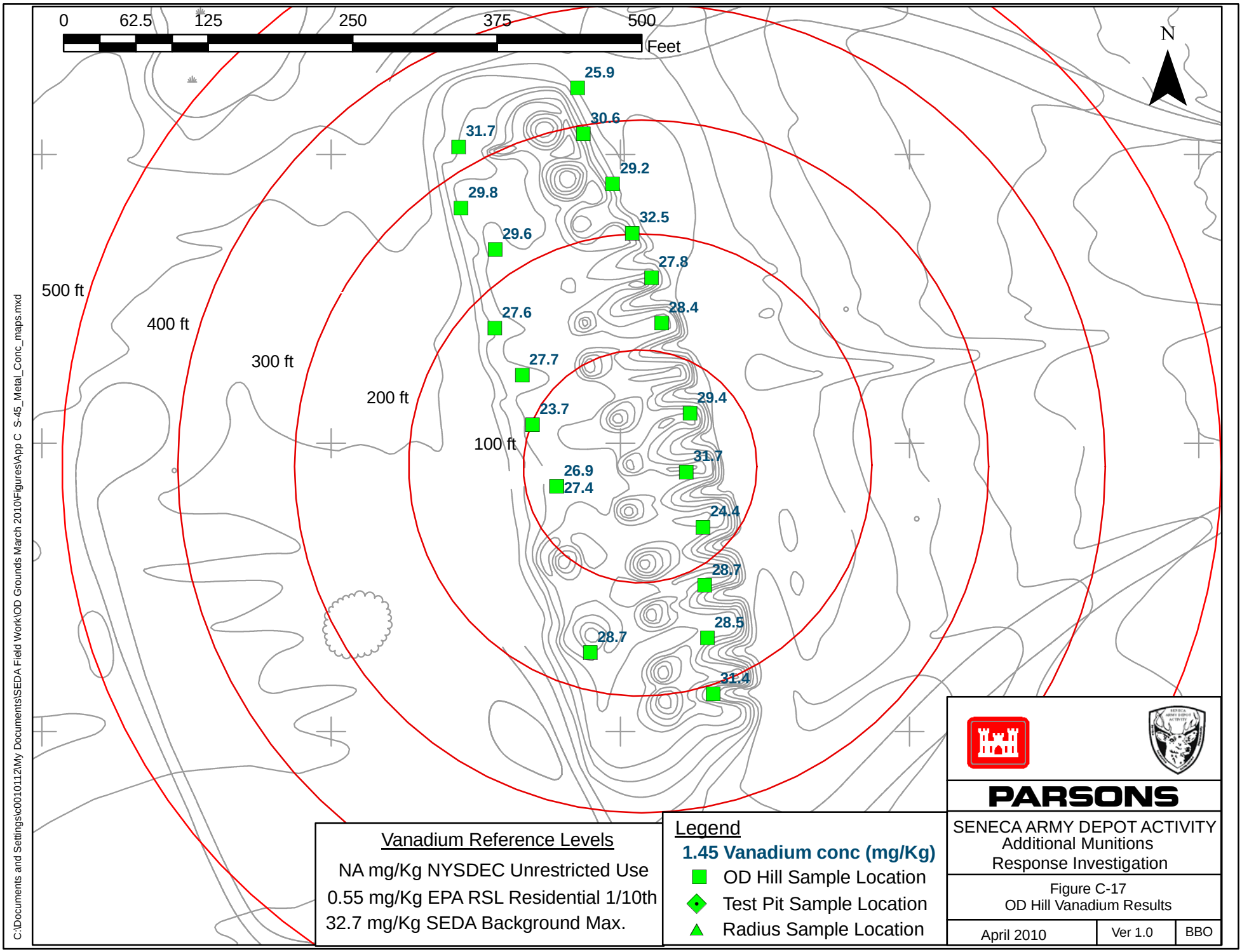
0
62.5
125
250
375
500
Feet
N
25.9
30.6
31.7
29.2
29.8
32.5
29.6
27.8
28.4
27.6
27.7
29.4
23.7
31.7
26.9
27.4
24.4
28.7
28.5
28.7
31.4
500 ft
400 ft
300 ft
200 ft
100 ft
Vanadium Reference Levels
NA mg/Kg NYSDEC Unrestricted Use
0.55 mg/Kg EPA RSL Residential 1/10th
32.7 mg/Kg SEDA Background Max.
Legend
1.45 Vanadium conc (mg/Kg)
OD Hill Sample Location
Test Pit Sample Location
Radius Sample Location
PARSONS
SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation
Figure C-17
OD Hill Vanadium Results
April 2010
Ver 1.0
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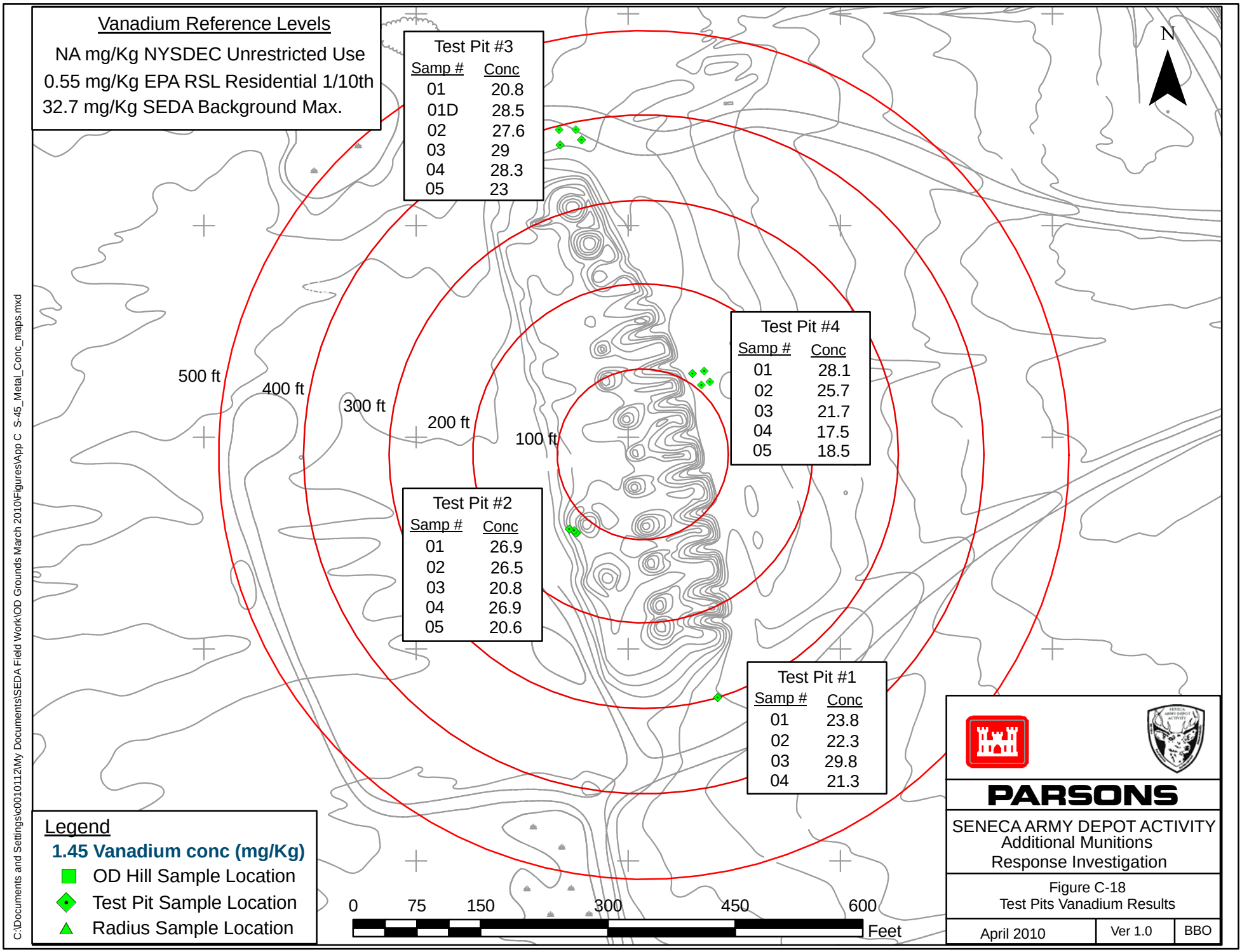
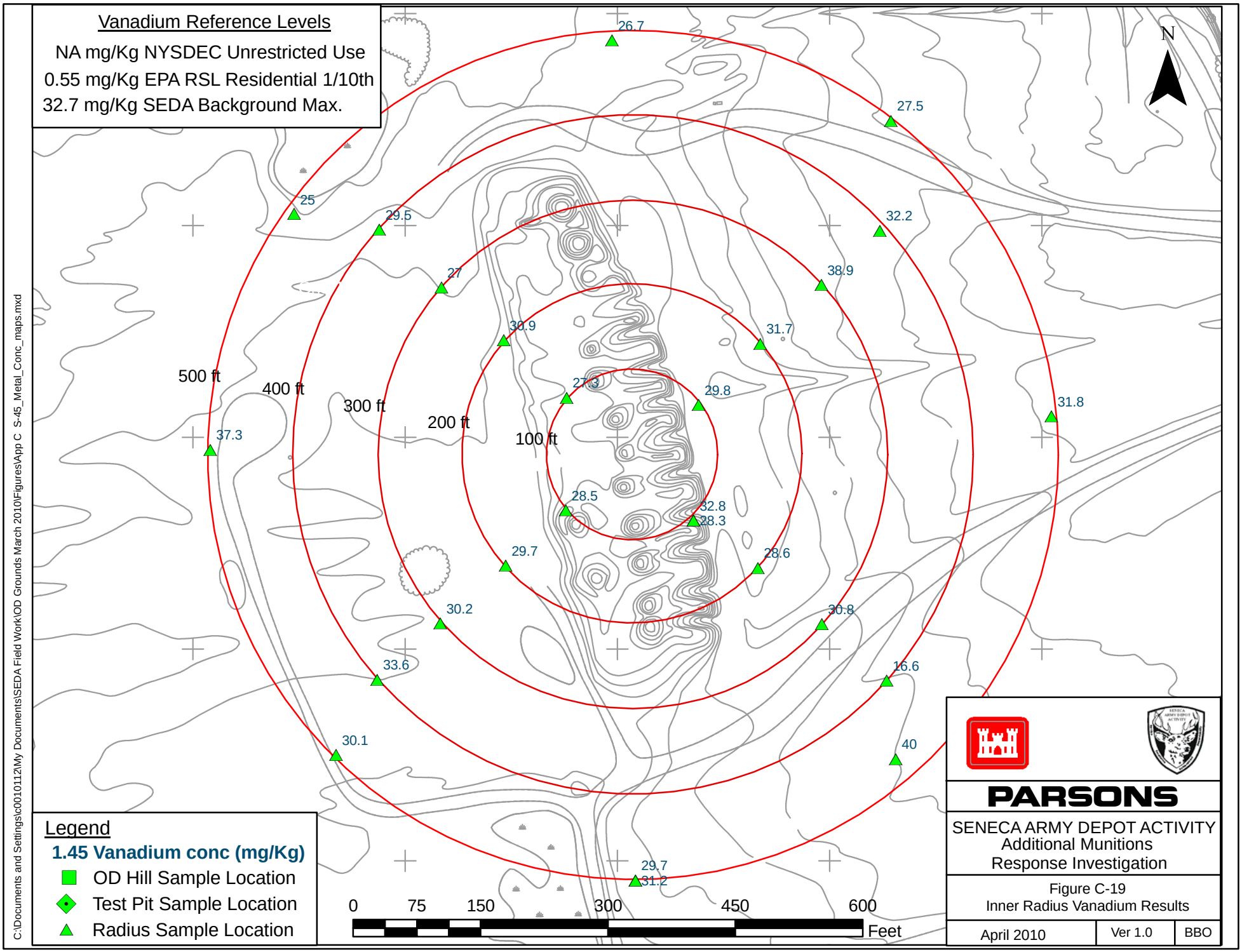

Vanadium Reference Levels
NA mg/Kg NYSDEC Unrestricted Use
0.55 mg/Kg EPA RSL Residential 1/10th
32.7 mg/Kg SEDA Background Max.
Test Pit #3
Samp # Conc
01 20.8
01D 28.5
02 27.6
03 29
04 28.3
05 23
Test Pit #4
Samp # Conc
01 28.1
02 25.7
03 21.7
04 17.5
05 18.5
Test Pit #2
Samp # Conc
01 26.9
02 26.5
03 20.8
04 26.9
05 20.6
Test Pit #1
Samp # Conc
01 23.8
02 22.3
03 29.8
04 21.3
500 ft
400 ft
300 ft
200 ft
100 ft
N
Legend
1.45 Vanadium conc (mg/Kg)
OD Hill Sample Location
Test Pit Sample Location
Radius Sample Location
0 75 150 300 450 600
Feet
PARSONS
SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation
Figure C-18
Test Pits Vanadium Results
April 2010
Ver 1.0
BBO
C:\Documents and Settings\c0010112\My Documents\SEDA Field Work\OD Grounds March 2010\FiguresApp C S-45_Metal_Conc_maps.mxd


Vanadium Reference Levels
NA mg/Kg NYSDEC Unrestricted Use
0.55 mg/Kg EPA RSL Residential 1/10th
32.7 mg/Kg SEDA Background Max.
N
26.7
27.5
25
29.5
32.2
27
38.9
30.9
31.7
500 ft
400 ft
300 ft
200 ft
100 ft
27.3
29.8
31.8
37.3
28.5
32.8
28.3
29.7
28.6
30.2
30.8
33.6
16.6
30.1
40
29.7
31.2
Legend
1.45 Vanadium conc (mg/Kg)
OD Hill Sample Location
Test Pit Sample Location
Radius Sample Location
0
75
150
300
450
600
Feet
PARSONS
SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation
Figure C-19
Inner Radius Vanadium Results
April 2010
Ver 1.0
BBO
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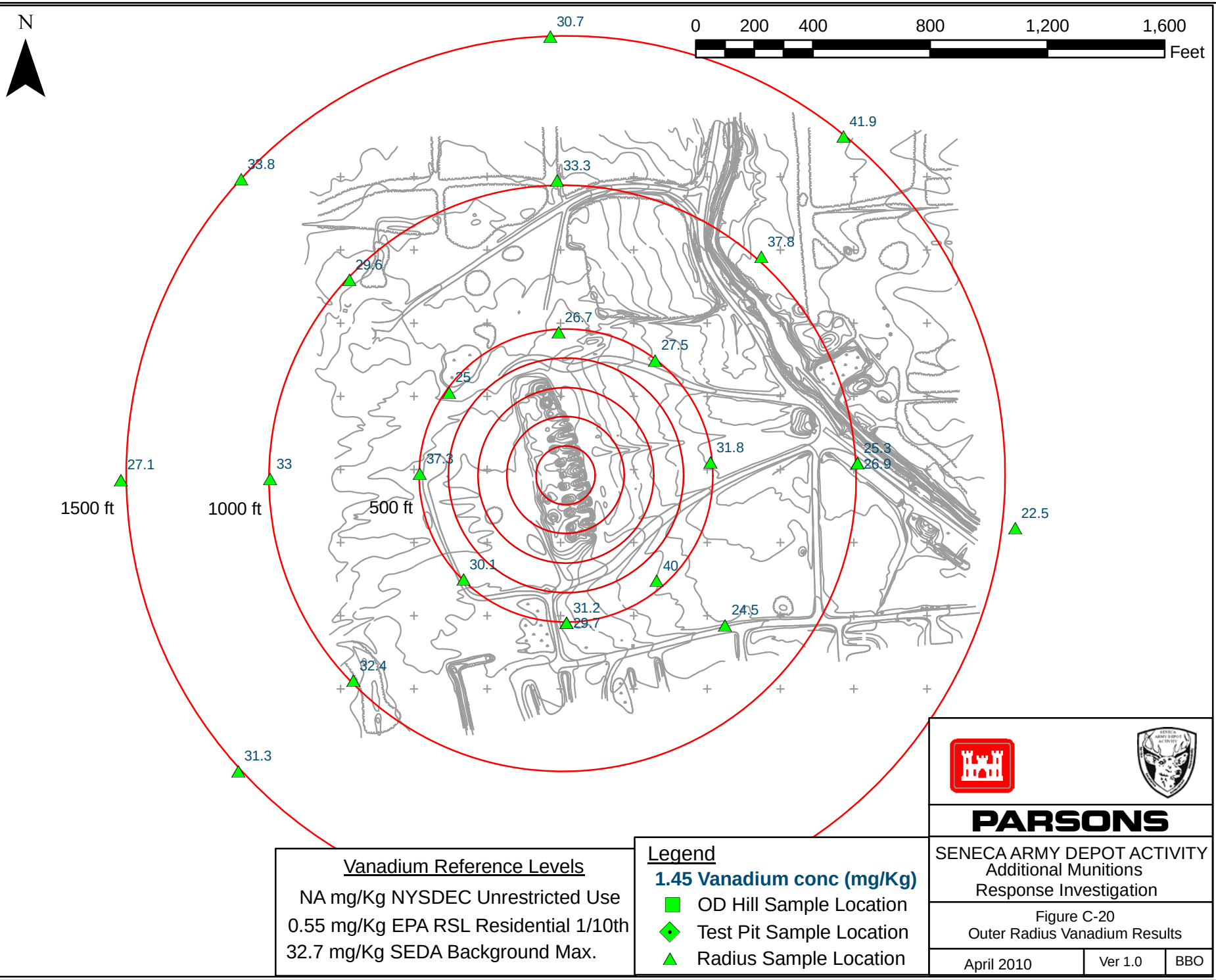
N
0 200 400 800 1,200 1,600
Feet
30.7
41.9
33.8
33.3
37.8
29.6
26.7
27.5
25
31.8
25.3
26.9
27.1
33
37.3
1500 ft
1000 ft
500 ft
22.5
30.1
40
31.2
29.7
24.5
32.4
31.3
Vanadium Reference Levels
NA mg/Kg NYSDEC Unrestricted Use
0.55 mg/Kg EPA RSL Residential 1/10th
32.7 mg/Kg SEDA Background Max.
Legend
1.45 Vanadium conc (mg/Kg)
OD Hill Sample Location
Test Pit Sample Location
Radius Sample Location
PARSONS
SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation
Figure C-20
Outer Radius Vanadium Results
April 2010
Ver 1.0
BBO
C:\Documents and Settings\c0010112\My Documents\SEDA Field Work\OD Grounds March 2010\FiguresApp C S-45_Metal_Conc_maps.mxd