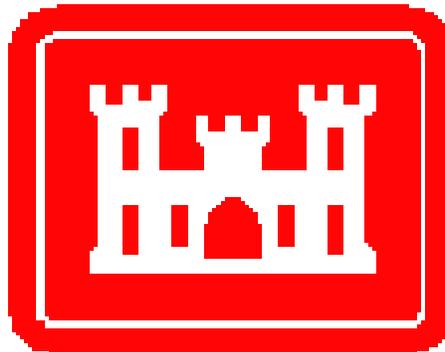

**SITE-WIDE CHEMICAL SAFETY SUBMISSION
SITE SPECIFIC ANNEX F – AMERICAN
UNIVERSITY LOT 18**

**SPRING VALLEY DERP/FUDS SITE, WASHINGTON, D.C.
CONTRACT NO. DACA87-00-D-0038, DO 0010**

Prepared For:

**U.S. ARMY ENGINEERING AND SUPPORT CENTER,
HUNTSVILLE**

**U.S. ARMY CORPS OF ENGINEERS,
BALTIMORE DISTRICT**



Prepared By:

PARSONS
10521 ROSEHAVEN STREET
FAIRFAX, VIRGINIA 22030

APRIL 5, 2004

SITE-WIDE CHEMICAL SAFETY SUBMISSION
SITE SPECIFIC ANNEX F – AMERICAN UNIVERSITY LOT 18

**SPRING VALLEY
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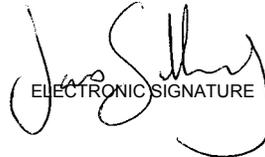
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APRIL 5, 2004

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Date: April 5, 2004

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APPENDICES

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(Prepared by USAESCH)

Appendix D: Sediment and Erosion Control

LIST OF ACRONYMS AND ABBREVIATIONS

ABP	Agent Breakdown Product
AU	American University
AUES	American University Experiment Station
CAFS	Chemical Agent Filtration System
CDL	Commercial Driving License
CENAB	U.S. Army Corps of Engineers, Baltimore District
CG	Phosgene
CK	Cyanogen Chloride
CSS	Chemical Safety Submission
CWM	Chemical Warfare Materiel
DAAMS	Depot Area Air Monitoring System
DCDOH	District of Columbia Department of Health
DERP	Defense Environmental Restoration Program
DOT	U.S. Department of Transportation
ECBC	Edgewood Chemical Biological Center
ECS	Engineering Control Structure
EE/CA	Engineering Evaluation/Cost Analysis
EPA	United States Environmental Protection Agency
EZ	Exclusion Zone
FUDS	Formally Used Defense Site
H	Mustard
HTW	Hazardous and Toxic Waste
IAW	In Accordance With
IDW	Investigation Derived Waste
L	lewisite
MCE	Maximum Credible Event
MINICAMS	Miniature Chemical Agent Monitoring System
MPM	Most Probable Munition
MRC	Multiple Round Container
NOSE	No Significant Effects
OE	Ordnance and Explosives

OPFTIR	Open-Path Fourier Transform Infrared Spectrometer
OU	Operable Unit
PDS	Personnel Decontamination Station
PID	Photo-ionization Detector
PMNSCM	Product Manager for Non-Stockpile Chemical Materiel
PS	Chloropicrin
PSHO	Project Safety and Health Officer
RCWM	Recovered Chemical Warfare Materiel
RI/FS	Remedial Investigation/Feasibility Study
SOP	Standard Operating Procedure
SSHO	Site Safety and Health Officer
SSHP	Site Safety And Health Plan
SVFUDS	Spring Valley Formerly Used Defense Site
TCRA	Time Critical Removal Action
TEU	U.S. Army Technical Escort Unit
USACE	U.S. Army Corps of Engineers
USAESCH	U.S. Army Engineering and Support Center, Huntsville
UXO	Unexploded Ordnance
WWI	World War I

1. WORK PLAN SUMMARY

1.0.0.1 The *Site-Wide Chemical Safety Submission (CSS) for the Spring Valley Defense Environmental Restoration Program (DERP)/Formally Used Defense Site (FUDS)*, Washington, D.C., U.S. Army Corps of Engineers (USACE), September 2003, was previously prepared for the general excavation of anomalies within the Spring Valley Formerly Used Defense Site (SVFUDS), Washington, D.C. The scope of the SVFUDS project is to investigate potential ordnance and explosives (OE) and recovered chemical warfare materiel (RCWM) burial locations and to intrusively investigate anomalies associated with the former American University Experiment Station (AUES), which was located at SVFUDS. The objective of the CSS is to address all probable investigation scenarios in a manner that protects the public, protects the personnel performing the investigations, and minimizes impacts on the normal activities of the public.

1.0.0.2 This Annex supplements the CSS and will cover the site-specific needs for an intrusive investigation of anomalies to be conducted at Lot 18 of the American University (AU). AU is located within the SVFUDS. All of these activities are being performed under contract to the U.S. Army Engineering and Support Center, Huntsville (USAESCH).

1.0.0.3 AU Lot 18 is one of 30 lots, each approximately one-half acre in size, that were designated for sampling purposes at AU during the Spring Valley Operable Unit 4 (OU-4) Remedial Investigation/Feasibility Study (RI/FS).

1.0.0.4 During World War I (WWI), the U.S. government established AUES to investigate the testing, production, and effects of noxious gases, antidotes, and protective masks. The AUES was located on the grounds of the current AU and used additional property in the vicinity to conduct this research and development on chemical warfare materiel (CWM), including mustard and lewisite agents, as well as adamsite, irritants, and smokes.

1.0.0.5 After the war, these activities were transferred to other locations and the site was returned to the owners. Additional information on the history of the AUES operations is provided in the *Remedial Investigation Report for the Operation Safe Removal Formerly Used Defense Site*, Washington, D.C., USACE, 1995.

1.1 PREVIOUS INVESTIGATIONS

1.1.1 Small Disposal Area

1.1.1.1 In April 1999, during a U.S. Environmental Protection Agency (EPA) SVFUDS sampling event, a District of Columbia Department of Health (DCDOH) representative discovered surface debris located on AU property in the vicinity of the site at 4801 Glenbrook Road. This area, designated as the Small Disposal Area (SDA), was thought to be a burial site potentially associated with AUES CWM-related research and testing activities. An investigation

of the SDA was conducted under *Addendum 09 to the Site Safety Submission, Spring Valley Operable Unit 3, Washington, D.C.* (USACE, October 2000).

1.1.1.2 In January 2001, debris including old used oil filters, glass and lab ware, and other miscellaneous debris was removed from the SDA. Soil contaminated with elevated levels of arsenic, lead, and mercury was encountered. Historical evidence suggests that, during the operation of the AUES, the SDA was very close to the AUES perimeter fence. An archaeological review of the items recovered during the excavation concluded that there were likely to have been at least two dumping episodes, and that the manufacturing date ranges of laboratory artifacts are consistent with use during the AUES activities. However, the data do not confirm whether the materials were dumped before or after the closure of the AUES.

1.1.1.3 The area was backfilled and closed following the 2001 removal. The approximate location of the SDA is shown on Figure 1-1.

1.1.2 Time-Critical Removal Action

1.1.2.1 In the Fall-Winter of 2000, Parsons performed the OU-4 RI/FS sampling investigation. This investigation focused on a portion of AU associated with the AUES and residential properties in the vicinity of the former AUES. The RI identified a number of lots with arsenic soil contamination. For lots with arsenic concentrations exceeding the screening level, grid soil sampling was recommended to further delineate the arsenic contamination. Initially scoped as an RI/FS, the investigation ultimately became a removal action as documented in the *Engineering Evaluation/Cost Analysis (EE/CA), Spring Valley Operable Units 4 and 5, Washington, D.C.*, December 2003 (Parsons).

1.1.2.2 A Time-Critical Removal Action (TCRA) was initiated for removal of arsenic-contaminated grids in the AU Lots. Although the OU-4 arsenic sampling for AU Lot 18 did not exceed the screening level, an overlapping portion of another AU lot in the western portion of AU Lot 18 (Kreeger Hall lot) did exceed and was grid sampled. Additionally, portions of the backyard of the residence at 4621 Rockwood Parkway overlapping AU Lot 18 were also grid sampled (AU also owns the 4621 property). This grid sampling identified seven grids with elevated levels (>20mg/kg) of arsenic in AU Lot 18 that were to be removed as part of the TCRA. Subsequent sampling established clearance depths for these grids. TCRA arsenic contaminated soil removal activities took place concurrently with the AU Lot 18 low-probability anomaly resolution and are described in Section 1.1.3.

1.1.3 AU Lot 18 Low Probability Anomaly Resolution

1.1.3.1 In April and May 2002, two separate geophysical surveys conducted by EODT and Weston for USACE at the AU lots identified anomalies in several of the grids included in the TCRA. The SVFUDS Partners, including USACE, EPA, and DCDOH, decided which anomalies should be intrusively investigated based on the survey results.

1.1.3.2 In November 2002, the low probability anomaly resolution at the AU Lot 18 area began with the intrusive investigation of 14 low-probability anomalies. During this intrusive operation, a potential disposal area containing glass, ceramic, metal, stone and concrete was identified. Following the discovery of the potential disposal area, at the request of AU,

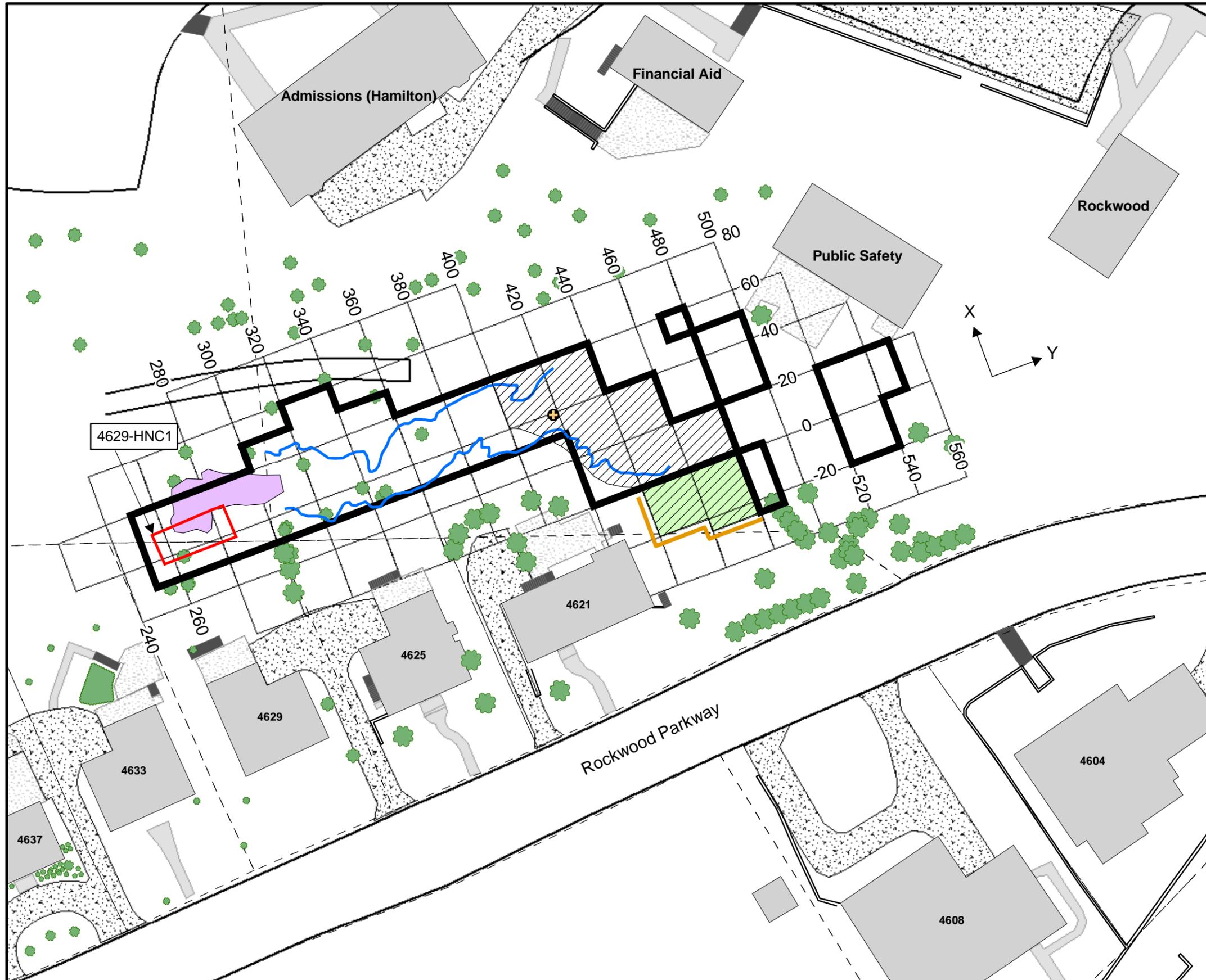


Figure 1-1
 AU Lot 18
 Investigation Area

Spring Valley Site-Wide
 Washington, DC

Legend

- Lewisite Bottle Found
- Sidewalk Cleared for Arsenic
- Lot 18 Anomaly Boundary (from Geophys)
- Wall
- Roads
- Lot 18 Excavation Extent (Mar '03)
- Geophysical Anomaly (4629-HNC1)
- Minimum Limit of Excavation
- Small Disposal Area
- Trees
- Parcels
- Stairs
- Buildings
- Driveway
- Deck/Porch
- Sidewalk
- Grids
- Grids Cleared for Glassware and Arsenic



1 inch equals 40 feet

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anomalies in AU Lot 18 were excavated until all the debris associated with the anomalies investigated was removed. Two grids (-20,440 and -20,460) were cleared for all debris (see Figure 1-1). During this anomaly investigation, pit characterization sampling indicated that three additional grids contained elevated arsenic concentrations, bringing the total of arsenic-contaminated grids identified at AU Lot 18 to ten.

1.1.3.3 TCRA related arsenic-contaminated soil removal activities took place concurrently with anomaly resolution in the grids in AU Lot 18. Arsenic-contaminated soil and glassware were completely removed from two of the arsenic-contaminated grids identified during the anomaly investigation (-20,440 and -20,460), and arsenic-contaminated soil was completely removed from one of the TCRA grids (40,400). While the arsenic-contaminated soil was removed from Grid 40,400, some TCRA-related sampling remains to be done to the south of that grid. These soil removal activities left a total of seven grids at AU Lot 18 that had been identified as containing arsenic at a concentration above 20mg/kg. Figures 1-1 and 1-2 show the extent of the excavation of low-probability anomalies and arsenic-contaminated soil in the AU Lot 18 area as of March 2003.

1.1.3.4 Items found during the excavation of AU Lot 18 included demi-john/carboy fragments, chemical bottles such as stoneware containers, Baker's Analyzed Chemicals bottles, Bausch and Lomb bottles, stoppers, tubes and stirrers. Domestic wares were also identified at AU Lot 18, including dairy bottles and fruit jars. According to an archaeological analysis of the debris performed by Parsons, most of the items uncovered in AU Lot 18 have manufacture dates prior to 1920. The remaining items were manufactured post 1920 and consisted mostly of fruit jars and ceramic plate fragments. The archaeologist concluded that this represented more than one dumping episode since 1848.

1.1.3.5 OE-related items were also uncovered during the investigation of the AU Lot 18 area. These consisted of scrap related to 75mm and Stokes mortar rounds, a Livens projectile, and 4.7-inch projectiles. All OE-related items were unfuzed, unfired, and empty and were classified as scrap by the USAESCH Safety Specialist. Disposal of these items is discussed in the *Waste Disposal Summary for the June 2003 Shipments* (Parsons, 2003). As a budgetary consideration, based on the number and types of items being found, it was decided to temporarily suspend AU Lot 18 operations in March 2003.

1.1.3.6 In preparation for returning to the site, USAESCH, prepared a position paper titled *American University Lot 18, Spring Valley, Washington, D.C.* (USAESCH, August 2003), which recommended that the intrusive investigation at AU Lot 18 be conducted under an approved CSS as a potential chemical warfare materiel site. Subsequent analysis by Edgewood Chemical Biological Center (ECBC) of an intact bottle recovered from AU Lot 18 found that it contained approximately 6 milliliters of 0.3 percent lewisite solution (0.3 µg/L), supporting the recommendation of the position paper.

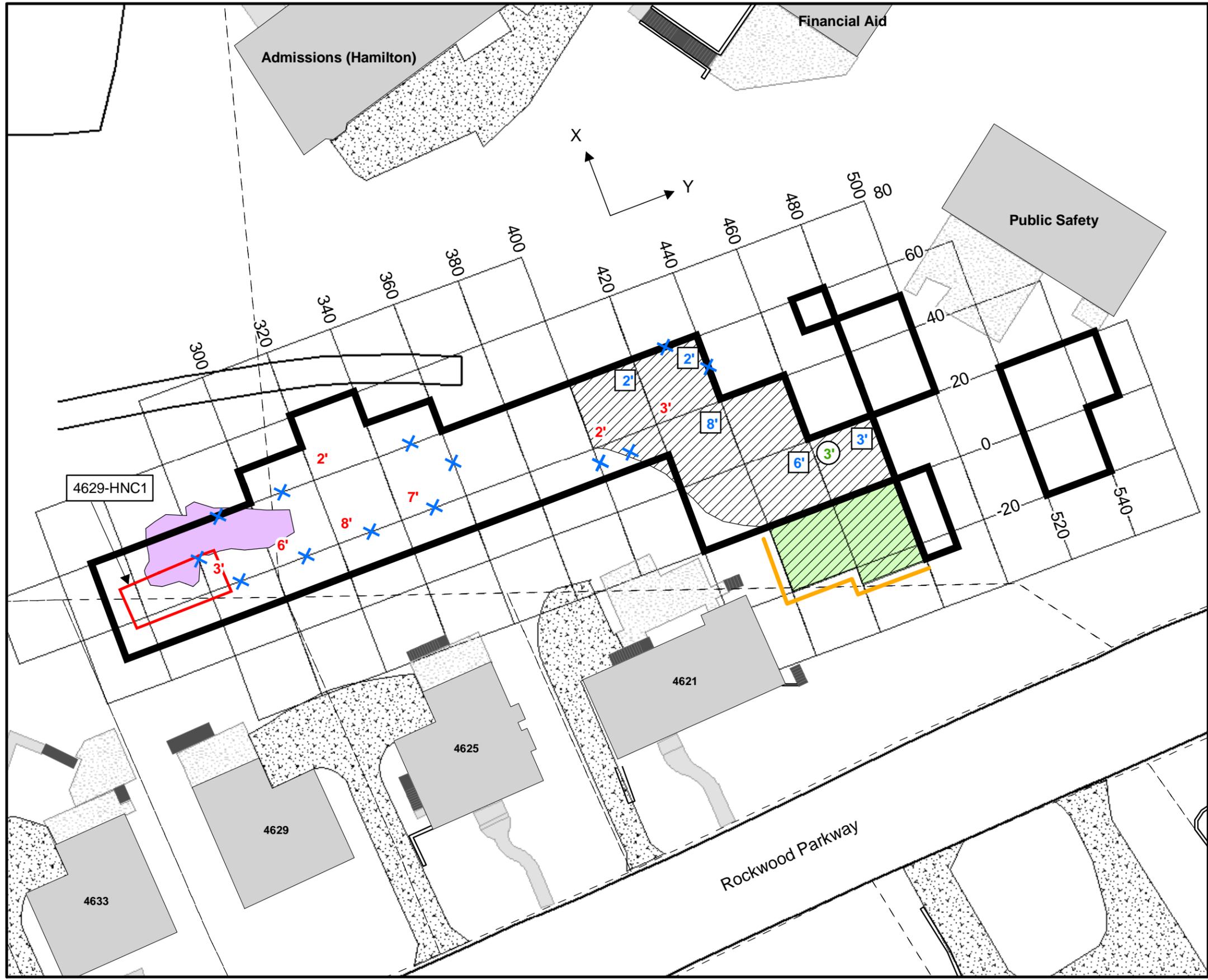
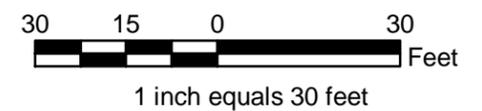


Figure 1-2
 AU Lot 18
 Additional Arsenic Excavation

Spring Valley Site-Wide
 Washington, DC

Legend

- 5' Established TCRA Clearance Depth
- 5' Arsenic Contamination Exists at Depth Noted
- 5' Grid Previously Excavated to Depth Noted & Backfilled with Clean Soil
- + Additional TCRA Sampling Required
- Sidewall Cleared for Arsenic
- Wall
- Roads
- Grids
- Lot 18 Excavation Extent (Mar '03)
- Geophysical Anomaly (4629-HNC1)
- Minimum Limit of Excavation
- Small Disposal Area
- Parcels
- Stairs
- Buildings
- Driveway
- Deck/Porch
- Sidewalk
- Grids Cleared for Glassware and Arsenic



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1.1.4 Goals and Objectives

1.1.4.1 The primary goal of the intrusive investigation is to remove all potentially AUES-related items from the suspect disposal area at AU Lot 18. The boundary of this suspect disposal area has been estimated using data gathered during previous geophysical data (see Figure A-1 in Attachment 1), and the results of the previous intrusive investigations and grid sampling for arsenic.

1.1.4.2 Additionally, geophysical investigation has identified an anomalous area (4629-HNC1) located behind the property at 4629 Rockwood Parkway. Because the anomaly is located directly adjacent to the suspected AU Lot 18 disposal area, minimum limit of excavation for the investigation has been extended around this anomaly.

1.1.4.3 Based on the data collected during the previous investigations, the objectives of the investigation at AU Lot 18 to be performed under this CSS Annex are to:

- Remove all soil, glassware and debris from the suspected disposal area at AU Lot 18;
- Investigate and resolve the anomaly at 4629 Rockwood Parkway (4629-HNC1);
- Remove Hazardous and Toxic Waste (HTW)-contaminated soil identified in the immediate vicinity of the suspect disposal area at AU Lot 18.

1.1.4.4 The estimated minimum limit of excavation to remove the suspect disposal area at AU Lot 18 is shown in Figures 1-1 and 1-2.

1.2 CONVENTIONAL ORDNANCE HANDLING PLAN

1.2.0.1 Based on the USAESCH position paper titled *Maximum Credible Event (MCE) for the American University Lot 18, Spring Valley, Washington D.C.*, USAESCH, October 2003 (see Appendix C), conventional OE items are not expected to be found at this site.

1.2.0.2 In the event that OE items are recovered during this investigation, the contingency plan will be initiated as described in the CSS, Volume II, Part A, Section 4. Any OE items recovered will be handled in accordance with (IAW) the CSS, Volume I, Section 1.1.

1.3 SUMMARY OF ACTIVITIES

1.3.1 RCWM/OE

1.3.1.1 For this site, the chemical agents of concern are mustard agent (H) and lewisite (L). These agents and their associated agent breakdown products will be monitored for during the course of the investigation (Section 3).

1.3.1.2 Activities at this site will, at a minimum, involve the intrusive investigation of the limit of excavation delineated in Figure 1-1. This minimum limit of excavation has been

subdivided into grids (20 feet by 20 feet) based on the grid system that was used during the previous Parsons investigations at AU Lot 18. Intrusive activities involving glassware and debris removal will be conducted under an engineering control structure (ECS), which will be moved during the course of the investigation as the excavation area progresses from grid to grid. The planned movement for excavation activities is to progress generally from east to west across the site, and from south to north over each grid within the minimum limit of excavation; however, this planned progression may be modified if site-specific factors require it.

1.3.1.3 In order to systematically remove all glassware and debris from the suspected disposal area, each of these grids will be excavated IAW the Site-Wide CSS, Volume I, Section 1.2.1 and Volume II, Part A. The methodology for conducting these excavations is described in the following paragraphs.

1.3.1.4 The excavation for glassware and debris removal will use a sifting table located inside the ECS to facilitate examination of the excavated soil. Each lift of excavated soil will be deposited on to the sifting table, where the soil will be inspected by members of the excavation team using hand rakes or other suitable hand tools. Glassware and debris will be segregated for further assessment and/or disposal. Excavated soil will be placed inside drums.

1.3.1.5 Each of the grids within the minimum limit of excavation (Figure 1-1) will be excavated until they are cleared for glassware and debris. Once grids are cleared for glassware and debris, the excavation will be extended a fixed distance for clearance confirmation, and then pit characterization samples will be collected. If these pit characterization samples are clear for agent/agent breakdown products (ABPs), the CWM-related excavation in that grid will be considered to be complete. Soil that is clear for agent/ABPs but is identified to contain HTW compounds will be removed as a separate stage of this investigation (Section 1.3.2).

1.3.1.6 For clearance purposes, each grid will be excavated to a depth where either (a) the excavation is clear for glassware and debris, or (b) when the excavation has reached saprolite or native soil. The excavation will be considered to be “clear for glassware and debris” when the excavated soil contains no glass containers, debris, or identifiable fragments thereof. Once the soil is considered to be clear for glassware and debris, the excavation will be taken one foot deeper for confirmation. Assuming that no further glassware and debris is found, pit characterization samples will be collected and, if the pit characterization samples are clear for agent/ABPs, the CWM-related excavation of the grid floor will cease.

1.3.1.7 Grid sidewalls will be cleared for glassware and debris in a similar fashion. Sidewalls at the boundary of the minimum limit of excavation will be excavated until the soil is clear for glassware and debris (see Para. 1.3.1.4). Once the soil is considered to be clear for glassware and debris, the excavation will be taken one foot farther for confirmation. Assuming that no further glassware and debris is found, pit characterization samples will be collected and, if the pit characterization samples are clear for agent/ABPs, the CWM-related excavation of that sidewall will cease.

1.3.1.8 Once the CWM-related excavation of the grid is complete, the grid will be lined with a biodegradable liner (e.g., jute mat) and backfilled with clean soil, pending pit characterization analysis for HTW compounds.

NOTE: An ongoing evaluation by the SVFUDS Partners of potential contaminants of concern based on the historical usage of chemicals at the AUES may result in additional parameters being added to the pit characterization sampling requirements. It is anticipated that this issue will be resolved and captured in the next revision of this document.

1.3.2 Hazardous and Toxic Waste

1.3.2.1 The removal of soil during the AU Lot 18 investigation will occur in two stages. The first stage of soil removal will involve soil associated with the glassware and debris removal within the suspect disposal area, or soil that is characterized to contain agent/ABPs. This soil will be excavated under engineering controls. However, once the excavation is clear for glassware and debris, and pit characterization samples are clear for agent/ABPs, further excavation of soil may be required if other HTW compounds are detected. Excavation of HTW-contaminated soil (only) will not be performed using engineering controls or air monitoring for CWM, as no chemical agent hazard exists.

1.3.2.2 If excavation of HTW-contaminated soil is required, removal activities will only be conducted on days when the CWM-related investigation is not in operation (e.g., if CWM-related intrusive investigation activities take place Monday through Thursday, excavation of HTW-contaminated soil may be performed on Friday and Saturday). Additionally, grids identified as containing HTW-contaminated soil will only be excavated once a distance of two grids (~40 feet) exists between the location of the ECS and the HTW-contaminated grids to be excavated. This margin is a conservative buffer zone to ensure that excavation of HTW-contaminated grids does not interfere with the equipment related to the engineering controls.

1.3.2.3 All soil excavated during the investigation at AU Lot 18 will be sampled and disposed of IAW the CSS, Volume I, Section 2.2.2 and Volume II, Part A, Section 8.

1.3.2.4 Intact containers, scrap, and investigation-derived waste (IDW) will be handled and disposed of IAW the CSS, Volume II, Part A, Sections 6, 7 and 9, respectively.

1.3.2.5 Seven of the grids within the boundary of the minimum limit of excavation at AU Lot 18 have been identified to contain arsenic at concentrations greater than 20 mg/kg. Figure 1-2 shows the areas of known arsenic contamination, as well as identified clearance depths where known. Because this arsenic-contaminated soil is located within the area to be excavated, this soil will be removed as part of this effort.

1.3.2.6 Following excavation of the arsenic-contaminated grids, confirmation sampling and subsequent analyses for arsenic will be carried out IAW the Quality Assurance Project Plan in Attachment F of the *Removal Action Design, Time Critical Removal Action, American University Athletic Fields and Other Critical American University Lots, Spring Valley Operable Unit 4, Washington, D.C.* (USACE, 2002). Where necessary, these grid confirmation samples will be collected in addition to pit characterization samples.

NOTE: An ongoing evaluation by the SVFUDS Partners of potential contaminants of concern based on the historical usage of chemicals at the AUES may result in additional parameters being added to the disposal characterization sampling requirements. It is

anticipated that this issue will be resolved and captured in the next revision of this document.

1.4 ORGANIZATIONS AND RESPONSIBILITIES

1.4.0.1 Organization and organization responsibilities will be IAW the Site-Wide CSS, Volume I, Section 1.3, and Volume II, Part A, Section 2. The organizations and their responsibilities are summarized in Table 1.1.

**TABLE 1.1:
ORGANIZATION AND RESPONSIBILITIES**

Responsibility	Organization
Geographic Military District (Project Manager, Site Operations Officer)	USACE, Baltimore District (CENAB)
Implementing Agency (Technical Manager for CWM, Safety Specialist)	U.S. Army Engineering and Support Center, Huntsville (USAESCH)
Transport and Disposal of RCWM	Product Manager for Non-Stockpile Chemical Materiel (PMNSCM)
RCWM Handling, Transport, and Assessment	U.S. Army Technical Escort Unit (TEU)
Agent/Industrial Chemical Air Monitoring and Analysis of CWM/ABPs	Edgewood Chemical Biological Center (ECBC)
OE Contractor [Site Manager, Project Safety and Health Officer (PSHO), and Site Safety Health Officer (SSHO)], Excavation Team, and Landscape Architect	Parsons
HTW Laboratory	GPL Laboratories
Site Support and HTW Waste Disposal	AWS Remediation
Landscape Contractor	Merrifield Garden Center

1.5 MAXIMUM CREDIBLE EVENT AND MOST PROBABLE MUNITION

1.5.1 Maximum Credible Event

1.5.1.1 The Maximum Credible Event (MCE) selected for AU Lot 18 is the evaporative release of lewisite from a one-liter container. This MCE is based on the historical use of the site and the MCE analysis contained in the USAESCH position paper titled *Maximum Credible Event (MCE) for the American University Lot 18, Spring Valley, Washington D.C.*, USAESCH, October 2003 (see Appendix C).

1.5.1.2 Using the D2SV modeling program, the No Significant Effects (NOSE) distance for an evaporative release of lewisite from a one-liter container without engineering controls was determined to be 59 meters, based upon an atmospheric stability factor of D, a wind speed of 1 meters/second, and a maximum temperature of 95°F (MCE and MPM Analysis for Site-Wide Operations, USAESCH, August 18, 2003). During the investigation at AU Lot 18, engineering controls in the form of an engineering control structure (ECS) and chemical agent filtration systems (CAFS) will be utilized to reduce the effective NOSE distance outside the ECS to zero.

1.5.2 Most Probable Munition

1.5.2.1 USAESCH determined that recovering explosively configured rounds at Lot 18 is not likely based on the MCE analysis contained in the USAESCH position paper titled *Maximum Credible Event (MCE) for the American University Lot 18, Spring Valley, Washington D.C.*, USAESCH, October 2003 (see Appendix C). This determination is based on the lack of historical evidence that the AU Lot 18 area was an impact area, firing point, or designated ordnance disposal area, and the evidence collected during previous intrusive investigations (Section 1.1.3). As a result, no Most Probable Munition was required for this investigation.

2. SAMPLING SUMMARY

2.0.0.1 Several types of samples will be collected and analyzed during the intrusive investigation at AU Lot 18. These samples will include soil (pit characterization, grid confirmation, and disposal characterization), scrap, aqueous investigation-derived waste (IDW) and water from the excavation (surface runoff and/or groundwater), and non-RCWM intact containers. All samples will be collected and handled IAW the Site-Wide CSS, Volume I, Section 2 and Volume II, Part A, Section 5.

2.1 PIT CHARACTERIZATION SAMPLING

2.1.0.1 Following excavation of each grid at AU Lot 18, the open excavation will be sampled for characterization parameters as described in the CSS, Volume II, Part A, Section 5.3. Due to the proposed extent of the excavation at AU Lot 18, pit characterization samples will be collected by grid throughout the excavation for the duration of the investigation.

2.1.0.2 Pit characterization samples will be collected from the center of the floor of each 20-foot by 20-foot grid, once the grid has been cleared for glass and debris as described in Section 1.3.1 of this Annex. Also, once the grid walls have been cleared for glassware and debris, pit characterization samples will be collected from the midpoint of the sidewall of each 20-foot by 20-foot grid, halfway between ground level and the pit floor, on the outer boundary of the proposed excavation area.

2.1.0.3 If CENAB and USAESCH determine that further excavation is required based on the results of the pit characterization sampling, over-excavation of the grid will be performed. If further excavation is required at the grid floor, the excavation will proceed one foot deeper, or until saprolite or native soil has been reached. If further excavation is required for a sidewall, the excavation will be taken one foot farther.

2.1.0.4 Following the over-excavation of the grid, additional pit characterization samples will be collected and the process will be repeated until the grids are determined to be clear, or until saprolite or native soil has been reached.

2.1.0.5 If the pit characterization samples are clear for agent/ABPs but indicate the presence of HTW, overexcavation of HTW-contaminated soil will be carried out once the ECS has been moved (Section 1.3.2).

NOTE: An ongoing evaluation by the SVFUDS Partners of potential contaminants of concern based on the historical usage of chemicals at the AUES may result in additional parameters being added to the pit characterization sampling requirements. It is anticipated that this issue will be resolved and captured in the next revision of this document.

2.2 GRID CONFIRMATION SAMPLING

2.2.0.1 Samples will be collected from the arsenic-contaminated grids during the anomaly removal IAW the Quality Assurance Project Plan in Attachment F of the *Removal Action Design, Time Critical Removal Action, American University Athletic Fields and Other Critical American University Lots, Spring Valley Operable Unit 4, Washington, D.C.* (USACE, 2002).

2.2.0.2 Prior to sending the samples collected to the HTW laboratory, a split sample will be cleared for CWM and ABPs by the ECBC laboratory.

2.3 SOIL DISPOSAL CHARACTERIZATION SAMPLES

2.3.0.1 Two composite disposal characterization samples will be collected for every three drums of excavated soil IAW the CSS, Volume II, Part A, Section 5.3.6. One of these samples will be sent to the ECBC laboratory for agent/ABP analysis, while the other will be kept on site, under refrigeration in a secure sampling shed, under chain-of-custody protocols for later HTW disposal characterization, pending the results of the agent/ABP analysis.

NOTE: An ongoing evaluation by the SVFUDS Partners of potential contaminants of concern based on the historical usage of chemicals at the AUES may result in additional parameters being added to the disposal characterization sampling requirements. It is anticipated that this issue will be resolved and captured in the next revision of this document.

2.4 SCRAP SAMPLING

2.4.0.1 General scrap recovered during the investigation will be sampled IAW the CSS, Volume II, Part A, Section 5.3.3.

2.5 AQUEOUS SAMPLES

2.5.0.1 Aqueous IDW generated during the investigation will be sampled IAW the CSS, Volume II, Part A, Section 5.3.4.

2.5.0.2 Samples of the water pumped out of the excavation will be collected from the holding tank and analyzed IAW the substantive requirements of the District of Columbia Water and Sewer Authority Temporary Discharge Permit (see Appendix A, Site-Specific Work Plan, Section 1.5).

2.6 INTACT CONTAINER SAMPLING

2.6.0.1 Non-RCWM intact containers recovered during the investigation will be sampled IAW the CSS, Volume II, Part A, Section 5.3.5.

2.7 OTHER SAMPLING

2.7.0.1 The excavation team may initiate additional soil sampling based on field observations such as stained soil or ash, or the presence of leaking containers or suspect scrap. This sampling

will only be performed after obtaining concurrence and approval from the on-site USAESCH Safety Specialist and CENAB Site Operations Officer, and will be performed IAW the CSS, Volume II, Part A, Section 5.3.1.

2.7.0.2 If backfill and topsoil sources were previously sampled, and if the source and the sample results are approved by USAESCH for the property, then additional backfill and topsoil sampling will not be necessary. Otherwise, soil and topsoil used for backfill will be sampled and analyzed IAW the CSS, Volume II, Part A, Section 5.3.2.

2.8 SAMPLE DESIGNATIONS

2.8.0.1 The following site-specific sample designations will be used for the investigation at AU Lot 18:

- Pit Characterization and Grid Confirmation
SW-AU18-(Grid)(Location)(Sample Number)(Depth Taken)
- Soil - RCWM SW-AU18-CWM-(Sample Number)
- Soil - HTW SW-AU18-HTW-(Date)
- Excavation Water SW-AU18-TANK-(Date)
- Scrap SW-AU18-SCR-(Grid)(Sample Number)
- Intact Container SW-AU18-IC-(Grid)(Sample Number)

2.8.0.2 For all samples, the first two letters of the sample number (SW) denote site-wide operations. The next four digits identify the site-specific location: "AU18" will be assigned to AU Lot 18. For all samples except pit characterization and grid confirmation samples, the next code denotes the type of sample (see above).

2.8.0.3 Pit characterization and grid confirmation samples will be further numbered using the grid number (e.g., 20,400), the location within the grid at which the sample was collected (e.g., NW [north wall], EW [east wall], FL [floor], etc.), the sample number, and the depth in feet at which the sample was collected. For example, sample #1 collected from the east wall of grid (20,400) at a depth of 3½ feet would be numbered "SW-AU18-(20,400)(EW)(01)(3.5')."

2.8.0.4 Soil disposal characterization samples sent for agent/ABP analysis will be further numbered by assigning a sequential sample number, beginning with 01. For example, the fourth composite disposal characterization sample sent for agent/ABP analysis would be identified as "SW-AU18-CWM-04."

2.8.0.5 Soil disposal characterization samples sent for HTW analysis will be further numbered using the date that they are composited and sent to the HTW lab for analysis. For example, the soil disposal characterization sample sent for HTW analysis on August 23, 2004 would be identified as "SW-AU18-HTW-(082304)."

2.8.0.6 Samples of the water from the excavation will be collected from the holding tank for HTW analysis will be numbered using the date that they are collected and sent to the HTW lab

for analysis. For example, the water sample collected for HTW analysis from the holding tank on August 23, 2004 would be identified as “SW-AU18-TANK-(082304).”

2.8.0.7 Scrap samples will be further numbered using the grid in which the scrap was found and an individually assigned sequential sample number. For example, the third item of scrap uncovered in grid (20,400) would be identified as “SW-AU18-SCR-(20,400)(03).”

2.8.0.8 Non-RCWM intact container samples will be further numbered using the grid in which the container was found and an individually assigned sequential sample number. For example, the first non-RCWM intact container uncovered in grid (20,400) would be identified as “SW-AU18-IC-(20,400)(01).”

2.8.0.9 Where sequential numbers are used, sample numbers and drum numbers will begin with 01. Where required, sample depths will be noted in feet or fraction thereof; for example 4’ or 0.5’.

3. AIR MONITORING PLAN

3.0.0.1 During the CWM-related intrusive investigation at AU Lot 18, airborne parameters will be monitored as shown in Table 3.1, IAW the Site-Wide CSS, Volume II, Part A, Section 11 and Volume II, Part B, Section 1. Air monitoring equipment will include the Miniature Chemical Agent Monitoring System (MINICAMS), Depot Area Air Monitoring System (DAAMS) tubes, the Open Path Fourier Transform Infrared Spectrometer (OPFTIR), and photo ionization detectors (PIDs).

3.0.0.2 Typical locations of air monitoring equipment are shown in the site layout in the Site-Specific Work Plan (Appendix A of this Annex). The MINICAMS monitoring the ECS will monitor the air at three locations: before the CAFS filter, at the mid-bed of the filter, and at the filter exhaust. A MINICAMS unit will also be used to monitor the Personnel Decontamination Station (PDS). DAAMS tubes will be used to sample the filter exhaust, as well as for confirmation sampling. Sampling locations are further explained in the Site-Wide CSS, Volume II, Part A, Section 11 and Volume II, Part B, Section 1.

3.0.0.3 Responses to air monitoring alarms are addressed in Section 5 of this Annex.

3.0.0.4 In addition to monitoring for CWM, the MINICAMS will also be used to monitor for potential HTW compounds passing through the CAFS. During CWM-related intrusive activities, MINICAMS instrument response will be reviewed for compound responses that are outside the H, L, CG, CK, or PS retention time windows. In the event of a detection of potential HTW at the mid-bed of the CAFS, a summa canister will be used to collect a sample. Sample analysis will be performed by an American Industrial Hygiene Association-accredited laboratory for parameters as agreed by the SVFUDS Partners' ongoing evaluation (see note below).

3.0.0.5 Air monitoring for dust will be performed during activities related to excavation of HTW-contaminated soil (Paragraph 1.3.2.1). A direct reading particulate monitor will be placed downwind of the excavation activities. The monitor alarm will be set for a dust concentration of 5 mg/m^3 . The monitor will be read periodically (approximately every 30 minutes) and the results logged. Any reading in excess of 5 mg/m^3 will be reported to the SSHO. This concentration will protect workers and the public to below the arsenic Threshold Limit Value of 0.01 mg/m^3 for soils containing up to 2,000 mg/kg arsenic.

3.0.0.6 In addition, for purposes of confirmation sampling during activities related to excavation of HTW-contaminated soil, total dust will be collected at the construction fence boundary. Samples will be collected on pre-weighed 37mm, $5 \mu\text{m}$ pore size, tared PVC filters or matched weight $0.8 \mu\text{m}$ pore size, mixed cellulose ester filters at a flow rate of 2.0 liters per minute. The samples will be collected at a minimum of one every day and will be sent to an American Industrial Hygiene Association-accredited lab to be analyzed for total dust and arsenic. Samples will be analyzed IAW NIOSH 7300 for arsenic and IAW NIOSH 0500 for total particulates.

TABLE 3.1: AIR MONITORING MATRIX

	MINICAMS (Near Real Time)	DAAMS (General Area Perimeter)	DAAMS (Confirmation)	OPFTIR (near real time)	PID
Locations	- Intrusive Site -PDS - Soil Headspace Clearance - IHF Location	- Location near intrusive site - Locations around work area	- Intrusive Site	Predominant downwind position from intrusive site	- Intrusive Site (within the ECS)
Sampling Frequency	Continuous On site ³ (during intrusive operations)	Up to 8 hours	Up to 8 hours	5 minute averages	Every 30 minutes
Analysis Time	Approximately 10 minutes	Approximately 15 minutes	Approximately 15 minutes	Approximately 5 minutes	Immediate
Number of People Required	2 MINICAMS operators	1 MAP operator & Sample Technician	1 MAP operator & Sample Technician	1 OPFTIR operator	1 Operator
Target Agent	Mustard (H) Lewisite (L) Phosgene (CG) Cyanogen Chloride (CK) Chloropicrin (PS)	Mustard (H) Lewisite (L)	Mustard (H) Lewisite (L)	Mustard (H) Lewisite (L) Phosgene (CG) Cyanogen Chloride (CK) Chloropicrin (PS)	VOCs
Lowest Level Of Detection	H: 0.00075 mg/m ³ L: 0.00075 mg/m ³ CG: 0.1 mg/m ³ CK: 0.15 mg/m ³ PS: 0.18 mg/m ³	H ¹ : 0.00008 mg/m ³ L ¹ : 0.00008 mg/m ³	H ¹ : 0.00008 mg/m ³ L ¹ : 0.00008 mg/m ³	H ² : 4.9 ppb L ² : 2.9 ppb CG ² : 1.4 ppb PS ² : 3.8 ppb CK ² : 35.5 ppb	1 ppm
SSHO Notification Level	H: 0.0021 mg/m ³ L: 0.00075 mg/m ³ CG: 0.3 mg/m ³ CK: 0.5 mg/m ³ PS: 0.5 mg/m ³	H: Any Detection L: Any Detection	H: Any Detection L: Any Detection	H: Any Detection L: Any Detection CG: Any Detection PS: Any Detection CK: Any Detection	50 ppm

1: Detection limit for the DAAMS tubes assumes a 24-liter sample is collected.

2: The lowest levels of detection for the OPFTIR were calculated from a 100-meter path length and may vary due to environmental and operational circumstances.

3. The MINICAMS collects continuous samples instead of grab samples. Soil headspace and IHF samples will be collected when required.

NOTE: An ongoing evaluation by the SVFUDS Partners of potential contaminants of concern based on the historical usage of chemicals at the AUES may result in additional parameters being added to the air monitoring requirements. It is anticipated that this issue will be resolved and captured in the next revision of this document.

4. SITE SAFETY AND HEALTH SUMMARY

4.0.0.1 Site safety and health and, in particular, PPE requirements are found in Site-Wide CSS Volume I, Section 4 and Volume II, Part A, Site Safety and Health Plan. The route to the hospitals can be found on the outside cover and the emergency phone numbers can be found on the inside back cover of this document.

4.0.0.2 Activity Hazard Analyses (AHAs) have been performed for the following tasks:

- Project Mobilization/Demobilization
- Intrusive Investigation
- Drum/Multiple Round Container (MRC) Handling
- Personnel Decontamination Station Operation
- Emergency Rescue
- Air Monitoring
- HTW-Contaminated Soil Removal and Packaging
- Excavation Backfill

4.0.0.3 These AHAs were based on the applicable Site-Wide CSS and LAWP SSHPs, and were reviewed and updated to ensure applicability to site operations for this effort. AHAs are contained in Appendix B.

Approved By: Edward C. Bishop, Ph.D., P.E., CIH
Project Safety and Health Officer



ELECTRONIC SIGNATURE

Date: April 5, 2004

5. PUBLIC PROTECTION PLAN SUMMARY

5.0.0.1 During the intrusive investigation at AU Lot 18, the public will be protected through the use of an ECS. The ECS selected for this investigation is a 33 feet wide by 60 feet long by 19 feet high (at the apex) Rubb THA Shelter that will contain the MCE for the investigation. The selection of this ECS is described in *Engineering Control Structure (ECS) Evaluation for the American University (AU) Lot 18 Intrusive Investigation, Spring Valley DERP/FUD Site, Washington, D.C.*, Parsons, 2004.

5.0.0.2 The ECS will be established as a negative pressure work environment using a CAFS. All intrusive activities at AU Lot 18 will be performed inside this ECS.

5.0.0.3 Each time a filter is installed in the CAFS, the unit will be tested with a refrigerant gas to ensure that is no leakage around the gaskets and no short-circuiting through the charcoal beds. This testing is performed by a team from ECBC IAW their Standard Operating Procedures (SOPs). The CAFS must pass these tests before operations are allowed to commence.

5.0.0.4 The CAFS is sized for the ECS to ensure that negative pressure is maintained. The ECS will be leak tested by generating smoke inside the ECS with the CAFS operating IAW ECBC SOPs. Observers then check for smoke outside the ECS. Any leaks observed will be sealed prior to operational acceptance. The smoke test will be performed each time that the ECS is reconfigured or moved, and the ECS must pass the smoke test before operations are allowed to commence.

5.0.0.5 Because the operation is using the ECS, the NOSE distance for the investigation at AU Lot 18 will be effectively reduced to zero (confined within the limits of ECS). However, for emergency planning purposes, the NOSE distance without engineering controls is presented in Figure 5-1. The NOSE distance calculated for the AU Lot 18 MCE, without engineering controls, is 59 meters (193 feet). This distance is based upon an atmospheric stability factor of D, a wind speed of 1 meters/second, and a maximum temperature of 95°F. The NOSE distance will vary with changes in metrological conditions and, for contingency planning purposes, will be calculated hourly during intrusive operations.

5.0.0.6 Responses to air monitoring alarms will be handled IAW the Site-Wide CSS, Volume II, Part A, Section 11. Additional details regarding public protection including the evacuation/shelter-in-place; public notification, and emergency operations, are discussed in the Site-Wide CSS: Volume I, Section 5, Volume II, Part A, SSHP, Section 14, and the CENAB Public Protection Plan.

Figure 5-1
 AU Lot 18 NOSE Distance
 Without Engineering Controls

Spring Valley Site-Wide
 Washington, DC

Legend

-  Lot 18 Anomaly Boundary (from Geophys)
-  Geophysical Anomaly (4629-HNC1)
-  Minimum Limit of Excavation
-  NOSE (59m)
-  Parcels
-  Buildings
-  Driveway
-  Deck/Porch
-  Sidewalk
-  Roads

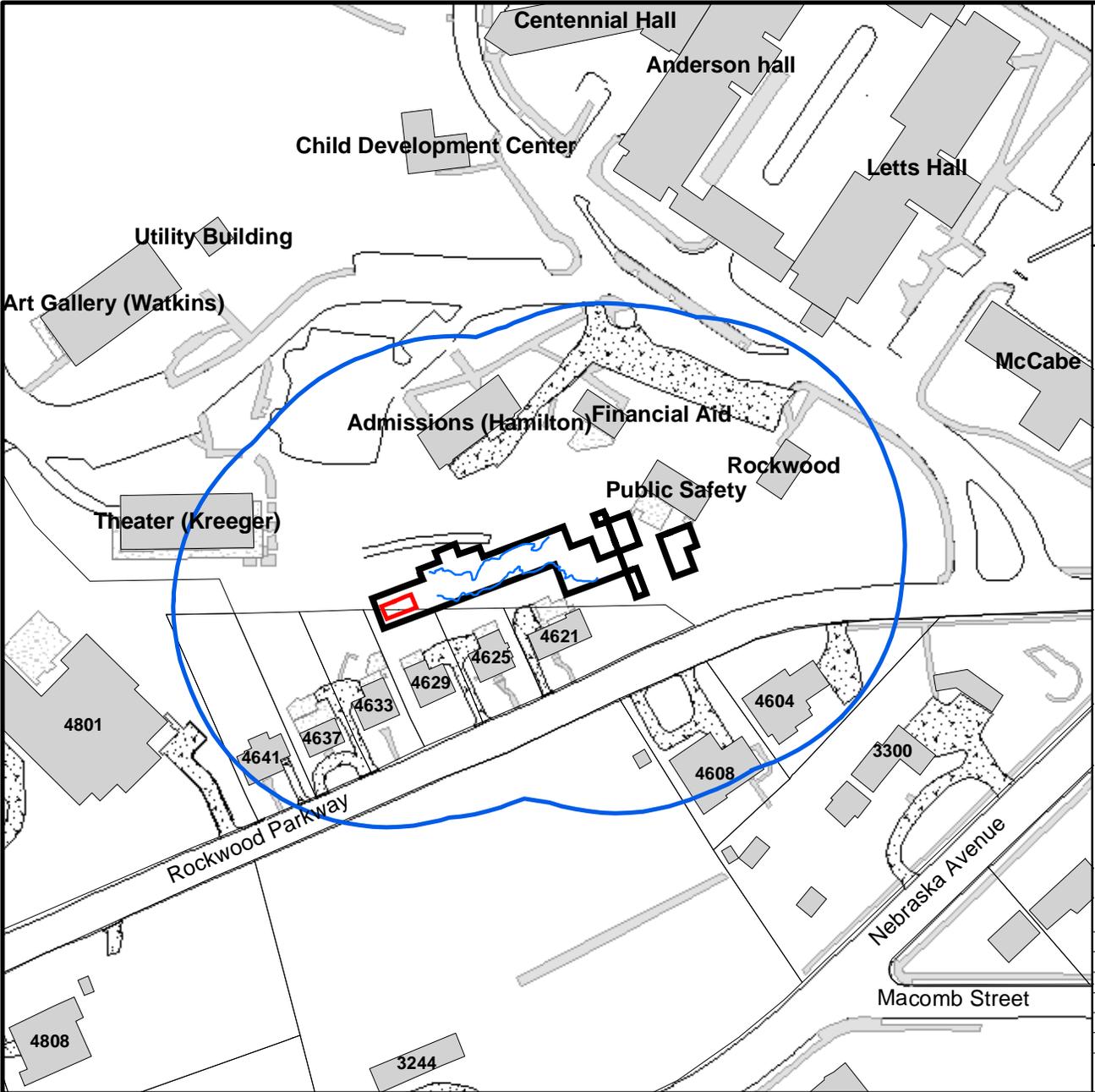
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1 inch equals 150 feet

Scale:	1:1,800
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Date:	03/03/2004
Figure Number:	5-1
Page Number:	

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6. INTERIM HOLDING FACILITY SITING PLAN SUMMARY

6.0.0.1 Interim Holding Facility Siting Plan requirements are found in Site-Wide CSS Volume I, Section 6 and Amendment 5 to the Site-Wide CSS, Federal Property Storage Area Siting Plan.

**ATTACHMENT 1
LOT 18 GEOPHYSICAL DATA MAP**

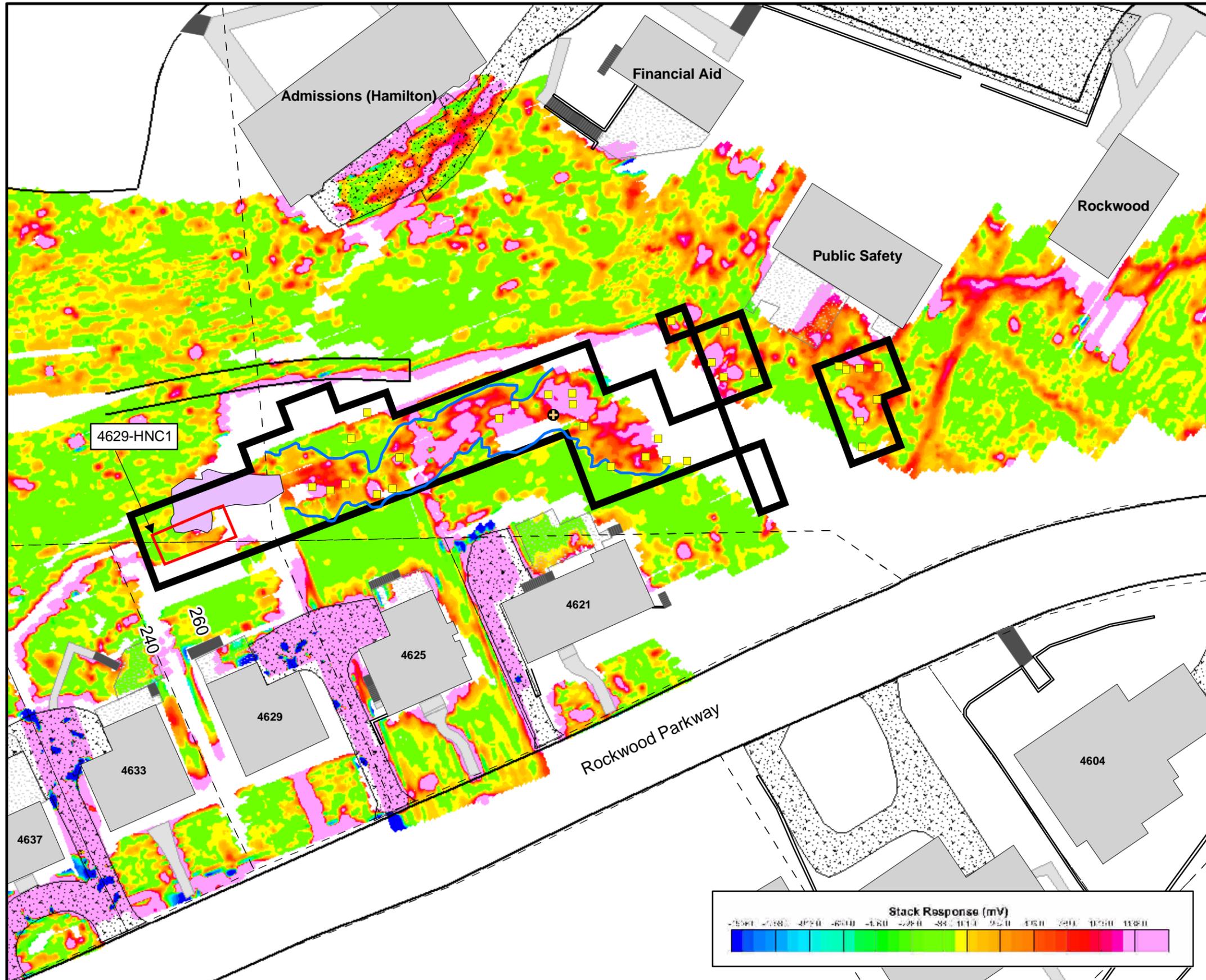


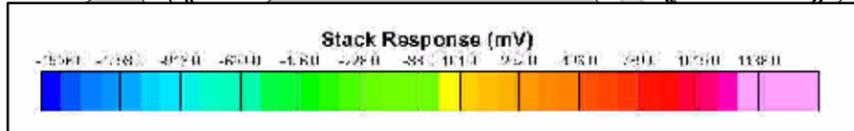
Figure A-1
 AU Lot 18
 EM61 Geophysical Survey Data

Spring Valley Site-Wide
 Washington, DC

- Legend**
- ⊕ Lewisite Bottle Found
 - Previously Identified Geophysical Anomalies
 - ~ Wall
 - ~ Roads
 - ▭ Grids
 - ~ Lot 18 Anomaly Boundary (from Geophys)
 - ▭ Geophysical Anomaly (4629-HNC1)
 - ▭ Minimum Limit of Excavation
 - ▭ Small Disposal Area
 - - - Parcels
 - ▭ Stairs
 - ▭ Buildings
 - ▭ Driveway
 - ▭ Deck/Porch
 - ▭ Sidewalk



1 inch equals 40 feet



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**APPENDIX A:
SITE-SPECIFIC WORK PLAN**

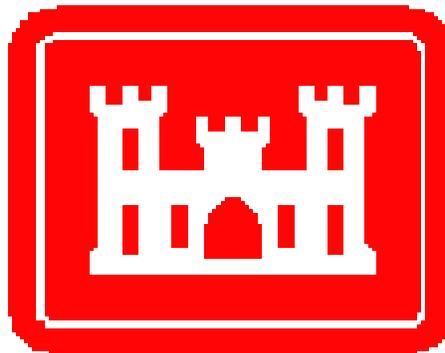
**SITE-SPECIFIC WORK PLAN FOR INTRUSIVE
INVESTIGATION OF AMERICAN UNIVERSITY
LOT 18**

**SPRING VALLEY DERP/FUDS SITE, WASHINGTON, D.C.
CONTRACT NO. DACA87-00-D-0038, DO 0010**

Prepared For:

**U.S. ARMY ENGINEERING AND SUPPORT CENTER,
HUNTSVILLE**

**U.S. ARMY CORPS OF ENGINEERS,
BALTIMORE DISTRICT**



Prepared By:

PARSONS
10521 ROSEHAVEN STREET
FAIRFAX, VIRGINIA 22030

APRIL 5, 2004

**SITE-SPECIFIC WORK PLAN
FOR INTRUSIVE INVESTIGATION OF ANOMALIES**

AU LOT 18

**SPRING VALLEY
WASHINGTON, DC
CONTRACT DACA87-00-D-0038
DELIVERY ORDER 10**

PREPARED FOR:

U. S. ARMY ENGINEERING AND SUPPORT CENTER, HUNTSVILLE

AND

U. S. ARMY CORPS OF ENGINEERS, BALTIMORE DISTRICT

PREPARED BY:

**PARSONS
10521 ROSEHAVEN STREET
FAIRFAX, VIRGINIA 22030**

APRIL 5, 2004

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- Attachment 2: Grid Coordinates for AU Lot 18

LIST OF ACRONYMS

ABP	Agent Breakdown Product
AOI	Area of Interest
ARB	Anomaly Review Board
AU	American University
AUES	American University Experiment Station
BWM	Biological Warfare Materiel
CAFS	Chemical Agent Filtration System
CENAB	U.S. Army Corps of Engineers, Baltimore District
CP	Command Post
CSS	Chemical Safety Submission
CWM	Chemical Warfare Materiel
DCWASA	District of Columbia Water and Sewer Authority
DERP	Defense Environmental Restoration Program
ECS	Engineering Control Structure
EPDS	Emergency Personnel Decontamination Station
FUDS	Formally Used Defense Site
HTW	Hazardous and Toxic Waste
IAW	In Accordance With
LAWP	Local Approved Work Plan
NOSE	No Significant Effects
OE	Ordnance and Explosives
PDS	Personnel Decontamination Station
POI	Point of Interest
PPE	Personal Protective Equipment
PSHO	Project Safety and Health Officer
QA	Quality Assurance
QC	Quality Control
RAD	Remedial Action Design
RCWM	Recovered Chemical Warfare Materiel
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
SSWP	Site-Specific Work Plan
SVFUDS	Spring Valley Formerly Used Defense Site
SVOC	Semi-volatile Organic Compound
USACE	U.S. Army Corps of Engineers
USAESCH	U.S. Army Engineering and Support Center, Huntsville
UXO	Unexploded Ordnance
VOC	Volatile Organic Compound

1. WORK PLAN SUMMARY

1.0.0.1 The *Site-Wide Local Approved Work Plan (LAWP) for the Spring Valley Defense Environmental Restoration Program (DERP)/Formally Used Defense Site (FUDS)*, Washington, D.C., Parsons, March 2004, was previously prepared for the general excavation of anomalies and excavation of hazardous and toxic waste (HTW) contaminated soil within the Spring Valley Formerly Used Defense Site (SVFUDS), Washington, D.C. The Site-Wide LAWP also discussed the mobilization, demobilization, and sampling activities associated with both the anomaly resolution and HTW-contaminated soil removal. The objective of the Site-Wide LAWP is to protect the public, protect the personnel performing the investigations, and minimize impacts on the normal activities of the public. All of these activities are being performed under contract to the U.S. Army Engineering and Support Center, Huntsville (USAESCH).

1.0.0.2 The overall scope of the SVFUDS project is to:

- Reacquire and intrusively investigate anomalies identified by the Spring Valley Anomaly Review Board (ARB) as requiring further investigation,
- Excavate grids identified by the U.S. Army Corps of Engineers (USACE) as containing arsenic at concentrations greater than 20 mg/kg, and
- Perform mobilization and demobilization efforts for these tasks.

1.0.0.3 This Site-Specific Work Plan (SSWP) supplements the Site-Wide LAWP. The SSWP will cover the site-specific mobilization and demobilization efforts involved with the investigation at American University (AU) Lot 18. Details of the intrusive investigation at AU Lot 18 are described in the *Site-Wide Chemical Safety Submission (CSS) Site-Specific Annex F - American University Lot 18, Spring Valley DERP/FUDS Site, Washington, D.C.* (hereafter referred to as Annex F), to which this SSWP is appended.

1.0.0.4 The history of AU Lot 18 and details regarding prior SVFUDS-related investigations conducted at the site are described in Annex F.

1.1 SITE MOBILIZATION AND DEMOBILIZATION PLAN

1.1.0.1 The equipment trailers and other permanent facilities required for the intrusive investigations will be staged on AU property for the course of this investigation. Events will be sequenced to ensure that contractors minimize the number of mobilizations and equipment rental time.

1.1.0.2 The Federal Property will be used as a temporary storage area for excavated material from AU Lot 18.

1.1.0.3 Each party will be responsible for demobilizing their own equipment or facilities. Any rental equipment, unless otherwise needed for the demobilization effort, will be demobilized as early as possible.

1.1.1 Site Layout

1.1.1.1 A 60 ft x 33 ft x 19 ft tent, as described in the *Engineering Control Structure (ECS) Evaluation for the American University (AU) Lot 18* (Parsons, 2004), will be erected over the excavation and used as an ECS for vapor containment. The ECS will consist of two 30 ft x 33 ft x 19 ft Rubb THA structures, configured together. When required, the ECS will be moved using a crane or forklifts. Crane and forklift safety procedures are described in Attachment 1. Positioning of the ECS will be an operational determination.

1.1.1.2 A Chemical Agent Filtration System (CAFS) will be required for the intrusive investigations and will need to be mobile so that it can be moved to the areas to be intrusively investigated. The ECS and CAFS will be used to reduce the effective No Significant Effects (NOSE) distance outside of the ECS to zero.

1.1.1.3 An Emergency Personnel Decontamination Station (EPDS) will be positioned next to the ECS in the contamination reduction zone. The EPDS will contain a shuffle pan and a station for gross decontamination of outer garments using 0.5% nominal bleach solution, and will be used to remove gross decontamination from personnel before they proceed to the PDS.

1.1.1.4 The support zone will contain the Personnel Decontamination Station (PDS) tent, the Command Post (CP), sampling shed, and the MINICAMS. The MINICAMS for the CAFS will operate out of the garage at the 4621 Rockwood Parkway property (owned by AU), while the MINICAMS for the PDS will be operate out of the sunroom. The Open Path Fourier Transform Infrared Spectrometer (OPFTIR) will be positioned on the deck at the 4621 Rockwood Parkway property, with the retroreflectors being positioned at the site depending on the location of intrusive operations. The 4621 Rockwood Parkway property will also act as the CP for the duration of this operation.

1.1.1.5 Figure 1-1 illustrates a typical site layout. The actual locations of support equipment shown in this figure may vary depending on actual site conditions.

1.1.2 Site Control

1.1.2.1 A temporary fence will be erected around the entire proposed AU Lot 18 investigation area to restrict and control site access during the AU Lot 18 intrusive investigation. Orange construction fencing will be erected around the ECS and equipment in the immediate vicinity of the active excavation, to demark the Contamination Reduction Zone.

1.1.2.2 Additionally, to prevent unauthorized access to the work area and associated equipment, a security guard will patrol the site during non-work hours (5 p.m. to 7 a.m. during weekdays, and 24 hours a day on weekends and holidays). The security guard will use the Command Post as the base of operations.

Figure 1-1
Typical Site Layout for AU Lot 18

Spring Valley Site-Wide
Washington, DC

Legend

- ✕ DAAMS Stations
- ⬜ Exclusion Zone
- Contamination Reduction Zone
- Support Zone
- Support Features
- ⬜ Geophysical Anomaly (4629-HNC1)
- ⬜ Grids
- ▨ Lot 18 Excavation Extent (Mar '03)
- ⬜ Minimum Limit of Excavation
- Small Disposal Area
- Wall
- Trees
- ⬜ Parcels
- Stairs
- Buildings
- ▨ Driveway
- ▨ Deck/Porch
- Roads
- Sidewalk
- Grids Cleared for Glassware and Arsenic



1 inch equals 40 feet

Scale: 1:480

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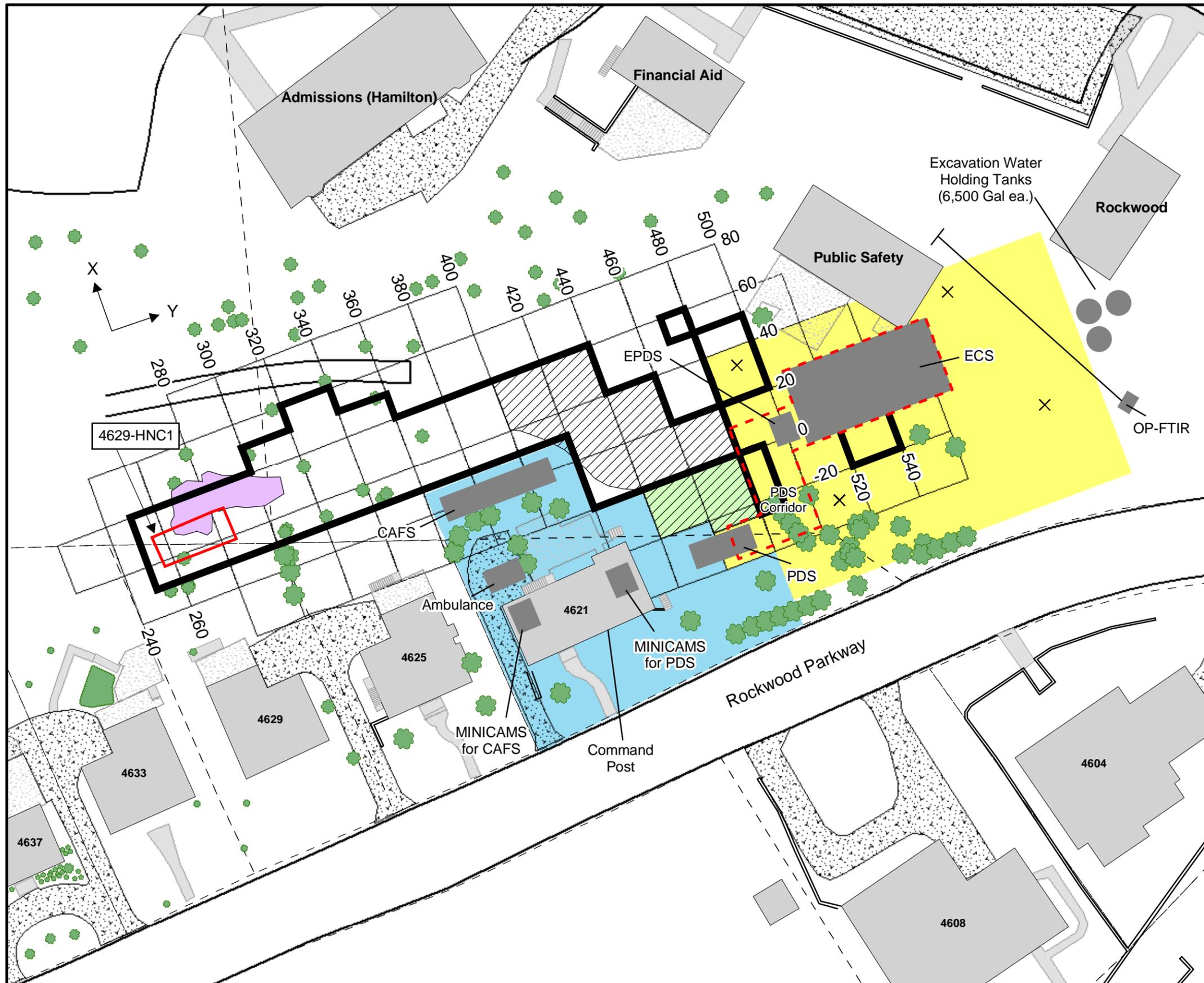
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Date: 03/03/2004

Figure Number: 1-1

Page Number:

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1.1.3 Site Preparation

1.1.3.1 Prior to the start of the excavation at AU Lot 18, C.P. Johnson, a certified surveyor, will delineate the 20 ft x 20 ft grids. C.P. Johnson performed a topographic survey of AU Lot 18 in February 2004, so topographic data will not be required. Table 1 in Attachment 1 to this SSWP contains a list of the grids to be located by C.P. Johnson for the investigation.

1.1.3.2 Also, prior to other site preparation activities, a landscape architect will survey the area at Lot 18 and the areas surrounding the properties at 4621 and 4625 Rockwood Parkway to assess and document the condition of all existing landscape features and vegetation in the areas in which equipment is planned to be set up. A survey will also be performed to assess and document the interior and exterior condition (e.g., walls, floors, windows, etc.) of the property at 4621 Rockwood Parkway, which is proposed as the location of the CP, and the exterior condition (e.g., walls, windows, etc.) of the property at 4625 Rockwood Parkway.

1.1.3.3 Following these surveys, and prior to any equipment being brought into the vicinity of the properties at 4621 and 4625 Rockwood Parkway, mats will be laid where necessary to protect the paved surfaces around those properties. Cardboard sheeting or temporary carpeting will be laid in the interior areas of the property at 4621 Rockwood Parkway, where necessary to protect the floors from wear and tear. To provide a level area for PDS deployment, a pad will be constructed immediately to the east of 4621 Rockwood Parkway.

1.1.3.4 To date, all brush, trees and bamboo in the immediate vicinity of the proposed AU Lot 18 excavation area has been removed. However, additional brush clearing may be required to clear areas for equipment, to remove branches overhanging the work zone or related facilities, or to allow extension of the temporary road. If additional brush clearing is required, or additional trees need to be removed, Parsons will request authorization from USAESCH to perform these activities. If tree removal is required, the tree(s) will be evaluated to determine their value prior to removal.

1.1.4 Utility Tie-in

1.1.4.1 Portable toilets and water coolers will be available on site.

1.1.4.2 The following electrical utility service will be required at the site:

- The sampling shed, PDS and the equipment in the ECS will require 110-volt, single-phase service and approximately 15-25 amps each. The break tent will require 600 V AC/250 V DC and 60 amps. HVAC in the ECS will require 600 V AC/250 V DC, 3-phase, and 60 amps.
- Each of the CAFS (two 2500CFM units) will require 220 V, 50 amps, and 3-phase service.
- The MINICAMS for the CAFS (6 units) will each require 110 V and 15 amps.
- The MINICAMS for the PDS (1 unit) will require 110 V and 15 amps.
- The OPFTIR will require 110 V and 15 amps.

1.1.4.3 Parsons, USACE, and ECBC will coordinate the provision of electrical utility service at the site. A 220 V, 200 amp, 3-phase power drop is planned to be provided at the site to provide the required power.

1.2 SITE-SPECIFIC CONSIDERATIONS

1.2.1 Stump Removal

1.2.1.1 Several tree stumps are located within the proposed limit of the excavation. These tree stumps will be removed under engineering controls during the course of the intrusive investigation.

1.2.2 Water Management

1.2.2.1 Should water be encountered in the excavation during the investigation, it will be pumped from the excavation to an intermediate holding tank for preliminary settling, and then pumped to a holding tank. For planning purposes, the preliminary estimate is that three 6,500 gallon capacity tanks (19,500 gallon total capacity) will be situated in the support zone (see Figure 1-1); however, if water storage capacity requirements vary from those expected, more or fewer storage tanks may be used as necessary. When water is encountered, a corner of the excavation will first be cleared to form a collection area, and then the floor of the excavation will be sloped towards the collection area to channel the water so it can be pumped out of the excavation. If any man-made sources are identified within the excavation as contributors to the water, for example storm water discharge outlet or steam line overflow discharge, they will be piped to the collection area or a drum in the excavation and then pumped to the intermediate holding tank. However, if the up gradient location of such a conduit can be identified, that conduit and water will be re-directed around the excavation, as practical.

1.2.2.2 Water in the tanks will first be sampled and cleared for CWM and Agent Breakdown Products (ABPs) and then HTW samples will be sent to the HTW laboratory for Volatile Organic Compounds (VOCs), Semi-volatile Organic Compounds (SVOCs), oil & grease, heavy metals, and pH, as necessary to meet the requirements agreed with the District of Columbia Water and Sewer Authority (DCWASA). Sample results will be reviewed by DCWASA as the basis of their approval of discharge to the sanitary sewer. The closest sanitary sewer is located on Rockwood Parkway. If sample results indicate that DCWASA standards are exceeded, the water will be shipped offsite for treatment and disposal.

1.2.3 Noise Abatement

1.2.3.1 ECBC will employ noise abatement measures to ensure that noise generated by the CAFS is controlled sufficiently to reduce disturbance to the surrounding public.

1.3 GEOPHYSICAL INVESTIGATION

1.3.0.1 Geophysical QC will be performed once the excavation has been backfilled. Geophysical QC will be conducted IAW the LAWP (Section 5.5) and will take place before any excavation of HTW-contaminated soil takes place in a grid.

1.4 ENVIRONMENTAL PROTECTION PLAN

1.4.0.1 This section addresses the measures to be taken during the investigation to minimize impacts to the environment in the vicinity of AU Lot 18, particularly with regard to sediment and erosion control.

1.4.0.2 All investigated areas will be backfilled using clean soil following the intrusive excavation. In previously grassed areas, backfill will be seeded or covered with sod during site restoration.

1.4.1 Erosion and Sediment Control and Runoff Diversion

1.4.1.1 The investigation area at AU Lot 18 is located in a low area at the head of a ravine and subject to runoff and potential flooding. Surface water runoff will be diverted to prevent water from entering the investigation area. The sediment and erosion control plan is presented in Appendix D of Annex F.

1.4.1.2 Silt fencing, straw-bale dykes, and other appropriate materials will be used for sediment control. The Sediment and Erosion Control Plan is presented in Appendix D of Annex F.

1.5 PERMITS

1.5.1 Building/Erosion and Sediment Control

1.5.1.1 Title 21, *Water and Sanitation*, section 502.1 of the District of Columbia Municipal Regulations (DCMR) requires any person engaging in “land disturbing” activities to obtain a building permit. Land disturbing activities include stripping, grading, excavating, and transporting and filling of land. Approval of a building permit is conditioned on the submission by the permit applicant of an erosion and sediment control plan that has been reviewed and approved by the Department of Consumer and Regulatory Affairs. USACE, Baltimore District (CENAB) will obtain a waiver for these permit requirements based on the information in this plan. The Sediment and Erosion Control Plan can be found in Appendix D of Annex F.

1.5.2 Storm Water Management Permit

1.5.2.1 Under 21 DCMR § 526.1, any earth moving or land change activities in the District of Columbia must institute appropriate storm water management measures to control or manage runoff, unless exempt. Exempt activities include construction or grading operations that do not disturb more than sixty-five thousand square feet of land, unless the operation is part of an approved subdivision that contains provisions for storm water management. Because the operation involves disturbing less than sixty-five thousand square feet, a storm water permit will not be required.

1.5.3 Permit to Discharge to Sanitary Sewer

1.5.3.1 Based on previous investigations in this area, it is expected that water from surface runoff, storm water discharges, and steam line overflows, discharging to the investigation area, will be encountered in the excavation. To minimize adverse impacts to the environment, water

from the excavation will be pumped to temporary holding tanks before discharge to the sanitary sewer, as described in Section 1.2.2. CENAB will obtain a waiver for the DCWASA temporary discharge permit requirements based on the information in this plan.

2. SAMPLING SUMMARY

2.0.0.1 Sampling activities for the investigation at AU Lot 18 are described in Section 2 of Annex F.

3. AIR MONITORING PLAN

3.0.0.1 Air monitoring activities for the investigation at AU Lot 18 are described in Section 3 of Annex F.

4. SITE SAFETY AND HEALTH SUMMARY

4.0.0.1 Site safety and health and, in particular, PPE requirements, are found in Site-Wide CSS Volume I, Section 4 and Volume II, Part A, Site Safety and Health Plan. The route to the hospitals can be found on the outside cover and the emergency phone numbers can be found on the inside back cover of this complete document.

4.0.0.2 Site-specific Activity Hazard Analyses were performed and are included in Appendix B of Annex F.

**ATTACHMENT 1
CRANE OPERATION AND SKID LOADER/FORKLIFT
SAFETY PROTOCOLS**

ATTACHMENT 1

CRANE OPERATION AND SKID LOADER/FORKLIFT SAFETY PROTOCOLS

DOT REGULATED VEHICLES/EQUIPMENT

- **Commercial Driving License:** All Parsons and subcontractor personnel operating a U.S. Department of Transportation (DOT)-regulated vehicle must hold a valid commercial driving license (CDL) from their state of residence. Operation of a vehicle without a valid operator's license is prohibited.
- **Air Hose and Couplings:** Periodically check air hoses and couplings and compressor hoses for worn or damaged parts. Do not crimp air hose to disconnect couplings; shut off air at the valve.
- **Backing Up:** Never start or back up equipment or vehicles until you are sure the way is clear. If necessary, have another person guide you safely. Back up alarms, when required, must be working and audible over the surrounding noise.
- **Ear Protection:** Ear plugs or other approved ear protection shall be worn when necessary. Use of ear plugs in cars or trucks on public highways may be against local laws.
- **Fueling and Repair:** No fueling or repair shall be made to equipment while it is in operations. The motor shall be turned off and the bucket, blade, gate or boom shall be lowered to the ground or blocks.
- **Housekeeping:** Operators should keep deckplates, steps, rung and hand rails on equipment free of grease, oil, ice, and mud. The inside of the cabs shall also be kept clean and free of flammable items.
- **Inspections:** Equipment and vehicles shall not be used until known defects or discrepancies are corrected. Inspections shall be made at the start of each shift and defects or discrepancies shall be reported to the supervisor immediately.
- **Jumping:** Jumping on or off equipment is prohibited. When climbing on or off equipment or vehicles, face the unit and use secure hand and foot holds to prevent slips and falls. Always look where you are stepping.
- **Know Your Equipment or Vehicle:** It is your responsibility to be thoroughly familiar with all features and manuals and if you are in doubt as to correct operating techniques or safety features, ask your supervisor at once.
- **Overloading:** Avoid overloading vehicle beds and equipment buckets and beds. Excessive material can damage the unit and falling material can cause serious injury.
- **Power Lines:** When operating trucks, cranes, shovels or other units, always use caution around power lines and maintain a minimum safe clearance of 10 feet or more depending upon the voltage.

- **Riders:** Only authorized persons will be permitted to ride in equipment or vehicles.
- **Securing Loads:** The operator of the vehicle is responsible for ensuring that their load is secure and will not shift during transport.
- **Long Hauls:** On long hauls, binders should be checked periodically (at least during each rest or service stop) to make sure they are still secure and tight.
- **Overhanging and Oversize Loads:** When it is necessary to transport overhanging or oversize loads, the appropriate signs and red flags and red lights will be used. When necessary, use flag cars.
- **Safety Chains:** Safety chains of sufficient size and strength shall be installed on all trailers being towed.
- **Safety Hooks:** Use safety hooks with latches on all winch truck cables.
- **Side Roads and Railroad Tracks:** Stop and look both ways before crossing railroad tracks or before driving onto a highway from a side road.
- **Stopping:** Do not stop vehicles in the middle of the road to talk to occupants in another vehicle. Always pull to the side or off the road to maintain a clear, safe road.
- **Turn Signals:** Always use turn signals, emergency and other signals as appropriate when turning, stopping, passing, or performing other vehicle operations.
- **Vehicle Maintenance:** It is the driver's responsibility to see that his vehicle is in good mechanical condition before and during operation. Special emphasis should be placed on ensuring the brakes, lights, horn, windshield wiper, tires and steering assembly are in good order. Defects must be reported and corrected immediately.

CRANE OPERATION

The following apply to crane operations:

- The crane will meet the appropriate manufacturing codes in effect at the time of manufacture. There will be no unauthorized modifications to the equipment.
- The crane will be inspected before each use.
- Any defects, needed repairs, etc., will cause the crane to be taken out of service until repaired.
- Only trained and qualified operators will operate the crane. Crane operator will be qualified or certified by a source that qualifies crane and derrick operators.
- The crane will be inspected IAW Appendix H of EM 385-1-1.

SKID LOADER/FORKLIFT OPERATION

The following apply to the operation of a skid loader or forklift:

- The skid loader/forklift will meet the appropriate manufacturing codes in effect at the time of manufacture. There will be no unauthorized modifications to the equipment.
- The skid loader/forklift will be inspected before each use.
- Any defects, needed repairs, etc., will cause the skid loader/forklift to be taken out of service until repaired.
- Only trained and qualified operators will operate the skid loader/forklift. Training will meet the requirements of 28CFR 1910.178.
- Riders are not allowed on the skid loader/forklift.
- The engine will be off, the brakes set, controls in neutral and the forklift lowered when the driver is not in the driver's seat.
- Only safely arranged loads will be lifted.
- Loads must be within the rated capacity of the skid loader/forklift.
- The skid loader/forklift will not be fueled while running.
- All skid loader/forklift safety devices will be operable and will not be bypassed.

**ATTACHMENT 2:
GRID COORDINATES FOR AU LOT 18**

ATTACHMENT 2: GRID COORDINATES FOR AU LOT 18

Table 1 lists the coordinates of the grids to be marked in at AU Lot 18. In the event that excavation is required beyond the proposed minimum limit of excavation, additional grids will be surveyed in as a “buffer.” This will facilitate excavation activities in the event that over-excavation of grids is required.

**TABLE 1
AU LOT 18 GRIDS AND COORDINATES**

GRID COORDINATES	NORTHING (FEET)	EASTING (FEET)
(80,480)	461845.3	1286363.1
(80,460)	461838.3	1286344.4
(60,500)	461833.7	1286388.9
(80,440)	461831.3	1286325.8
(100,380)	461828.9	1286262.5
(60,480)	461826.6	1286370.1
(80,420)	461824.3	1286307.0
(40,520)	461822.0	1286414.6
(100,360)	461821.8	1286243.8
(60,460)	461819.6	1286351.5
(80,400)	461817.2	1286288.3
(40,500)	461814.9	1286396.0
(100,340)	461814.8	1286225.0
(60,440)	461812.6	1286332.8
(20,540)	461810.3	1286440.4
(80,380)	461810.2	1286269.5
(40,480)	461807.9	1286377.3
(100,320)	461807.8	1286206.4
(60,420)	461805.5	1286314.0
(20,520)	461803.3	1286421.8
(80,360)	461803.1	1286250.9
(40,460)	461800.9	1286358.5
(100,300)	461800.8	1286187.6
(0,560)	461798.6	1286466.1
(60,400)	461798.5	1286295.3
(20,500)	461796.2	1286403.0

TABLE 1
AU LOT 18 GRIDS AND COORDINATES

GRID COORDINATES	NORTHING (FEET)	EASTING (FEET)
(80,340)	461796.1	1286232.1
(40,440)	461793.8	1286339.8
(0,540)	461791.6	1286447.5
(60,380)	461791.4	1286276.6
(20,480)	461789.2	1286384.3
(80,320)	461789.1	1286213.4
(40,420)	461786.8	1286321.0
(0,520)	461784.5	1286428.8
(60,360)	461784.4	1286257.9
(20,460)	461782.2	1286365.5
(80,300)	461782.0	1286194.6
(-20,560)	461779.9	1286473.3
(40,400)	461779.8	1286302.4
(0,500)	461777.5	1286410.0
(60,340)	461777.4	1286239.1
(20,440)	461775.1	1286346.8
(80,280)	461775.0	1286175.9
(-20,540)	461772.8	1286454.5
(40,380)	461772.7	1286283.6
(0,480)	461770.5	1286391.3
(60,320)	461770.3	1286220.4
(20,420)	461768.1	1286328.1
(80,260)	461767.9	1286157.3
(-20,520)	461765.8	1286435.8
(40,360)	461765.7	1286264.9
(0,460)	461763.4	1286372.6
(60,300)	461763.3	1286201.8
(20,400)	461761.0	1286309.4
(-20,500)	461758.8	1286417.0
(40,340)	461758.7	1286246.1
(0,440)	461756.4	1286353.9
(60,280)	461756.3	1286183.0

TABLE 1
AU LOT 18 GRIDS AND COORDINATES

GRID COORDINATES	NORTHING (FEET)	EASTING (FEET)
(-40,540)	461754.1	1286461.5
(20,380)	461754.0	1286290.6
(-20,480)	461751.8	1286398.4
(40,320)	461751.6	1286227.5
(0,420)	461749.3	1286335.1
(60,260)	461749.2	1286164.3
(-40,520)	461747.1	1286442.8
(20,360)	461747.0	1286271.9
(-20,460)	461744.7	1286379.6
(40,300)	461744.6	1286208.8
(0,400)	461742.3	1286316.4
(60,240)	461742.2	1286145.5
(-40,500)	461740.1	1286424.1
(20,340)	461739.9	1286253.3
(-20,440)	461737.7	1286360.9
(40,280)	461737.5	1286190.0
(0,380)	461735.3	1286297.6
(-40,480)	461733.0	1286405.4
(20,320)	461732.9	1286234.5
(-20,420)	461730.6	1286342.1
(40,260)	461730.5	1286171.3
(0,360)	461728.3	1286279.0
(-40,460)	461726.0	1286386.6
(20,300)	461725.8	1286215.8
(40,240)	461723.5	1286152.6
(0,340)	461721.2	1286260.3
(-40,440)	461718.9	1286367.9
(20,280)	461718.8	1286197.0
(0,320)	461714.2	1286241.5
(20,260)	461711.8	1286178.4
(0,300)	461707.1	1286222.8
(100,280)	461793.7	1286168.9

TABLE 1
AU LOT 18 GRIDS AND COORDINATES

GRID COORDINATES	NORTHING (FEET)	EASTING (FEET)
(80,240)	461760.9	1286138.5
(60,220)	461735.2	1286126.8
(40,220)	461716.4	1286133.9
(20,240)	461704.8	1286159.6
(0,280)	461700.1	1286204.1
(100,400)	461835.9	1286281.3
(80,500)	461852.4	1286381.9
(60,520)	461840.7	1286407.6
(40,540)	461829.0	1286433.4
(20,560)	461817.3	1286459.1
(-40,560)	461761.2	1286480.3
(-40,420)	461711.9	1286349.3

**APPENDIX B
ACTIVITY HAZARD ANALYSES**

LIST OF ACTIVITY HAZARD ANALYSES

<u>Activities</u>	<u>Page Number</u>
• Site Mobilization/Preparation	B-2
• Intrusive Investigation	B-8
• Drum/MRC Handling	B-12
• Personnel Decontamination Station Operation	B-15
• Emergency Rescue	B-18
• Air Monitoring	B-20
• HTW-Contaminated Soil Removal and Packaging	B-22
• Excavation Backfill	B-25

ACTIVITY: PROJECT MOBILIZATION/PREPARATION

Summary: Prior to intrusive operations, mobilization and site preparation activities will be required. These activities include site preparation, installation of erosion and sediment controls, geophysical investigations, surveying, landscape evaluation, removal of vegetation, and erection of the ECS. At various stages of the operation, the ECS will also be relocated.

Principal Steps	Potential Hazards	Controls
General Mobilization/Preparation Hazards	Biological hazards	SSHO will walk site and identify potentially hazardous areas and these will be identified in the daily tailgate briefing. Site personnel will wear protective clothing to prevent exposure to biological hazards such as poison ivy. Personnel will exercise caution when moving obstacles, items, etc., that could be homes to snakes, spiders, or other animals or insects.
	Cold and heat stress injuries	SSHO will implement heat stress/cold injury control program (when daily temperature is predicted to be greater than 80°F or less than 35°F). Beverages will be available on site. SSHO will monitor weather conditions and stress symptoms in workers.
	Tripping hazards	SSHO will ensure that workers are aware of potential slippery surfaces and tripping hazards. Personnel will inform site manager or SSHO of any observed potential slip, trip, or fall hazards.
Site preparation	Injury from vehicle and heavy equipment traffic in work area	Personnel will remain out of the bucket swing radius and make sure they have the attention of the equipment operator and that the equipment is grounded prior to working in or around the equipment. A ground guide will be used when backing. Equipment will be immediately grounded if unauthorized personnel enter the work zone. If there are overhead power lines in the vicinity of the work area, a ground guide will be used to ensure that equipment maintains proper safe distances.
	Injury from hand tool/power tool usage	SSHO and Site Manager will ensure that all tools used on site are in proper working order and are in good condition. Use of hand tools/power tools will be monitored periodically by SSHO. Workers will inform supervisors if tools require repair or replacement and no damaged equipment will be used until repaired or replaced. Workers will ensure other personnel are clear of the swing arc of hand tools. Face shield, leather gloves, and/or chaps will be used as prescribed by the SSHO.
Property survey and mapping	<i>See general hazards above</i>	<i>See general hazards above.</i>

Principal Steps	Potential Hazards	Controls
Landscape survey	Injury from hand tool usage	SSHO and Site Manager will ensure that all tools used on site are in proper working order and are in good condition. Use of hand tools will be monitored periodically by SSHO. Workers will inform supervisors if tools require repair or replacement and no damaged equipment will be used until repaired or replaced. Workers will ensure other personnel are clear of the swing arc of hand tools. Face shield, leather gloves, and/or chaps will be used as prescribed by the SSHO.
Geophysical investigation	Manual lifting	Workers will be made aware of proper lifting techniques and the potential for injuries due to lifting, to be discussed during site-specific training.
Brush/obstacle removal	Injury from vehicle and heavy equipment traffic in work area	Personnel will remain out of the bucket swing radius and make sure they have the attention of the equipment operator and that the equipment is grounded prior to working in or around the equipment. A ground guide will be used when backing. Equipment will be immediately grounded if unauthorized personnel enter the work zone. If there are overhead power lines in the vicinity of the work area, a ground guide will be used to ensure that equipment maintains proper safe distances. Crane and forklift safety protocols will be implemented (Atch 1, SSWP)
	Manual lifting	Workers will be made aware of proper lifting techniques and the potential for injuries due to lifting, to be discussed during site-specific training.
	Handling flammable liquid during fueling	Gasoline will be stored in approved flammable liquid containers. Fueling will be carried out in areas free of combustible debris/vegetation. Fueling will not be performed in back of a pick-up truck with a bed liner. All engines will be turned off prior to fueling. Containers will be bonded and grounded during transfer of flammable liquids.
	Noise	SSHO will ensure that hearing protection will be worn in hazardous noise areas (where shouting is required for face-to-face communication within three feet).
	Tree Removal	Ensure personnel wear hard hats and ensure no personnel are in the fall zone of trees. Personnel will wear face shields, hearing protection, and chaps when operating chain saws.
	Injury from hand tool/power tool usage	SSHO and Site Manager will ensure that all tools used on site are in proper working order and are in good condition. Use of hand tools/power tools will be monitored periodically by SSHO. Workers will inform supervisors if tools require repair or replacement and no damaged equipment will be used until repaired or replaced. Workers will ensure other personnel are clear of the swing arc of hand tools. Face shield, leather gloves, and/or chaps will be used as prescribed by the SSHO.

Principal Steps	Potential Hazards	Controls
Erect and remove security fence/construction fence; Install/remove erosion and sediment controls	Injury from vehicle and heavy equipment traffic in work area	Personnel will remain out of the bucket swing radius and make sure they have the attention of the equipment operator and that the equipment is grounded prior to working in or around the equipment. A ground guide will be used when backing. Equipment will be immediately grounded if unauthorized personnel enter the work zone. If there are overhead power lines in the vicinity of the work area, a ground guide will be used to ensure that equipment maintains proper safe distances. Crane and forklift safety protocols will be implemented (Atch 1, SSWP)
	Manual lifting	Workers will be made aware of proper lifting techniques and the potential for injuries due to lifting, to be discussed during site-specific training.
	Handling flammable liquid during fueling	Gasoline will be stored in approved flammable liquid containers. Fueling will be carried out in areas free of combustible debris/vegetation. Fueling will not be performed in back of a pick-up truck with a bed liner. All engines will be turned off prior to fueling. Containers will be bonded and grounded during transfer of flammable liquids.
	Noise	SSHO will ensure that hearing protection will be worn in hazardous noise areas (where shouting is required for face-to-face communication within three feet).
	Injury from hand tool/power tool usage	SSHO and Site Manager will ensure that all tools used on site are in proper working order and are in good condition. Use of hand tools/power tools will be monitored periodically by SSHO. Workers will inform supervisors if tools require repair or replacement and no damaged equipment will be used until repaired or replaced. Workers will ensure other personnel are clear of the swing arc of hand tools. Face shield, leather gloves, and/or chaps will be used as prescribed by the SSHO.
Position support trailers and equipment	Injury from vehicle and heavy equipment traffic in work area	Personnel will remain out of the bucket swing radius and make sure they have the attention of the equipment operator and that the equipment is grounded prior to working in or around the equipment. A ground guide will be used when backing. Equipment will be immediately grounded if unauthorized personnel enter the work zone. If there are overhead power lines in the vicinity of the work area, a ground guide will be used to ensure that equipment maintains proper safe distances. Crane and forklift safety protocols will be implemented (Atch 1, SSWP)
	Manual lifting	Workers will be made aware of proper lifting techniques and the potential for injuries due to lifting, to be discussed during site-specific training.
	Handling flammable liquid during fueling	Gasoline will be stored in approved flammable liquid containers. Fueling will be carried out in areas free of combustible debris/vegetation. Fueling will not be performed in back of a pick-up truck with a bed liner. All engines will be turned off prior to fueling. Containers will be bonded and grounded during transfer of flammable liquids.

Principal Steps	Potential Hazards	Controls
Position support trailers and equipment (contd.)	Noise	SSHO will ensure that hearing protection will be worn in hazardous noise areas (where shouting is required for face-to-face communication within three feet).
	Injury from hand tool/power tool usage	SSHO and Site Manager will ensure that all tools used on site are in proper working order and are in good condition. Use of hand tools/power tools will be monitored periodically by SSHO. Workers will inform supervisors if tools require repair or replacement and no damaged equipment will be used until repaired or replaced. Workers will ensure other personnel are clear of the swing arc of hand tools. Face shield, leather gloves, and/or chaps will be used as prescribed by the SSHO.
Establish power hook-ups (generator or line)	Injury from hand tool/power tool usage	SSHO and Site Manager will ensure that all tools used on site are in proper working order and are in good condition. Use of hand tools/power tools will be monitored periodically by SSHO. Workers will inform supervisors if tools require repair or replacement and no damaged equipment will be used until repaired or replaced. Workers will ensure other personnel are clear of the swing arc of hand tools. Face shield, leather gloves, and/or chaps will be used as prescribed by the SSHO.
	Electrical hazards	No frayed electrical cords will be permitted on site. GFCI devices will be used on all outdoor circuits. Proper lock-out/tag-out procedures will be used when repairing or installing electrical equipment and only qualified personnel will perform electrical hook-ups.
Erection/Movement of ECS	Injury from vehicle and heavy equipment traffic in work area	Personnel will remain out of the bucket swing radius and make sure they have the attention of the equipment operator and that the equipment is grounded prior to working in or around the equipment. A ground guide will be used when backing. Equipment will be immediately grounded if unauthorized personnel enter the work zone. If there are overhead power lines in the vicinity of the work area, a ground guide will be used to ensure that equipment maintains proper safe distances. Crane and forklift safety protocols will be implemented (Atch 1, SSWP)
	Manual lifting	Workers will be made aware of proper lifting techniques and the potential for injuries due to lifting, to be discussed during site-specific training.
	Handling flammable liquid during fueling	Gasoline will be stored in approved flammable liquid containers. Fueling will be carried out in areas free of combustible debris/vegetation. Fueling will not be performed in back of a pick-up truck with a bed liner. All engines will be turned off prior to fueling. Containers will be bonded and grounded during transfer of flammable liquids.
	Noise	SSHO will ensure that hearing protection will be worn in hazardous noise areas (where shouting is required for face-to-face communication within three feet).

Principal Steps	Potential Hazards	Controls
	Injury from hand tool/power tool usage	SSHO and Site Manager will ensure that all tools used on site are in proper working order and are in good condition. Use of hand tools/power tools will be monitored periodically by SSHO. Workers will inform supervisors if tools require repair or replacement and no damaged equipment will be used until repaired or replaced. Workers will ensure other personnel are clear of the swing arc of hand tools. Face shield, leather gloves, and/or chaps will be used as prescribed by the SSHO.

Personal Protective Equipment Requirements:

- Level D PPE
- Hardhat (as required)
- Hearing Protection (as required)
- Safety glasses (as required)
- Face shield when using chainsaw or brush trimmers
- Chaps when using chainsaw

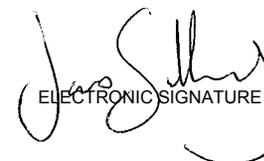
Equipment to be used:

- Common hand tools
- Common power tools (chain saws, brush trimmers)
- Vehicles: excavator, front-end loader, crane, forklift

Inspection Requirements: The SSHO will inspect the entire work area daily. Workers will inspect all equipment each day prior to use. If, during inspection or during use, equipment fails to function properly, it should be turned in for repair/replacement. All safety guards on equipment will remain in place. If any safety device on equipment is missing, that piece of equipment will be placed out of service until it is repaired/replaced.

Training Requirements: All on site personnel (except land surveyors and landscape valuation assessors) will be current in OSHA training IAW 29 CFR 1910.120 (HAZWOPER) and be enrolled in a medical monitoring program with a current occupational physical with physician's certificate IAW 29 CFR 1910.120(f). A minimum of two people trained in First Aid and CPR will be on site during operations.

Analyzed By: James Salisbury



ELECTRONIC SIGNATURE

Date: April 2, 2004

Approved By: Edward C. Bishop, Ph.D., P.E., CIH
Project Safety and Health Officer



ELECTRONIC SIGNATURE

Date: April 2, 2004

ACTIVITY: INTRUSIVE INVESTIGATION

Summary: Soil and materials in investigation area will be excavated. Intrusive investigations will be performed within an ECS, either manually (hand digging) or using mechanical equipment, as necessary. Excavated material will be sorted on a sorting table and scrap or suspect RCWM will be segregated for further assessment. Excavated soil will be drummed for removal/disposal.

Principal Steps	Potential Hazards	Controls
General Initial Intrusive Investigation Activities	Chemical Warfare Agents and UXO	SSHO will include RCWM and UXO training and safety awareness training during site-specific health and safety training. This training will be refreshed during tailgate safety briefings. Continuous air monitoring.
	Cold and Heat Stress Injuries	SSHO will implement heat stress/cold injury control program (when daily temperature is predicted to be greater than 80°F or less than 35°F). Beverages will be available on site. SSHO will monitor weather conditions and stress symptoms in workers.
	Contact with contaminated soil, air, liquid	All personnel will don the proper PPE commensurate with the potential chemical hazard. RCWM, UXO, and HTW training and safety awareness during site specific training and refreshed during morning tailgate briefing. Continuous air monitoring.
	Tripping Hazards	SSHO will ensure that workers are aware of potential slippery surfaces and tripping hazards. Personnel will inform site manager or SSHO of any observed potential slip, trip, or fall hazards.
	Confined space entry	Confined space entry program will be implemented in concert with excavation and trenching procedures (i.e., if excavation and trenching procedures are implemented, the excavation will be considered to be a confined space). Periodic trench inspections will be performed.
	Excavation and trenching	Shoring will be installed or benching/sloping implemented when excavation exceeds 4 feet, if workers are required to enter. All water will be pumped from the excavation prior to worker entrance. Excavation will be inspected by the SSHO prior to entrance by workers. Proper ingress and egress will be provided.
	Injury from hand tool/power tool usage	SSHO and Site Manager will ensure that all tools used on site are in proper working order and are in good condition. Use of hand tools/power tools will be monitored periodically by SSHO. Workers will inform supervisors if tools require repair or replacement and no damaged equipment will be used until repaired or replaced. Workers will ensure other personnel are clear of the swing arc of hand tools. Face shield, leather gloves, and/or chaps will be used as prescribed by the SSHO.
	Manual lifting	SSHO will make workers aware of proper lifting techniques and the potential for injuries due to lifting. This will be discussed during site-specific training.

Principal Steps	Potential Hazards	Controls
Hand digging (contd.)	Noise	SSHO will ensure that hearing protection will be worn in hazardous noise areas (where shouting is required for face-to-face communication within three feet).
Mechanical Excavation	Confined space entry	Confined space entry program will be implemented in concert with excavation and trenching procedures (i.e., if excavation and trenching procedures are implemented, the excavation will be considered to be a confined space). Periodic trench inspections will be performed.
	Excavation and trenching	Shoring will be installed or benching/sloping implemented when excavation exceeds 4 feet, if workers are required to enter. All water will be pumped from the excavation prior to worker entrance. Excavation will be inspected by the SSHO prior to entrance by workers. Proper ingress and egress will be provided.
	Handling flammable liquid during fueling	Gasoline will be stored in approved flammable liquid containers. Fueling will be carried out in areas free of combustible debris/vegetation. Fueling will not be performed in back of a pick-up truck with a bed liner. All engines will be turned off prior to fueling. Containers will be bonded and grounded during transfer of flammable liquids.
	Injury from vehicle and heavy equipment traffic in work area	Personnel will remain out of the bucket swing radius and make sure they have the attention of the equipment operator and that the equipment is grounded prior to working in or around the equipment. A ground guide will be used when backing. Equipment will be immediately grounded if unauthorized personnel enter the work zone. If there are overhead power lines in the vicinity of the work area, a ground guide will be used to ensure that equipment maintains proper safe distances.
	Noise	SSHO will ensure that hearing protection will be worn in hazardous noise areas (where shouting is required for face-to-face communication within three feet).
Collect RCWM/HTW samples	Confined space entry	Confined space entry program will be implemented in concert with excavation and trenching procedures (i.e., if excavation and trenching procedures are implemented, the excavation will be considered to be a confined space). Periodic trench inspections will be performed.
Segregate scrap and suspect RCWM items for further assessment by EOD	Confined space entry	Confined space entry program will be implemented in concert with excavation and trenching procedures (i.e., if excavation and trenching procedures are implemented, the excavation will be considered to be a confined space). Periodic trench inspections will be performed.
	Manual lifting	SSHO will make workers aware of proper lifting techniques and the potential for injuries due to lifting. This will be discussed during site-specific training.
Load excavated soil in drums	Confined space entry	Confined space entry program will be implemented in concert with excavation and trenching procedures (i.e., if excavation and trenching procedures are implemented, the excavation will be considered to be a confined space). Periodic trench inspections will be performed.

Principal Steps	Potential Hazards	Controls
Load excavated soil in drums (contd.)	Manual lifting	SSHO will make workers aware of proper lifting techniques and the potential for injuries due to lifting. This will be discussed during site-specific training.

Personal Protective Equipment Requirements:

Level B or Level C PPE initially (upgrade IAW this plan)

Hardhat (as required)

Face shield (as required)

Hearing Protection (as required)

Rubber gloves with leather outer gloves

Equipment/Materials to be Used:

Vehicles: excavator

Hand tools

Shoring

Multiple Round Containers (MRCs)

Inspection Requirements: A daily inspection of PPE by workers will be conducted. Equipment will be inspected by workers daily prior to use IAW the manufacturer’s instructions. If during inspection or during use, equipment fails to function properly, equipment is to be turned in for repair/replacement. All safety guards designed on equipment will remain in place. If any safety device on equipment is missing, that piece of equipment will be placed out of service until it can be repaired/replaced. The SSHO will inspect or survey excavation at least daily or right after changes in conditions (i.e., heavy rain, large amounts of soil removed). The SSHO will look for fissures and cracks in the walls and will ensure that engineering controls are still appropriate. During site set-up, any equipment generating noise will be monitored by the SSHO to assess whether hearing protection is required.

Training Requirements: All on-site personnel will be current in OSHA training IAW 29 CFR 1910.120 (HAZWOPER), enrolled in a medical monitoring program, and have a current occupational physical with physician's certificate IAW 29 CFR 1910.120(f). Operators will be trained in the safe use of required equipment and in the required PPE. All persons performing UXO operations will be graduates of USAESCH-approved courses and be approved by USAESCH Contracting. Before entering a confined space, all personnel will show proof of confined space training to the SSHO. All personnel operating heavy equipment will provide proof of competency with the equipment to the SSHO prior to operating the equipment. All personnel required to wear respiratory protection will be fit tested and documentation for this will be maintained on site by the SSHO.

Analyzed By: James Salisbury



ELECTRONIC SIGNATURE

Date: April 2, 2003

Approved By: Edward C. Bishop, Ph.D., P.E., CIH
Project Safety and Health Officer



ELECTRONIC SIGNATURE

Date: April 2, 2003

ACTIVITY: DRUM/MRC HANDLING

Summary: Drummed soil will be loaded for transport to Federal Property pending receipt of analysis results and subsequent appropriate disposal. MRCs will also be transported to the Federal Property for assessment and subsequent storage at the Interim Holding Facility, pending appropriate disposition.

Principal Steps	Potential Hazards	Controls
General Soil Loading Activities	Biological hazards	SSHO will walk site and identify potentially hazardous areas and these will be identified in the daily tailgate briefing. Site personnel will wear protective clothing to prevent exposure to biological hazards such as poison ivy. Personnel will exercise caution when moving obstacles, items, etc., that could be homes to snakes, spiders, or other animals or insects.
	Cold and Heat Stress Injuries	SSHO will implement heat stress/cold injury control program (when daily temperature is predicted to be greater than 80°F or less than 35°F). Beverages will be available on site. SSHO will monitor weather conditions and stress symptoms in workers.
	Handling flammable liquid during fueling	Gasoline will be stored in approved flammable liquid containers. Fueling will be carried out in areas free of combustible debris/vegetation. Fueling will not be performed in back of a pick-up truck with a bed liner. All engines will be turned off prior to fueling. Containers will be bonded and grounded during transfer of flammable liquids.
	Injury from vehicle and heavy equipment traffic in work area	Personnel will remain out of the bucket swing radius and make sure they have the attention of the equipment operator and that the equipment is grounded prior to working in or around the equipment. A ground guide will be used when backing. Equipment will be immediately grounded if unauthorized personnel enter the work zone. If there are overhead power lines in the vicinity of the work area, a ground guide will be used to ensure that equipment maintains proper safe distances.
	Manual lifting	SSHO will make workers aware of proper lifting techniques and the potential for injuries due to lifting. This will be discussed during site-specific training.
	Noise	SSHO will ensure that hearing protection will be worn in hazardous noise areas (where shouting is required for face-to-face communication within three feet).
	Tripping Hazards	SSHO will ensure that workers are aware of potential slippery surfaces and tripping hazards. Personnel will inform site manager or SSHO of any observed potential slip, trip, or fall hazards.

Personal Protective Equipment Requirements:

Modified Level D PPE

Hardhat (as required)

Hearing protection (as required)

Safety glasses (as required)

Leather gloves (as required)

Equipment to be used:

Vehicles: fork-lift

Drum dolly

Inspection Requirements: Equipment will be inspected daily by workers prior to use IAW the manufacturer's instructions. If during inspection or during use, equipment fails to function properly, equipment is to be turned in for repair/replacement. The SSHO will inspect loading locations at least daily.

Training Requirements: Operators will be trained in the safe use of required equipment and in the required PPE. All on-site personnel will be current in OSHA training IAW 29 CFR 1910.120 (HAZWOPER), be enrolled in a medical monitoring program, and have a current occupational physical with physician's certificate IAW 29 CFR 1910.120(f). All personnel operating heavy equipment will provide proof of competency with the equipment to the SSHO prior to operating the equipment.

Analyzed By: James Salisbury



ELECTRONIC SIGNATURE

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Project Safety and Health Officer



ELECTRONIC SIGNATURE

Date: April 2, 2003

ACTIVITY: PERSONNEL DECONTAMINATION STATION OPERATION

Summary: Intrusive investigation personnel exiting the ECS will be processed through the Personnel Decontamination Station (PDS) to be decontaminated. Equipment used during the excavation will also be decontaminated. PDS personnel will also support rescue personnel, as required.

Principal Steps	Potential Hazards	Controls
General PDS Activities	Chemical Warfare Agents	SSHO will include RCWM and UXO training and safety awareness training during site-specific health and safety training. This training will be refreshed during tailgate safety briefings. Continuous air monitoring of work zone where PDS personnel are working.
	Cold and Heat Stress Injuries	SSHO will implement heat stress/cold injury control program (when daily temperature is predicted to be greater than 80°F or less than 35°F). Beverages will be available on site. SSHO will monitor weather conditions and stress symptoms in workers.
	Contact with contaminated soil, air, liquid	All personnel will don the proper PPE commensurate with the potential chemical hazard. RCWM, UXO, and HTW training and safety awareness during site-specific training and refreshed during morning tailgate briefing. Continuous air monitoring of work zone where PDS personnel are working.
	Manual lifting	SSHO will make workers aware of proper lifting techniques and the potential for injuries due to lifting. This will be discussed during site-specific training.
	Noise	SSHO will ensure that hearing protection will be worn in hazardous noise areas (where shouting is required for face-to-face communication within three feet).
	Tripping Hazards	SSHO will ensure that workers are aware of potential slippery surfaces and tripping hazards. Personnel will inform site manager or SSHO of any observed potential slip, trip, or fall hazards.

Personal Protective Equipment Requirements:

Level C PPE at minimum

Two-way radios

Face shield (as required)

Splash protection (as required)

Hearing Protection (as required)

Equipment/Materials to be Used:

Decontamination buckets

Brush

Bleach, nominal 0.5%

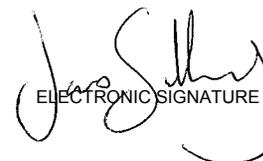
Detergent/soap

Water

Inspection Requirements: Equipment will be inspected by workers daily prior to use IAW the manufacturer's instructions. If during inspection or during use, equipment fails to function properly, equipment is to be turned in for repair/replacement. If any safety device on equipment is missing, that piece of equipment will be placed out of service until it can be repaired/replaced. The SSHO will ensure prior to daily operations that the PDS is ready for operations.

Training Requirements: All PDS personnel will be trained in the safe use of required equipment and in the required PPE. All on-site personnel will be current in OSHA training IAW 29 CFR 1910.120 (HAZWOPER), enrolled in a medical monitoring program, and have a current occupational physical with physician's certificate IAW 29 CFR 1910.120(f). All personnel required to wear respiratory protection will be fit tested and documentation for this will be maintained on site by the SSHO.

Analyzed By: James Salisbury



ELECTRONIC SIGNATURE

Date: April 2, 2003

Approved By: Edward C. Bishop, Ph.D., P.E., CIH
Project Safety and Health Officer


ELECTRONIC SIGNATURE

Date: April 2, 2003

ACTIVITY: EMERGENCY RESCUE

Summary: In the event that one or more members of the intrusive investigation team are injured during activities within the ECS, personnel will enter the ECS to rescue the injured worker(s).

Principal Steps	Potential Hazards	Controls
Emergency Rescue Activities	Chemical Warfare Agents	SSHO will include RCWM and UXO training and safety awareness training during site-specific health and safety training. This training will be refreshed during tailgate safety briefings. Continuous air monitoring.
	Biological hazards	SSHO will receive training regarding blood borne pathogens during site-specific training.
	Cold and Heat Stress Injuries	SSHO will implement heat stress/cold injury control program (when daily temperature is predicted to be greater than 80°F or less than 35°F). Beverages will be available on site. SSHO will monitor weather conditions and stress symptoms in workers.
	Confined space entry	Confined space entry program will be implemented in concert with excavation and trenching procedures (i.e., if excavation and trenching procedures are implemented, the excavation will be considered to be a confined space). Periodic trench inspections will be performed.
	Contact with contaminated soil, air, liquid	All personnel will don the proper PPE commensurate with the potential chemical hazard. RCWM, UXO, and HTW training and safety awareness during site-specific training and refreshed during morning tailgate briefing. Continuous air monitoring.
	Manual lifting	SSHO will make workers aware of proper lifting techniques and the potential for injuries due to lifting. This will be discussed during site-specific training.
	Noise	SSHO will ensure that hearing protection will be worn in hazardous noise areas (where shouting is required for face-to-face communication within three feet).
	Tripping Hazards	SSHO will ensure that workers are aware of potential slippery surfaces and tripping hazards. Personnel will inform site manager or SSHO of any observed potential slip, trip, or fall hazards.

Personal Protective Equipment Requirements:

All levels of PPE: rescue personnel will upgrade to an equal or higher level of protection than the worker(s) requiring rescue

Equipment/Materials to be Used:

Rescue litter

Mechanical retrieval device or pre-positioned equipment suitable for lifting loader

Inspection Requirements: All rescue equipment will be inspected daily by workers prior to use IAW the manufacturer's instructions. If during inspection or during use, equipment fails to function properly, equipment is to be replaced. All safety guards designed on equipment will remain in place. If any safety device on equipment is missing, that piece of equipment will be placed out of service until it can be repaired/replaced.

Training Requirements: All rescue personnel will be trained in rescue procedures. Rescue teams will practice rescue operations before the start of initial operations. All on-site personnel will be current in OSHA training IAW 29 CFR 1910.120 (HAZWOPER), enrolled in a medical monitoring program, and have a current occupational physical with physician's certificate IAW 29 CFR 1910.120(f). Rescue personnel will be trained in UXO awareness during site-specific training. All personnel will provide proof of competency with the equipment to the SSHO prior to operating. Before entering a confined space, all personnel will show proof of confined space training to the SSHO. All personnel required to wear respiratory protection will be fit tested and documentation for this will be maintained on site by the SSHO.

Analyzed By: James Salisbury



ELECTRONIC SIGNATURE

Date: April 2, 2003

Approved By: Edward C. Bishop, Ph.D., P.E., CIH
Project Safety and Health Officer



ELECTRONIC SIGNATURE

Date: April 2, 2003

ACTIVITY: AIR MONITORING

Summary: Air monitoring for chemical agents and industrial chemicals will be conducted during the investigation. Related activities include set-up and calibration of equipment, and operation during site activities.

Principal Steps	Potential Hazards	Controls
Air monitoring	Chemical Warfare Agents	SSHO will include RCWM and UXO training and safety awareness training during site-specific health and safety training. This training will be refreshed during tailgate safety briefings. Continuous air monitoring.
	Biological hazards	SSHO will walk site and identify potentially hazardous areas and these will be identified in the daily tailgate briefing. Site personnel will wear protective clothing to prevent exposure to biological hazards such as poison ivy. Personnel will exercise caution when moving obstacles, items, etc., that could be homes to snakes, spiders, or other animals or insects.
	Cold and Heat Stress Injuries	SSHO will implement heat stress/cold injury control program (when daily temperature is predicted to be greater than 80°F or less than 35°F). Beverages will be available on site. SSHO will monitor weather conditions and stress symptoms in workers.
	Contact with contaminated soil, air, liquid	All personnel will don the proper PPE commensurate with the potential chemical hazard. RCWM, UXO, and HTW training and safety awareness during site-specific training and refreshed during morning tailgate briefing. Continuous air monitoring.
	Manual lifting	SSHO will make workers aware of proper lifting techniques and the potential for injuries due to lifting. This will be discussed during site-specific training.
	Noise	SSHO will ensure that hearing protection will be worn in hazardous noise areas (where shouting is required for face-to-face communication within three feet).
	Injury from pressurized cylinders	Pressurized cylinders will be inspected periodically by the air monitoring team. Cylinders will be stored IAW the SSHP.
	Tripping Hazards	SSHO will ensure that workers are aware of potential slippery surfaces and tripping hazards. Personnel will inform site manager or SSHO of any observed potential slip, trip, or fall hazards.

Personal Protective Equipment Requirements:

Modified Level D PPE

Hearing protection (as required)

Equipment to be Used:

MINICAMS monitoring equipment

DAAMS tubes and portable sampling pumps

OPFTIR spectrometer

Inspection Requirements: All air monitoring equipment will be inspected and calibrated daily prior to use by air monitoring team. If during inspection or during use, equipment fails to function properly, equipment is to be turned in for repair/replacement. Cylinders will be inspected daily by air monitoring team to ensure proper placement and storage.

Training Requirements: All on-site personnel will be current in OSHA training IAW 29 CFR 1910.120 (HAZWOPER), be enrolled in a medical monitoring program and have a current occupational physical with physician's certificate IAW 29 CFR 1910.120(f).

Analyzed By: James Salisbury



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Date: April 2, 2003

Approved By: Edward C. Bishop, Ph.D., P.E., CIH
Project Safety and Health Officer



ELECTRONIC SIGNATURE

Date: April 2, 2003

ACTIVITY: HTW-CONTAMINATED SOIL REMOVAL AND PACKAGING

Summary: Following the completion of intrusive investigation activities and RCWM-related soil removal, identified HTW-contaminated soil will be removed and loaded into dump trucks or roll-offs.

Principal Steps	Potential Hazards	Controls
General Soil Removal and Packaging Activities	Biological hazards	SSHO will walk site and identify potentially hazardous areas and these will be identified in the daily tailgate briefing. Site personnel will wear protective clothing to prevent exposure to biological hazards such as poison ivy. Personnel will exercise caution when moving obstacles, items, etc., that could be homes to snakes, spiders, or other animals or insects.
	Handling flammable liquid during fueling	Gasoline will be stored in approved flammable liquid containers. Fueling will be carried out in areas free of combustible debris/vegetation. Fueling will not be performed in back of a pick-up truck with a bed liner. All engines will be turned off prior to fueling. Containers will be bonded and grounded during transfer of flammable liquids.
	Cold and Heat Stress Injuries	SSHO will implement heat stress/cold injury control program (when daily temperature is predicted to be greater than 80°F or less than 35°F). Beverages will be available on site. SSHO will monitor weather conditions and stress symptoms in workers.
	Contact with contaminated soil, air, liquid	All personnel will don the proper PPE commensurate with the potential chemical hazard. RCWM, UXO, and HTW training and safety awareness during site-specific training and refreshed during morning tailgate briefing.
	Injury from hand tool/power tool usage	SSHO and Site Manager will ensure that all tools used on site are in proper working order and are in good condition. Use of hand tools/power tools will be monitored periodically by SSHO. Workers will inform supervisors if tools require repair or replacement and no damaged equipment will be used until repaired or replaced. Workers will ensure other personnel are clear of the swing arc of hand tools. Face shield, leather gloves, and/or chaps will be used as prescribed by the SSHO.
	Injury from vehicle and heavy equipment traffic in work area	Personnel will remain out of the bucket swing radius and make sure they have the attention of the equipment operator and that the equipment is grounded prior to working in or around the equipment. A ground guide will be used when backing. Equipment will be immediately grounded if unauthorized personnel enter the work zone. If there are overhead power lines in the vicinity of the work area, a ground guide will be used to ensure that equipment maintains proper safe distances.
	Noise	SSHO will ensure that hearing protection will be worn in hazardous noise areas (where shouting is required for face-to-face communication within three feet).

Principal Steps	Potential Hazards	Controls
General Soil Removal Activities (contd.)	Tripping Hazards	SSHO will ensure that workers are aware of potential slippery surfaces and tripping hazards. Personnel will inform site manager or SSHO of any observed potential slip, trip, or fall hazards.

Personal Protective Equipment Requirements:

- Modified Level D PPE
- Hardhat (as required)
- Safety glasses (as required)
- Hearing protection (as required)
- Rubber gloves with leather outer gloves (as required)

Equipment/Materials to be Used:

- Vehicles: excavator, loader, compactor
- Hand tools (i.e., shovels, rakes)

Inspection Requirements: Workers will inspect PPE, equipment, hand and power tools daily prior to use IAW the manufacturer’s instructions. If during inspection or during use, equipment fails to function properly, equipment is to be turned in for repair/ replacement. All safety guards on equipment will remain in place. If any safety device on equipment is missing, that piece of equipment will be placed out of service until it can be repaired/replaced. The SSHO will inspect or survey excavation at least daily or right after changes in conditions (i.e., heavy rain, large amounts of soil removed). The SSHO will ensure that there is no water in the excavation and that there are no fissures and cracks in the walls, and will also ensure that engineering controls are still appropriate.

Training Requirements: All on site personnel will be current in OSHA training IAW 29 CFR 1910.120 (HAZWOPER), and be enrolled in a medical monitoring program with a current occupational physical with physician’s certificate IAW 29 CFR 1910.120(f). Operators will be trained in the safe use of required equipment. All personnel operating heavy equipment will provide proof of competency with the equipment to the SSHO prior to operating the equipment.

Analyzed By: James Salisbury


ELECTRONIC SIGNATURE
April 2, 2003

Date:

Approved By: Edward C. Bishop, Ph.D., P.E., CIH
Project Safety and Health Officer


ELECTRONIC SIGNATURE

Date:

April 2, 2003

ACTIVITY: EXCAVATION BACKFILL

Summary: Following intrusive investigation activities, the excavation will be backfilled using clean soil.

Principal Steps	Potential Hazards	Controls
Backfill Activities	Biological hazards	SSHO will walk site and identify potentially hazardous areas and these will be identified in the daily tailgate briefing. Site personnel will wear protective clothing to prevent exposure to biological hazards such as poison ivy. Personnel will exercise caution when moving obstacles, items, etc., that could be homes to snakes, spiders, or other animals or insects.
	Handling flammable liquid during fueling	Gasoline will be stored in approved flammable liquid containers. Fueling will be carried out in areas free of combustible debris/vegetation. Fueling will not be performed in back of a pick-up truck with a bed liner. All engines will be turned off prior to fueling. Containers will be bonded and grounded during transfer of flammable liquids.
	Cold and Heat Stress Injuries	SSHO will implement heat stress/cold injury control program (when daily temperature is predicted to be greater than 80°F or less than 35°F). Beverages will be available on site. SSHO will monitor weather conditions and stress symptoms in workers.
	Injury from hand tool/power tool usage	SSHO and Site Manager will ensure that all tools used on site are in proper working order and are in good condition. Use of hand tools/power tools will be monitored periodically by SSHO. Workers will inform supervisors if tools require repair or replacement and no damaged equipment will be used until repaired or replaced. Workers will ensure other personnel are clear of the swing arc of hand tools. Face shield, leather gloves, and/or chaps will be used as prescribed by the SSHO.
	Injury from vehicle and heavy equipment traffic in work area	Personnel will remain out of the bucket swing radius and make sure they have the attention of the equipment operator and that the equipment is grounded prior to working in or around the equipment. A ground guide will be used when backing. Equipment will be immediately grounded if unauthorized personnel enter the work zone. If there are overhead power lines in the vicinity of the work area, a ground guide will be used to ensure that equipment maintains proper safe distances.
	Noise	SSHO will ensure that hearing protection will be worn in hazardous noise areas (where shouting is required for face-to-face communication within three feet).
	Tripping Hazards	SSHO will ensure that workers are aware of potential slippery surfaces and tripping hazards. Personnel will inform site manager or SSHO of any observed potential slip, trip, or fall hazards.

Personal Protective Equipment Requirements:

Level D PPE

Hardhat (as required)

Hearing protection (as required)

Equipment/Materials to be Used:

Vehicles: excavator, loader, compactor

Hand tools (i.e., shovels, rakes)

Inspection Requirements: Workers will inspect PPE, equipment, hand and power tools daily prior to use IAW the manufacturer’s instructions. If during inspection or during use, equipment fails to function properly, equipment is to be turned in for repair/ replacement. All safety guards on equipment will remain in place. If any safety device on equipment is missing, that piece of equipment will be placed out of service until it can be repaired/replaced. The SSHO will inspect or survey excavation at least daily or right after changes in conditions (i.e., heavy rain, large amounts of soil removed). The SSHO will ensure that there is no water in the excavation and that there are no fissures and cracks in the walls, and will also ensure that engineering controls are still appropriate.

Training Requirements: All on site personnel will be current in OSHA training IAW 29 CFR 1910.120 (HAZWOPER), and be enrolled in a medical monitoring program with a current occupational physical with physician’s certificate IAW 29 CFR 1910.120(f). Operators will be trained in the safe use of required equipment. All personnel operating heavy equipment will provide proof of competency with the equipment to the SSHO prior to operating the equipment.

Analyzed By: James Salisbury



ELECTRONIC SIGNATURE

Date: April 2, 2003

Approved By: Edward C. Bishop, Ph.D., P.E., CIH
Project Safety and Health Officer


ELECTRONIC SIGNATURE

Date: April 2, 2003

**APPENDIX C:
POSITION PAPER
MAXIMUM CREDIBLE EVENT FOR
THE AMERICAN UNIVERSITY LOT 18
(PREPARED BY USAESCH)**

Position Paper

SUBJECT: Maximum Credible Event (MCE) for the American University Lot 18, Spring Valley, Washington D.C.

1. PURPOSE: To determine the maximum credible event (MCE) for the Intrusive Investigation to be conducted at the American University Lot 18 (Lot 18)
2. REFERENCES:
 - a. Interim Guidance for Biological Warfare Materiel (BWM) and Non-Stockpile CWM Response Activities', 5 September 1997.
 - b. Site-Specific Removal Report Spaulding and Captain Rankin Area
 - c. Interim Draft Report on the American University Lots.
 - d. Site Wide CSS, Site Specific Annex C-American University Lots, (Integrated CSS/LAWP Annex), dated Oct. 23, 2002
 - e. Position paper dated 19 August 2003, "To determine whether American University Lot (Lot 18) should be considered as a potential Chemical Warfare Materiel site".
 - f. Maximum Credible Event (MCE) and Most Probable Munition (MPM) Analysis For Spring Valley Site-Wide Operations, dated August 14, 2003.
3. PROJECT TEAM EVALUATORS:
 - a. Hank Hubbard, OE-CX, Safety Specialist
 - b. Allyn Allison, Project Manager
 - c. Wilson Walters, Operations Officer
 - d. Kellie Williams, Industrial Hygienist
 - e. Bruce Whisenant, Technical Manager

4. INTRODUCTION:

4.1 The Maximum Credible Event (MCE) for intrusive activities at Spring Valley site wide was utilized to develop the site specific MCE for Lot 18. The Spring Valley site wide MCE's were evaluated in accordance with the "US Army Program Manager for Chemical Demilitarization, System Safety Program Plan for Chemical Warfare Materiel Handling at Small Burial Sites (SSMP)", March 1997 and Army Regulation 385-61, "The Army Chemical Agent Safety Program."

4.2 SITE BACKGROUND. The Spring Valley Formerly Used Defense Site (FUDS) is located in northwest Washington, DC. The Time Critical Removal Action (TCRA) American University Lots are located within the boundary of the area designated by USACE as Operable Unit 4 (OU-4) in the Spring Valley FUDS. OU-4 encompasses an

area that was formerly occupied by the American University Experiment Station (AUES) between 1917 and 1920. During World War I, the U.S. Government established the AUES to investigate the testing, production and effects of noxious gases, antidotes and protective masks. The AUES was located on the grounds of the present AU and used portions of adjoining properties to conduct the research and development of CWM, including mustard, lewisite, adamsite, irritants and smokes. Immediately after the war these activities were transfer to other locations and the property returned to the owners. American University Lot 18 is located in the extreme southern portion of the AUES in 1918. During a prior investigation a pit or dump was identified. The location of this pit is immediately adjacent to or consistent with the southern 1918 fence line of AUES. The fence line in the south trends with the tributary east-west in Lot 18. Four AUES buildings were located in Lot 18. They included: dispersoid storage lab #4 in the north, two 10 cubic meter explosives chambers in the central area and a fire cage located in the south. Though the exact nature, size and function of the fire cage structure are unknown, the building's moniker suggests burning.

4.3 INVESTIGATION BACKGROUND. A probability assessment was conducted and it was determined that the anomalies identified on AU Lot 18 were "low probability" anomalies. Low probability anomalies are defined as those anomalies that have a low probability of being related to OE/RCWM activities. In January 2003 the intrusive investigation of the low probability anomalies began in the vicinity of the Spaulding and Captain Ranking Areas (including American University Lot 18). During this investigation a pit was identified. The pit contained glassware, ceramic, metal, stone and concrete items and other miscellaneous items. Intact glass bottles with stoppers that contained liquid and empty, unfuzed and unfired munitions (75 mm, 3" stokes, 4.7 " projectiles and 8" Livens) were also found in the pit. Work ceased at Lot 18 in March 2003.

4.4 MCE ANALYSIS (SPRING VALLEY SITE WIDE) The maximum credible event (MCE) analysis was completed for site wide application at the Spring Valley project sites. Each project related site shall be independently evaluated and an MCE shall be selected based upon the site conditions and credible event for that particular site operation. This document is dated August 18, 2003 and contains three scenarios for implementation at an individual site. The three are as follows:

- Instantaneous release of mustard (H) from an explosively configured 75 mm
- Evaporative release of Lewisite from a one liter container
- Evaporative release of Lewisite from a five gallon carboy container

5.0 DISCUSSION for Site Specific MCE Selection.

5.1 Instantaneous release of mustard (H) from an explosively configured 75 mm was evaluated as an MCE for Lot # 18. OE related items were found commingled with the glassware and other pieces of debris in Lot 18 The team reviewed the historical data provided below and determined that this historical data provides information about former disposal operations that can be utilized to provide a basis for the evaluation of an

explosively configured round being recovered from this area. In the approximately 20-30 % of the location that has been intrusively investigated, all ordnance related items recovered from this area have all been assessed as empty unfuzed and unfired munition items. Based upon the lack of historical data indicating this area was an impact area or firing point or designated ordnance disposal area and the evidence collected to date from our intrusive investigation, the team evaluated the selection of an explosively configured round at Lot #18 as not credible for the intrusive operations at this site.

OE Related Scrap Recovered from Lot #18

Area	Item No.	Grid	Depth (bgs)	Date Recovered	Description of Items	Scrap Y/N
Lot 18	1	0,420	4'	1/29/03	7 - 3" Stokes mortars, unfused, empty	Y
	2	0,420	3'	1/30/03	75mm round, UF, UF, empty	Y
	3	0,420	3'	1/29/03	8" Livens smoke round, empty	Y
	4	0,440	3'	1/15/03	75mm round, UF, UF, empty	Y
	5	0,440	2'	1/16/03	75mm round, UF, UF, empty	Y
	6	0,440	3'	1/21/03	75mm round, UF, UF, empty	Y
	7	0,440	4'	1/21/03	75mm round, UF, UF, empty	Y
	8	0,440	NA	1/22/03	2 - 75mm rounds, UF, UF, empty	Y
	9	0,440	NA	1/22/03	75mm base only	Y
	10	0,440	NA	1/22/03	75 mm round -- closed cavity (assessed as empty, UF,UF)	Y
	11	0,440	3'	1/22/03	4.7" round, UF, UF; base	Y
	12	0,440	NA	1/23/03	3 - 75mm rounds, UF, UF	Y
	13	20,420	1'	2/3/03	4.7" projectile, empty	Y
	14	20,420	1.5'	2/4/03	75mm round, UF, UF, empty	Y
	15	20,420	2'	2/4/03	OE scrap - 2" diam X 7" long, tail boom	Y
	16	40,300	NA	1/7/03	75mm round, UF, UF, empty	Y
	17	40,400	1'	2/5/03	4.7" projectile, UF, UF, empty	Y
	18	40,400	NA	2/5/03	8" cartridge case, w/o primer & flash tube, severely rusted	Y
	19	40,420	1'	1/27/03	3" Stokes mortar, unfused, empty	Y
	20	40,420	1'	1/28/03	3" Stokes mortar, unfused, empty	Y
	21	40,420	3'	1/28/03	3" Stokes mortar, unfused, empty	Y
	22	40,420	NA	1/28/03	75mm base only	Y

5.2 Evaporative release of Lewisite from a one liter container was evaluated as an MCE for Lot #18. The intrusive investigations to date at this site removed numerous one liter and smaller sized laboratory type bottles. These bottles were found broken, whole but empty and some that were whole and sealed with contents inside (intact). The table below is a list of the intact glassware recovered to date from this area. One of the bottles listed was tested and found to contain Lewisite. The items recovered from Lot #18 offers evidence to support that a one liter glassware is a credible event that would be likely to be

recovered in the future. The team evaluated the selection of a one liter container of Lewisite at Lot #18 as credible for the intrusive operations at this site.

Intact Glassware Recovered from Lot #18

Date Recovered	Grid	Depth	Number	Description
11/18/02	20,480	1-2 ft	1	1 liter glass chemical bottle (empty); possibly AUES-related
11/20/03	0,440		2	glass w/ liquid
11/21/02	20,480		1	bottle w/ liquid, capped, 8 oz, 1/4 full
1/16/03	0,440		1	glass bottle w/ glass stopper
1/23/03	20,440	1 ft	1	bottle w/ cap, oil like liquid
1/27/03	20,420		1	test tube w/ liquid capped
1/27/03	40,420		1	test tube w/ liquid capped
1/28/03	40,420		1	glass jar w/ liquid
1/28/03	40,420	3 ft	2	bottles capped w/ liquid substance, one green, one clear
1/28/03	40,420	3.5 ft	1	bottles/stoppers & liquid
1/29/03	40,420	3.5 ft	5	bottles/stoppers w/ liquids
1/29/03	40,420	2 ft	3	test tubes w/ solids
1/29/03	20,420		4	bottles/stoppers w/ liquid
1/30/03	0,420	NA	2	bottles capped, w/ liquid
1/30/03	20,420	3 ft	1	bottle w/ liquid, capped
1/31/03	20,420	3 ft	4	bottles capped, w/ liquid
2/3/03	20,420	1 ft	1	bottle w/ cork & liquid
2/4/03	20,420	3 ft	1	bottle w/ stopper & solid powder
2/4/03	20,420	3 ft	1	bottle w/ stopper & liquid
2/4/03	20,420	4 ft	1	jar w/ lid & liquid
2/4/03	20,420	4 ft	1	bottle w/ stopper & solid
2/4/03	20,420	4 ft	1	bottle w/ stopper & liquid
2/5/03	40,400	1 ft	1	bottle w/ stopper & liquid
3/13/03	40,420		2	bottle w/ rubber stopper and a solid substance
4/16/03	20,400		1	glass bottle w/ liquid and glass stopper*

* The contents of this container was sampled, analyzed and found to contain Lewisite (L).

5.3 Evaporative release of Lewisite from a five gallon carboy container was evaluated as an MCE for Lot #18. In the intrusive investigation to date no complete carboy sized containers have been recovered. Some fragments of carboys were reported in the previous investigation but these were mixed with other broken glassware suggesting that they were discarded as unuseable as opposed to intact containers buried in the ground. The items recovered from Lot #18 offers evidence to support that no intact carboys would be likely to be recovered in the future. Therefore, the team evaluated the selection of a five gallon carboy of Lewisite for Lot #18 as not credible for the intrusive operations at this site.

6. FINDINGS. During the "low probability" anomaly investigation at Lot 18, potential OE/RCWM related to the activities at AUES was uncovered. It appears, from the archaeological report, that there were several dumping episodes at Lot 18 and that some of the debris found is older than 1920 (the date that AUES closed). However, the post-1920 debris was determined to be commingled with potential AUES debris. Intact bottles containing a liquid with their top intact were found during the "low probability" investigation. One of the intact bottles was tested and found to contain Lewisite. While ordnance related items were found at the site, all were unfuzed, unfired and empty. Given these findings and the historical evidence, the team has evaluated that the MCE for the site is the evaporative release of Lewisite from a one liter container.

7. CONCLUSION. Based on the analysis of the MCE conducted for the site wide Spring Valley project, the team determined that the intrusive investigation at Lot 18 bc conducted under an approved Safety Submission as a potential chemical warfare material site with the MCE being the evaporative release of Lewisite from a one liter container for Lot #18.

8. RECOMMENDATION The Chemical Safety Submission Annex for Lot #18 must contain contingencies to cease work and reevaluate the MCE if the item(s) recovered creates a greater public and worker hazard than the 1 Liter evaporative release MCE identified in this analysis.

9. The following project team evaluators concur with the conclusion and recommendations discussed in this paper.

Hank Hubbard 29 Oct 03

Hank Hubbard Date

Allyn Allison 10/29/03

Allyn Allison Date

Wilson Walters 29 Oct 03

Wilson Walters Date

Bruce Whisenant 30 OCT 03

Bruce Whisenant Date

Kellie Williams 31 Nov 03

Kellie Williams Date

**APPENDIX D:
SEDIMENT AND EROSION CONTROL**

SEDIMENT AND EROSION CONTROL

D.1 In order to prevent surface drainage from impacting the excavation area and to minimize sediment transport, the following steps will be implemented:

D.1.1 A combination of silt fences and super silt fences will be used along the perimeter of the site to prevent the flow of sediments to the excavation area.

D.1.2 The existing sedimentation pond at the head of the Upper Rockwood Stream will be upgraded. A straw bale dyke system will be constructed around the pond. All diversion conduits will be maintained in proper working condition.

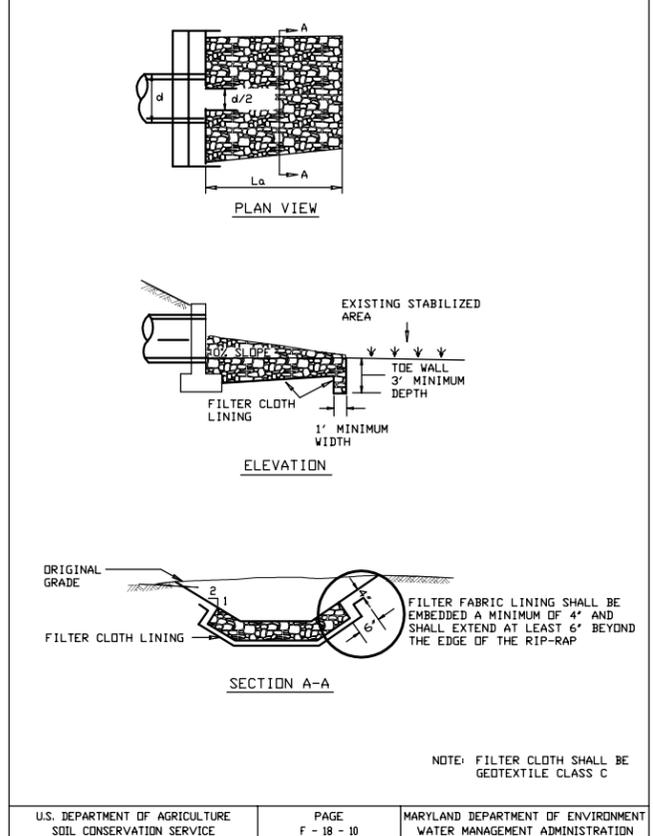
D.1.3 The current access road will be stabilized and extended to the southwest corner of AU Lot 18 for transporting equipment. During construction of the road, a silt fence will be used to prevent sediment and silt from entering the investigation area.

D.1.4 Diversion dikes or French drains will be used to control surface drainage. Surface drainage from the area between the AU Administration and the Financial Aid Buildings and the investigation area will be diverted and tied into the conduit that connects the culvert located southwest of the Administration Building. The surface drainage from the houses and road will be diverted to a proposed trench that will discharge to the sedimentation pond.

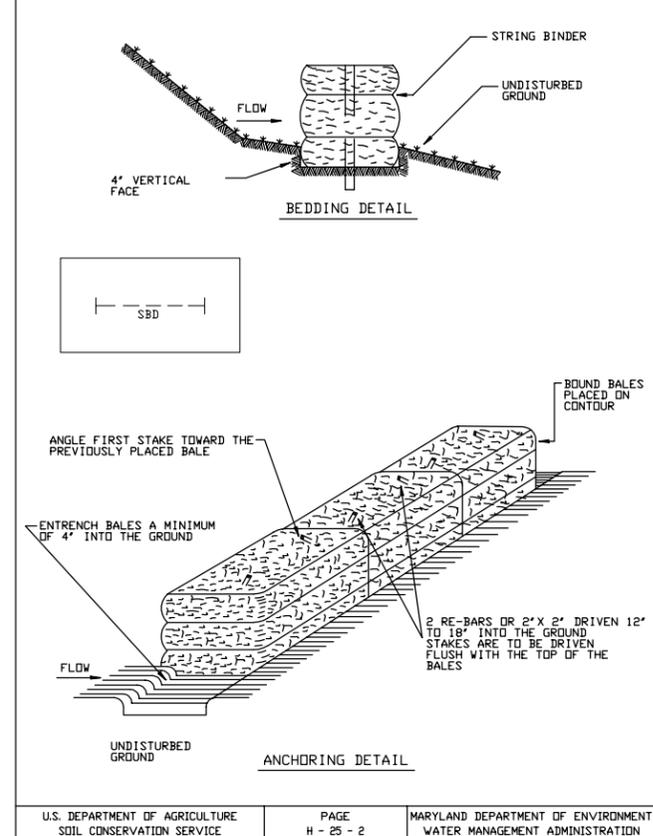
D.1.5 Water encountered in the excavation will be diverted to temporary holding tanks, sampled, and discharged to a sanitary sewer IAW the substantive requirements of DCWASA's permit.

D.2 The proposed sediment and erosion control measures are shown on the attached drawings.

DETAIL 27 - ROCK OUTLET PROTECTION III



DETAIL 32 - STRAW BALE DIKE



GENERAL EROSION AND SEDIMENT CONTROL MEASURES AND SEQUENCE

- UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL MEASURES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS REQUIRED BY THE DC ENVIRONMENTAL HEALTH ADMINISTRATION, WATERSHED PROTECTION DIVISION.
- A BUILDING PERMIT WILL BE OBTAINED PRIOR TO START OF INTRUSIVE ACTIVITIES.
- ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE PLACED PRIOR TO OR AS THE FIRST STEP IN GRADING.
- CONSTRUCTION SHALL BE SEQUENCED SO THAT GRADING OPERATIONS CAN BEGIN AND END AS QUICKLY AS POSSIBLE.
- NO DISTURBED AREA WILL BE DENUDED FOR MORE THAN 7 CALENDAR DAYS. INSTALL THE NECESSARY TEMPORARY OR PERMANENT VEGETATIVE STABILIZATION MEASURES TO ACHIEVE ADEQUATE EROSION AND SEDIMENT CONTROL.
- ALL CONSTRUCTION TO BE INSPECTED DAILY AND AFTER ALL STORM EVENTS BY THE PARSONS SITE MANAGER. ANY DAMAGED SILTATION OR EROSION CONTROL DEVICES OR MEASURES WILL BE REPAIRED AT THE CLOSE OF THE DAY.
- ALL SILT FENCE, INLET PROTECTION, AND DIVERSIONS TO BE MAINTAINED IN GOOD WORKING CONDITION.
- IN PARTICULAR, THE SILT FENCE BARRIER AND INLET PROTECTION DEVICES WILL BE CHECKED REGULARLY FOR UNDERMINING OR DETERIORATION OF THE FABRIC. SEDIMENT SHALL BE REMOVED WHEN THE LEVEL OF SEDIMENT DEPOSITION REACHES HALF WAY TO THE TOP OF THE BARRIER.
- ALL EROSION AND SEDIMENT CONTROLS WILL BE REMOVED ONLY AFTER THEIR CONTRIBUTING BASINS HAVE BEEN PERMANENTLY STABILIZED.

EROSION AND SEDIMENT CONTROL NOTES

- ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED AS PER STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR THE DISTRICT OF COLUMBIA.
- IF ANY ON-SITE INSPECTION REVEALS THAT FURTHER EROSION CONTROL MEASURES ARE NECESSARY, THEY SHALL BE PROVIDED.
- THE UPPER ROCKWOOD STREAM SHALL BE PROTECTED. ALL EROSION AND SEDIMENT CONTROL DEVICES AROUND THE POND SHALL BE MAINTAINED IN GOOD WORKING CONDITION.

EROSION AND SEDIMENT CONTROL NARRATIVE:

PROJECT DESCRIPTION

THE PURPOSE OF THIS PROJECT IS TO RESOLVE GEOPHYSICAL ANOMALIES, EXCAVATE POTENTIAL AMERICAN UNIVERSITY EXPERIMENTAL STATION (AUES) DEBRIS, AND REMOVE ARSENIC CONTAMINATED GRIDS AT THE AU LOT 18 SITE. IT IS PROJECTED THAT AN AREA ABOUT 0.22 ACRES WILL BE DISTURBED DURING THE INVESTIGATION. A TOTAL OF ABOUT 1400 CUBIC YARDS IS ANTICIPATED TO BE EXCAVATED DURING THE INVESTIGATION, AND DISPOSED OF OFFSITE. THE EXCAVATED SOIL WILL BE REPLACED WITH CLEAN BACKFILL FROM AN APPROVED OFFSITE LOCATION.

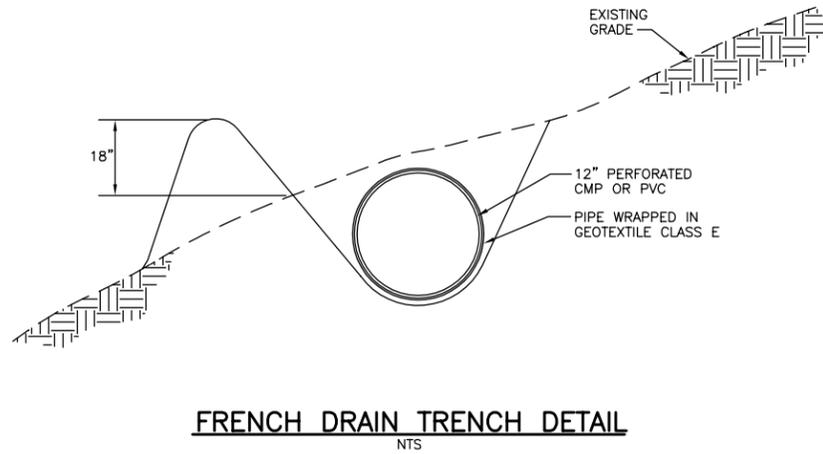
EXISTING SITE CONDITIONS

THE PROJECT SITE AT AU LOT 18 ENCOMPASSES AN AREA OF APPROXIMATELY 1.1 ACRES. THE SITE IS A LOW LYING AREA SURROUNDED BY GRASS AND TREES ON SLOPES OF 7% TO OVER 80%. STORMWATER RUNOFF FROM ADJACENT BUILDINGS IS CHANNLED TO OUTLETS THAT DRAIN TO THE EXCAVATION AREA. SOME OF THE OUTLETS DISCHARGE UNDERGROUND. IN ADDITION, STEAM-LINE OVERFLOWS DISCHARGE TO THIS AREA. THE SURFACE FLOWS ARE GENERALLY FROM EAST TO WEST AND FROM THE PERIMETER TOWARDS THE EXCAVATION AREA WHICH IS AT A LOW POINT IN LOT 18. STORM DRAINAGE FROM A CULVERT SOUTHWEST OF THE ADMINISTRATION BUILDING IS CHANNLED THROUGH AN 18-INCH DUCT THAT DISCHARGES TO AN EXISTING SEDIMENTATION POND, AT THE HEAD OF THE UPPER ROCKWOOD STREAM. AN 18-INCH TERRACOTTA PIPE RUNS THROUGH THE SITE AND DISCHARGES CONTINUOUSLY JUST WEST OF THE INVESTIGATION AREA, INTO THE UPPER ROCKWOOD STREAM. A SECOND TERRACOTTA PIPE IS EXPOSED ON THE SLOPES SOUTH OF THE ADMINISTRATION BUILDING. FLOWS FROM THIS PIPE ARE INTERMITTENT.

PROPOSED SITE IMPROVEMENTS

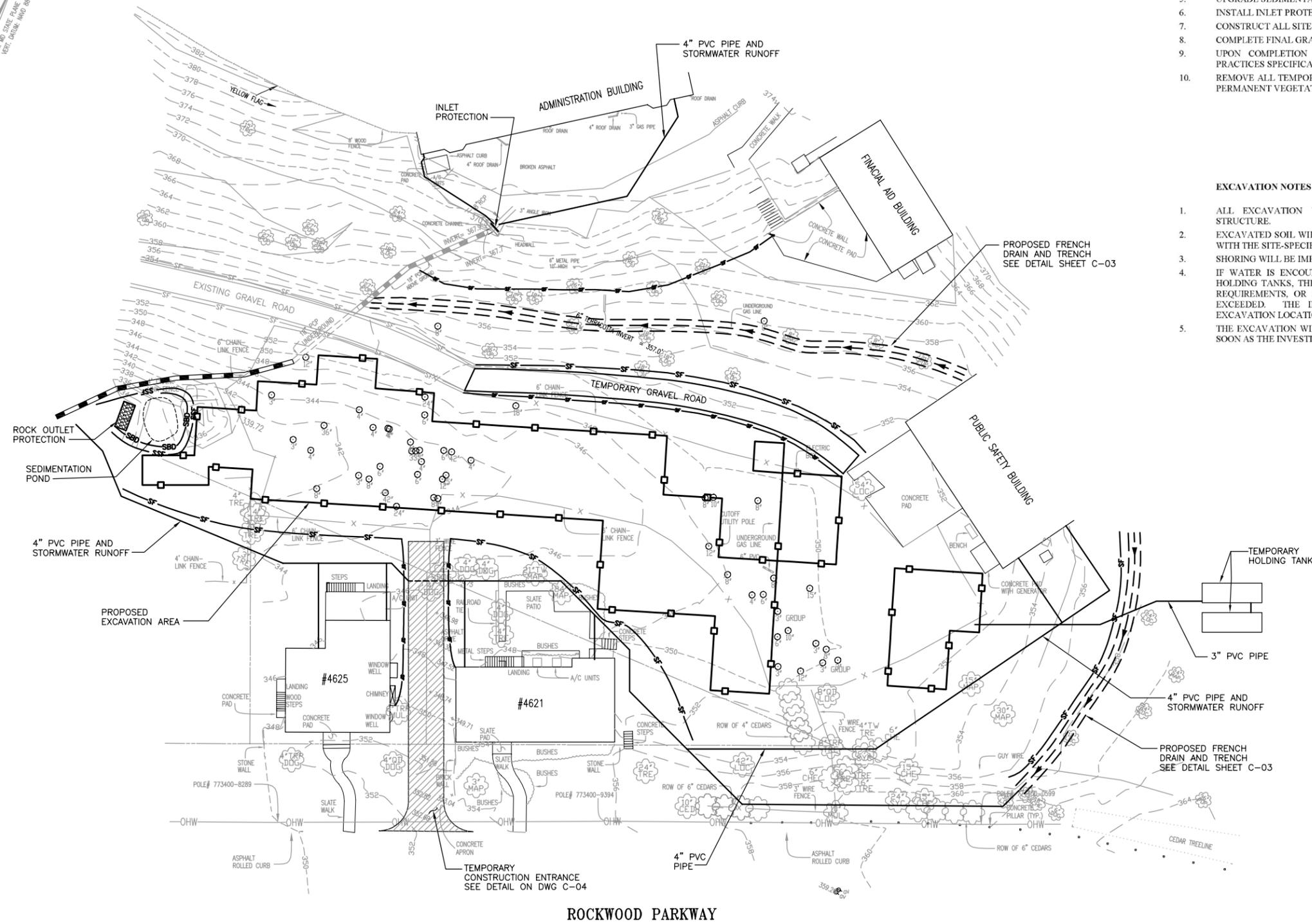
THERE ARE NO PROPOSED SITE IMPROVEMENTS. THE SITE WILL BE RESTORED TO ORIGINAL GRADE AND VEGETATIVE COVER AFTER EXCAVATION IS COMPLETE.

FRENCH DRAIN TRENCH DETAIL



Job No. 740465	Designed JOT	Drawn SPF	Checked JM	Reviewed JOT	Approved JOT	Reg. No. 03/05/04	Date	Rev	Description	By
PARSONS FAIRFAX VIRGINIA (703) 591-7575										
U.S. ARMY ENGINEERING & SUPPORT CENTER, HUNTSVILLE & U.S. ARMY CORPS OF ENGINEERS, BALTIMORE DISTRICT										
SPRING VALLEY SITE-WIDE INTRUSIVE INVESTIGATION AU LOT 18 EROSION & SEDIMENT CONTROL NOTES AND DETAILS										
DRAWING NO. C-03										REV. 0

SCALE: 1"=20'
 HRR: DAVENUM, MD STATE PLANK MAP B3171
 REPT: DAVENUM, MAP B3



EXCAVATION SITE PLAN
 SCALE: 1"=20'

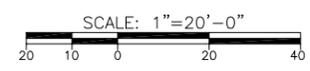
NOTES

1. INSTALL CONSTRUCTION ENTRANCES AND EXTEND EXISTING TEMPORARY ROAD.
2. CLEAR ONLY ENOUGH TO INSTALL DIVERSIONS AND SILT FENCES AS SHOWN ON PLANS.
3. INSTALL DIVERSION DIKES AND SILT FENCES AS SHOWN ON PLANS.
4. IMMEDIATELY RESEED WITH BERMUDA GRASS OR EQUIVALENT.
5. UPGRADE SEDIMENTATION POND AT THE HEAD OF THE UPPER ROCKWOOD STREAM.
6. INSTALL INLET PROTECTION DEVICES AS SHOWN ON PLANS.
7. CONSTRUCT ALL SITE IMPROVEMENTS AS SHOWN ON PLANS.
8. COMPLETE FINAL GRADING.
9. UPON COMPLETION OF FINAL GRADING, RE-SEED ACCORDING TO VEGETATIVE PRACTICES SPECIFICATIONS.
10. REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES ONLY AFTER PERMANENT VEGETATION IS WELL-ESTABLISHED.

EXCAVATION NOTES

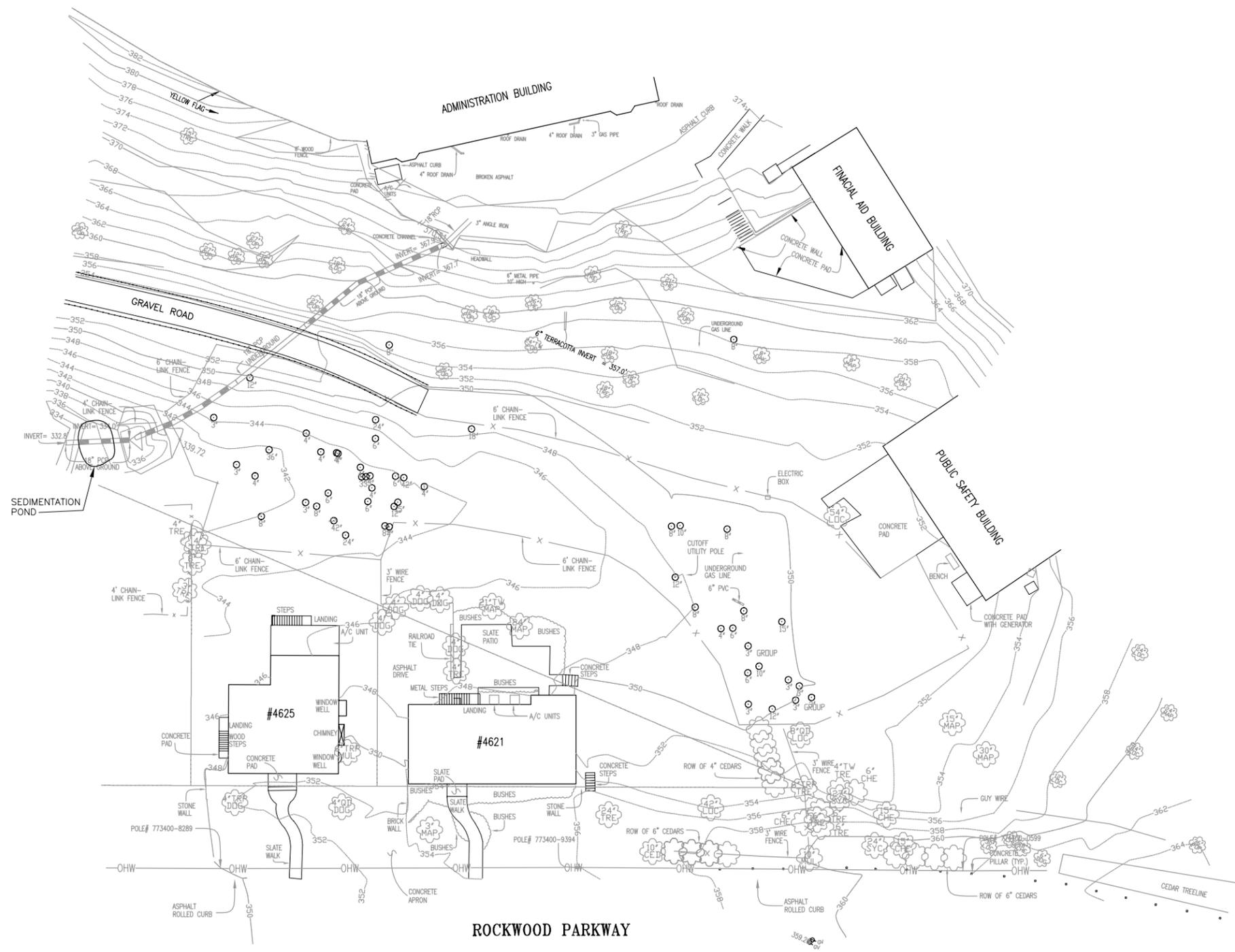
1. ALL EXCAVATION WILL BE CONDUCTED UNDER AN ENGINEERING CONTROL STRUCTURE.
2. EXCAVATED SOIL WILL BE DRUMMED UP AND DISPOSED OF OFFSITE, IN ACCORDANCE WITH THE SITE-SPECIFIC WORK PLAN.
3. SHORING WILL BE IMPLEMENTED IN EXCAVATIONS GREATER THAN 4 FEET IN DEPTH.
4. IF WATER IS ENCOUNTERED DURING THE EXCAVATION, IT WILL BE PUMPED INTO HOLDING TANKS, THEN SAMPLED AND DISCHARGED IN ACCORDANCE WITH DCWASA REQUIREMENTS, OR SHIPPED OFFSITE FOR DISPOSAL, IF DCWASA STANDARDS ARE EXCEEDED. THE INTERMEDIATE HOLDING TANK WILL MOVE DEPENDING ON EXCAVATION LOCATION.
5. THE EXCAVATION WILL BE BACKFILLED WITH AN APPROVED BACKFILL MATERIAL AS SOON AS THE INVESTIGATION IS COMPLETE.

*DRAWINGS HAVE BEEN
 REDUCED FROM THEIR
 ORIGINAL SIZE*



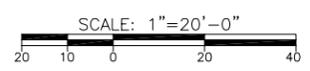
Job No. 740465	Designed JOT	Drawn SPF	Checked JM	Reviewed JOT	Approved JOT	Reg. No. 03/05/04	Date
PARSONS FAIRFAX VIRGINIA (703) 591-7575							
U.S. ARMY ENGINEERING & SUPPORT CENTER, HUNTSVILLE & U.S. ARMY CORPS OF ENGINEERS, BALTIMORE DISTRICT							
SPRING VALLEY SITE-WIDE INTRUSIVE INVESTIGATION AU LOT 18				EXCAVATION SITE AND EROSION & SEDIMENT CONTROL PLAN & NOTES			
DRAWING NO. C-02						REV. 0	

SCALE: 1"=20'
 MPR DATUM: MD STATE PLANE, NAD 83 (91)
 XREF: DATUM: NAD 83



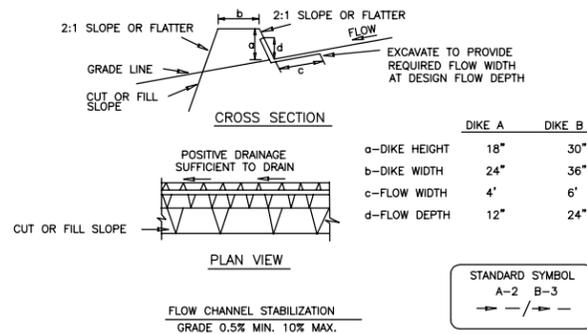
EXISTING SITE PLAN
 SCALE: 1"=20'

**DRAWINGS HAVE BEEN
 REDUCED FROM THEIR
 ORIGINAL SIZE**



Job No. 740465 Designed JOT Drawn SPF Checked JIM Reviewed JOT Approved JOT Reg. No. 03/05/04 Date	
PARSONS FAIRFAX VIRGINIA (703) 591-7575	
U.S. ARMY ENGINEERING & SUPPORT CENTER, HUNTSVILLE & U.S. ARMY CORPS OF ENGINEERS, BALTIMORE DISTRICT	
SPRING VALLEY SITE-WIDE INTRUSIVE INVESTIGATION AU LOT 18	EXISTING SITE PLAN
DRAWING NO. C-01	REV. 0

DETAIL 1 - EARTH DIKE

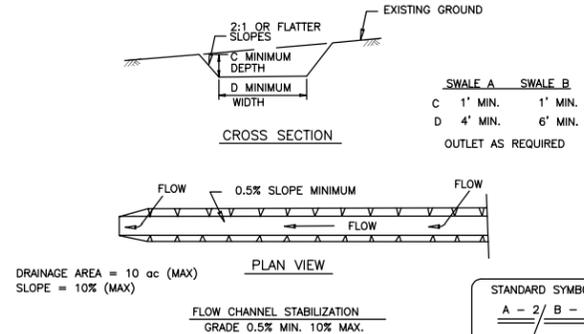


1. Seed and cover with straw mulch.
2. Seed and cover with Erosion Control Matting or line with sod.
3. 4" - 7" stone or recycled concrete equivalent pressed into the soil 7" minimum

Construction Specifications

1. All temporary earth dikes shall have uninterrupted positive grade to an outlet. Spot elevations may be necessary for grades less than 1%.
2. Runoff diverted from a disturbed area shall be conveyed to a sediment trapping device.
3. Runoff diverted from an undisturbed area shall outlet directly into an undisturbed, stabilized area at a non-erosive velocity.
4. All trees, brush, stumps, obstructions, and other objectional material shall be removed and disposed of so as not to interfere with the proper functioning of the dike.
5. The dike shall be excavated or shaped to line, grade and cross section as required to meet the criteria specified herein and be free of bank projections or other irregularities which will impede normal flow.
6. Fill shall be compacted by earth moving equipment.
7. All earth removed and not needed for construction shall be placed so that it will not interfere with the functioning of the dike.
8. Inspection and maintenance must be provided periodically and after each rain event.

DETAIL 2 - TEMPORARY SWALE

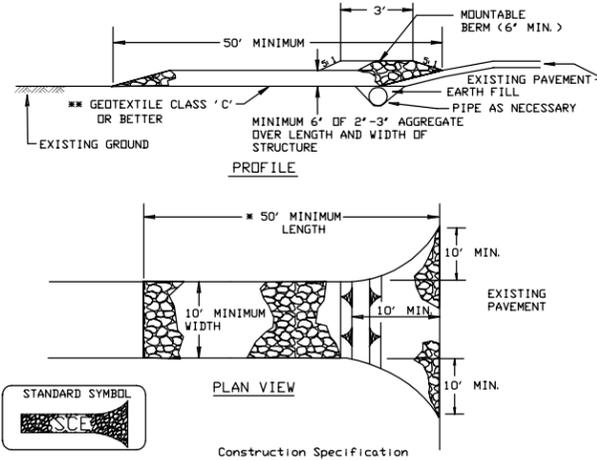


1. Seed and cover with straw mulch.
2. Seed and cover with Erosion Control Matting or line with sod.
3. 4"-7" stone or recycled concrete equivalent pressed into soil in a minimum 7" layer.

Construction Specifications

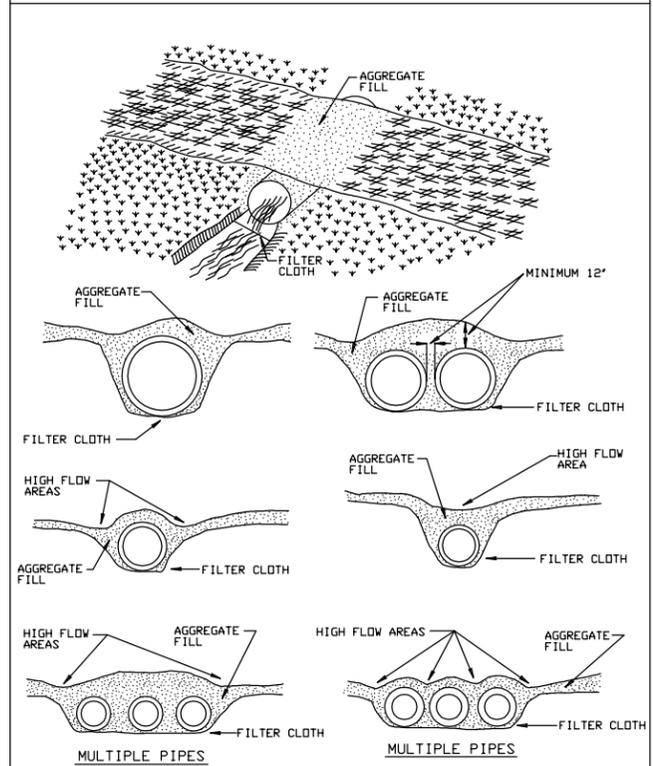
1. All temporary swales shall have uninterrupted positive grade to an outlet. Spot elevations may be necessary for grades less than 1%.
2. Runoff diverted from a disturbed area shall be conveyed to a sediment trapping device.
3. Runoff diverted from an undisturbed area shall outlet directly into an undisturbed stabilized area at a non-erosive velocity.
4. All trees, brush, stumps, obstructions, and other objectional material shall be removed and disposed of so as not to interfere with the proper functioning of the swale.
5. The swale shall be excavated or shaped to line, grade and cross section as required to meet the criteria specified herein and be free of bank projections or other irregularities which will impede normal flow.
6. Fill, if necessary, shall be compacted by earth moving equipment.
7. All earth removed and not needed for construction shall be placed so that it will not interfere with the functioning of the swale.
8. Inspection and maintenance must be provided periodically and after each rain event.

DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE

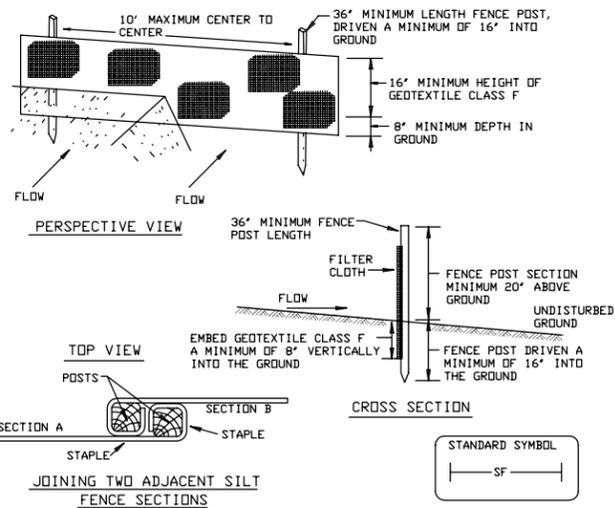


1. Length - minimum of 50' (*30' for single residence lot).
2. Width - 10' minimum, should be flared at the existing road to provide a turning radius.
3. Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. **The plan approval authority may not require single family residences to use geotextile.
4. Stone - crushed aggregate (2' to 3') or reclaimed or recycled concrete equivalent shall be placed at least 6' deep over the length and width of the entrance.
5. Surface Water - all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable berm with 5:1 slopes and a minimum of 6' of stone over the pipe. Pipe has to be sized according to the drainage. When the SCE is located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6' minimum will be required.
6. Location - A stabilized construction entrance shall be located at every point where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance.

DETAIL 36 - TEMPORARY ACCESS CULVERT



DETAIL 22 - SILT FENCE

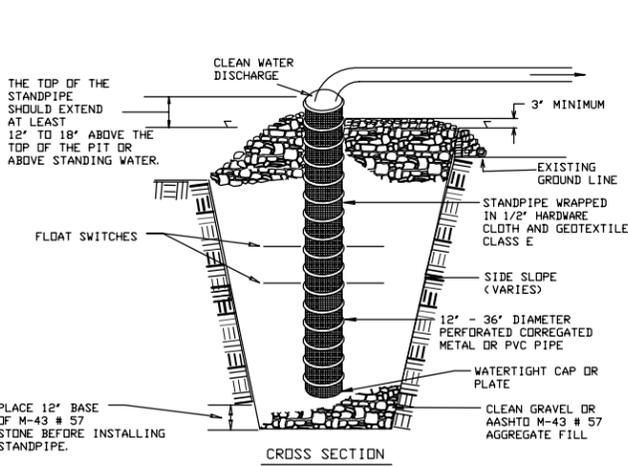


1. Fence posts shall be a minimum of 36' long driven 16' minimum into the ground. Wood posts shall be 1 1/2" x 1 1/2" square (minimum cut, or 1 3/4" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighting not less than 1.00 pound per linear foot.
2. Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal ft ² /minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

3. Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.
4. Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50% of the fabric height.

DETAIL 20B - SUMP PIT



1. Pit dimensions are variable, with the minimum diameter being 2 times the standpipe diameter.
2. The standpipe should be constructed by perforating a 12" to 24" diameter corrugated or PVC pipe. Then wrapping with 1/2" hardware cloth and Geotextile Class E. The perforations shall be 1/2" x 6" slits or 1" diameter holes.
3. A base of filter material consisting of clean gravel or #57 stone should be placed in the pit to a depth of 12". After installing the standpipe, the pit surrounding the standpipe should then be backfilled with the same filter material.
4. The standpipe should extend 12" to 18" above the lip of the pit or the riser crest elevation (basin dewatering only) and the filter material should extend 3' minimum above the anticipated standing water elevation.

STABILIZED CONSTRUCTION ENTRANCE

1. Length - minimum of 50' (*30' for single residence lot).
2. Width - 10' minimum, should be flared at the existing road to provide a turning radius.
3. Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. **The plan approval authority may not require single family residences to use geotextile.
4. Stone - crushed aggregate (2' to 3'), or reclaimed or recycled concrete equivalent shall be placed at least 6' deep over the length and width of the entrance.
5. Surface Water - all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable berm with 5:1 slopes and a minimum of 6' of stone over the pipe. Pipe has to be sized according to the drainage. When the SCE is located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6' minimum will be required.
6. Location - A stabilized construction entrance shall be located at every point where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance.

TEMPORARY ACCESS CULVERT

1. Restrictions - No Construction or removal of a temporary access culvert will be permitted between October 1 through April 30 for Class III and Class IV Trout Waters or between March 1 through June 15 for non-trout waterways.
2. Culvert Strength - All culverts shall be strong enough to support their cross sectional area under maximum expected loads.
3. Culvert Size - The size of the culvert pipe shall be the largest pipe diameter that will fit into the existing channel without major excavation of the waterway channel or without major approach fills. If a channel width exceeds 3 feet, additional pipes may be used until the cross sectional area of the pipes is greater than 60 percent of the cross sectional area of the existing channel. The minimum size culvert that may be used is a 12" diameter pipe. In all cases, the pipe(s) shall be large enough to convey normal stream flows.
4. Culvert Length - The culvert(s) shall extend a minimum of one foot beyond the upstream and downstream toe to the aggregate placed around the culvert. In no case shall the culvert exceed 40 feet in length.
5. Filter Cloth - Filter cloth shall be placed on the streambed and streambanks prior to placement of the pipe culvert(s) and aggregate. The filter cloth shall cover the streambed and extend a minimum six inches and a maximum one foot beyond the end of the culvert and bedding material. Filter cloth reduces settlement and improves crossing stability.
6. Culvert Placement - The invert elevation of the culvert shall be installed on the natural streambed grade to minimize interference with fish migration (free passage of fish).
7. Culvert Protection - The culvert(s) shall be covered with a minimum of one foot of aggregate. If multiple culverts are used they shall be separated by at least 12" of compacted aggregate fill.
8. Stabilization - All areas disturbed during culvert installation shall be stabilized within 14 calendar days of the disturbance in accordance with the Standard for 'Critical Area Stabilization With Permanent Seeding.'

Job No. 740465
 Designed JOT
 Drawn SPF
 Checked JM
 Reviewed JOT
 Approved JOT
 Reg. No. 03/05/04
 Date

Issue Certification
 DISTRICT OF COLUMBIA
 JAMES TAYLOR
 No. 10588
 REGISTERED PROFESSIONAL ENGINEER

U.S. ARMY ENGINEERING & SUPPORT CENTER, HUNTSVILLE & BALTIMORE DISTRICT

PARSONS
 FAIRFAX VIRGINIA
 (703) 591-7575

SPRING VALLEY
 SITE-WIDE INTRUSIVE INVESTIGATION
 AU LOT 18

EROSION & SEDIMENT CONTROL NOTES AND DETAILS

DRAWING NO. C-04
 REV. 0

These contacts and maps should be posted prominently at the site. Should any situation or unplanned occurrence require outside assistance or support services, the appropriate contact from the following list should be made:

Agency/Contact	Activity	Telephone Number	
Police		911	
Fire		911	
Ambulance		On site	
Emergency Response (Spills/Releases-Only)	Emergency Response Coordinator for Area	911	
Hospital for Non-Trauma/Non-Chemical	Sibley Hospital	202-537-4000	
Hospital for Trauma/Chemical	George Washington University Hospital	202-994-3211	
National Response Center		800-424-9500	
Poison Control Center		800-288-9999	
Responsible Person		Telephone Numbers	
		Work	Other
CENAB Site Operations Officer – CPT. Thomas Verell		202-686-3359	202-360-3762 (cell)
CENAB OE/RCWM Project Manager – Craig Georg		410 962-6782	202 439-4267 (cell)
USAESCH Safety Specialist – David Becker		202-885-8516	256-426-0655 (cell)
USAESCH Project Manager - Allyn Allison		256 895-1121	256 990-1430 (cell)
Parsons Project Manager – Deepak Bhinge		703-218-1092	703-609-3963(cell)
Parsons Deputy Project Manager – James Salisbury		703-218-1492	
Parsons Site Manager – Kenneth Cargel		202-885-8516	416-725-2979 (cell)
Parsons Project Safety and Health Officer - Ed Bishop		626-440-3579	703-927-6836 (cell)
Parsons Site Safety and Health Officer – Michael Ball		202-885-8516	425-870-4975 (cell)
TEU Emergency Contact – SBCCOM Emergency Command Post		410-436-2148	
ECBC Emergency Contact - SBCCOM Emergency Command Post		410-436-2148	