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Final

Trenching and Limited Field Investigation Report Site 7N

Naval Weapons Station Yorktown Cheatham Annex Site

Prepared For

Department of the Navy

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Naval Facilities Engineering Command

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FINAL

TRENCHING AND LIMITED FIELD INVESTIGATION REPORT SITE 7N

NAVAL WEAPONS STATION YORKTOWN
CHEATHAM ANNEX SITE
WILLIAMSBURG, VIRGINIA

CONTRACT TASK ORDER 0046

Prepared for:

DEPARTMENT OF THE NAVY
ATLANTIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
Norfolk, Virginia

Under the:

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1.0 PURPOSE OF INVESTIGATION

The Atlantic Division Naval Facilities Engineering Command, (NAVFAC Atlantic) directed Baker Environmental, Inc. (Baker) to perform trenching activities and a limited field investigation at Cheatham Annex (CAX) Site 7N to obtain additional information as to the nature and extent (both horizontal and vertical) of the buried waste materials. This trenching work was in direct support of a proposed Time Critical Removal Action (TCRA) at Site 7N following debris exposure along the York River shoreline from Hurricane Isabel (Appendix A - Photos 1 to 3).

2.0 SITE BACKGROUND

The actual location of CAX Site 7 (Old DuPont Disposal Area) has lead to some confusion in the past. According to the 1984 Initial Assessment Study (IAS) for CAX, Site 7 received wastes from the City of Penniman and from the DuPont Penniman facility, which would date the waste to around the World War I era. The wastes were reported to be non-hazardous and/or inert. However, specific information documenting the types and quantities of wastes was not available, and the IAS did not recommend Site 7 for Confirmation Study because of the "non-hazardous nature of the wastes disposed there" (NEESA, 1984).

The IAS states that Site 7 "is located along the York River in the northwestern section of the activity" (NEESA, 1984). While IAS Figure 8-6 depicts Site 7 to the east of Cabins 169 and 170, the physical description of Site 7 in the text describes it as "approximately 300 feet east of D Street" and having western, northern, and eastern boundaries that are "clearly defined by steep banks rising an estimated 10-20 feet in elevation from the surface of the site" (NEESA, 1984).

Photographic analysis of historical CAX aerial photographs (nine dates were used from 1937 to 1998) concluded that Site 7 (referred to as "AOC 7" in the report) was not present along the York River and suggested that Site 7 might actually be located near Queen Creek (USEPA, 1998 - also known as the "EPIC Study").

Therefore, three possible locations were reported for Site 7: (1) east of recreational cabins (Cabins 169 and 170) and adjacent to the York River (IAS Figure 8-6 location); (2) northeast of the intersection of Chase and Lynch Roads, near the York River (IAS text description location); and (3) adjacent to Queen Creek (Epic Study location). Baker conducted a Field Investigation for Site 7 in November 1999 and determined that the second option was actually Site 7's location

(i.e., northeast of the intersection of Chase and Lynch Roads, near the York River). Baker based this conclusion on the physical description of Site 7 in the IAS and an on-site, field identification by a former Naval Weapons Station Yorktown employee who was present when the IAS was conducted (Baker, 2001).

As part of its 1999 Field Investigation, Baker conducted test pitting and collected one sediment sample (in the low-lying area east of the area of buried debris) for TCL organics, nitramines/nitroaromatics, and TAL inorganics. The debris found within the test pits revealed it was much more recent than World War I era, suggesting that this dump area was not related to the Penniman facility which ceased operations shortly after World War I.

A site visit by Navy, US Environmental Protection Agency, and Baker representatives in August 2000 revealed what was believed to be a newly discovered disposal area adjacent and southeast of Cabin 169. In Baker's Final Field Inspection report, this area was designated as "Site 13" (Baker, 2001). However, this area was not officially designated as "Site 13," and discussions involving this area have continued to refer to it as "Site 7" although the tract to its south had already been investigated and identified as Site 7. In order to not confuse the activities and sample identifications presented herein with those activities conducted in 1999, the area adjacent to and southeast of Cabin 169 has been labeled as "Site 7N" (meaning "Site 7 North") in this report. In addition, the nomenclature for the test trenches and sample locations includes "07N" (again meaning "Site 7 North").

3.0 TRENCHING ACTIVITIES

Trenching activities were conducted February 9 and 10, 2004. Trenches ranged from 1 to 6 feet in depth and 7 to 14 feet in length and were dug until native soil was encountered. Fourteen trenches (07N-TT1 to 07N-TT14) were dug to the east and south of Cabin 169 using a backhoe with a 30-inch wide bucket. Trench locations were field determined and limited by on-site utilities, trees, and Cabin 169. Figure 1 identifies the location of the test trenches.

A representative picture of each test trench is located in Appendix A (Photos 4 – 35). Baker's field geologist characterized and logged the soils and ash/debris encountered during trenching. These logs are provided within Appendix B of this report. Table 1 also summarizes the characteristics of each trench.

All of the test trenches were mapped with a GPS. Horizontal Northing and Easting coordinate values were recorded in Virginia State Plane, North American Datum 1983 (NAD 83), with units expressed in United States Survey Feet; these coordinate values are presented on the Test Trench Records.

All soil and ash/debris encountered during excavation was placed back into the trenches, minus a few glass bottles, pieces of stoneware, and miscellaneous items kept to determine the age of the debris.

No samples were collected for environmental analyses during trenching activities, as the objective of the trenching was to determine the type and extent (both horizontal and vertical) of the buried waste materials prior to developing a sampling plan.

Following all trenching work, site restoration activities involved compacting the soils within the trench and applying grass seed and jute mating on top of the trenches and disturbed areas (Appendix A – Photos 36 and 37).

PRELIMINARY FINDINGS OF TEST TRENCHING

Based on results of the test trenching, Baker noted the following observations:

1. The majority of the debris (e.g., glass bottles, large pieces of stoneware, bricks, pieces of metal, etc.) is to the east of the existing fence and within the slope.

2. The larger pieces of debris appear to be located east of the existing fence, as only smaller debris (e.g., nails, small shards of stoneware and glass, etc.) was found in the test trenches west of the existing fence.

3. The debris dates to around the early 1900s and is Penniman-related refuse, as evident by a copper "coin" found at the site that is stamped "DuPont" and "Penniman, VA" (Appendix C – Photo 1), by the pottery marks (Appendix C – Photos 2 to 9), and by miscellaneous items (Appendix C – Photos 10 to 16). Although the debris dates to the

Penniman-era, it is not known when the materials were actually incinerated and disposed, as they could have been warehoused after the Penniman facility closed.

4. The waste was incinerated, as evident by the presence of ash; melted, misshaped bottles (Appendix C – Photo 17); charred pieces of metal; and what looked like pieces of slag and coal mixed in with the ash layer.

5. West of the existing fence, an ash layer is present. It is thickest near the fence line and thins as it extends west to Cabin 169's parking area. Generally, the ash layer is within the upper 12 inches of soil, but did extend to approximately 16 inches below ground surface in test trench 07N-TT01.

6. The preliminary waste boundary edges, following trenching, were defined as:
   - between test trenches 07N-TT01 and 07N-TT02 (northern edge)
   - the east side Cabin 169's parking area (western edge)
   - between test trenches 07N-TT05 and 07N-TT13 (southern edge)
   - along the slope from test trench 07N-T13 to north of test trench 07N-TT09 (eastern edge)

   Figure 2 shows an approximate, preliminary waste boundary, based on observations made during the test trenching, which is roughly 5,000 ft^2. Combining this square footage estimation with an assumed three-foot removal depth resulted in an estimated 550 cubic yards (cy) of waste and soil.

Baker described the trenching activities and presented its conclusions to the Naval Weapons Station Yorktown Restoration Advisory Board on February 18, 2004. In addition, Baker recommended refining the waste boundary edge by hand in the areas where the backhoe could not be used and collecting surface and subsurface soil samples.

4.0 WASTE BOUNDARY REFINEMENT

On March 1, 2004, Baker and Bhate Environmental, Inc. (Bhate) hand dug holes along the preliminary waste boundary to determine where the northern, western, and southern edges were

"clean" (meaning no visible ash or debris). Each hole was dug using a shovel and was advanced until debris (i.e., glass/pottery shards, nails, pieces of coal, etc.) or native soil was encountered.

Figure 3 shows a revised waste boundary based on the additional, hand-dug, test holes. After the waste boundary refinement, Baker made the following observations:

1. The northern "clean" edge is approximately 35 feet north of test trench 07N-TT02. (Although 07N-TT02 did not show any debris or ash, pieces of glass, coal, and nails were found in the hand dug holes to the north and northwest of it.)

2. A closer inspection of the drip line along the west and east walls of Cabin 169 revealed exposed small glass and pottery pieces. In addition, holes dug between the road and west cabin wall and along the north cabin wall contained pieces of glass and coal. Therefore, although thin (less than approximately 2-3"), the debris/ash layer does extend underneath Cabin 169.

3. The western "clean" edge is assumed to be just off the road's west edge. This assumption is based on test trench 07N-TT12 being visibly clean and containing about a two-foot thick layer of road bed (i.e., gravel and orange silt). Because the ash and debris is generally within the top 12 inches of soil and thins as it extends west from the fence line, it was most likely removed/regraded during construction of the road and parking area.

4. The southern "clean" edge remained relatively unchanged from its preliminary estimate.

5.0 SAMPLE COLLECTION

Baker developed a sampling plan to determine the nature and extent of contamination within and around the waste boundary. Baker proposed the collection of surface (0 to 6 inches) and subsurface (various depths) soil samples from eight sample locations - one at each "clean" corner (as determined by waste boundary refinement) and four within the waste boundary and near the test trenches (Table 2). In addition, Baker proposed collecting a sample directly from the ash layer on the exposed slope. A full suite of analyses [i.e, Target Compound List Organics (volatile and semivolatile organic compounds, Selected Ion Monitoring (SIM) (for low-level polyaromatic

hydrocarbon detection), pesticides and PCBs) and Target Analyte List Inorganics (metals, including cyanide)] and rapid laboratory turn around time (i.e., 7-Day) was recommended for each soil sample. Dioxin analysis also was recommended for the ash layer sample since dioxin can be a by-product of incineration. In addition, Toxicity Characteristic Leaching Procedure (including Ignitability, Corrosivity, and Reactivity) analyses were recommended for the ash layer sample to determine the "worst case scenario" for disposal purposes.

Baker and Bhate conducted the sample collection on March 3, 2004. Samples were collected via hand auger, and all sampling equipment was either disposable (i.e., new, one-time use) or fully decontaminated prior to use for sample collection. Field conditions slightly altered the sampling plan (e.g., a thick layer of gravel prevented collection of a subsurface sample at Location 8[1]), but sample collection for the most part occurred as proposed.

The actual sample locations are depicted on Figure 4. Table 3 provides a summary of the samples collected, their identification numbers, depths, and analytic parameters.

5.1 RESULTS OF FIELD SAMPLING

Tables 4 and 5 summarize the detections in the surface soil for organic and inorganic compounds, respectively, while Tables 6 and 7 summarize the positive hits in the subsurface soil for organic and inorganic compounds, respectively. The analytic results were compared to the CAX Site 1 Ecological Cleanup Goals given the proximity of Site 7N to Site 1 and the similar nature of the waste at both sites. If a cleanup goal didn't exist for a parameter, the result was compared to the CAX background values for Soil Group 2, the soil group to which the Site 7N soils belong.

The highest number of contaminant detections (both in quantity and concentration) was found in the surface soil collected from locations near visible debris/ash areas (i.e., SS1, SS2, and SS3). The subsurface soils had few organic detections and some notable inorganic detections, specifically for barium, copper, lead, and zinc.

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[1] Prior to being connected to CAX's sanitary sewer system, Cabin 169 had a septic tank. The gravel layer could be related to the septic drain field; however, utility maps where not available to confirm this speculation. Another possibility is the gravel is related to an old road bed or parking area. Standing at location 8, facing west and looking at the single-car asphalt parking area just north of Cabin 169, trees frame either side of the parking area (Appendix A – Photo 38). Traveling east from the parking area, the trees continue to maintain the same width apart, meaning there are no trees in the middle. Therefore, perhaps there was a gravel road or parking area between the cabins (maybe a scenic, look-out for the York River). A portion of the gravel layer is evident east of the fence line in the exposed slope (Appendix A – Photo 39).

A more detailed discussion of the positive detections is provided in the subsections below, while the complete laboratory results and sample Chain of Custody Forms (COC's) are in Appendix D.

Organic Compounds

The volatile organic compounds were all non-detects in the surface and subsurface soil. The SVOC compounds were non-detects in all of the surface samples except two (SS1-00 and SS3-00) and all of the subsurface samples. SIM PAHs were detected in all of the surface samples except SS8-00. SIM PAHs were non-detects in all of the subsurface samples except three (SB2-01, SB3-01, and SB4-01). However, SB3-01 and SB4-01 each had only one PAH detection (SB3-01: dibenzo(a,h)anthracene 4.5J ppm and SB4-01: phenanthrene 7.7J ppm). Most of the pesticide compounds were non-detected in the surface soil and subsurface soil. Location SS1-00 had the highest 4,4'-DDE, Alpha-BHC, Beta-BHC, and heptachlor epoxide concentration (3.9J ppm, 3.6J ppm, 5.5J ppm, and 11J ppm, respectively), which exceeded the Soil Group 2 Background concentration for 4,4'-DDE (1.1J ppm), Alpha-BHC (15U ppm), and Beta-BHC (.99J ppm) and exceeded the Site 1 Ecological Cleanup Goal for heptachlor epoxide (1.5J ppm). 4,4-DDT also was detected at SS1-00 at 4.3J ppm; however, this concentration is well below the Site 1 Ecological Cleanup Goal for 4,4-DDT (100 ppm). Locations SS3-00 and SS9-00 had alpha-chlordane detections (11 ppm and 3.6 ppm, respectively) which exceed the Soil Group 2 Background concentration of 1.9 ppm. PCB compounds were all non-detects except Aroclor-1260, which had concentrations of 29J ppm and 40J ppm in SS1-00 and SS7-00, respectively; however, these detections were below the Site 1 Ecological Cleanup Goals for Aroclor-1260 (100 ppm). Again, Tables 4 and 6 summarize all of the detection data for surface and subsurface soil, respectively.

Inorganic Compounds

As expected, based on the amount of metal debris and ash, there are high inorganic compound concentrations, especially in the surface soil. Lead is the primary compound of concern with maximum concentrations of 4980, 5070, and 6420 in surface soil samples SS1-00, SS2-00, and SS3-00, respectively. The next highest detections were for Barium, Copper, and Zinc of which the highest concentration for these compounds was noted in SS1-00 (Barium 2190 ppm, Copper 858 ppm, and Zinc 2240 ppm). Arsenic was slightly above Soil Group 2 Background for surface

soil (4.1 ppm) in the surface soil samples, but was below Soil Group 2 Background for subsurface samples (15.9 ppm) in the subsurface soil. Mercury exceeded the ecological cleanup goal for Site 1 (i.e., 0.24 ppm) in two samples (SS2-00 – 0.27 ppm and SB2-01 – 1.9 ppm).

Dioxin

Table 8 presents dioxin test results for a sample collected from the ash layer (SB04-01). This sample was the only one collected for dioxin analysis[2], and it was collected from an area of exposed debris and ash (where the ash was visibly thickest), assuming that this location would represent "worst case" conditions.

As shown on Table 8, the total dioxin result of 2.28 x 10-5 ppm (expressed as a toxic equivalency or TEQ) is one order of magnitude greater than the Environmental Protection Agency (EPA) Region III residential Risk Based Concentration (RBC) for dioxin in soil of 4.26 x 10-6 ppm. However, the total dioxin result is still within EPA's acceptable cancer risk range of 1 x 10-6 to 1 x 10-4.

The EPA has developed RBC values for inhalation and ingestion pathways for both carcinogenic and non-carcinogenic compounds. The RBC calculation includes both adult and small child exposure pathways, and uses an age-adjusted-factor for children and adults for carcinogenic risks (See EPA RAGS IB). The following information, taken from EPA's RBC literature, is a brief summary of the factors included in the RBC calculation for residential soil ingestion exposure pathway:

1. Adult body weight equals 70 kilograms (kg)
2. Child body weight (age 1 to 6) equals 15 kg
3. Adult soil ingestion rate equals 100 milligrams per day (mg/d)
4. Child soil ingestion rate equals 200 mg/d
5. Soil ingestion factor, age adjusted equals 114.29 mg per year/kg-day
6. Exposure frequency equals 350 days per year
7. Child (age 1 to 6) exposure duration equals 6 years

[2] Note: As the cost of dioxin analysis with a 7-day turn-around time is expensive (approximately $850/sample), only one dioxin sample was collected.

8. Total exposure duration of 30 years

Given the conservative factors used to calculate the residential RBC for dioxin, the reported dioxin value suggests that while present at this location, dioxin presents no unacceptable human heath risks. In addition, the total dioxin TEQ of 2.28 x 10-5 ppm compares favorably with the average total dioxin concentration of 5.79 x 10-5 ppm from samples collected in 2000 at WNSTA Site 4 and 21, and 22, where ash layers from incineration were also found.

Risk specialists from EPA Region III and Virginia Department of Environmental Quality (VDEQ) reviewed the data presented in Table 8 and both concur that the dioxin level for this sample is within EPA's acceptable risk range (Appendix F, Ioven and Mihalko emails).

Should the Navy plan to excavate and dispose of soil and/or debris from the site, the EPA has stated that the dioxin waste is not a RCRA waste and would not have to be classified as an F-listed waste since it is not the result of a manufacturing process at the site (Appendix F, Franklin email). In addition, the VDEQ has stated that since the levels are below 1 ppb, there should be no restrictions on ash and soil disposal in a permitted Virginia landfill (Appendix F, Mihalko email).

Toxicity Characteristic Leaching Procedure (TCLP)

Table 9 presents the results of the ash layer sample's (SB04-01) TCLP analyses. All analytes are less than the EPA's TCLP disposal limits, indicating that the waste can be disposed of as non-hazardous.

5.2 PRELIMINARY FINDINGS FOLLOWING MARCH 2004 SAMPLING

Based on the sample results, Baker made the following observations:

1. Sample location 6 had lead and zinc concentrations in the surface (153 and 94.4 ppm, respectively) and subsurface soil (174 and 80.5m ppm, respectively). Therefore, the northwest waste boundary quadrant had not been identified.

2. Sample location 7 had a lead concentration of 677 ppm in the surface soil; therefore, the southwest waste boundary quadrant had not been identified.

3. Sample location 8 had a surface soil lead concentration of 38.3ppm; however, this concentration is below the CAX Site 1 Cleanup Goal for lead, of 50 ppm. This location also had a zinc concentration of 344 ppm, well above the CAX Site 1 Cleanup Goal for zinc (50 ppm). In addition, as noted previously, no subsurface soil sample was collected at this location. Therefore, the northeast waste boundary quadrant had not been identified.

4. Surface and subsurface soil concentrations from sample location 9 are below preliminary screening values, indicating that the southeast waste boundary quadrant had been identified.

6.0 CABIN 170 SAMPLING

Based on the results of the March 2004 soil sampling, Commander, Naval Region Mid-Atlantic (CNRMA) closed Cabin 169 to campers. The CAX Morale, Welfare, and Recreation (MWR) office inquired about the status of Cabin 170, given its close proximity to Cabin 169. Consequently, CNRMA requested additional soil samples around Cabin 170 to which NAVFAC agreed.

On April 8, 2004, CNRMA, Bhate, and Baker met at Cabin 170 to scope the additional sample locations. Immediately west (approximately three feet) of the northwest corner of Cabin 170's parking area, debris (glass, metal, etc.) and ash were discovered underneath a tree uprooted by Hurricane Isabel (Appendix A – Photo 40). This debris matched that found around Cabin 169 and along the exposed shoreline slope. Approximately 100 feet west of Cabin 170, between the cabins and Chase Road, more debris (mostly flat and twisted pieces of metal) was discovered under another, large, uprooted tree. A soil berm was found approximately 75 feet west-northwest of Cabin 170; however, no debris or ash was noted or visible in or around the berm. North of the berm, no debris or ash was found underneath the uprooted trees. The discovery of this additional debris means that the western waste boundary is much wider than original thought and could possibly extend all the way to Chase Road. CNRMA concluded that Cabin 170 also would need to be closed to campers.

Given the presence of the debris and ash west of Cabin 170, the focus of the sampling effort became determining the northern boundary for the shoreline protection by continuing sample

collection in a straight line off and north of previous sample location 8. Starting at location 8 and moving north, five sampling locations were staked along the slope at approximate 25 feet intervals. Since a subsurface sample was not collected at location 8, location 11 was designated as a subsurface location only, as close to location 8 as possible, in order to close any potential data gap. In addition, one sample location was placed within the debris/ash underneath the uprooted tree to the west of Cabin 170's parking area. In total, six additional sample locations, with one surface (0-6 inches) and one subsurface (6-24 inches) sample each (minus location 11, which was subsurface only), were proposed. The numbering scheme for these samples was a sequential continuation of the samples collected around Cabin 169. The full suite of analyses was requested, minus TCL VOCs, as these compounds were undetected in the samples around Cabin 169.

Bhate and Baker collected the additional samples on April 22, 2004. All samples were collected as proposed, and the sample locations are shown on Figure 5. Fourteen-day turn around was requested. Tables 10 and 11 present the surface and subsurface soil results, respectively. Unlike the results for the samples collected March 2004, these results were not validated because the time required to secure a data validator and validate the results would delay submission of this report and completion of the Site 7N Action Memorandum. Although unvalidated, the analytical results from sample locations 10 to 15 are comparable with the validated data from sample locations 1 to 9. Therefore, the unvalidated data should not alter the recommendations of this report or the material presented in the Site 7N Action Memorandum. The analytic results from sample locations 10 to 15 will be validated in order to have a complete data set.

Overall, the samples collected along and west of the fence line were below preliminary screening values, except for location 12 which had a lead concentration of 68.7 ppm in the surface soil. The surface soil at location 10, which had a fair amount of surface debris and ash, had copper, lead, and zinc concentrations of 165, 2010, and 311 ppm, respectively. The subsurface soil at location 10 appeared to be below preliminary screening values; however, the duplicate sample taken at this location had a lead concentration of 95.2 ppm.

7.0 ARCHITECTURAL SURVEY AND ASSESSMENT

On April 16, 2004, Baker, NAVFAC representative Linda Cole, and CNRMA representative Channing Blackwell met with NAVFAC Senior Staff Archaeologist Bruce J. Larson at Site 7N to

discuss archeological resources present around Cabins 169 and 170. In 1998, R. Christopher Goodwin & Associates conducted a Phase II evaluation of Site 44YO608 (archeological, not installation restoration site designation), which encompasses the area immediately north, south, and west of Cabins 169 and 170. [Note: Another site (Site 44YO458) was evaluated during the investigation; however, this area is north of Building 165 and outside of the Site 7N boundaries.] Goodwin's report concluded the following:

> No evidence of undisturbed, natural soils or intact cultural features was observed at [Site] 44YO608 during the Phase II investigation. Based on the evidence of widespread disturbance from agricultural activities, tree plantation, and more recent construction in the vicinity of Site 44YO608, and based on the lack of any intact cultural deposits or features, it is unlikely that the site is capable of producing significant data related to prehistoric or historic period occupation in the area. Site 44YO608 does not appear to satisfy any of the criteria for eligibility for nomination to the National Register of Historic Places (36 CFR 60.4 [a-d]), and no further archeological work is recommended at this site. (Goodwin, 1999)

Bruce Larson reiterated that Site 7N and the immediate vicinity were not culturally or historically significant. Consequently, archeological significance will not be a concern for a future removal action.

8.0 RECOMMENDATIONS

Figure 5 presents the revised waste boundary based on analytical and visual data. The cross hatched area on Figure 5 appears to be the primary area of debris, which is estimated to be approximately 650 cy of debris, ash, and soil. Removal of this material would likely require shoreline stabilization, because debris removal could undermine the slope. Therefore, some form of slope stabilization may be required as part of any removal action. Stabilization could include cutting back the top of the slope to create a more steady condition. Stabilizing the slope, as part of a removal action, also would help minimize the affects of stormwater erosion.

The waste boundary line on Figure 5 is solid to the southeast and east, as these boundaries have been defined. The waste boundary line to the north and west is dashed to indicate that these

boundaries have not been defined. The extent of the debris to the west of the cabins is unknown. Therefore, the waste boundary line for now just encompasses the sample locations.

The size of the waste area (as shown on Figure 5) outside of the hatched area is estimated to be approximately 7,500 square feet. This is an estimated area because the north and west waste boundary edges are unknown. In addition, this estimate does not include any of the bulk debris (concrete, I-beams, timber) littering the beach.

Based on the results of trenching, the two sampling events, and a conference call with the Yorktown Partnering Team on March 22, 2004, Baker recommends the following for Site 7N (a copy of the meeting minutes is provided in Appendix E, following the Response to Comments):

1. As a result of Hurricane Isabel damage to the existing fence and the unstable slope condition, a potential falling hazard exists; therefore, consider installing fencing, or similar barrier, to restrict access to the York River from Cabins 169 and 170.

2. Prevent further erosion of the ash and debris layer along the exposed slope by stabilizing the shoreline. This action will help minimize additional erosion into the York River until a final remedy for the site is determined.

3. Plan and execute a more comprehensive investigation of the site, as initial data suggests such an investigation of the site is warranted. This investigation would include a more detailed determination of the nature and extent of contamination and an assessment of human health and ecological risks, which would help determine the final site remedy. Any additional investigation should consider collecting nitromine (explosive) data and additional dioxin data.

9.0 REFERENCES

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Table 1

CHEATHAM ANNEX - Site 7N

Test Trench Summary

Trench ID	Length	Maximum Depth	Debris/Ash Layer Description
07N-TT01	13.5'	3.5'	12 inches thick along east wall and thins to approximately 4 inches on west wall. Misc. glass and metal fragments within ash layer.
07N-TT02	12.0'	2.0'	No ash layer noted. Found a piece of a dish and a spoon and nothing else.
07N-TT03	12.5'	4.0'	From approximately 2 to 5 inches below ground surface ash/cinder-debris layer noted, along with pieces of metal and coal. Not much glass, except on surface.
07N-TT04	12.0'	1.6'	Same as 07N-TT03
07N-TT05	14.0'	5.0'	No ash layer. No glass debris. Did uncover what looks like old insulation or dry wall on the surface, just under the vegetation.
07N-TT06	11.0'	5.5'	No ash or debris of any kind.
07N-TT07	14.0'	6.0'	No ash or debris of any kind.
07N-TT08	14.0'	2.0'	No ash or debris noted.
07N-TT09	7.0'	2.8'	From about 4 to 14 inches below ground surface there is an ash and debris layer - bricks, glassware, metal - same stuff seeing down on river shoreline. This Layer is thicket on the east wall and gets thinner as head west towards fence line.

Table 1

CHEATHAM ANNEX - Site 7N

Test Trench Summary

Trench ID	Length	Maximum Depth	Debris/Ash Layer Description
07N-TT10	8.0'	3.5'	As with 07N-TT09, ash/debris layer thins out as go west toward fence. Large pieces of metal, bottles, and glassware noted.
07N-TT11	9.5'	2.25'	Ash/cinder-debris layer seems to be consistent for length of trench, with some thinning as approach Cabin 169 parking area.
07N-TT12	10.0'	1.5'	No ash or debris noted.
07N-TT13	~12.0'	~3.0'	Trench went from edge of slope top to nearly slope toe. Great deal of debris (pottery pieces, glass bottles, bricks, metal, etc.) buried here. Because of slope steepness, soil and material continually sloughed from the side walls; therefore, an exact trench and debris layer profile not possible.
07N-TT14	~12.0'	~3.0'	This trench dug similar to 07N-TT13 - near slope edge and reaching over to nearly toe of slope and trenching up towards the top. No debris found in this trench.

TABLE 2
CHEATHAM ANNEX
Site 7N
Proposed Soil Sample Locations and Rationale

Sample Location	No. of Samples from Location	Sample Depths	Analytic Parameters	Sample Rationale
1	3	Surface (0 to 6")	Full TAL/TCL TCL VOC, TCL SVOC, SIM PAH, TCL Pest/ PCB, and TAL Metals and Cyanide	Determine contaminant levels, if any, in surface soil
		(Within Ash Layer)	same	Determine contaminant levels, if any, in ash layer
		(Under Ash Layer)	same	Determine contaminant levels, if any, in subsurface soil
2	3	Surface (0 to 6")	Full TAL/TCL TCL VOC, TCL SVOC, SIM PAH, TCL Pest/ PCB, and TAL Metals and Cyanide	Determine contaminant levels, if any, in surface soil
		(Within Ash Layer)	same	Determine contaminant levels, if any, in ash layer
		(Under Ash Layer)	same	Determine contaminant levels, if any, in subsurface soil
3	2	(Within Ash Layer)	Full TAL/TCL TCL VOC, TCL SVOC, SIM PAH, TCL Pest/ PCB, and TAL Metals and Cyanide	Determine contaminant levels, if any, in ash layer
		(Under Ash Layer)[1]	same	Determine contaminant levels, if any, in subsurface soil
4	2	(Within Ash Layer)	Full TAL/TCL TCL VOC, TCL SVOC, SIM PAH, TCL Pest/ PCB, and TAL Metals and Cyanide Dioxin[2] and Full TCLP w/ ICR[3]	Determine contaminant levels, if any, in ash layer, also conduct waste characterization (TCLP w/ ICR)
		(Under Ash Layer)[1]	Full TAL/TCL TCL VOC, TCL SVOC, SIM PAH, TCL Pest/ PCB, and TAL Metals and Cyanide	Determine contaminant levels, if any, in subsurface soil
5	2	(Within Ash Layer)	Full TAL/TCL TCL VOC, TCL SVOC, SIM PAH, TCL Pest/ PCB, and TAL Metals and Cyanide	Determine contaminant levels, if any, in ash layer
		(Under Ash Layer)[1]	same	Determine contaminant levels, if any, in subsurface soil
6	2	Surface (0 to 6")	Full TAL/TCL TCL VOC, TCL SVOC, SIM PAH, TCL Pest/ PCB, and TAL Metals and Cyanide	Determine contaminant levels, if any, in surface soil
		6 to 24"[4]	same	Determine contaminant levels, if any, in subsurface soil

TABLE 2
CHEATHAM ANNEX
Site 7N
Proposed Soil Sample Locations and Rationale

Sample Location	No. of Samples from Location	Sample Depths	Analytic Parameters	Sample Rationale
7	2	Surface (0 to 6") 6 to 24"[4]	Full TAL/TCL TCL VOC, TCL SVOC, SIM PAH, TCL Pest/ PCB, and TAL Metals and Cyanide	Determine contaminant levels, if any, in surface soil Determine contaminant levels, if any, in subsurface soil
8	2	Surface (0 to 6") 6 to 24"[4]	Full TAL/TCL TCL VOC, TCL SVOC, SIM PAH, TCL Pest/ PCB, and TAL Metals and Cyanide same	Determine contaminant levels, if any, in surface soil Determine contaminant levels, if any, in subsurface soil
9	2	Surface (0 to 6") 6 to 24"[4]	Full TAL/TCL TCL VOC, TCL SVOC, SIM PAH, TCL Pest/ PCB, and TAL Metals and Cyanide same	Determine contaminant levels, if any, in surface soil Determine contaminant levels, if any, in subsurface soil

Notes:

1 Field conditions may not allow for the collection of subsurface soil under the ash layer at these locations because this area is the exposed and eroding slope. The continual sloughing of material may not allow access to the subsurface soil.

2 Dioxin can be a by-product of waste incineration. Since there is evidence of incineration (melted bottles, ash), the ash layer at this location will be tested for dioxin as well. (This location chosen for dioxin testing because it allows great access to the ash layer and the ash layer is thick in this area.)

3 Full TCLP w/ Ignitability, Reactiviy, and Corresivity (ICR) is for waste characterization. It will be collected from the ash layer in order to get results from a "dirty" area to see how best to dispose of the waste.

4 These locations will be outside the delineated waste boundaries and are expected to be "clean." Therefore, the subsurface depth matches the subsurface depth for the CAX Background for ease of comparision.

Table 3
CAX Site 7N
Surface and Subsurface Soil
Sample Collection Summary

Sample Location	Sample Depths	Analytic Parameters	Comments
CAX-07N-SS1-00	0 to 6"	Full TAL/TCL TCL VOC, TCL SVOC, SIM PAH, TCL Pest/ PCB, and TAL Metals and Cyanide	Some ash and few small pieces of metal and burnt items
CAX-07N-SB1-01	6 to 12"	same	Ash in top two inches
CAX -07N-SB1-02	12 to 18"	same	under ash/debris
CAX-07N-SS2-00	0 to 6"	Full TAL/TCL TCL VOC, TCL SVOC, SIM PAH, TCL Pest/ PCB, and TAL Metals and Cyanide	Some ash and few small pieces of debris (glass, metal , potttery) and coal
CAX-07N-SB2-01	6 to 12"	same	Small pieces of debris within 6 to 10 inches
CAX -07N-SB2-02	12 to 18"	same	under ash/debris
CAX-07N-SS3-00	0 to 6"	Full TAL/TCL TCL VOC, TCL SVOC, SIM PAH, TCL Pest/ PCB, and TAL Metals and Cyanide	No ash. Few small pieces of debris (glass, pottery, metal) at 6-inch depth
CAX-07N-SB3-01	6 to 12"	same	6 to 8" small pieces of debris, then visibly appear to be under debris
CAX-07N-SB4-01	Within Ash Layer About 16 to 18" bgs	Full TAL/TCL TCL VOC, TCL SVOC, SIM PAH, TCL Pest/ PCB, and TAL Metals and Cyanide Dioxin and Full TCLP w/ ICR	(Note: No surface sample collected, as area will be removed when ash/debris removed. Also, ash too thick, not possible to get underneath it for another subsurface sample.)
CAX-07N-SS5-00	0 to 6"	Full TAL/TCL TCL VOC, TCL SVOC, SIM PAH, TCL Pest/ PCB, and TAL Metals and Cyanide	No ash or debris noted.
CAX-07N-SB5-01	24 to 30"	same	No ash or debris noted.
CAX-07N-SS6-00	0 to 6"	Full TAL/TCL TCL VOC, TCL SVOC, SIM PAH, TCL Pest/ PCB, and TAL Metals and Cyanide	No ash or debris noted.
CAX-07N-SB6-01	6 to 24"	same	No ash or debris noted.
CAX-07N-SS7-00	0 to 6"	Full TAL/TCL TCL VOC, TCL SVOC, SIM PAH, TCL Pest/ PCB, and TAL Metals and Cyanide	No ash or debris noted.
CAX-07N-SB7-01	6 to 24"	same	No ash or debris noted.
CAX-07N-SS8-00	0 to 6"	Full TAL/TCL TCL VOC, TCL SVOC, SIM PAH, TCL Pest/ PCB, and TAL Metals and Cyanide	No ash or debris in surface. (Note: No subsurface sample because of refusal due to gravel layer.[1])
CAX-07N-SS9-00	0 to 6"	Full TAL/TCL TCL VOC, TCL SVOC, SIM PAH, TCL Pest/ PCB, and TAL Metals and Cyanide	No ash or debris noted.
CAX-07N-SB9-01	6 to 24"	same	No ash or debris noted.

Note:

[1]The sampling team did not know the extent (horizontal and vertical) of the gravel sub-base. Based on the hand-dug holes used to refine the northern waste boundary, it appeared to extend from the fence line (near where sample point #8 was located) west toward the single-vehicle, asphalt, parking area between Cabins 169 and 170. The sampling team could not determine how thick the gravel layer was because hand augering and hand digging could not penetrate much more than the top three-four inches of the gravel sub-base. Several attempts were made with the hand auger and with a sampling spoon to break through the gravel layer and get to the soil below, but the gravel was large (about 3" long) and fairly compact. The sampling team offset from the original sample location by about one and half feet on three separate tries [to the east (once) and to the north (twice)] and each time encountered the gravel layer around nine inches below ground surface and could not break through it. Field conditions suggested that continuing to move north to try to get out of the gravel would move the sample location too far from what was considered the "clean" boundary (i.e., where there was no visible ash or debris), thus possibly creating an unnecessary extension of the northern waste boundary by 15 to 20 feet (or more). Therefore, the sampling team declared subsurface refusal at this location.

TABLE 4

CHEATHAM ANNEX
SITE 7N
SURFACE SOIL - ORGANIC COMPOUNDS
HITS
(DUPLICATES COMBINED)

SITE SAMPLE I.D.	CAX BACKGROUND	CAX SITE 1	CAX-07N-SS1-00	CAX-07N-SS2-00	CAX-07N-SS3-00	CAX-07N-SS5-00	CAX-07N-SS6-00	CAX-07N-SS7-00	CAX-07N-SS8-00	CAX-07N-SS9-00
LAB SAMPLE I.D.	CONCENTRATIONS	OIL CLEANUP GOAL	239301	239304	239307	239310	239312	239314	239316	239317
SAMPLE DATE	SOIL GROUP 2	(Eco-Driven Numbers)	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004
SEMIVOLATILES (ug/kg)										
BENZO(A)ANTHRACENE	460U		270 J	460 U	400 U	430 U	390 U	420 U	410 U	400 U
BENZO(A)PYRENE	1100U		230 J	460 U	150 J	430 U	390 U	420 U	410 U	400 U
BENZO(B)FLUORANTHENE	460U		160 J	460 U	92 J	430 U	390 U	420 U	410 U	400 U
BENZO(G,H,I)PERYLENE	460U		130 J	460 U	200 J	430 U	390 U	420 U	410 U	400 U
BENZO(K)FLUORANTHENE	460U		180 J	460 U	400 U	430 U	390 U	420 U	410 U	400 U
BIS(2-ETHYLHEXYL) PHTHALATE	5000		100 J	460 U	400 U	430 U	390 U	120 B	410 U	400 U
CHRYSENE	460U		290 J	460 U	96 J	430 U	390 U	420 U	410 U	400 U
DIBENZO(A,H)ANTHRACENE	1100U		430 U	460 U	220 J	430 U	390 U	420 U	410 U	400 U
FLUORANTHENE	460U		430	460 U	400 U	430 U	390 U	420 U	410 U	400 U
INDENO(1,2,3-CD)PYRENE	460U		110 J	460 U	130 J	430 U	390 U	420 U	410 U	400 U
PHENANTHRENE	460U		320 J	460 U	400 U	430 U	390 U	420 U	410 U	400 U
PYRENE	460U		660	460 U	400 U	430 U	390 U	420 U	410 U	400 U
PESTICIDES (ug/kg)										
4,4'-DDE	1.1J		3.9 J	1 J	1.3 J	4.3 U	1.6 J	1.4 J	4.1 U	4 U
4,4'-DDT	4U	100	4.3 J	4.6 U	4 U	4.3 U	3.9 U	4.2 U	4.1 U	4 U
ALPHA-BHC	15U		3.6 J	2.1 J	2.1 U	0.94 J	2 U	2.2 U	2.1 U	2.1 U
ALPHA-CHLORDANE	1.9		2.2 U	2.4 U	11	2.2 U	2 J	2.2 U	2.1 U	3.6
BETA-BHC	.99J		5.5 J	4.1 J	2.8 J	1.5 J	2 U	1.2 J	0.82 J	2.1 U
DIELDRIN	4U		4.3 U	4.6 U	4 U	4.3 U	1.4 J	4.2 U	4.1 U	4 U
ENDRIN	4U		4.3 U	4.6 U	1.3 J	4.3 U	3.9 U	4.2 U	4.1 U	4 U
ENDRIN KETONE	4U		4.3 U	4.6 U	2.3 J	4.3 U	3.9 U	4.2 U	4.1 U	4 U
HEPTACHLOR EPOXIDE	15U	1.5J	11 J	3.5	10 J	0.61 J	3.5	2.2 U	2.1 U	2.1 U
PCBs (ug/kg)										
AROCLOR-1260	40U	100	29 J	46 U	40 U	43 U	39 U	40 J	41 U	40 U
PAHs (ug/kg)										
ANTHRACENE	1100U			5.8 J		11 U	9.8 U	11 U	10 U	10 U
BENZO(A)ANTHRACENE	460U		(see note below)	11 J	(see note below)	9.3 J	6.7 J	11	10 U	5.2 J
BENZO(A)PYRENE	1100U			31		8.9 J	14	13	10 U	5.2 J
BENZO(B)FLOURANTHENE	460U			28		13	19 J	15	10 U	11 J
BENZO(G,H,I)PERYLENE	460U			85 J		8 J	25 J	15 J	10 U	5.6 J
BENZO(K)FLUORANTHENE	460U			11 J		9.3 J	13 J	12	10 U	7.6 J
CHRYSENE	460U			21		12	12	17	10 U	6.1 J
DIBENZO(A,H)ANTHRACENE	1100U			69 J		11 U	29 J	12 J	10 U	5.4 J
FLUORANTHENE	460U			18		19	10	23	10 U	11
INDENO(1,2,3-CD)PYRENE	460U			43		7.7 B	19 B	18 B	7.4 B	12 B
PHENANTHRENE	460U			21		15	7 J	18	10 U	9.5 J
PYRENE	460U			16		16	8.7 J	20	10 U	8.8 J

Organic Qualifiers
B: Analyte found in the associated blank as well as in the sample. Indicates probable blank contamination.
U: Analyte analyzed but not detected
J: Estimated value

Note: Samples SS1 and SS3 not analyzed for low-level PAHs because concentrations exceeded method limits.

TABLE 5

CHEATHAM ANNEX
SITE 7N
SURFACE SOIL - INORGANIC COMPOUNDS
HITS
(DUPLICATES COMBINED)

SITE SAMPLE I.D.	CAX BACKGROUND	CAX SITE 1	CAX-07N-SS1-00	CAX-07N-SS2-00	CAX-07N-SS3-00	CAX-07N-SS5-00	CAX-07N-SS6-00	CAX-07N-SS7-00	CAX-07N-SS8-00	CAX-07N-SS9-00
LAB SAMPLE I.D.	CONCENTRATIONS	SOIL CLEANUP GOALS	239301	239304	239307	239310	239312	239314	239316	239317
SAMPLE DATE	SOIL GROUP 2	(Eco-Driven Numbers)	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004
METALS (mg/kg)										
ALUMINUM	4570		9510	9960	8240	9440	10700	10800	7580	9520
ARSENIC	4.1		9.2	8.3	6.5	4.1	6.3	4.1	4.4	3
BARIUM	32.7B		2190	1420	373	173	74.1	217	33.5 J	76.6
CADMIUM	.094U	4	1.7	1.9	1.9	0.16 B	0.045 U	0.17 B	0.14 B	0.045 U
CALCIUM	3320		8080	10500	3340	3390	2040	2430	2000	870 J
CHROMIUM	12.4		138	220	57.7	18.5	21.1	27.2	13.2	7.4
COBALT	5.3J		7.1 J	6.4 J	5.2 J	6.7 J	2.7 J	4.9 J	1.3 B	4.4 J
COPPER	4J	50	858	353	178	66.1	36.6	57.4	10.2	5.4 J
IRON	12600		32300	18700	29800	9050	14300	17200	11000	6270
LEAD	11	50	4980	5070	6420	250	153	677	38.3	19.2
MAGNESIUM	257		3490	5440	1760	838 J	1520	1240	651 J	573 J
MANGANESE	257		632	779	573	393	170	339	64.3	256
MERCURY	.059U	0.24	0.12	0.27	0.23	0.075 J	0.051 U	0.11 J	0.063 J	0.058 U
NICKEL	3.9J	30	27	40.2	24.7	14.2	6.2 J	9.6	4.2 J	5.6 J
POTASSIUM	1210L		938 J	1540 J	474 J	420 J	658 J	504 J	634 J	289 J
SILVER	.16J	2	1.8 J	1.9 J	1 B	0.17 B	0.11 U	0.33 B	0.12 U	0.11 U
SODIUM	356B		159 J	406 J	50.5 U	87.5 J	51 U	53.1 U	55.2 J	51.4 U
VANADIUM	15.2		30.5	38.2	21.5	14.2	28.6	17.9	26.8	12.8
ZINC	17.9J	50	2240	1430	2090	201	94.4	292	344	35.4

Inorganic Qualifiers

B: Indicates probable blank contamination - treat as a nondetect.
J: Estimated value
U: Analyte analyzed but not detected

TABLE 6

CHEATHAM ANNEX
SITE 7N
SUBSURFACE SOIL - ORGANIC COMPOUNDS
HITS
(DUPLICATES COMBINED)

SITE SAMPLE I.D.	CAX BACKGROUND	CAX SITE 1	CAX-07N-SB1-01	CAX-07N-SB1-02	CAX-07N-SB2-01	CAX-07N-SB2-02	CAX-07N-SB3-01	CAX-07N-SB4-01	CAX-07N-SB5-01	CAX-07N-SB6-01	CAX-07N-SB7-01	CAX-07N-SB9-01
LAB SAMPLE I.D.	CONCENTRATIONS	SOIL CLEANUP GOALS	239302	239303	239305	239306	239308	239309	239311	239313	239315	239318
SAMPLE DATE	SOIL GROUP 2	(Eco-Driven Numbers)	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004
PESTICIDES (ug/kg)												
ALPHA-BHC	15U		2 U	2 U	0.5 J	0.97 J	2 U	2.3 U	2 U	2 U	2 U	2 U
ALPHA-CHLORDANE	1.9		2 U	2 U	2.1 U	2 U	2 U	2.3 U	2 U	2 U	2 U	1.7 J
BETA-BHC	.99J		0.8 J	2 U	2 J	2 U	2 U	2.6 J	2 U	0.77 J	2 U	2 U
HEPTACHLOR EPOXIDE	15U	1.5J	1.5 J	2 U	10 J	2 U	2 U	2.3 U	2 U	9	2 U	2 U
PAHs (ug/kg)												
BENZO(A)PYRENE	460U		9.9 U	9.9 U	7.3 J	10 U	9.7 U	11 U	10 U	9.8 U	9.7 U	9.8 U
BENZO(B)FLOURANTHENE	460U		9.9 U	9.9 U	12 J	10 U	9.7 U	11 U	10 U	9.8 U	9.7 U	9.8 U
BENZO(G,H,I)PERYLENE	460U		9.9 U	9.9 U	15 J	10 U	9.7 U	11 U	10 U	9.8 U	9.7 U	9.8 U
BENZO(K)FLUORANTHENE	460U		9.9 U	9.9 U	8.7 J	10 U	9.7 U	11 U	10 U	9.8 U	9.7 U	9.8 U
CHRYSENE	460U		9.9 U	9.9 U	6.5 J	10 U	9.7 U	11 U	10 U	9.8 U	9.7 U	9.8 U
DIBENZO(A,H)ANTHRACENE	460U		9.9 U	9.9 U	13 J	10 U	4.5 J	11 U	10 U	9.8 U	9.7 U	9.8 U
FLUORANTHENE	460U		9.9 U	9.9 U	4.5 J	10 U	9.7 U	11 U	10 U	9.8 U	9.7 U	9.8 U
PHENANTHRENE	460U		9.9 U	9.9 U	7.5 J	10 U	9.7 U	7.7 J	10 U	9.8 U	9.7 U	9.8 U

Organic Qualifiers
B: Analyte found in the associated blank as well as in the sample. Indicates probable blank contamination.
U: Analyte analyzed but not detected
J: Estimated value

TABLE 7

CHEATHAM ANNEX
SITE 7N
SUBSURFACE SOIL - INORGANIC COMPOUNDS
HITS
(DUPLICATES COMBINED)

SITE SAMPLE I.D.	CAX BACKGROUND	CAX SITE 1	AX-07N-SB1-01	AX-07N-SB1-02	AX-07N-SB2-01	AX-07N-SB2-02	AX-07N-SB3-01	AX-07N-SB4-01	AX-07N-SB5-01	AX-07N-SB6-01	AX-07N-SB7-01	AX-07N-SB9-01
LAB SAMPLE I.D.	CONCENTRATIONS	SOIL CLEANUP GOALS	239302	239303	239305	239306	239308	239309	239311	239313	239315	239318
SAMPLE DATE	SOIL GROUP 2	(Eco-Driven Numbers)	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004
METALS (mg/kg)												
ALUMINUM	12600		9800	9550	9400	9990	9450	5130	13100	12700	9300	8450
ARSENIC	15.9		3.2	2.7	3.8	2.7	2.5	4.8	5.4	4	2.5	2.6
BARIUM	48.5		156	85.4	206	117	101	264	58.2	89.2	59.5	69.2
CALCIUM	162000		2100	1110 J	3080	1760	1150	8880	1430	1110 J	794 J	569 J
CHROMIUM	26.4		13.2	7.5	33.8	11.9	8.2	14.4	18.7	15.9	8.7	6.7
COBALT	7.3J		4.5 J	4 J	4.8 J	5 J	3.5 J	6.3 J	1.7 J	1.6 J	3.1 J	3.8 J
COPPER	5J	50	41.4	7.2	50.3	18.4	9.6	69.2	5.8	34.7	2.4 J	3 J
IRON	30000		6690	6330	7150	6120	5820	4670	24800	18100	7860	5920
LEAD	8.3	50	176	40.7	583	117	118	283	27.5	174	12.8	8.7
MAGNESIUM	3340		699 J	547 J	1230	700 J	529 J	1140 J	881 J	1060 J	604 J	519 J
MANGANESE	131		207	193	308	330	210	289	40.8	135 J	79.9	164
MERCURY	0.12B	0.24	0.041 U	0.057 U	1.9	0.052 U	0.042 U	0.24	0.042 U	0.061 J	0.04 U	0.045 U
NICKEL	9.1J	30	6.6 J	5.4 J	9.2 J	6.3 J	5.1 J	13.6	4.3 J	5.6 J	4.3 J	4.7 J
POTASSIUM	2100		409 J	311 J	543 J	363 J	249 J	993 J	510 J	369 J	291 J	242 J
SODIUM	815B		52.7 U	51.4 U	94 J	50.3 U	53.5 J	369 J	50.7 U	53.5 U	51.6 U	50.4 U
VANADIUM	33.2		12.2	11.3 J	13.3	11 J	10 J	17.9	29.1	27.9	15.4	10.7 J
ZINC	30.8	50	105	29.2	268	58.7	93	182	23.6	80.5	12.1	14.7

Inorganic Qualifiers
B: Indicates probable blank contamination - treat as a nondetect.
J: Estimated value
U: Analyte analyzed but not detected

TABLE 8

CHEATHAM ANNEX
SITE 7N
DIOXIN TOXICITY EQUIVALENT CONCENTRATIONS SUMMARY
(VALIDATED)

Analyte	07N-SB4-01 (reported)	(converted)	Toxic Equivalent Factor	Toxic Equivalent Concentrations	Validator Qualifier
	pg/g	mg/kg		mg/kg	
2,3,7,8-TCDD	4.88	4.88E-06	1	4.88E-06	
1,2,3,7,8-PeCDD	19.1	1.91E-05	0.5	9.55E-06	
1,2,3,4,7,8-HxCDD	14.6	1.46E-05	0.1	1.46E-06	
1,2,3,6,7,8-HxCDD	18.7	1.87E-05	0.1	1.87E-06	
1,2,3,7,8,9-HxCDD	21.5	2.15E-05	0.1	2.15E-06	
1,2,3,4,6,7,8-HpCDD	105	1.05E-04	0.01	1.05E-06	
OCDD	195	1.95E-04	0.001	1.95E-07	
2,3,7,8-TCDF	0.478	4.78E-07	0.1	4.78E-08	J
1,2,3,7,8-PeCDF	0.833	8.33E-07	0.05	4.17E-08	J
2,3,4,7,8-PeCDF	1.84	1.84E-06	0.5	9.20E-07	J
1,2,3,4,7,8-HxCDF	1.4	1.40E-06	0.1	1.40E-07	J
1,2,3,6,7,8-HxCDF	1.55	1.55E-06	0.1	1.55E-07	J
2,3,4,6,7,8-HxCDF	2.27	2.27E-06	0.1	2.27E-07	J
1,2,3,7,8,9-HxCDF	0.773	7.73E-07	0.1	7.73E-08	J
1,2,3,4,6,7,8-HpCDF	6.14	6.14E-06	0.01	6.14E-08	J
1,2,3,4,7,8,9-HpCDF	0.765	7.65E-07	0.01	7.65E-09	J
OCDF	5.32	5.32E-06	0.001	5.32E-09	

TOTAL: 2.28E-05 mg/kg

USEPA Region III RBC: 4.26E-06 mg/kg

J = The analyte was positively identified; however, the concentration value is an estimate. Also used if a result was measured at a concentration below the Contract Required Quantification Limit (CRQL) or Contract Required Detection Limit (CRDL).

TABLE 9

CAX SITE 7N
TCLP DETECTION SUMMARY

SAMPLE ID	TCLP	07N-SB4-01
SAMPLE DEPTH	LIMITS (ug/L)	18"
SAMPLE DATE	40CFR261.24	3/3/2004
Volatiles (ug/L)		
1,2-Dichloroethane	500	25 U
1,2-Dichloroethene		25 U
2-butanone	200000	63 U
Benzene	500	25 U
Carbon Tetrachloride	500	25 U
Chlorobenzene	100000	25 U
Chloroform	6000	25 U
Tetrachloroethene	700	25 U
Trichloroethene	500	25 U
Vinyl Chloride	200	25 U
Semivolatiles (ug/L)		
1,4-Dichlorobenzene	7500	50 U
2,4,5-Trichlorophenol	400000	50 U
2,4,6-Trichlorophenol	2000	50 U
2,4-Dinitrotoluene	130	50 U
2-Methylphenol	200000	50 U
3-Methylphenol	200000	50 U
4-Methylphenol	200000	50 U
Hexachlorobenzene	130	50 U
Hexachlorobutadiene	500	50 U
Hexachloroethane	3000	50 U
Nitrobenzene	2000	50 U
Pentachlorophenol	100000	100 U
Pyridine	5000	50 U
Pesticides (ug/L)		
2,4-D	10000	25 U
Endrin	20	2.0 U
gamma-BHC (Lindane)	400	0.5 U
Heptachlor	8	0.5 U
Heptachlor epoxide	8	0.5 U
Methoxychlor	10000	5 U
Silvex	1000	5 U
Technical Chlordane	30	0.8 U
Toxaphene	500	25 U

TABLE 9

CAX SITE 7N
TCLP DETECTION SUMMARY

SAMPLE ID	TCLP	07N-SB4-01
SAMPLE DEPTH	LIMITS (ug/L)	18"
SAMPLE DATE	40CFR261.24	3/3/2004
Inorganics (ug/L)		
Arsenic	5000	44.1 B
Barium	100000	774 B
Cadmium	1000	1.7 B
Chromium	5000	4.5 B
Lead	5000	357 B
Mercury	200	0.1 U
Selenium	1000	9.3 B
Silver	5000	0.5 B

TABLE 10

CHEATHAM ANNEX
CABIN 170 AREA
DETECTION SUMMARY OF ORGANIC AND INORGANIC COMPOUNDS
SURFACE SOIL SAMPLES
(NOT VALIDATED)

SAMPLE ID SAMPLE DEPTH SAMPLE DATE	CAX BACKGROUND CONCENTRATIONS SOIL GROUP 2	CAX SITE 1 SOIL CLEANUP GOALS (Eco-Driven Numbers)	07N-SS10-00 0-6" 04/22/2004	07N-SS12-00 0-6" 04/22/2004	07N-SS13-00 0-6" 4/22/2004	07N-SS14-00 0-6" 4/22/2004	07N-SS15-00 0-6" 4/22/2004
ORGANICS							
Semivolatiles (ug/kg)							
Phenanthrene	460U		420 U	380 U	380 U	380 U	390 U
Fluoranthene	460U		420 U	380 U	380 U	380 U	390 U
Pyrene	460U		420 U	380 U	380 U	380 U	390 U
Benzo(a)anthracene	460U		420 U	380 U	380 U	380 U	390 U
Chrysene	460U		420 U	380 U	380 U	380 U	390 U
bis (2-Ethylhexyl) phthalate	5000		420 U	380 U	380 U	990	190 J
Benzo(b)fluoranthene	460U		420 U	380 U	380 U	380 U	390 U
Benzo(k)fluoranthene	460U		420 U	380 U	380 U	380 U	390 U
Benzo(a)pyrene	460U		420 U	380 U	380 U	380 U	390 U
Indeno(1,2,3-cd)pyrene	460U		420 U	380 U	380 U	380 U	390 U
Dibenzo (a,h) anthracene	1100U		420 U	380 U	380 U	380 U	390 U
Benzo(g,h,i)perylene	460U		420 U	380 U	380 U	380 U	390 U
Pesticides/PCBs (ug/kg)							
4,4'-DDE	1.1J		4.2 U	2 J	3.8 U	3.8 U	3.9 U
4,4'-DDT	4U	100	2 J	1.3 JP	3.8 U	3.8 U	3.9 U
Dieldrin	4U		4.2 U	3.8 U	3.8 U	3.8 U	3.9 U
Endrin	4U		4.2 U	3.8 U	3.8 U	3.8 U	3.9 U
Endrin ketone	4U		4.2 U	3.8 U	3.8 U	3.8 U	3.9 U
Heptachlor epoxide	2U		1.2 J	2 U	2 U	2 U	2 U
alpha-BHC	2.1U		2.2 U	2 U	2 U	2 U	2 U
alpha-Chlordane	2.5		2.2 U	0.46 JP	2 U	2 U	2 U
beta-BHC	2.1U		0.93 JP	1.1 JP	2 U	2 U	2 U
Aroclor-1260	40U	100	42 U	38 U	38 U	36 U	39 U
SIM PAHs (ug/kg)							
Phenanthrene			11 U	5.4 J	4.8 J	9.5 U	9.8 U
Anthracene			11 U	9.5 U	9.7 U	9.5 U	9.8 U
Fluoranthene			11 U	6.7 J	4.6 J	9.5 U	4.4 J
Pyrene			11 U	6.8 J	9.7 U	9.5 U	9.8 U
Benzo(a)anthracene			11 U	9.5 U	9.7 U	9.5 U	9.8 U
Chrysene			11 U	5 J	9.7 U	9.5 U	9.8 U
Benzo(b)fluoranthene			11 U	9.5 U	9.7 U	9.5 U	9.8 U
Benzo(k)fluoranthene			11 U	4.7 J	9.7 U	9.5 U	9.8 U
Benzo(a)pyrene			11 U	9.5 U	9.7 U	9.5 U	9.8 U
Indeno(1,2,3-cd)pyrene			11 U	9.5 U	9.7 U	9.5 U	9.8 U
Dibenzo(a,h)anthracene			11 U	9.5 U	9.7 U	9.5 U	9.8 U
Benzo(g,h,i)perylene			11 U	9.5 U	9.7 U	9.5 U	9.8 U
INORGANICS (mg/kg)							
Aluminum	4570		9590	9840	10200	10100	9760
Antimony	0.41 B	11	3.1 BN	0.91 BN	0.4 UN	0.41 UN	0.48 BN
Arsenic	4.1		8.4	3.5	2.8	3	2.3 B
Barium	32.7 B		720	65	63.9	63.2	65
Beryllium	.52B		0.33 B	0.54 B	0.57 B	0.59 B	0.61 B
Cadmium	.094U	4	0.1 U	0.092 U	0.085 U	0.086 U	0.091 U
Chromium	12.4		34.9 E	9.8 E	8.4 E	8 E	6.6 E
Cobalt	5.3J		3.4 B	2.7 B	2.4 B	2.7 B	2.6 B
Copper	4J	50	165	9.6	6	4.5 B	4.1 B
Cyanide	.068B		0.67	0.035 U	0.1 B	0.058 B	0.087 B
Lead	11	50	2010	68.7	33	20.1	17.3
Manganese	257		469	163	127	186	216
Mercury	.059U	0.24	0.15	0.067 B	0.058 B	0.054 B	0.053 U
Nickel	3.9J	30	19.8	6.5 B	4.9 B	5 B	4.7 B
Selenium	.69J		0.6 U	0.55 U	0.51 U	0.57 B	0.55 U
Silver	.16J	2	1.3 B	0.092 U	0.085 U	0.086 U	0.091 U
Vanadium	15.2		29	0.74 U	14.9	15.3	11.8
Zinc	17.9J	50	311	19.3	28.6	21.1	18.1

Organic Qualifiers
U: Compound analyzed but not detected
J: Estimated value
P: Regarding CLP, flag is used for a Pesticide/Aloclor analyte, when there is > 25% difference for detected concentrations between the two GC columns. The lower of the two values is flagged "P". Regarding SW-846 GC and HPLC analyses, when RPD > 40%, then the highe

Inorganic Qualifiers
U: Analyte analyzed but not detected
B: Analyte analyzed for and the reported value was obtained from a reading less than the Contract Required Detection Limit but greater than or equal to the Instrument Detection Limit.
E: Estimated value
J: Estimated value
N: This flag indicates the sample spike recovery is outside of control limits.

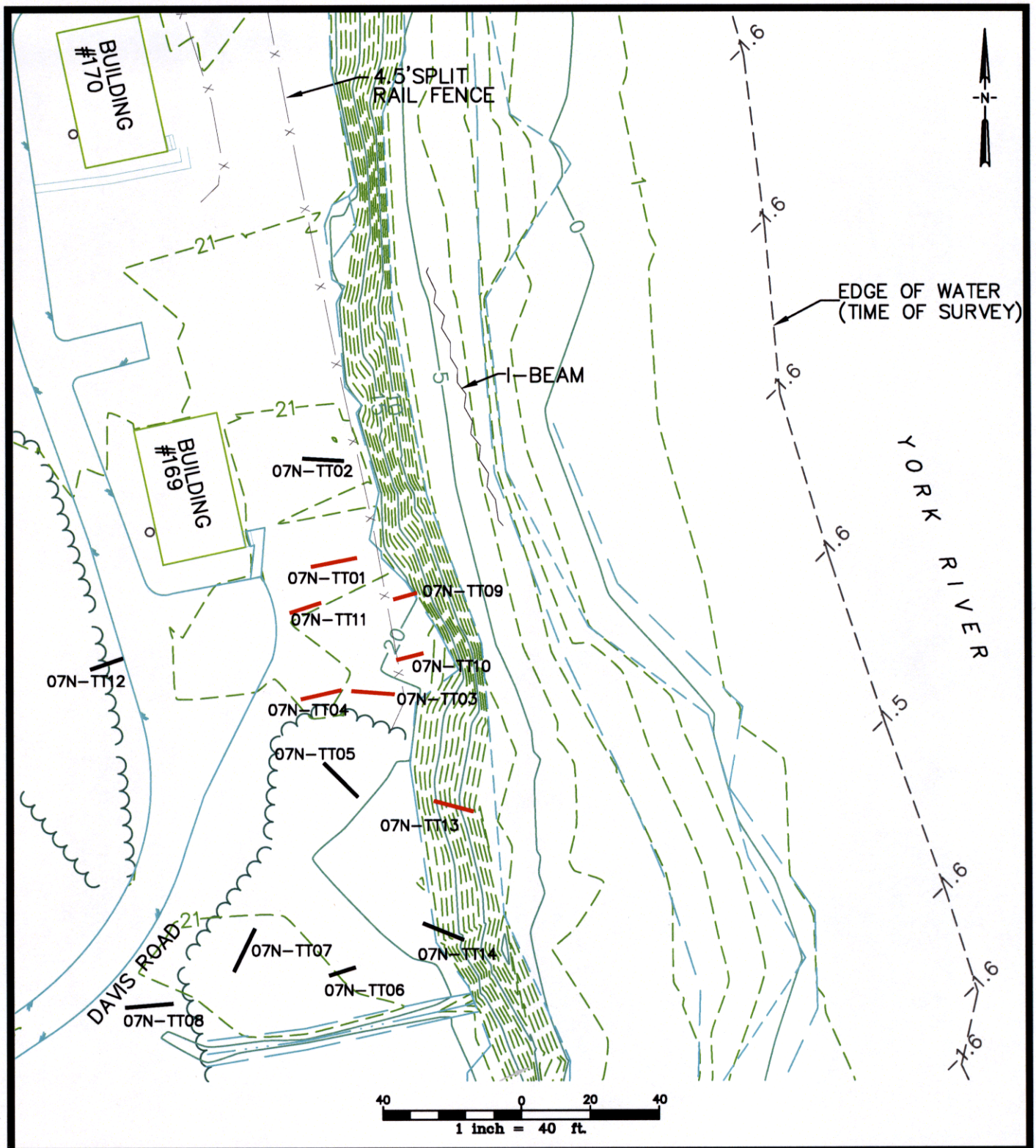
TABLE 11

CHEATHAM ANNEX
CABIN 170 AREA
DETECTION SUMMARY OF ORGANIC AND INORGANIC COMPOUNDS
SUBSURFACE SOIL SAMPLES
(NOT VALIDATED)

SAMPLE ID	CAX BACKGROUND	CAX SITE 1	07N-SB10-01	07N-SB10-01A	07N-SB11-01	07N-SB12-01	07N-SB13-01	07N-SB14-01	07N-SB15-01
SAMPLE DEPTH	CONCENTRATIONS	SOIL CLEANUP GOALS	6"-24"	6"-24"	6"-24"	6"-24"	6"-24"	6"-24"	6"-24"
SAMPLE DATE	SOIL GROUP 2	(Eco-Driven Numbers)	04/22/2004	04/22/2004	04/22/2004	04/22/2004	04/22/2004	04/22/2004	04/22/2004
ORGANICS									
Semivolatiles (ug/kg)									
bis (2-Ethylhexyl) phthalate	670		110 J	390 U	380 U	380 U	89 J	94 J	390 U
Pesticides/PCBs (ug/kg)									
Heptachlor epoxide	15U		2 U	2 U	2 U	2 U	1.9 U	2 U	2 U
alpha-BHC	15U		2 U	2 U	2 U	2 U	1.9 U	2 U	2 U
alpha-Chlordane	1.9		2 U	2 U	2 U	2 U	1.9 U	2 U	2 U
beta-BHC	.99J		2 U	2 U	2 U	2 U	1.9 U	2 U	2 U
SIM PAHs (ug/kg)									
Phenanthrene	460U		9.9 U	8.8 J	9.5 U	9.5 U	9.4 U	9.9 U	9.8 U
Fluoranthene	460U		9.9 U	6.1 J	9.5 U	9.5 U	9.4 U	9.9 U	9.8 U
Chrysene	460U		9.9 U	9.9 U	9.5 U	9.5 U	9.4 U	9.9 U	9.8 U
Benzo(b)fluoranthene	460U		9.9 U	9.9 U	9.5 U	9.5 U	9.4 U	9.9 U	9.8 U
Benzo(k)fluoranthene	460U		9.9 U	9.9 U	9.5 U	9.5 U	9.4 U	9.9 U	9.8 U
Benzo(a)pyrene	460U		9.9 U	9.9 U	9.5 U	9.5 U	9.4 U	9.9 U	9.8 U
Indeno(1,2,3-cd)pyrene	1100U		9.9 U	9.9 U	9.5 U	9.5 U	9.4 U	9.9 U	9.8 U
Dibenzo(a,h)anthracene	460U		9.9 U	9.9 U	9.5 U	9.5 U	9.4 U	9.9 U	9.8 U
Benzo(g,h,i)perylene	460U		9.9 U	9.9 U	9.5 U	9.5 U	9.4 U	9.9 U	9.8 U
INORGANICS (mg/kg)									
Aluminum	12600		10300	12400	9640	9300	10300	9290	9770
Antimony	.86B	11	0.78 BN	0.94 BN	0.41 UN	0.6 BN	0.42 UN	0.41 UN	0.42 UN
Barium	48.5		20.5 B	42.1 B	53.9	64.1	65.6	61.5	61
Cadmium	0.11	4	0.088 U	0.091 U	0.087 U	0.087 U	0.089 U	0.087 U	0.088 U
Chromium	26.4		16.6 E	0.091 U	9.2 E	7.2 E	8.7 E	6.9 E	7.4 E
Copper	5J	50	2.1 B	4.1 B	4.2 B	3.3 B	3.1 B	2.4 B	2.7 B
Cyanide	0.12U		0.036 U	0.052 B	0.088 B	0.09 B	0.048 B	0.058 B	0.12 B
Lead	8.3	50	8.6	95.2	14.6	19.3	11.9	8.5	9.1
Manganese	131		8.9	15.4	33.8	134	99	122	123
Mercury	0.12B	0.24	0.049 U	0.059 B	0.054 B	0.05 U	0.042 U	0.046 U	0.049 U
Nickel	9.1J	30	2.1 B	3 B	3.9 B	4.5 B	3.9 B	4.2 B	4.1 B
Silver	0.14	2	0.088 U	0.091 U	0.087 U	0.087 U	0.089 U	0.087 U	0.088 U
Zinc	30.8	50	10	17.4	19.1	19.2	14.3	12.5	13

Organic Qualifiers
U: Compound analyzed but not detected
J: Estimated valuc
P: Regarding CLP, flag is used for a Pesticide/Aloclor analyte, when there is > 25% difference for detected concentrations between the two GC columns. The lower of the two values is flagged "P". Regarding SW-846 GC and HPLC analyses, when RPD > 40%, then the h

Inorganic Qualifiers
U: Analyte analyzed but not detected
B: Analyte analyzed for and the reported value was obtained from a reading less than the Contract Required Detection Limit but greater than or equal to the Instrument Detection Limit.
E: Estimated value
J: Estimated value
N; This flag indicates the sample spike recovery is outside of control limits.



LEGEND

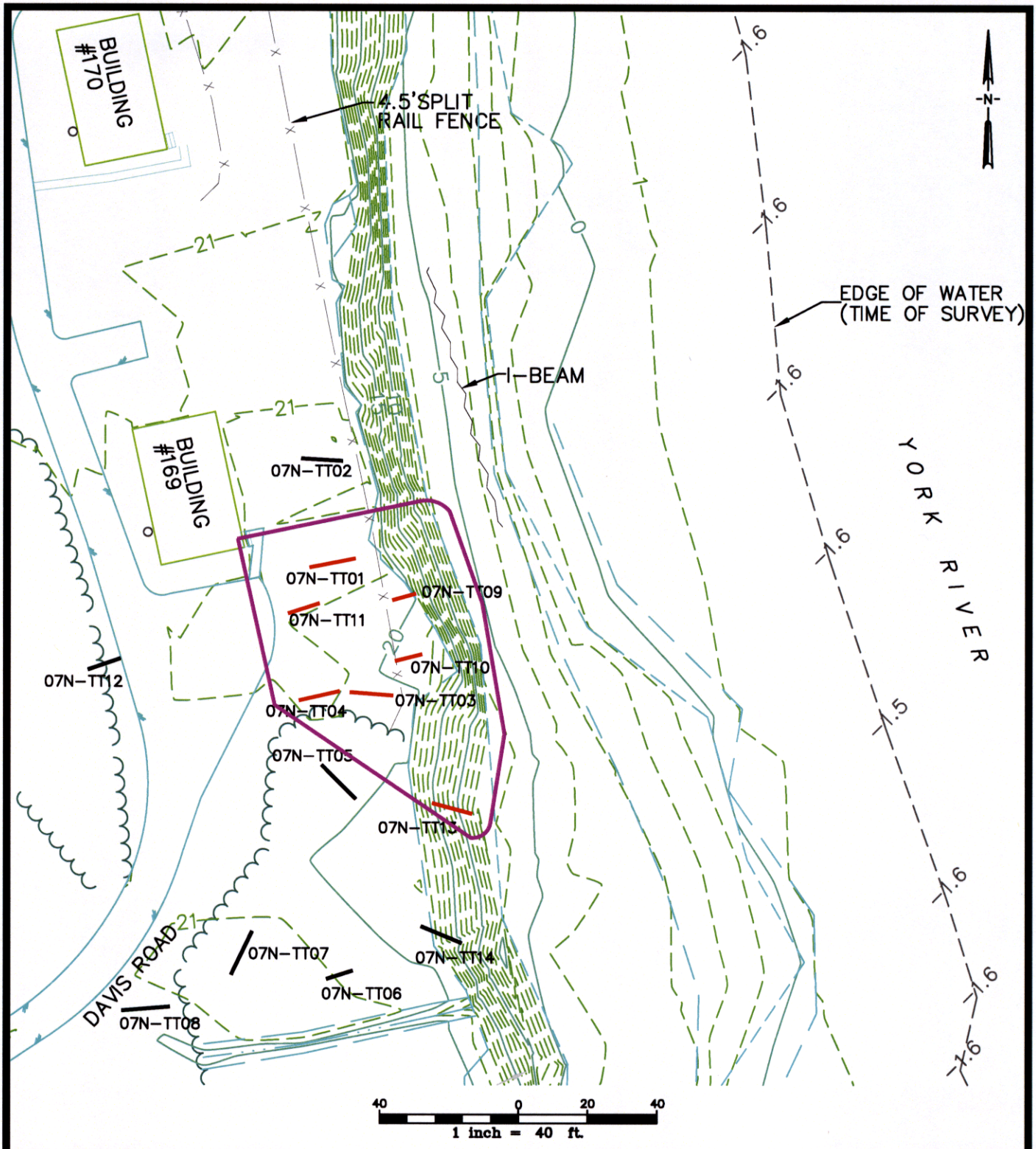
TRENCH LOCATION (NO ASH/DEBRIS)

TRENCH LOCATION (ASH/DEBRIS OBSERVED)

SURVEY PREPARED BY PHRA 4/04

FIGURE 1
TEST TRENCH LOCATIONS
SITE 7N

NAVAL WEAPONS STATION YORKTOWN
CHEATHAM ANNEX SITE



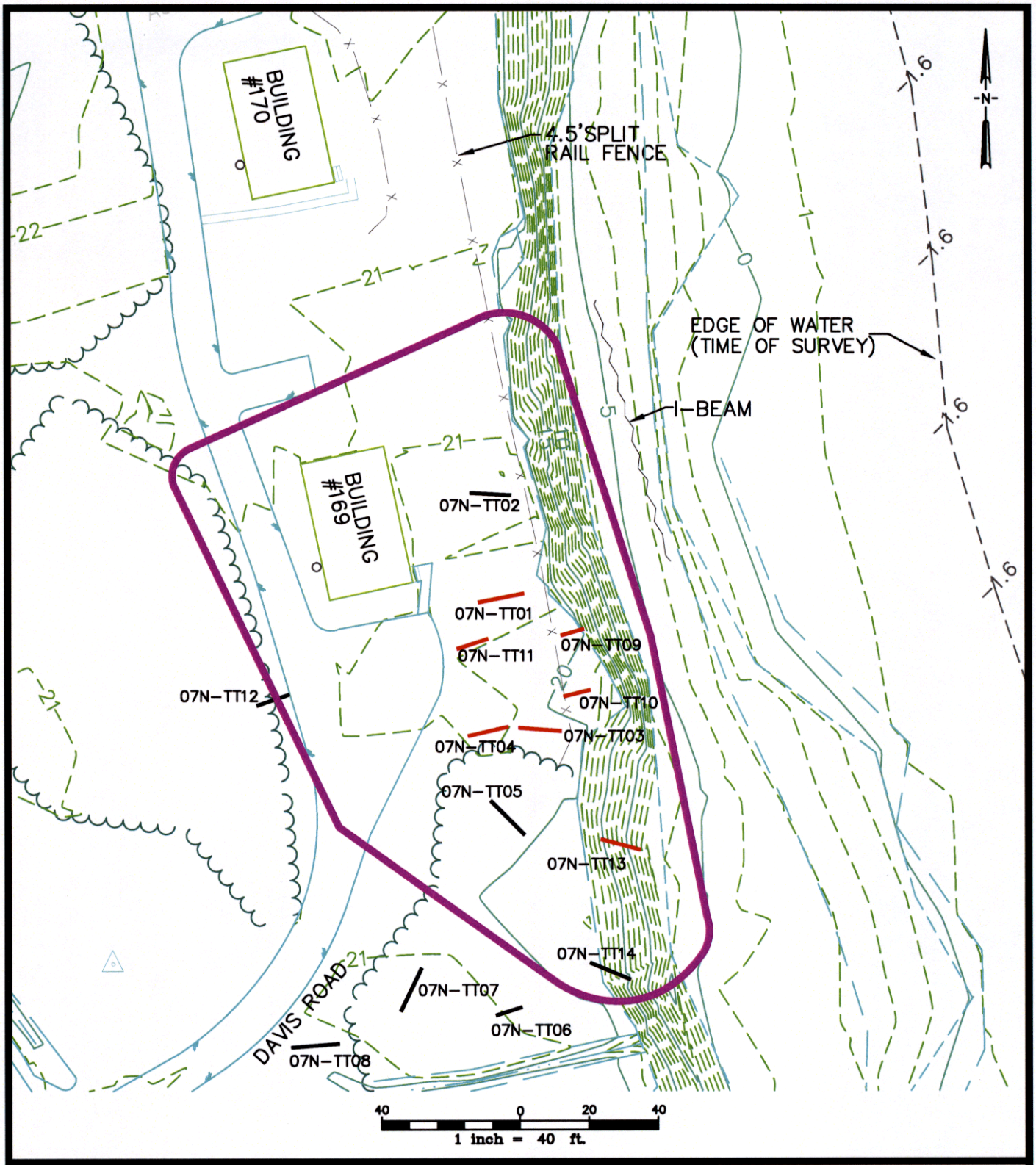
LEGEND

- TRENCH LOCATION (NO ASH/DEBRIS)
- TRENCH LOCATION (ASH/DEBRIS OBSERVED)
- APPROXIMATE BOUNDARY OF ASH/DEBRIS

SURVEY PREPARED BY PHRA 4/04

FIGURE 2
PRELIMINARY WASTE BOUNDARY
2/10/04
SITE 7N

NAVAL WEAPONS STATION YORKTOWN
CHEATHAM ANNEX SITE



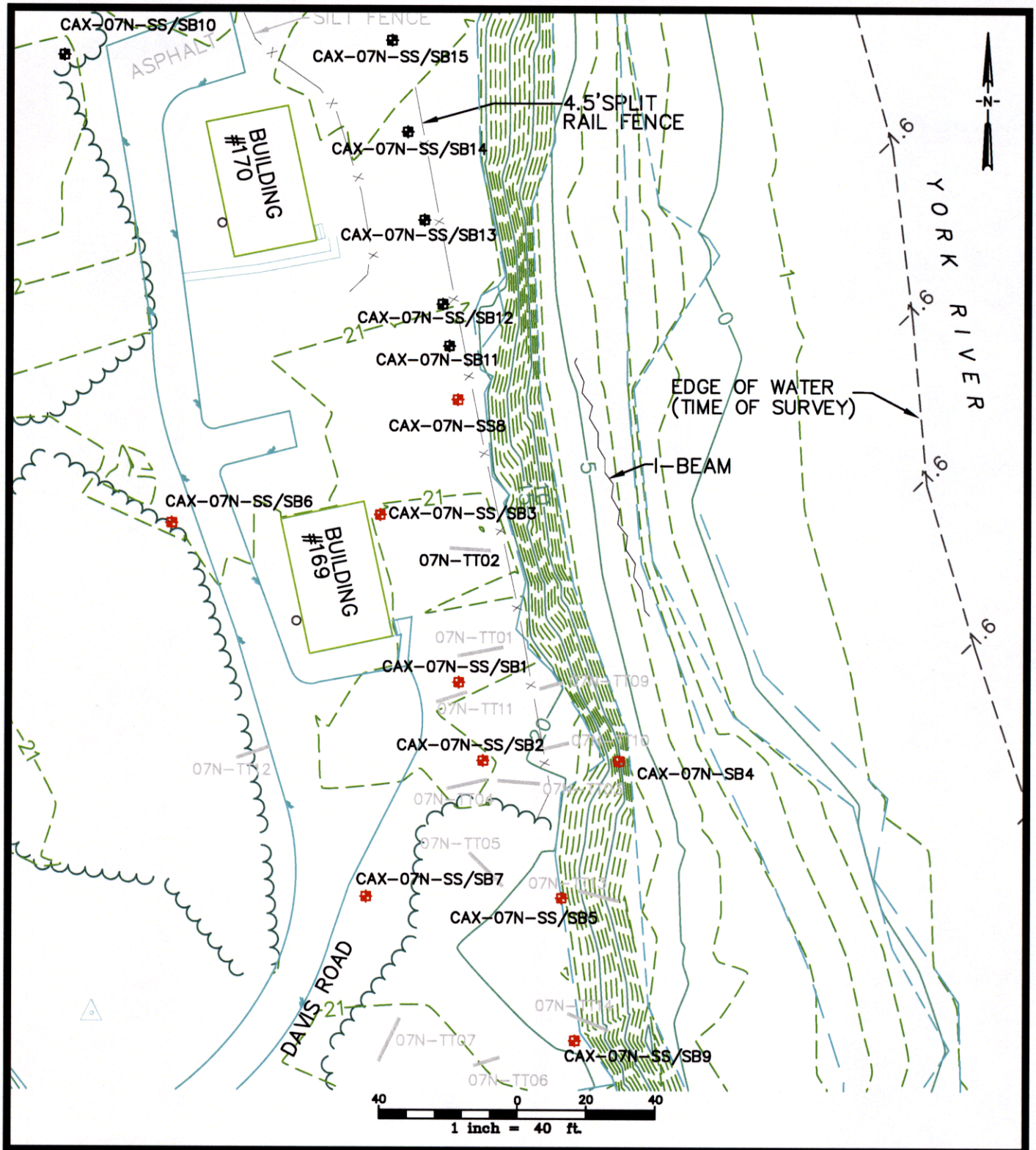
LEGEND

- TRENCH LOCATION (NO ASH/DEBRIS)
- TRENCH LOCATION (ASH/DEBRIS OBSERVED)
- APPROXIMATE BOUNDARY OF ASH/DEBRIS

SURVEY PREPARED BY PHRA 4/04

FIGURE 3
REVISED WASTE BOUNDARY
3/1/04
SITE 7N

NAVAL WEAPONS STATION YORKTOWN
CHEATHAM ANNEX SITE



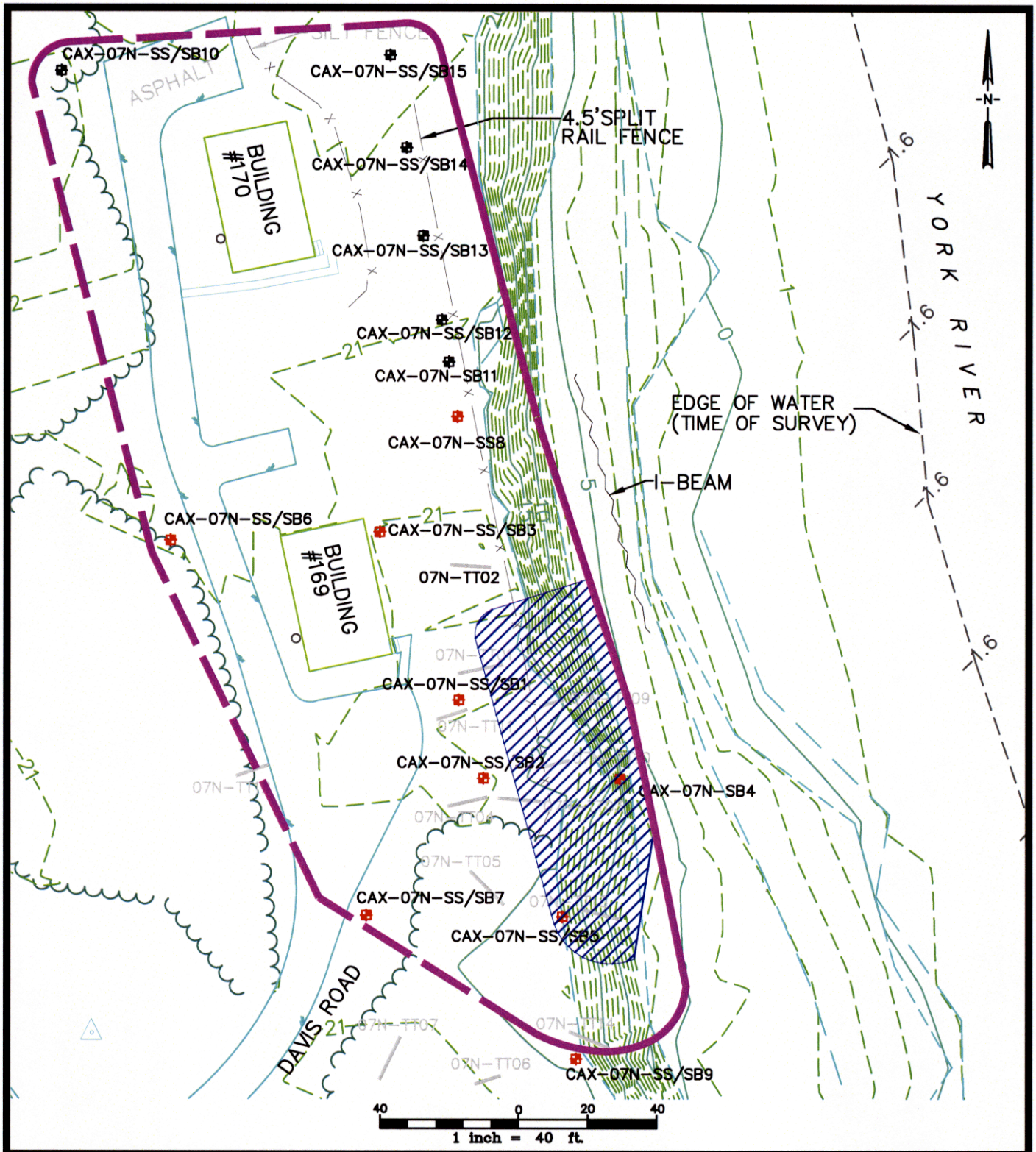
LEGEND

- TRENCH LOCATION
- SOIL SAMPLE LOCATION (MARCH 2004)
- SOIL SAMPLE LOCATION (APRIL 2004)

SURVEY PREPARED BY PHRA 4/04

FIGURE 4
SOIL SAMPLE LOCATIONS
SITE 7N

NAVAL WEAPONS STATION YORKTOWN
CHEATHAM ANNEX SITE



LEGEND

- TRENCH LOCATION
- APPROXIMATE BOUNDARY OF WASTE/DEBRIS
- ESTIMATED BOUNDARY OF WASTE/DEBRIS
- SOIL SAMPLE LOCATION (MARCH 2004)
- SOIL SAMPLE LOCATION (APRIL 2004)
- PRIMARY AREA OF DEBRIS

SURVEY PREPARED BY PHRA 4/04

FIGURE 5
REVISED WASTE BOUNDARY
5/28/04
SITE 7N

NAVAL WEAPONS STATION YORKTOWN
CHEATHAM ANNEX SITE

(Note: Photos taken 2/10/2004, unless otherwise noted.)

Photo 1 – Slope Damage from Hurricane Isabel

(Facing north. Cabin 170 in upper left of frame.)

(Photo taken 2/6/2004 and courtesy of Mr. Al Farrow, Deputy PWO, PWC Peninsula Site)

Photo 2 – Slope and Shoreline Damage from Hurricane Isabel

(Facing north-northwest.)

Photo 3 – Slope Damage from Hurricane Isabel

(Facing west – back to York River.)

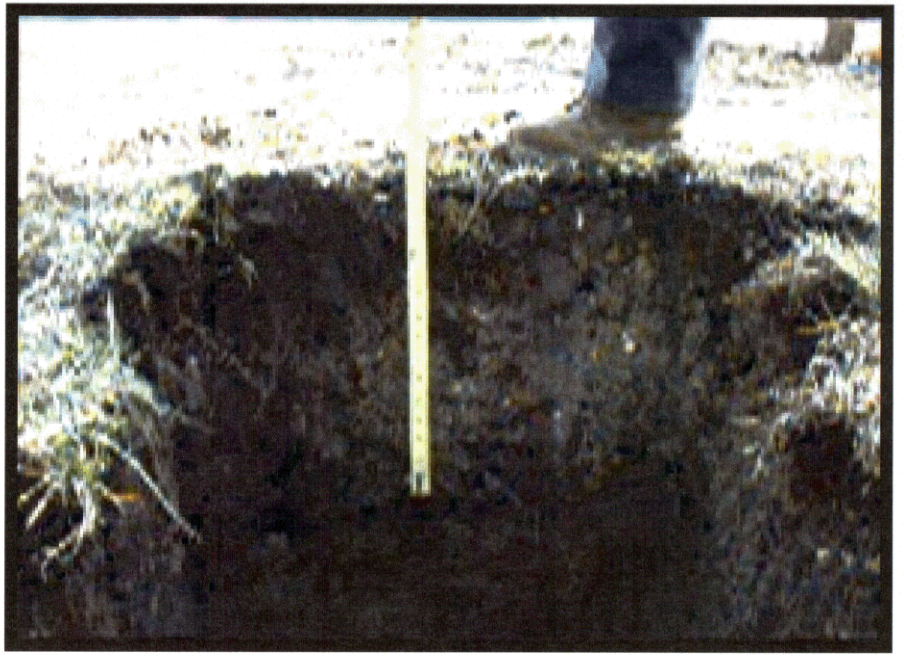


Photo 4 – Test Trench 1

(Facing east – debris/ash layer thickness (1'))

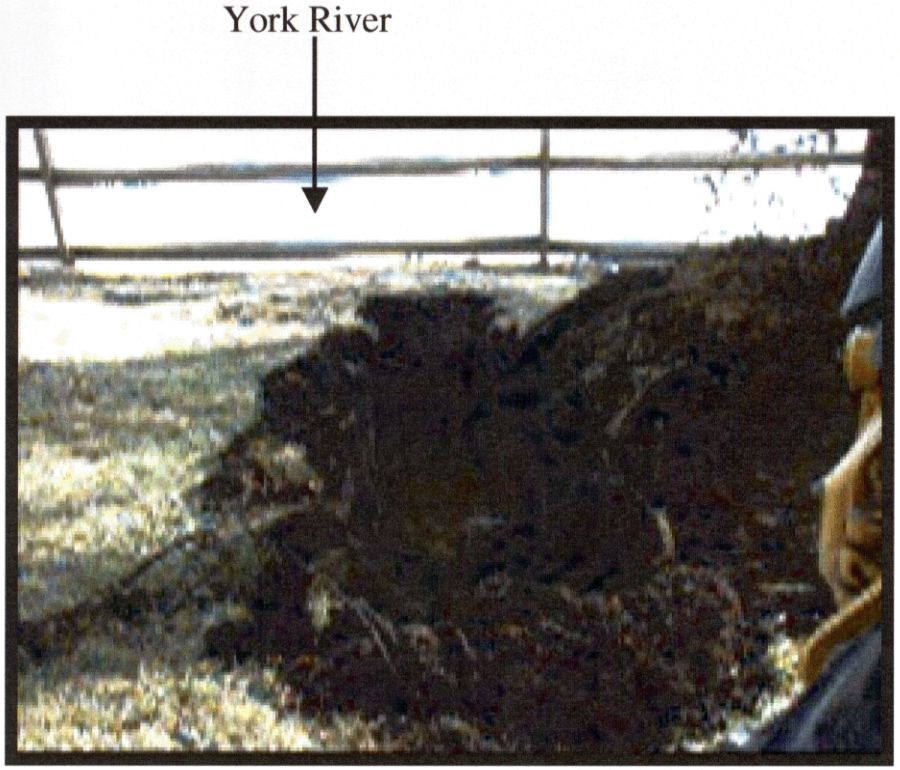


Photo 5 – Test Trench 1

(Facing east – trench lengthwise)

Photo 6 – Test Trench 2

(Facing east – trench profile)

Photo 7 – Test Trench 3

(Facing east – trench lengthwise)

Photo 8 – Test Trench 3

(Facing east – close-up of trench profile)

Photo 9 – Test Trench 4

(Facing east – trench lengthwise)

Photo 10 – Test Trench 4

(South side wall – close-up of ash (white) layer to right of orange pin flag)

Photo 11 – Test Trench 5

(Facing east – trench lengthwise)

Photo 12 – Test Trench 5

(Facing east – close-up of east wall profile)

Photo 13 – Surface Debris at Test Trench 5

(Piece of highly weathered insulation or dry wall found just below the ground surface at Test Trench 5. This building material was a more recent dump and not related to the Penniman-era debris/ash found along the slope and in other trenches.)

Photo 14 – Test Trench 6

(Facing east – trench lengthwise)

Photo 15 – Test Trench 6

(Facing east – east wall profile)

Photo 16 – Test Trench 7

(Facing north-northwest – trench lengthwise)

Photo 17 – Test Trench 8

(Facing east-northeast – trench lengthwise)

Photo 18 – Test Trench 9

(Facing southeast – backhoe reaching over fence and clearing before dig)

Photo 19 – Test Trench 9

(Facing west – trench profile)

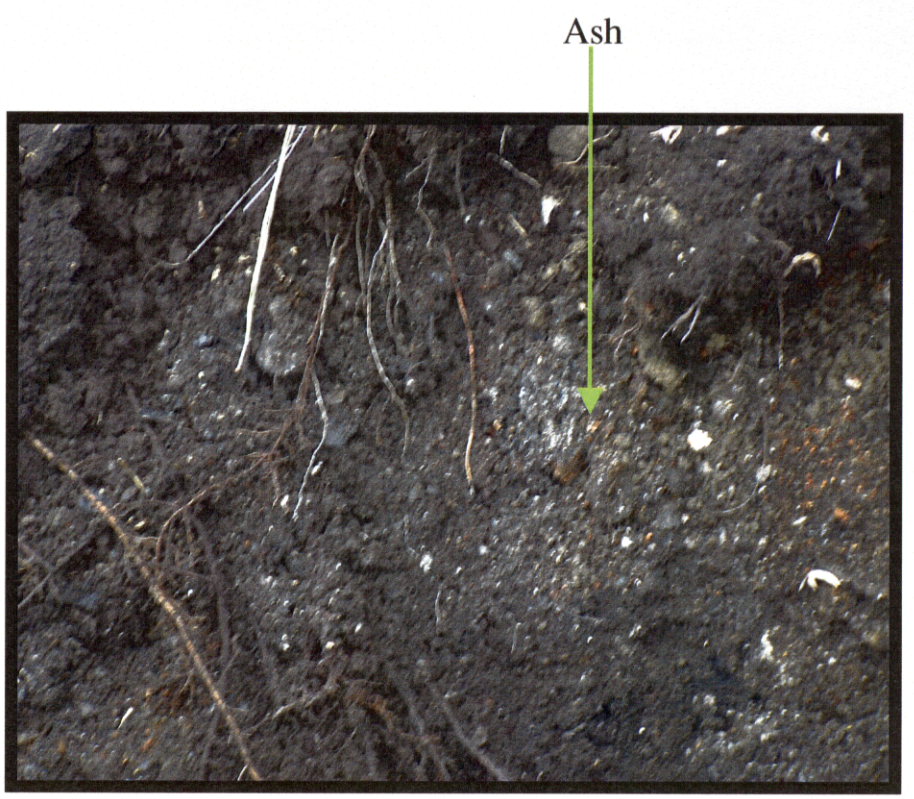


Photo 20 – Test Trench 9

(Facing north – close-up of ash layer in north wall)

Photo 21 – Test Trench 9

(Facing east – trench lengthwise)

Photo 22 – Test Trench 10

(Facing southeast)

Photo 23 – Test Trench 10

(Facing southeast)

Photo 24 – Test Trench 10

(Facing east – trench lengthwise)

Photo 25 – Test Trench 10

(Facing east – bottom of trench)

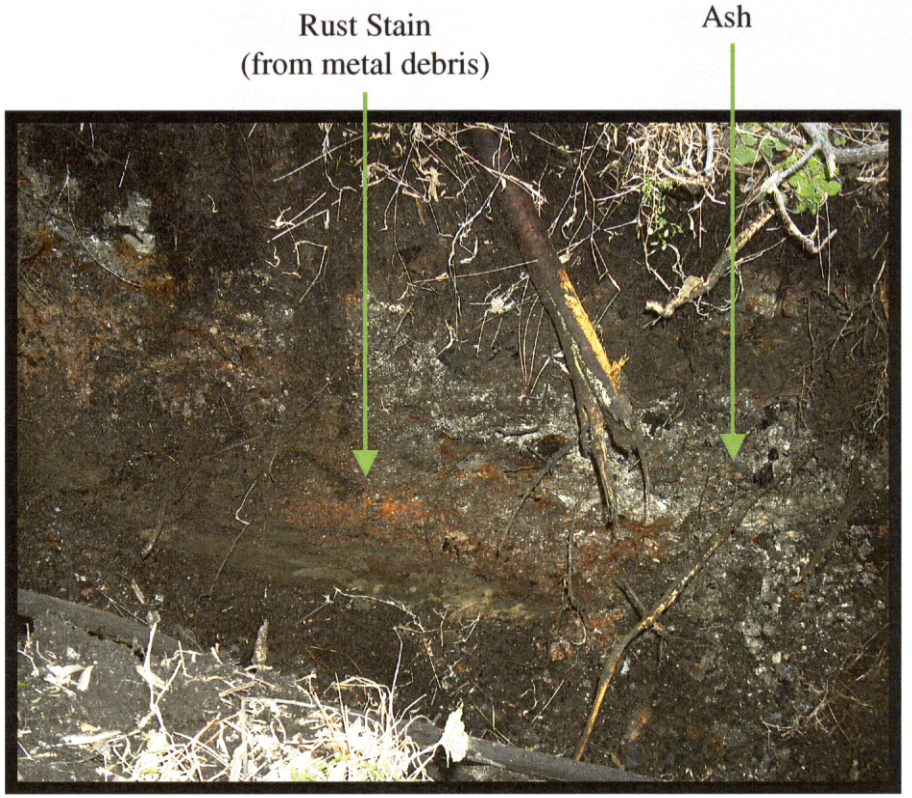


Photo 26 – Test Trench 10

(Facing north – north wall ash layer)

Photo 27 – Test Trench 11

(Facing east – trench lengthwise)

Photo 28 – Test Trench 11

(Facing south – south wall profile)

Photo 29 – Test Trench 11

(Facing north – north wall profile)

Photo 30 – Test Trench 12

(Facing west – trench lengthwise)

Photo 31 – Test Trench 13

(Facing southwest – trench lengthwise, looking up the slope with back to York River)

Photo 32 – Test Trench 13

(Facing southwest – bottom of trench, looking up the slope with back to York River)

Photo 33 – Test Trench 13

(Facing east – looking at trench lengthwise from top of slope)

Photo 34 – Test Trench 14

(Facing west – looking up the slope with back to York River)

Photo 35 – Test Trench 14

(Facing west – looking up the slope with
back to York River)

Site Restoration Following Trenching Activities (backfilling, grading, and seeding)

Photo 36

Photo 37

Jute Mat

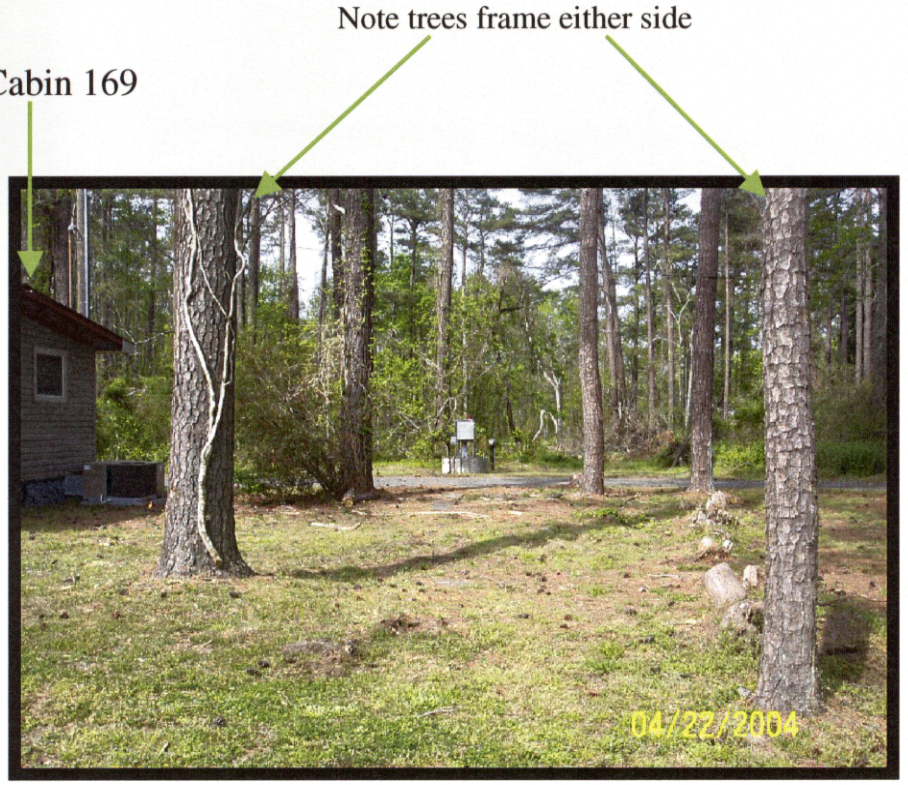


Photo 38 – Possible Old Road
(Source of Subsurface Gravel at and around Sample Location #8?)

(Facing west - back to fence line/York River)

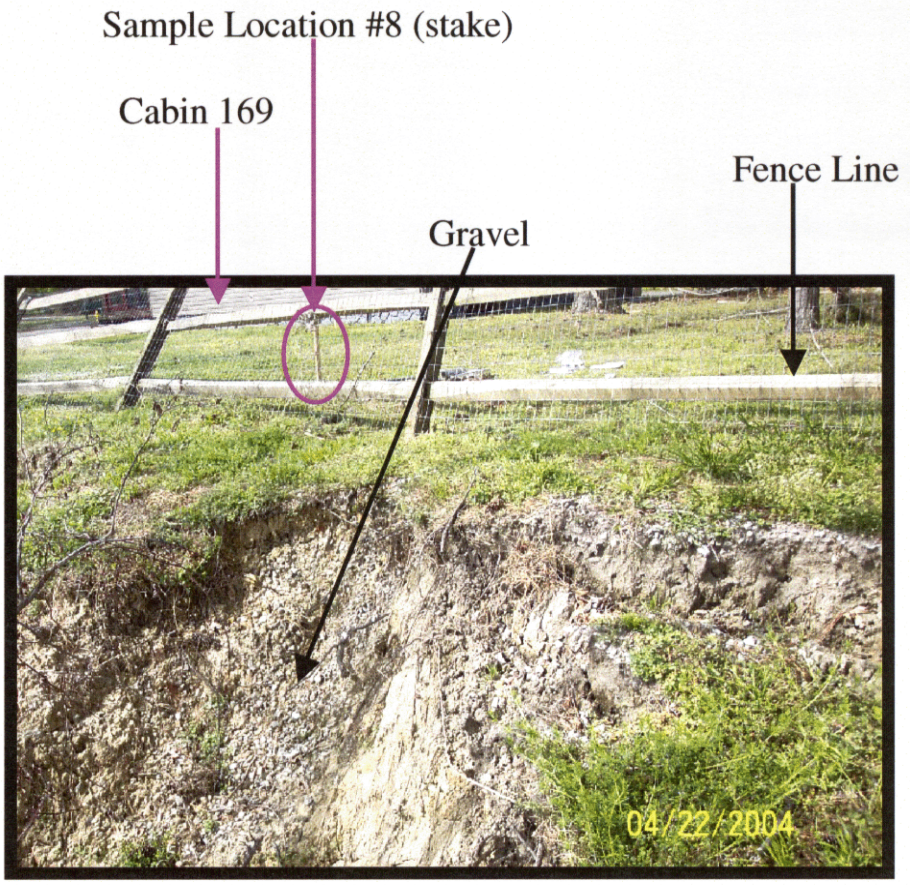


Photo 39 - Gravel Exposed in Slope

(Facing west – standing on slope edge and back to York River)

Photo 40 – Sample Location #10

APPENDIX B – Test Trench Records

Baker
Baker Environmental, Inc.

TEST TRENCH RECORD

Test Trench No.: 07N-TT01

Project: Cheatham Annex Site 7
Number: CTO 275

Date: 9-Feb-04
Weather: Partly Cloudy, Chilly
Upper 40s/Low 50s

Dimensions: Length = 13.5' Width = 2.5' Depth = 3.5'

Endpoint Coordinates:

NW	x	12033090.51	NE	x	12033106.89
	y	3636856.03		y	3636859.29
SW	x	12033090.29	SE	x	12033104.71
	y	3636854.04		y	3636856.84

AIR MONITORING

Time	PID Reading	Source
0943	0.0 ppm	BG
0950	0.0 ppm	PS

Definitions
PID = Photo Ionization Detector
BG = Background (in ppm)
PS = Point Source (in ppm)

TEST TRENCH CROSS SECTION

View: North Wall

West | East

0.0 ft — Ground Surface - Landscaped grass

0 to 4" - Black, rich top soil layer, damp. No ash or debris.

0.5 ft

4 to 16" - Ash Layer with misc. glass and metal fragments

1.0 ft

1.5 ft

16 to 28" - Brown silt, damp. No ash or debris.

2.0 ft

2.5 ft

3.0 ft — 28" to 3.5' - Beige silt with little clay and fine sand, moist. No ash or debris.

3.5 ft — (Bottom of Test Trench)

Note: Ash layer goes from 12" to approx. 4" thick east to west toward the Cabin 169 parking area.

Contractor: IMS Environmental, Inc.
Equipment: Backhoe with extended bucket

Baker Rep.: Marlene Ivester

Baker
Baker Environmental, Inc.

TEST TRENCH RECORD

Test Trench No.: 07N-TT02

Project: Cheatham Annex Site 7
Number: CTO 275

Date: 9-Feb-04
Weather: Partly Cloudy, Chilly
Upper 40s/Low 50s

Dimensions: Length = 12.0' Width = 2.5' Depth = 2.0'

Endpoint Coordinates:

NW	x	12033090.07	NE	x	12033101.08
	y	3636884.77		y	3636884.25
SW	x	12033089.10	SE	x	12033101.69
	y	3636881.88		y	3636881.08

AIR MONITORING

Time	PID Reading	Source
1045	0.0 ppm	BG
1050	0.0 ppm	PS

Definitions
PID = Photo Ionization Detector
BG = Background (in ppm)
PS = Point Source (in ppm)

TEST TRENCH CROSS SECTION
View: North Wall

West		East
0.0 ft	Ground Surface - Landscaped grass	0.0 ft
0.5 ft	0 to 8" - Black, rich top soil layer, damp. No ash or debris.	0.5 ft
1.0 ft	8 to 18" - Brown silt, damp. No ash or debris.	1.0 ft
1.5 ft		1.5 ft
2.0 ft	18 to 24" - Beige silt w/ little clay and fine sand, moist. No ash or debris.	2.0 ft
	(Bottom of Test Trench)	

Note: No ash layer. Found a piece of a dish and a spoon and nothing else.

Contractor: IMS Environmental, Inc.
Equipment: Backhoe with extended bucket

Baker Rep.: Marlene Ivester

Baker
Baker Environmental, Inc.

TEST TRENCH RECORD

Test Trench No.: 07N-TT03

Project: Cheatham Annex Site 7
Number: CTO 275

Date: 9-Feb-04
Weather: Partly Cloudy, Chilly
Upper 40s/Low 50s

Dimensions: Length = 12.5' Width = 2.5' Depth = 4.0'

Endpoint Coordinates:

NW	x	12033104.62	NE	x	12033114.03
	y	3636819.59		y	3636817.77
SW	x	12033104.71	SE	x	12033113.56
	y	3636815.52		y	3636815.99

AIR MONITORING

Time	PID Reading	Source
1125	0.0 ppm	BG
1130	0.0 ppm	PS

Definitions
PID = Photo Ionization Detector
BG = Background (in ppm)
PS = Point Source (in ppm)

TEST TRENCH CROSS SECTION
View: North Wall

West | East

0.0 ft — Ground Surface - Landscaped grass
0 to 2" - Black, rich to soil layer, damp. No ash or debris.
0.5 ft — 2 to 5" - Ash/cinder-debris layer.
5 to 15" - Brown silt, damp. No ash or debris.
1.0 ft
1.5 ft
15 to 33" - Beige silt w/ little clay and fine sand, moist. No ash or debris.
2.0 ft
2.5 ft
3.0 ft
33 to 48" - Orange-brown silt w/ some clay and little fine sand, moist. No ash or debris.
3.5 ft
4.0 ft — (Bottom of Test Trench)

Note: Pieces of metal and coal noted in ash layer.
Didn't see much glass, except what was on the ground surface.

Contractor: IMS Environmental, Inc.
Equipment: Backhoe with extended bucket

Baker Rep.: Marlene Ivester

Baker
Baker Environmental, Inc.

TEST TRENCH RECORD

Test Trench No.: 07N-TT04

Project: Cheatham Annex Site 7
Number: CTO 275

Date: 9-Feb-04
Weather: Partly Cloudy, Chilly
Upper 40s/Low 50s

Dimensions: Length = 12.0' Width = 2.5' Depth = 20"

Endpoint Coordinates:

NW	x	12033086.00	NE	x	12033099.54
	y	3636817.35		y	3636819.70
SW	x	12033076.74	SE	x	12033100.16
	y	3636810.15		y	3636816.25

AIR MONITORING

Time	PID Reading	Source
1205	0.0 ppm	BG
1210	0.0 ppm	PS

Definitions
PID = Photo Ionization Detector
BG = Background (in ppm)
PS = Point Source (in ppm)

TEST TRENCH CROSS SECTION
View: North Wall

West — East

0.0 ft — Ground Surface - Landscaped grass
0 to 2" - Black, rich to soil layer, damp. No ash or debris.
0.5 ft — 2 to 5" - Ash/cinder-debris layer.
1.0 ft — 5 to 20" - Brown silt, damp. No ash or debris.
1.5 ft
2.0 ft — (Bottom of Test Trench)

Note: Saw same ash/cinder layer as in Test Trench 07N-TT03. Some glass pieces near surface.

Contractor: IMS Environmental, Inc.
Equipment: Backhoe with extended bucket

Baker Rep.: Marlene Ivester

Baker
Baker Environmental, Inc.

TEST TRENCH RECORD

Test Trench No.: 07N-TT05

Project: Cheatham Annex Site 7
Number: CTO 275

Date: 9-Feb-04
Weather: Partly Cloudy, Chilly
Upper 40s/Low 50s

Dimensions: Length = 14.0' Width = 2.5' Depth = 5.0'

Endpoint Coordinates:

NW	x	12033094.25	NE	x	12033105.38
	y	3636801.43		y	3636788.99
SW	x	12033095.21	SE	x	12033106.00
	y	3636791.82		y	3636782.14

AIR MONITORING

Time	PID Reading	Source
1240	0.0 ppm	BG
1245	0.0 ppm	PS

Definitions
PID = Photo Ionization Detector
BG = Background (in ppm)
PS = Point Source (in ppm)

TEST TRENCH CROSS SECTION
View: North Wall

West		East
0.0 ft	Ground Surface - Sparsely wooded area. Few understory plants and vines.	0.0 ft
	0 to 1" - Dark brown silt with some organics, damp. No ash or debris.	
0.5 ft		0.5 ft
1.0 ft	1 to 19" - Brown silt, damp. No ash or debris.	1.0 ft
1.5 ft		1.5 ft
2.0 ft		2.0 ft
2.5 ft	19 to 37" - Beige silt with little clay and fine sand, moist. No ash or debris.	2.5 ft
3.0 ft		3.0 ft
3.5 ft		3.5 ft
4.0 ft	37 to 60" - Orange-brown silt with some clay and little fine sand, damp. No ash or debris. Clay turn light gray at bottom of trench (i.e., at 5.0')	4.0 ft
4.5 ft		4.5 ft
5.0 ft		5.0 ft
	(Bottom of Test Trench)	

Note: No ash layer, glass or debris seen in trench.

Did uncover, near groundsurface on the east wall, what looks like old insulation or dry wall. Was fiberous and very weathered. Obvious surface dump of probably less than 10 or so years. Not much there, maybe a small backhoe bucket full.

Contractor: IMS Environmental, Inc.
Equipment: Backhoe with extended bucket

Baker Rep.: Marlene Ivester

Baker
Baker Environmental, Inc.

TEST TRENCH RECORD

Test Trench No.: 07N-TT06

Project: Cheatham Annex Site 7
Number: CTO 275

Date: 9-Feb-04
Weather: Partly Cloudy, Chilly
Upper 40s/Low 50s

Dimensions: Length = 11.0' Width = 2.5' Depth = 5.5'

Endpoint Coordinates:

NW	x	12033095.59	NE	x	12033103.82
	y	3636734.59		y	3636738.61
SW	x	12033093.58	SE	x	12033103.73
	y	3636733.53		y	3636735.33

AIR MONITORING

Time	PID Reading	Source
1340	0.0 ppm	BG
1345	0.0 ppm	PS

Definitions
PID = Photo Ionization Detector
BG = Background (in ppm)
PS = Point Source (in ppm)

TEST TRENCH CROSS SECTION

View: North Wall

West | East

0.0 ft — Ground Surface - Sparsely wooded area. Few understory plants and vines.

0.5 ft — 0 to 6" - Dark brown silt with some organics, damp. No ash or debris.

1.0 ft — 6 to 16" - Brown silt, damp. No ash or debris.

1.5 ft

2.0 ft — 16 to 29" - Beige silt with little clay and fine sand, moist. No ash or debris.

2.5 ft

3.0 ft

3.5 ft

4.0 ft — 29 to 66" - Orange-brown silt with some clay and little fine sand, damp. No ash or debris. Clay turn light gray at bottom of trench (i.e., at 5.5')

4.5 ft

5.0 ft

5.5 ft — (Bottom of Test Trench)

Note: No ash layer, glass or debris seen in trench.

Contractor: IMS Environmental, Inc.
Equipment: Backhoe with extended bucket

Baker Rep.: Marlene Ivester

Baker
Baker Environmental, Inc.

TEST TRENCH RECORD

Test Trench No.: 07N-TT07

Project: Cheatham Annex Site 7
Number: CTO 275

Date: 9-Feb-04
Weather: Partly Cloudy, Chilly
Upper 40s/Low 50s

Dimensions: Length = 14.0' Width = 2.5' Depth = 6.0'

Endpoint Coordinates:

NW	x	12033069.09	NE	x	12033073.43
	y	3636739.22		y	3636746.66
SW	x	12033071.11	SE	x	12033074.26
	y	3636738.57		y	3636746.54

AIR MONITORING

Time	PID Reading	Source
1355	0.0 ppm	BG
1400	0.0 ppm	PS

Definitions
PID = Photo Ionization Detector
BG = Background (in ppm)
PS = Point Source (in ppm)

TEST TRENCH CROSS SECTION

View: North Wall

West		East
0.0 ft	Ground Surface - Sparsely wooded area. Few understory plants and vines.	0.0 ft
0.5 ft	0 to 6" - Dark brown silt with some organics, damp. No ash or debris.	0.5 ft
1.0 ft	6 to 16" - Brown silt, damp. No ash or debris.	1.0 ft
1.5 ft		1.5 ft
2.0 ft	16 to 28" - Beige silt with little clay and fine sand, moist. No ash or debris.	2.0 ft
2.5 ft		2.5 ft
3.0 ft		3.0 ft
3.5 ft		3.5 ft
4.0 ft	28 to 66" - Orange-brown silt with some clay and little fine sand, damp. No ash or debris.	4.0 ft
4.5 ft		4.5 ft
5.0 ft		5.0 ft
5.5 ft		5.5 ft
6.0 ft	66 to 72" - Light gray clay with some silt and some orange mottling, damp. No ash or debris.	6.0 ft
	(Bottom of Test Trench)	

Note: No ash layer, glass or debris seen in trench.

Contractor: IMS Environmental, Inc.
Equipment: Backhoe with extended bucket

Baker Rep.: Marlene Ivester

Baker
Baker Environmental, Inc.

TEST TRENCH RECORD

Test Trench No.: 07N-TT08

Project: Cheatham Annex Site 7
Number: CTO 275

Date: 9-Feb-04
Weather: Partly Cloudy, Chilly
Upper 40s/Low 50s

Dimensions: Length = 14.0' Width = 2.5' Depth = 2.0'

Endpoint Coordinates:

NW	x	12033036.65	NE	x	12033047.07
	y	3636728.56		y	3636727.75
SW	x	12033037.31	SE	x	12033048.54
	y	3636722.07		y	3636724.65

AIR MONITORING

Time	PID Reading	Source
1445	0.0 ppm	BG
1450	0.0 ppm	PS

Definitions
PID = Photo Ionization Detector
BG = Background (in ppm)
PS = Point Source (in ppm)

TEST TRENCH CROSS SECTION

View: North Wall

West		East
0.0 ft	Ground Surface - Landscaped grass	0.0 ft
	0 to 4" - Dark brown silt with some organics, damp. No ash or debris.	
0.5 ft		0.5 ft
1.0 ft	4 to 16" - Brown silt, damp. No ash or debris.	1.0 ft
1.5 ft		1.5 ft
	16 to 24" - Beige silt with little clay and fine sand, moist. No ash or debris.	
2.0 ft		2.0 ft
	(Bottom of Test Trench)	

Note: No ash layer, glass or debris seen in trench.

Contractor: IMS Environmental, Inc.
Equipment: Backhoe with extended bucket

Baker Rep.: Marlene Ivester

Baker
Baker Environmental, Inc.

TEST TRENCH RECORD

Test Trench No.: 07N-TT09

Project: Cheatham Annex Site 7
Number: CTO 275

Date: 9-Feb-04
Weather: Partly Cloudy, Chilly
Upper 40s/Low 50s

Dimensions: Length = 7.0' Width = 3.0' Depth = 34"

Endpoint Coordinates:

NW	x	12033112.27	NE	Top of Slope*
	y	3636850.39		
SW	x	12033115.47	SE	Top of Slope*
	y	3636843.71		

AIR MONITORING

Time	PID Reading	Source
1500	0.0 ppm	BG
1505	0.0 ppm	PS

Definitions
PID = Photo Ionization Detector
BG = Background (in ppm)
PS = Point Source (in ppm)

TEST TRENCH CROSS SECTION

View: North Wall

West		East
0.0 ft	Ground Surface - Some grass, vines and weeds	0.0 ft
	0 to 4" - Dark brown silt, w/ some organics, damp.	
0.5 ft		0.5 ft
	4 to 14" - Ash and debris layer - bricks, glassware, metal (same stuff seeing on shoreline)	
1.0 ft	This layer is thickest along the east wall and thins as head west towards fence line.	1.0 ft
1.5 ft		1.5 ft
	14 to 26" - Brown silt, damp. No ash or debris.	
2.0 ft		2.0 ft
2.5 ft		2.5 ft
	26" to 34"' - Beige silt with little clay and fine sand, moist. No ash or debris.	
	(Bottom of Test Trench)	

***Note:** This trench is located between the top of the slope and east of the fence line. Not a wide area and not safe to stand along the eastern edge to collect coordinates with the GPS, give the unstable, loose nature of the material.

Contractor: IMS Environmental, Inc.
Equipment: Backhoe with extended bucket

Baker Rep.: Marlene Ivester

Baker
Baker Environmental, Inc.

TEST TRENCH RECORD

Test Trench No.: 07N-TT10

Project: Cheatham Annex Site 7
Number: CTO 275

Date: 9-Feb-04
Weather: Partly Cloudy, Chilly
Upper 40s/Low 50s

Dimensions: Length = 7.0' Width = 3.0' Depth = 34"

Endpoint Coordinates:

NW	x	12033115.51	NE	Top of Slope*
	y	3636828.02		
SW	x	12033116.23	SE	Top of Slope*
	y	3636825.48		

AIR MONITORING

Time	PID Reading	Source
1535	0.0 ppm	BG
1540	0.0 ppm	PS

Definitions
PID = Photo Ionization Detector
BG = Background (in ppm)
PS = Point Source (in ppm)

TEST TRENCH CROSS SECTION

View: North Wall

West		East
0.0 ft	Ground Surface - Some grass, vines and weeds	0.0 ft
	0 to 4" - Dark brown silt, w/ some organics, damp.	
0.5 ft		0.5 ft
	4 to 32" - Ash and debris layer - bricks, glassware, metal (same stuff seeing on shoreline)	
1.0 ft	This layer is thickest along the east wall and thins as head west towards fence line.	1.0 ft
1.5 ft		1.5 ft
2.0 ft		2.0 ft
2.5 ft	32 to 38" - Brown silt, moist. No ash or debris.	2.5 ft
3.0 ft		3.0 ft
3.5 ft	38" to 42"' - Beige silt with little clay and fine sand, moist. No ash or debris.	3.5 ft
	(Bottom of Test Trench)	

*Note: This trench is located between the top of the slope and east of the fence line. Not a wide area and not safe to stand along the eastern edge to collect coordinates with the GPS, give the unstable, loose nature of the material.

Contractor: IMS Environmental, Inc.
Equipment: Backhoe with extended bucket

Baker Rep.: Marlene Ivester

Baker
Baker Environmental, Inc.

TEST TRENCH RECORD

Test Trench No.: 07N-TT11

Project: Cheatham Annex Site 7
Number: CTO 275

Date: 10-Feb-04
Weather: Cloudy, Chilly, Slight Breeze
Upper 40s/Low 50s

Dimensions: Length = 9.5' Width = 2.5' Depth = 27"

Endpoint Coordinates:

NW	x	12033087.61	NE	x	12033093.33
	y	3636840.24		y	3636843.06
SW	x	12033086.90	SE	x	12033095.54
	y	3636838.17		y	3636840.04

AIR MONITORING

Time	PID Reading	Source
0925	0.0 ppm	BG
0930	0.0 ppm	PS

Definitions
PID = Photo Ionization Detector
BG = Background (in ppm)
PS = Point Source (in ppm)

TEST TRENCH CROSS SECTION

View: North Wall

West | East

0.0 ft — Ground Surface - Landscaped grass

0 to 2" - Black, rich to soil layer, damp. No ash or debris.

0.5 ft

2 to 10" - Ash/cinder-debris layer with misc. glass and metal fragments

1.0 ft

10 to 22" - Brown silt, damp. No ash or debris.

1.5 ft

2.0 ft — 22 to 27" - Beige silt with little clay and fine sand, moist. No ash or debris.

(Bottom of Test Trench)

Note: Ash/cinder-debris layer seems to be consistent in thickness for length of trench, with some thinning as move west toward road.

Contractor: IMS Environmental, Inc.
Equipment: Backhoe with extended bucket

Baker Rep.: Marlene Ivester

Baker
Baker Environmental, Inc.

TEST TRENCH RECORD

Test Trench No.: 07N-TT12

Project: Cheatham Annex Site 7
Number: CTO 275

Date: 10-Feb-04
Weather: Cloudy, Chilly, Slight Breeze
Upper 40s/Low 50s

Dimensions: Length = 10.0' Width = 2.5' Depth = 1.5'

Endpoint Coordinates:

NW	x	12033027.84	NE	x	12033035.84
	y	3636825.37		y	3636827.84
SW	x	12033028.93	SE	x	12033037.51
	y	3636823.10		y	3636826.31

AIR MONITORING

Time	PID Reading	Source
1120	0.0 ppm	BG
1125	0.0 ppm	PS

Definitions
PID = Photo Ionization Detector
BG = Background (in ppm)
PS = Point Source (in ppm)

TEST TRENCH CROSS SECTION

View: North Wall

West | East

0.0 ft — Ground Surface - Landscaped grass — 0.0 ft

0.5 ft — 0 to 6" - Black, rich to soil layer, damp. No ash or debris. — 0.5 ft

1.0 ft — 1.0 ft

6 to 18" - Brown silt, damp. No ash or debris.

1.5 ft — 1.5 ft

(Bottom of Test Trench)

Note: No ash layer, glass or debris seen in trench.
Approximately from the edge of the road to two feet west of road, road bed (gravel and orange silt) noted.

Contractor: IMS Environmental, Inc.
Equipment: Backhoe with extended bucket

Baker Rep.: Marlene Ivester

Baker
Baker Environmental, Inc.

TEST TRENCH RECORD

Test Trench No.: 07N-TT13

Project: Cheatham Annex Site 7
Number: CTO 275

Date: 10-Feb-04
Weather: Cloudy, Chilly, Slight Breeze
Upper 40s/Low 50s

Dimensions: Length = ~12.0' Width = 2.5' Depth = ~30"

Endpoint Coordinates:

NW	x	12033131.25	NE	**
	y	3636785.81		
SW	x	12033130.44	SE	**
	y	3636783.07		

AIR MONITORING

Time	PID Reading	Source
1135	0.0 ppm	BG
1145	0.0 ppm	PS

Definitions
PID = Photo Ionization Detector
BG = Background (in ppm)
PS = Point Source (in ppm)

TEST TRENCH CROSS SECTION
View: North Wall

Ground Surface - Some grass, vines and weeds

***Note:** This test trench was east of Test Trench 07N-TT05 and down the side of the slope. The backhoe sat as close to the edge of the top of the slope as possible and the operator extended the bucket down slope as far as it could go, then scraped from near the toe of the slope up toward the top of the slope to reveal what was beneath the surface. The trench went from nearly the toe of the slope to the top of the slope and was approximately 12.0' in length. Because of the slope steepness, material continually sloughed from the side walls. Therefore, an exact soil profile and determination of debris layer thickness was difficult and is approximate. Generally, the soil was a dark, rich silt on top, followed by a brown silt, then a beige silt with little clay, similar/the same as what was seen in the other test trenches. The debris layer was estimated at approximately two feet thick and was near the top of the slope. No debris was noted within the toe of the slope.

A great deal of debris buried here - glass bottles, pieces of ceramic dishes, a lightbulb, bricks, metal, etc., the same as what is on the shoreline. An ash layer was not noted.

****Note:** The slope steepness did not allow for collection of GPS data at this point.
In addition, this trench is not on a horizontal plane, but is within/along a vertical slope.

Contractor: IMS Environmental, Inc.
Equipment: Backhoe with extended bucket

Baker Rep.: Marlene Ivester

Baker
Baker Environmental, Inc.

TEST TRENCH RECORD

Test Trench No.: 07N-TT14

Project: Cheatham Annex Site 7
Number: CTO 275

Date: 10-Feb-04
Weather: Cloudy, Chilly, Slight Breeze
Upper 40s/Low 50s

Dimensions: Length = ~12.0' Width = 2.5' Depth = ~30"

Endpoint Coordinates:

NW	x	12033124.06	NE	**
	y	3636751.01		
SW	x	12033122.78	SE	**
	y	3636748.6		

AIR MONITORING

Time	PID Reading	Source
1200	0.0 ppm	BG
1210	0.0 ppm	PS

Definitions
PID = Photo Ionization Detector
BG = Background (in ppm)
PS = Point Source (in ppm)

TEST TRENCH CROSS SECTION
View: North Wall

Ground Surface - Some grass, vines and weeds

***Note**: This test trench was east of Test Trench 07N-TT06 and down the side of the slope. The backhoe sat as close to the edge of the top of the slope as possible and the operator extended the bucket down slope as far as it could go, then scraped from near the toe of the slope up toward the top of the slope to reveal what was beneath the surface. The trench went from nearly the toe of the slope to the top of the slope and was approximately 12.0' in length. Because of the slope steepness, material continually sloughed from the side walls. Therefore, an exact soil profile was difficult and is approximate. Generally, the soil was a dark, rich silt on top, followed by a brown silt, then a beige silt with little little clay, similar/the same as what was seen in the other test trenches.

No debris or ash was noted in the trench, minus some surficial debris that was transported via gravity (i.e., some pipes that fell down slope from the top) or water (i.e., garbage brought in with the tide).

****Note**: The slope steepness did not allow for collection of GPS data at this point.
In addition, this trench is not on a horizontal plane, but is within/along a vertical slope.

Contractor: IMS Environmental, Inc.
Equipment: Backhoe with extended bucket

Baker Rep.: Marlene Ivester

APPENDIX C – Debris Photos

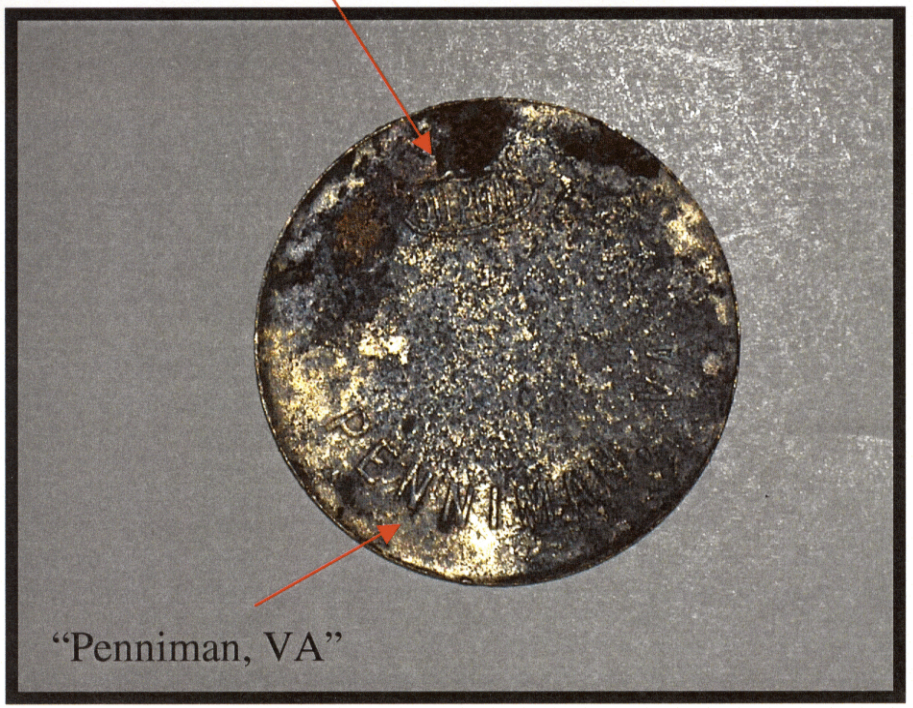


Photo 1: Copper Penniman "Coin"

Photo 2: Back Mark

"1862
Greenwood China
Trenton, N.J.
1876
Reg. U.S. Pat. Off"

Porcelain, earthenware. 20th Century (1868-ca. 1933)

Photo 3: Back Mark

"TST
Avona
China"

Taylor, Smith & Taylor. East Liverpool, OH.
Semivitreous ware (1908-ca. 1915)

Photo 4: Back Mark

"Chester
Hotel
China
Made in USA"

Taylor, Smith & Taylor. East Liverpool, OH.
Dinner/Restaurant ware (1915-1330)

Photo 5: Back Mark

"Dresden
China"

Potter's Cooperative Co. East Liverpool, OH
Hotel ware (1882-1925)

Photo 6: Back Mark

"HALL"

Hall China Co. East Liverpool, OH
Whiteware, Dinnerware (1903-Present)

Photo 7: Back Mark

"Homer Laughlin
Hotel
China"

Homer Laughlin China Co. East Liverpool, OH
Semivitreous hotel ware (ca.1901-ca.1915)

Photo 8 : Back Mark

"Vitreous
Edwin M. Knowles
China Co."

Edwin M. Knowles China Co. East Liverpool, OH
Semiporcelain (1900-1948)

Photo 9: Back Mark

"K.T.&K.
S---V
China
R.S.I."

Knowles, Taylor & Knowles. East Liverpool, OH
Semivitreous dinnerware (1870-1929)

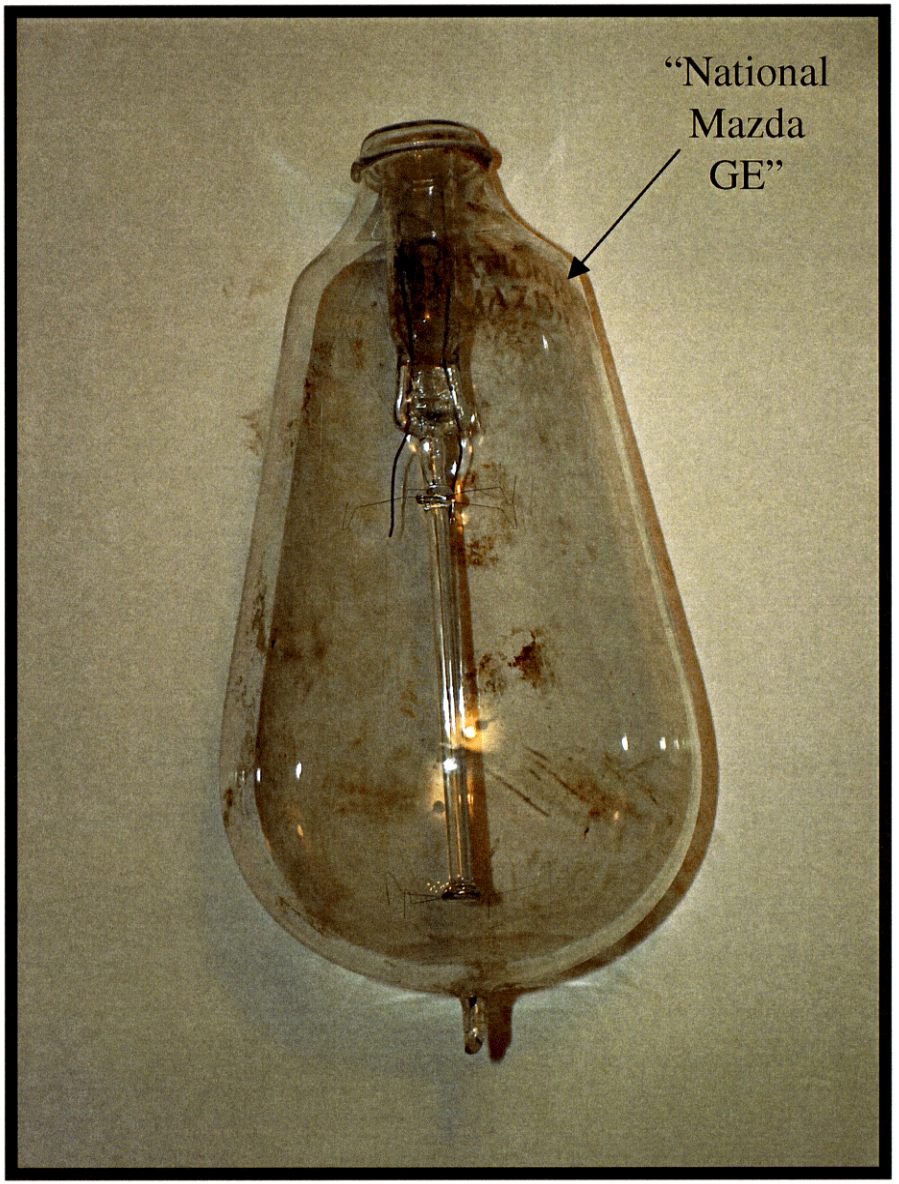


Photo 10: Light Bulb (minus base)

(The Mazda name first appeared in 1909. GE continued using the Mazda name until 1949.)

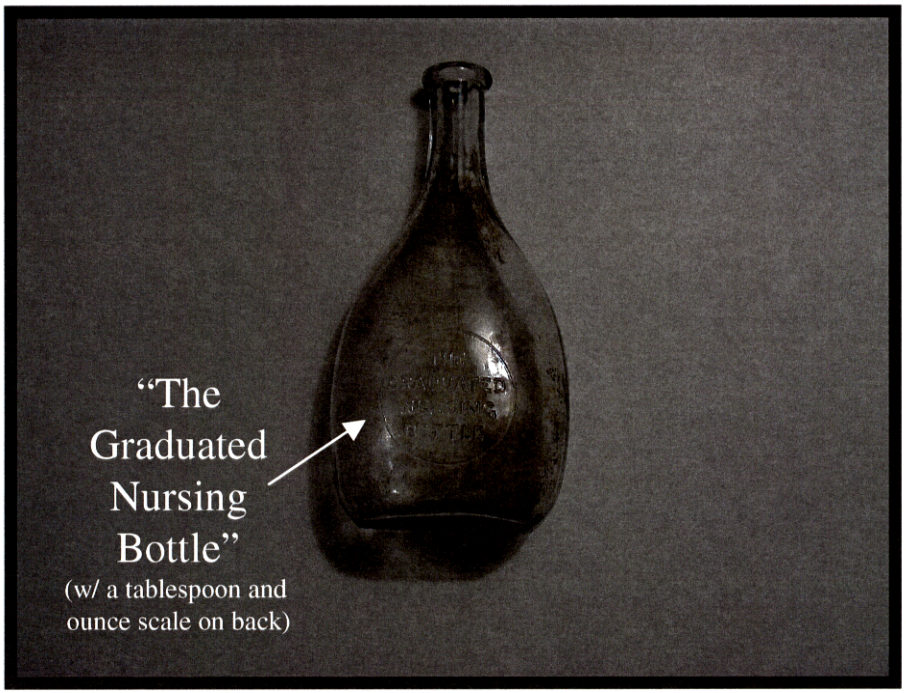


Photo 11: Glass Nursing Bottle
(Late 19th/Early 20th Century)

Photo 12: Misc. Medicine Bottles
(Late 19th/Early 20th Century)

Photo 13: Small Storage Jar (left) and Ink Bottles (center and right)
(Late 19th/Early 20th Century)

Photo 14: Small, Glass Jar Lid

(Possibly lid to jar of an apple product by Board, Armstrong and Company who began manufacturing cider vinegar in 1908 and apple products in 1918. Note the White House name and logo on the vinegar bottle at right is similar to that on the jar lid.)

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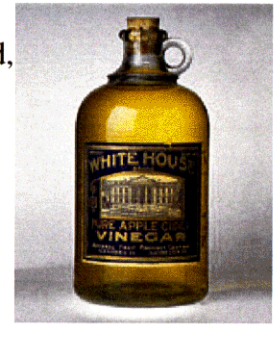

Photo 15: Ceramic Wire Insulators
(Late 19th/Early 20th Century)

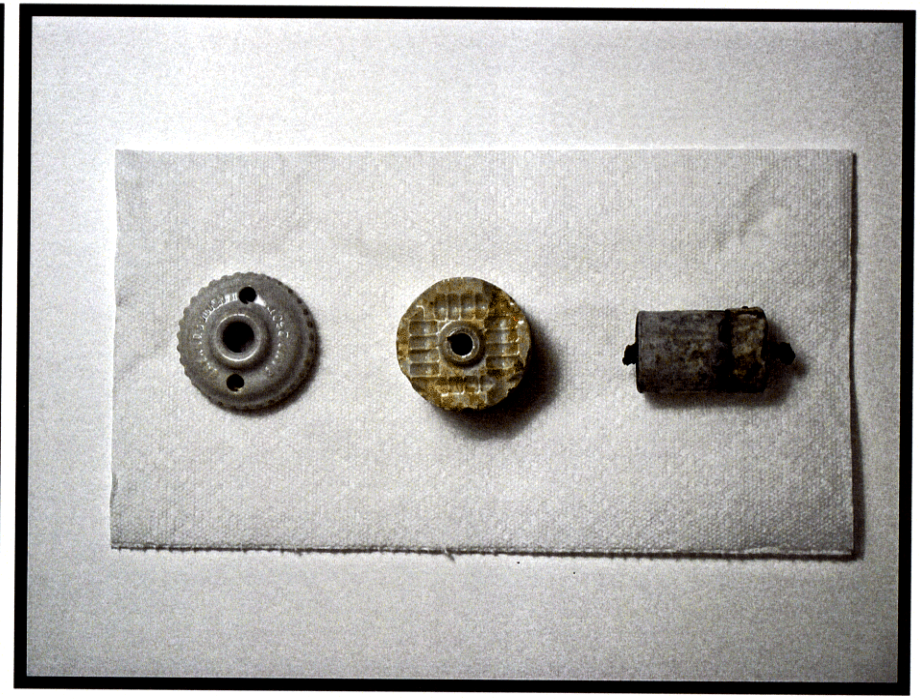

Photo 16: Ceramic Electrical Components
(Late 19th/Early 20th Century)

Photo 17: Melted Bottles
(Evidence of Incineration)

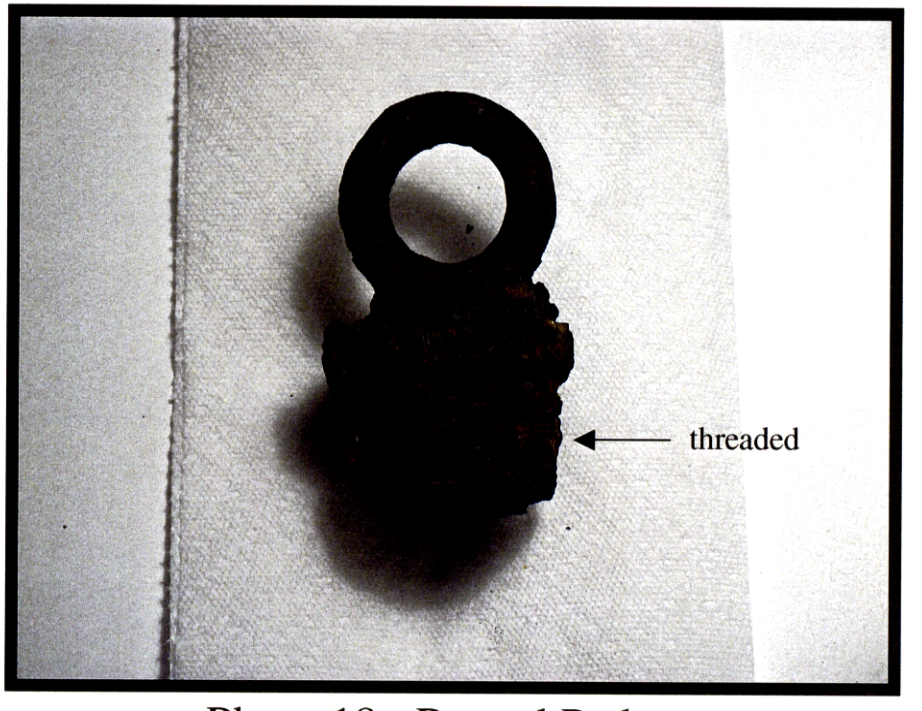

Photo 18: Rusted Padeye

[Note: Padeyes are used to hoist a variety of things, including bombs. Whether or not the padeyes found at Site 7N were used for bomb handling is unknown; they could have been discarded unused as well.]

APPENDIX D – Laboratory Results and COC's

March 2004 Sampling

(Results Validated)

CHEATHAM ANNEX
SITE 7N
SURFACE SOIL - ORGANIC COMPOUNDS
(DUPLICATES COMBINED)

SITE SAMPLE I.D.	CAX-07N-SS1-00	CAX-07N-SS2-00	CAX-07N-SS3-00	CAX-07N-SS5-00	CAX-07N-SS6-00	CAX-07N-SS7-00	CAX-07N-SS8-00	CAX-07N-SS9-00
LAB SAMPLE I.D.	239301	239304	239307	239310	239312	239314	239316	239317
SAMPLE DATE	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004
VOLATILES (ug/kg)								
1,1,1-TRICHLOROETHANE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
1,1,2,2-TETRACHLOROETHANE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHAN	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
1,1,2-TRICHLOROETHANE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
1,1-DICHLOROETHANE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
1,1-DICHLOROETHENE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
1,2,4-TRICHLOROBENZENE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
1,2-DIBROMO-3-CHLOROPROPANE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
1,2-DIBROMOETHANE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
1,2-DICHLOROBENZENE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
1,2-DICHLOROETHANE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
1,2-DICHLOROPROPANE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
1,3-DICHLOROBENZENE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
1,4-DICHLOROBENZENE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
2-BUTANONE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
2-HEXANONE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
4-METHYL-2-PENTANONE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
ACETONE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
BENZENE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
BROMODICHLOROMETHANE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
BROMOFORM	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
BROMOMETHANE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
CARBON DISULFIDE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
CARBON TETRACHLORIDE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
CHLOROBENZENE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
CHLOROETHANE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
CHLOROFORM	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
CHLOROMETHANE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
CIS-1,2-DICHLOROETHENE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
CIS-1,3-DICHLOROPROPENE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
CYCLOHEXANE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
DIBROMOCHLOROMETHANE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
DICHLORODIFLUOROMETHANE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
ETHYLBENZENE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
ISOPROPYLBENZENE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
METHYL ACETATE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
METHYL-TERT-BUTYL ETHER	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
METHYLCYCLOHEXANE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
METHYLENE CHLORIDE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
STYRENE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
TETRACHLOROETHENE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
TOLUENE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U

CHEATHAM ANNEX
SITE 7N
SURFACE SOIL - ORGANIC COMPOUNDS
(DUPLICATES COMBINED)

SITE SAMPLE I.D.	CAX-07N-SS1-00	CAX-07N-SS2-00	CAX-07N-SS3-00	CAX-07N-SS5-00	CAX-07N-SS6-00	CAX-07N-SS7-00	CAX-07N-SS8-00	CAX-07N-SS9-00
LAB SAMPLE I.D.	239301	239304	239307	239310	239312	239314	239316	239317
SAMPLE DATE	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004
VOLATILES (ug/kg) (cont.)								
TRANS-1,2-DICHLOROETHENE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
TRANS-1,3-DICHLOROPROPENE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
TRICHLOROETHENE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
TRICHLOROFLUOROMETHANE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
VINYL CHLORIDE	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
XYLENE (TOTAL)	13 U	14 U	12 U	13 U	12 U	13 U	12 U	12 U
SEMIVOLATILES (ug/kg)								
1,1'-BIPHENYL	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
2,2'-OXYBIS(1-CHLOROPROPANE)	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
2,4,5-TRICHLOROPHENOL	1100 U	1200 U	1000 U	1100 U	980 U	1100 U	1000 U	1000 U
2,4,6-TRICHLOROPHENOL	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
2,4-DICHLOROPHENOL	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
2,4-DIMETHYLPHENOL	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
2,4-DINITROPHENOL	1100 U	1200 U	1000 U	1100 U	980 U	1100 U	1000 U	1000 U
2,4-DINITROTOLUENE	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
2,6-DINITROTOLUENE	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
2-CHLORONAPHTHALENE	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
2-CHLOROPHENOL	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
2-METHYLNAPHTHALENE	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
2-METHYLPHENOL	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
2-NITROANILINE	1100 U	1200 U	1000 U	1100 U	980 U	1100 U	1000 U	1000 U
2-NITROPHENOL	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
3,3'-DICHLOROBENZIDINE	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
3-NITROANILINE	1100 U	1200 U	1000 U	1100 U	980 U	1100 U	1000 U	1000 U
4,6-DINITRO-2-METHYLPHENOL	1100 U	1200 U	1000 U	1100 U	980 U	1100 U	1000 U	1000 U
4-BROMOPHENYL-PHENYLETHER	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
4-CHLORO-3-METHYLPHENOL	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
4-CHLOROANILINE	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
4-CHLOROPHENYL-PHENYLETHER	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
4-METHYLPHENOL	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
4-NITROANILINE	1100 U	1200 U	1000 U	1100 U	980 U	1100 U	1000 U	1000 U
4-NITROPHENOL	1100 U	1200 U	1000 U	1100 U	980 U	1100 U	1000 U	1000 U
ACENAPHTHENE	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
ACENAPHTHYLENE	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
ACETOPHENONE	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
ANTHRACENE	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
ATRAZINE	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
BENZALDEHYDE	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
BENZO(A)ANTHRACENE	270 J	460 U	400 U	430 U	390 U	420 U	410 U	400 U
BENZO(A)PYRENE	230 J	460 U	150 J	430 U	390 U	420 U	410 U	400 U
BENZO(B)FLUORANTHENE	160 J	460 U	92 J	430 U	390 U	420 U	410 U	400 U
BENZO(G,H,I)PERYLENE	130 J	460 U	200 J	430 U	390 U	420 U	410 U	400 U
SEMIVOLATILES (ug/kg) (cont.)								
BENZO(K)FLUORANTHENE	180 J	460 U	400 U	430 U	390 U	420 U	410 U	400 U
BIS(2-CHLOROETHOXY) METHANE	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
BIS(2-CHLOROETHYL) ETHER	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
BIS(2-ETHYLHEXYL) PHTHALATE	100 J	460 U	400 U	430 U	390 U	120 B	410 U	400 U
BUTYLBENZYL PHTHALATE	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
CAPROLACTAM	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
CARBAZOLE	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
CHRYSENE	290 J	460 U	96 J	430 U	390 U	420 U	410 U	400 U
DI-N-BUTYL PHTHALATE	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U

CHEATHAM ANNEX
SITE 7N
SURFACE SOIL - ORGANIC COMPOUNDS
(DUPLICATES COMBINED)

SITE SAMPLE I.D.	CAX-07N-SS1-00	CAX-07N-SS2-00	CAX-07N-SS3-00	CAX-07N-SS5-00	CAX-07N-SS6-00	CAX-07N-SS7-00	CAX-07N-SS8-00	CAX-07N-SS9-00
LAB SAMPLE I.D.	239301	239304	239307	239310	239312	239314	239316	239317
SAMPLE DATE	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004
DI-N-OCTYL PHTHALATE	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
DIBENZO(A,H)ANTHRACENE	430 U	460 U	220 J	430 U	390 U	420 U	410 U	400 U
DIBENZOFURAN	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
DIETHYLPHTHALATE	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
DIMETHYLPHTHALATE	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
FLUORANTHENE	430	460 U	400 U	430 U	390 U	420 U	410 U	400 U
FLUORENE	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
HEXACHLOROBENZENE	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
HEXACHLOROBUTADIENE	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
HEXACHLOROCYCLOPENTADIENE	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
HEXACHLOROETHANE	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
INDENO(1,2,3-CD)PYRENE	110 J	460 U	130 J	430 U	390 U	420 U	410 U	400 U
ISOPHORONE	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
N-NITROSO-DI-N-PROPYLAMINE	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
N-NITROSODIPHENYLAMINE	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
NAPHTHALENE	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
NITROBENZENE	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
PENTACHLOROPHENOL	1100 U	1200 U	1000 U	1100 U	980 U	1100 U	1000 U	1000 U
PHENANTHRENE	320 J	460 U	400 U	430 U	390 U	420 U	410 U	400 U
PHENOL	430 U	460 U	400 U	430 U	390 U	420 U	410 U	400 U
PYRENE	660	460 U	400 U	430 U	390 U	420 U	410 U	400 U
PESTICIDES (ug/kg)								
4,4'-DDD	4.3 U	4.6 U	4 U	4.3 U	3.9 U	4.2 U	4.1 U	4 U
4,4'-DDE	3.9 J	1 J	1.3 J	4.3 U	1.6 J	1.4 J	4.1 U	4 U
4,4'-DDT	4.3 J	4.6 U	4 U	4.3 U	3.9 U	4.2 U	4.1 U	4 U
ALDRIN	2.2 U	2.4 U	2.1 U	2.2 U	2 U	2.2 U	2.1 U	2.1 U
ALPHA-BHC	3.6 J	2.1 J	2.1 U	0.94 J	2 U	2.2 U	2.1 U	2.1 U
ALPHA-CHLORDANE	2.2 U	2.4 U	11	2.2 U	2 J	2.2 U	2.1 U	3.6
BETA-BHC	5.5 J	4.1 J	2.8 J	1.5 J	2 U	1.2 J	0.82 J	2.1 U
DELTA-BHC	2.2 U	2.4 U	2.1 U	2.2 U	2 U	2.2 U	2.1 U	2.1 U
DIELDRIN	4.3 U	4.6 U	4 U	4.3 U	1.4 J	4.2 U	4.1 U	4 U
ENDOSULFAN I	2.2 U	2.4 U	2.1 U	2.2 U	2 U	2.2 U	2.1 U	2.1 U
ENDOSULFAN II	4.3 U	4.6 U	4 U	4.3 U	3.9 U	4.2 U	4.1 U	4 U
PESTICIDES (ug/kg) (cont.)								
ENDOSULFAN SULFATE	4.3 U	4.6 U	4 U	4.3 U	3.9 U	4.2 U	4.1 U	4 U
ENDRIN	4.3 U	4.6 U	1.3 J	4.3 U	3.9 U	4.2 U	4.1 U	4 U
ENDRIN ALDEHYDE	4.3 U	4.6 U	4 U	4.3 U	3.9 U	4.2 U	4.1 U	4 U
ENDRIN KETONE	4.3 U	4.6 U	2.3 J	4.3 U	3.9 U	4.2 U	4.1 U	4 U
GAMMA-BHC (LINDANE)	2.2 U	2.4 U	2.1 U	2.2 U	2 U	2.2 U	2.1 U	2.1 U
GAMMA-CHLORDANE	2.2 U	2.4 U	2.1 U	2.2 U	2 U	2.2 U	2.1 U	2.1 U
HEPTACHLOR	2.2 U	2.4 U	2.1 U	2.2 U	2 U	2.2 U	2.1 U	2.1 U
HEPTACHLOR EPOXIDE	11 J	3.5	10 J	0.61 J	3.5	2.2 U	2.1 U	2.1 U
METHOXCHLOR	22 U	24 U	21 U	22 U	20 U	22 U	21 U	21 U
TOXAPHENE	220 U	240 U	210 U	220 U	200 U	220 U	210 U	210 U
PCBs (ug/kg)								
AROCLOR-1016	43 U	46 U	40 U	43 U	39 U	42 U	41 U	40 U
AROCLOR-1221	88 U	94 U	82 U	87 U	79 U	86 U	83 U	82 U
AROCLOR-1232	43 U	46 U	40 U	43 U	39 U	42 U	41 U	40 U
AROCLOR-1242	43 U	46 U	40 U	43 U	39 U	42 U	41 U	40 U
AROCLOR-1248	43 U	46 U	40 U	43 U	39 U	42 U	41 U	40 U
AROCLOR-1254	43 U	46 U	40 U	43 U	39 U	42 U	41 U	40 U
AROCLOR-1260	29 J	46 U	40 U	43 U	39 U	40 J	41 U	40 U

CHEATHAM ANNEX
SITE 7N
SURFACE SOIL - ORGANIC COMPOUNDS
(DUPLICATES COMBINED)

SITE SAMPLE I.D.	CAX-07N-SS1-00	CAX-07N-SS2-00	CAX-07N-SS3-00	CAX-07N-SS5-00	CAX-07N-SS6-00	CAX-07N-SS7-00	CAX-07N-SS8-00	CAX-07N-SS9-00
LAB SAMPLE I.D.	239301	239304	239307	239310	239312	239314	239316	239317
SAMPLE DATE	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004
PAHs (ug/kg)								
1-METHYLNAPHTALENE		12 U		11 U	9.8 U	11 U	10 U	10 U
2-METHYLNAPHTHALENE		12 U		11 U	9.8 U	11 U	10 U	10 U
ACENAPHTHENE		12 U		11 U	9.8 U	11 U	10 U	10 U
ACENAPHTHYLENE		12 U		11 U	9.8 U	11 U	10 U	10 U
ANTHRACENE		5.8 J		11 U	9.8 U	11 U	10 U	10 U
BENZO(A)ANTHRACENE		11 J		9.3 J	6.7 J	11	10 U	5.2 J
BENZO(A)PYRENE		31		8.9 J	14	13	10 U	5.2 J
BENZO(B)FLOURANTHENE		28		13	19 J	15	10 U	11 J
BENZO(G,H,I)PERYLENE		85 J		8 J	25 J	15 J	10 U	5.6 J
BENZO(K)FLUORANTHENE		11 J		9.3 J	13 J	12	10 U	7.6 J
CHRYSENE		21		12	12	17	10 U	6.1 J
DIBENZO(A,H)ANTHRACENE		69 J		11 U	29 J	12 J	10 U	5.4 J
FLUORANTHENE		18		19	10	23	10 U	11
FLUORENE		12 U		11 U	9.8 U	11 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE		43		7.7 B	19 B	18 B	7.4 B	12 B
NAPHTHALENE		12 U		11 U	9.8 U	11 U	10 U	10 U
PHENANTHRENE		21		15	7 J	18	10 U	9.5 J
PYRENE		16		16	8.7 J	20	10 U	8.8 J

CHEATHAM ANNEX
SITE 7N
SURFACE SOIL - INORGANIC COMPOUNDS
(DUPLICATES COMBINED)

SITE SAMPLE I.D.	CAX-07N-SS1-00	CAX-07N-SS2-00	CAX-07N-SS3-00	CAX-07N-SS5-00	CAX-07N-SS6-00	CAX-07N-SS7-00	CAX-07N-SS8-00	CAX-07N-SS9-00
LAB SAMPLE I.D.	239301	239304	239307	239310	239312	239314	239316	239317
SAMPLE DATE	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004
METALS (mg/kg)								
ALUMINUM	9510	9960	8240	9440	10700	10800	7580	9520
ANTIMONY	2.3 B	2.8 B	1.2 B	0.51 UJ	0.47 UJ	0.49 UJ	0.49 UJ	0.48 UJ
ARSENIC	9.2	8.3	6.5	4.1	6.3	4.1	4.4	3
BARIUM	2190	1420	373	173	74.1	217	33.5 J	76.6
BERYLLIUM	0.56 B	0.5 B	0.41 B	0.81 B	0.41 B	0.91 B	0.23 B	0.87 B
CADMIUM	1.7	1.9	1.9	0.16 B	0.045 U	0.17 B	0.14 B	0.045 U
CALCIUM	8080	10500	3340	3390	2040	2430	2000	870 J
CHROMIUM	138	220	57.7	18.5	21.1	27.2	13.2	7.4
COBALT	7.1 J	6.4 J	5.2 J	6.7 J	2.7 J	4.9 J	1.3 B	4.4 J
COPPER	858	353	178	66.1	36.6	57.4	10.2	5.4 J
CYANIDE	0.74 B	1.5 B	0.46 B	0.32 B	0.25 B	0.2 B	0.45 B	0.18 B
IRON	32300	18700	29800	9050	14300	17200	11000	6270
LEAD	4980	5070	6420	250	153	677	38.3	19.2
MAGNESIUM	3490	5440	1760	838 J	1520	1240	651 J	573 J
MANGANESE	632	779	573	393	170	339	64.3	256
MERCURY	0.12	0.27	0.23	0.075 J	0.051 U	0.11 J	0.063 J	0.058 U
NICKEL	27	40.2	24.7	14.2	6.2 J	9.6	4.2 J	5.6 J
POTASSIUM	938 J	1540 J	474 J	420 J	658 J	504 J	634 J	289 J
SELENIUM	1.3 B	0.84 B	0.89 B	0.57 B	0.91 B	0.59 B	0.96 B	0.6 B
SILVER	1.8 J	1.9 J	1 B	0.17 B	0.11 U	0.33 B	0.12 U	0.11 U
SODIUM	159 J	406 J	50.5 U	87.5 J	51 U	53.1 U	55.2 J	51.4 U
THALLIUM	0.8 U	0.86 U	0.71 U	0.78 U	0.72 U	0.75 U	0.74 U	0.73 U
VANADIUM	30.5	38.2	21.5	14.2	28.6	17.9	26.8	12.8
ZINC	2240	1430	2090	201	94.4	292	344	35.4

CHEATHAM ANNEX
SITE 7N
SUBSURFACE SOIL - ORGANIC COMPOUNDS
(DUPLICATES COMBINED)

SITE SAMPLE I.D.	CAX-07N-SB1-01	CAX-07N-SB1-02	CAX-07N-SB2-01	CAX-07N-SB2-02	CAX-07N-SB3-01	CAX-07N-SB4-01
LAB SAMPLE I.D.	239302	239303	239305	239306	239308	239309
SAMPLE DATE	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004
VOLATILES (ug/kg)						
1,1,1-TRICHLOROETHANE	12 U	12 U	12 U	12 U	12 U	14 U
1,1,2,2-TETRACHLOROETHANE	12 U	12 U	12 U	12 U	12 U	14 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	12 U	12 U	12 U	12 U	12 U	14 U
1,1,2-TRICHLOROETHANE	12 U	12 U	12 U	12 U	12 U	14 U
1,1-DICHLOROETHANE	12 U	12 U	12 U	12 U	12 U	14 U
1,1-DICHLOROETHENE	12 U	12 U	12 U	12 U	12 U	14 U
1,2,4-TRICHLOROBENZENE	12 U	12 U	12 U	12 U	12 U	14 U
1,2-DIBROMO-3-CHLOROPROPANE	12 U	12 U	12 U	12 U	12 U	14 U
1,2-DIBROMOETHANE	12 U	12 U	12 U	12 U	12 U	14 U
1,2-DICHLOROBENZENE	12 U	12 U	12 U	12 U	12 U	14 U
1,2-DICHLOROETHANE	12 U	12 U	12 U	12 U	12 U	14 U
1,2-DICHLOROPROPANE	12 U	12 U	12 U	12 U	12 U	14 U
1,3-DICHLOROBENZENE	12 U	12 U	12 U	12 U	12 U	14 U
1,4-DICHLOROBENZENE	12 U	12 U	12 U	12 U	12 U	14 U
2-BUTANONE	12 U	12 U	12 U	12 U	12 U	14 U
2-HEXANONE	12 U	12 U	12 U	12 U	12 U	14 U
4-METHYL-2-PENTANONE	12 U	12 U	12 U	12 U	12 U	14 U
ACETONE	12 U	12 U	12 U	12 U	12 U	14 U
BENZENE	12 U	12 U	12 U	12 U	12 U	14 U
BROMODICHLOROMETHANE	12 U	12 U	12 U	12 U	12 U	14 U
BROMOFORM	12 U	12 U	12 U	12 U	12 U	14 U
BROMOMETHANE	12 U	12 U	12 U	12 U	12 U	14 U
CARBON DISULFIDE	12 U	12 U	12 U	12 U	12 U	14 U
CARBON TETRACHLORIDE	12 U	12 U	12 U	12 U	12 U	14 U
CHLOROBENZENE	12 U	12 U	12 U	12 U	12 U	14 U
CHLOROETHANE	12 U	12 U	12 U	12 U	12 U	14 U
CHLOROFORM	12 U	12 U	12 U	12 U	12 U	14 U
CHLOROMETHANE	12 U	12 U	12 U	12 U	12 U	14 U
CIS-1,2-DICHLOROETHENE	12 U	12 U	12 U	12 U	12 U	14 U
CIS-1,3-DICHLOROPROPENE	12 U	12 U	12 U	12 U	12 U	14 U
CYCLOHEXANE	12 U	12 U	12 U	12 U	12 U	14 U
DIBROMOCHLOROMETHANE	12 U	12 U	12 U	12 U	12 U	14 U
DICHLORODIFLUOROMETHANE	12 U	12 U	12 U	12 U	12 U	14 U
ETHYLBENZENE	12 U	12 U	12 U	12 U	12 U	14 U
ISOPROPYLBENZENE	12 U	12 U	12 U	12 U	12 U	14 U
VOLATILES (ug/kg) (cont.)						
METHYL ACETATE	12 U	12 U	12 U	12 U	12 U	14 U
METHYL-TERT-BUTYL ETHER	12 U	12 U	12 U	12 U	12 U	14 U
METHYLCYCLOHEXANE	12 U	12 U	12 U	12 U	12 U	14 U
METHYLENE CHLORIDE	12 U	12 U	12 U	12 U	12 U	14 U

CHEATHAM ANNEX
SITE 7N
SUBSURFACE SOIL - ORGANIC COMPOUNDS
(DUPLICATES COMBINED)

SITE SAMPLE I.D.	CAX-07N-SB1-01	CAX-07N-SB1-02	CAX-07N-SB2-01	CAX-07N-SB2-02	CAX-07N-SB3-01	CAX-07N-SB4-01
LAB SAMPLE I.D.	239302	239303	239305	239306	239308	239309
SAMPLE DATE	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004
STYRENE	12 U	12 U	12 U	12 U	12 U	14 U
TETRACHLOROETHENE	12 U	12 U	12 U	12 U	12 U	14 U
TOLUENE	12 U	12 U	12 U	12 U	12 U	14 U
TRANS-1,2-DICHLOROETHENE	12 U	12 U	12 U	12 U	12 U	14 U
TRANS-1,3-DICHLOROPROPENE	12 U	12 U	12 U	12 U	12 U	14 U
TRICHLOROETHENE	12 U	12 U	12 U	12 U	12 U	14 U
TRICHLOROFLUOROMETHANE	12 U	12 U	12 U	12 U	12 U	14 U
VINYL CHLORIDE	12 U	12 U	12 U	12 U	12 U	14 U
XYLENE (TOTAL)	12 U	12 U	12 U	12 U	12 U	14 U
SEMIVOLATILES (ug/kg)						
1,1'-BIPHENYL	390 U	390 U	400 U	400 U	380 U	450 U
2,2'-OXYBIS(1-CHLOROPROPANE)	390 U	390 U	400 U	400 U	380 U	450 U
2,4,5-TRICHLOROPHENOL	990 U	990 U	1000 U	1000 U	970 U	1100 U
2,4,6-TRICHLOROPHENOL	390 U	390 U	400 U	400 U	380 U	450 U
2,4-DICHLOROPHENOL	390 U	390 U	400 U	400 U	380 U	450 U
2,4-DIMETHYLPHENOL	390 U	390 U	400 U	400 U	380 U	450 U
2,4-DINITROPHENOL	990 U	990 U	1000 U	1000 U	970 U	1100 U
2,4-DINITROTOLUENE	390 U	390 U	400 U	400 U	380 U	450 U
2,6-DINITROTOLUENE	390 U	390 U	400 U	400 U	380 U	450 U
2-CHLORONAPHTHALENE	390 U	390 U	400 U	400 U	380 U	450 U
2-CHLOROPHENOL	390 U	390 U	400 U	400 U	380 U	450 U
2-METHYLNAPHTHALENE	390 U	390 U	400 U	400 U	380 U	450 U
2-METHYLPHENOL	390 U	390 U	400 U	400 U	380 U	450 U
2-NITROANILINE	990 U	990 U	1000 U	1000 U	970 U	1100 U
2-NITROPHENOL	390 U	390 U	400 U	400 U	380 U	450 U
3,3'-DICHLOROBENZIDINE	390 U	390 U	400 U	400 U	380 U	450 U
3-NITROANILINE	990 U	990 U	1000 U	1000 U	970 U	1100 U
4,6-DINITRO-2-METHYLPHENOL	990 U	990 U	1000 U	1000 U	970 U	1100 U
4-BROMOPHENYL-PHENYLETHER	390 U	390 U	400 U	400 U	380 U	450 U
4-CHLORO-3-METHYLPHENOL	390 U	390 U	400 U	400 U	380 U	450 U
SEMIVOLATILES (ug/kg) (cont.)						
4-CHLOROANILINE	390 U	390 U	400 U	400 U	380 U	450 U
4-CHLOROPHENYL-PHENYLETHER	390 U	390 U	400 U	400 U	380 U	450 U
4-METHYLPHENOL	390 U	390 U	400 U	400 U	380 U	450 U
4-NITROANILINE	990 U	990 U	1000 U	1000 U	970 U	1100 U
4-NITROPHENOL	990 U	990 U	1000 U	1000 U	970 U	1100 U
ACENAPHTHENE	390 U	390 U	400 U	400 U	380 U	450 U
ACENAPHTHYLENE	390 U	390 U	400 U	400 U	380 U	450 U
ACETOPHENONE	390 U	390 U	400 U	400 U	380 U	450 U
ANTHRACENE	390 U	390 U	400 U	400 U	380 U	450 U

CHEATHAM ANNEX
SITE 7N
SUBSURFACE SOIL - ORGANIC COMPOUNDS
(DUPLICATES COMBINED)

SITE SAMPLE I.D.	CAX-07N-SB1-01	CAX-07N-SB1-02	CAX-07N-SB2-01	CAX-07N-SB2-02	CAX-07N-SB3-01	CAX-07N-SB4-01
LAB SAMPLE I.D.	239302	239303	239305	239306	239308	239309
SAMPLE DATE	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004
ATRAZINE	390 U	390 U	400 U	400 U	380 U	450 U
BENZALDEHYDE	390 U	390 U	400 U	400 U	380 U	450 U
BENZO(A)ANTHRACENE	390 U	390 U	400 U	400 U	380 U	450 U
BENZO(A)PYRENE	390 U	390 U	400 U	400 U	380 U	450 U
BENZO(B)FLUORANTHENE	390 U	390 U	400 U	400 U	380 U	450 U
BENZO(G,H,I)PERYLENE	390 U	390 U	400 U	400 U	380 U	450 U
BENZO(K)FLUORANTHENE	390 U	390 U	400 U	400 U	380 U	450 U
BIS(2-CHLOROETHOXY) METHANE	390 U	390 U	400 U	400 U	380 U	450 U
BIS(2-CHLOROETHYL) ETHER	390 U	390 U	400 U	400 U	380 U	450 U
BIS(2-ETHYLHEXYL) PHTHALATE	390 U	390 U	400 U	400 U	380 U	450 U
BUTYLBENZYL PHTHALATE	390 U	390 U	400 U	400 U	380 U	450 U
CAPROLACTAM	390 U	390 U	400 U	400 U	380 U	450 U
CARBAZOLE	390 U	390 U	400 U	400 U	380 U	450 U
CHRYSENE	390 U	390 U	400 U	400 U	380 U	450 U
DI-N-BUTYL PHTHALATE	390 U	390 U	400 U	400 U	380 U	450 U
DI-N-OCTYL PHTHALATE	390 U	390 U	400 U	400 U	380 U	450 U
DIBENZO(A,H)ANTHRACENE	390 U	390 U	400 U	400 U	380 U	450 U
DIBENZOFURAN	390 U	390 U	400 U	400 U	380 U	450 U
DIETHYLPHTHALATE	390 U	390 U	400 U	400 U	380 U	450 U
DIMETHYLPHTHALATE	390 U	390 U	400 U	400 U	380 U	450 U
FLUORANTHENE	390 U	390 U	400 U	400 U	380 U	450 U
FLUORENE	390 U	390 U	400 U	400 U	380 U	450 U
HEXACHLOROBENZENE	390 U	390 U	400 U	400 U	380 U	450 U
HEXACHLOROBUTADIENE	390 U	390 U	400 U	400 U	380 U	450 U
HEXACHLOROCYCLOPENTADIENE	390 U	390 U	400 U	400 U	380 U	450 U
HEXACHLOROETHANE	390 U	390 U	400 U	400 U	380 U	450 U
SEMIVOLATILES (ug/kg) (cont.)						
INDENO(1,2,3-CD)PYRENE	390 U	390 U	400 U	400 U	380 U	450 U
ISOPHORONE	390 U	390 U	400 U	400 U	380 U	450 U
N-NITROSO-DI-N-PROPYLAMINE	390 U	390 U	400 U	400 U	380 U	450 U
N-NITROSODIPHENYLAMINE	390 U	390 U	400 U	400 U	380 U	450 U
NAPHTHALENE	390 U	390 U	400 U	400 U	380 U	450 U
NITROBENZENE	390 U	390 U	400 U	400 U	380 U	450 U
PENTACHLOROPHENOL	990 U	990 U	1000 U	1000 U	970 U	1100 U
PHENANTHRENE	390 U	390 U	400 U	400 U	380 U	450 U
PHENOL	390 U	390 U	400 U	400 U	380 U	450 U
PYRENE	390 U	390 U	400 U	400 U	380 U	450 U
PESTICIDES (ug/kg)						
4,4'-DDD	3.9 U	3.9 U	4 U	4 U	3.8 U	4.5 U
4,4'-DDE	3.9 U	3.9 U	4 U	4 U	3.8 U	4.5 U

CHEATHAM ANNEX
SITE 7N
SUBSURFACE SOIL - ORGANIC COMPOUNDS
(DUPLICATES COMBINED)

SITE SAMPLE I.D.	CAX-07N-SB1-01	CAX-07N-SB1-02	CAX-07N-SB2-01	CAX-07N-SB2-02	CAX-07N-SB3-01	CAX-07N-SB4-01
LAB SAMPLE I.D.	239302	239303	239305	239306	239308	239309
SAMPLE DATE	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004
4,4'-DDT	3.9 U	3.9 U	4 U	4 U	3.8 U	4.5 U
ALDRIN	2 U	2 U	2.1 U	2 U	2 U	2.3 U
ALPHA-BHC	2 U	2 U	0.5 J	0.97 J	2 U	2.3 U
ALPHA-CHLORDANE	2 U	2 U	2.1 U	2 U	2 U	2.3 U
BETA-BHC	0.8 J	2 U	2 J	2 U	2 U	2.6 J
DELTA-BHC	2 U	2 U	2.1 U	2 U	2 U	2.3 U
DIELDRIN	3.9 U	3.9 U	4 U	4 U	3.8 U	4.5 U
ENDOSULFAN I	2 U	2 U	2.1 U	2 U	2 U	2.3 U
ENDOSULFAN II	3.9 U	3.9 U	4 U	4 U	3.8 U	4.5 U
ENDOSULFAN SULFATE	3.9 U	3.9 U	4 U	4 U	3.8 U	4.5 U
ENDRIN	3.9 U	3.9 U	4 U	4 U	3.8 U	4.5 U
ENDRIN ALDEHYDE	3.9 U	3.9 U	4 U	4 U	3.8 U	4.5 U
ENDRIN KETONE	3.9 U	3.9 U	4 U	4 U	3.8 U	4.5 U
GAMMA-BHC (LINDANE)	2 U	2 U	2.1 U	2 U	2 U	2.3 U
GAMMA-CHLORDANE	2 U	2 U	2.1 U	2 U	2 U	2.3 U
HEPTACHLOR	2 U	2 U	2.1 U	2 U	2 U	2.3 U
HEPTACHLOR EPOXIDE	1.5 J	2 U	10 J	2 U	2 U	2.3 U
METHOXCHLOR	20 U	20 U	21 U	20 U	20 U	23 U
TOXAPHENE	200 U	200 U	210 U	200 U	200 U	230 U

CHEATHAM ANNEX
SITE 7N
SUBSURFACE SOIL - ORGANIC COMPOUNDS
(DUPLICATES COMBINED)

SITE SAMPLE I.D.	CAX-07N-SB1-01	CAX-07N-SB1-02	CAX-07N-SB2-01	CAX-07N-SB2-02	CAX-07N-SB3-01	CAX-07N-SB4-01
LAB SAMPLE I.D.	239302	239303	239305	239306	239308	239309
SAMPLE DATE	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004
PCBs (ug/kg)						
AROCLOR-1016	39 U	39 U	40 U	40 U	38 U	45 U
AROCLOR-1221	80 U	80 U	82 U	81 U	78 U	92 U
AROCLOR-1232	39 U	39 U	40 U	40 U	38 U	45 U
AROCLOR-1242	39 U	39 U	40 U	40 U	38 U	45 U
AROCLOR-1248	39 U	39 U	40 U	40 U	38 U	45 U
AROCLOR-1254	39 U	39 U	40 U	40 U	38 U	45 U
AROCLOR-1260	39 U	39 U	40 U	40 U	38 U	45 U
PAHs (ug/kg)						
1-METHYLNAPHTALENE	9.9 U	9.9 U	10 U	10 U	9.7 U	11 U
2-METHYLNAPHTHALENE	9.9 U	9.9 U	10 U	10 U	9.7 U	11 U
ACENAPHTHENE	9.9 U	9.9 U	10 U	10 U	9.7 U	11 U
ACENAPHTHYLENE	9.9 U	9.9 U	10 U	10 U	9.7 U	11 U
ANTHRACENE	9.9 U	9.9 U	10 U	10 U	9.7 U	11 U
BENZO(A)ANTHRACENE	9.9 U	9.9 U	10 U	10 U	9.7 U	11 U
BENZO(A)PYRENE	9.9 U	9.9 U	7.3 J	10 U	9.7 U	11 U
BENZO(B)FLOURANTHENE	9.9 U	9.9 U	12 J	10 U	9.7 U	11 U
BENZO(G,H,I)PERYLENE	9.9 U	9.9 U	15 J	10 U	9.7 U	11 U
BENZO(K)FLUORANTHENE	9.9 U	9.9 U	8.7 J	10 U	9.7 U	11 U
CHRYSENE	9.9 U	9.9 U	6.5 J	10 U	9.7 U	11 U
DIBENZO(A,H)ANTHRACENE	9.9 U	9.9 U	13 J	10 U	4.5 J	11 U
FLUORANTHENE	9.9 U	9.9 U	4.5 J	10 U	9.7 U	11 U
FLUORENE	9.9 U	9.9 U	10 U	10 U	9.7 U	11 U
INDENO(1,2,3-CD)PYRENE	7.2 B	6.9 B	15 B	7.8 B	7.9 B	7.3 B
NAPHTHALENE	9.9 U	9.9 U	10 U	10 U	9.7 U	11 U
PHENANTHRENE	9.9 U	9.9 U	7.5 J	10 U	9.7 U	7.7 J
PYRENE	9.9 U	9.9 U	10 U	10 U	9.7 U	11 U

CHEATHAM ANNEX
SITE 7N
SUBSURFACE SOIL - ORGANIC COMPOUNDS
(DUPLICATES COMBINED)

SITE SAMPLE I.D.	CAX-07N-SB5-01	CAX-07N-SB6-01	CAX-07N-SB7-01	CAX-07N-SB9-01
LAB SAMPLE I.D.	239311	239313	239315	239318
SAMPLE DATE	03-03-2004	03-03-2004	03-03-2004	03-03-2004
VOLATILES (ug/kg)				
1,1,1-TRICHLOROETHANE	12 U	12 U	12 U	12 U
1,1,2,2-TETRACHLOROETHANE	12 U	12 U	12 U	12 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	12 U	12 U	12 U	12 U
1,1,2-TRICHLOROETHANE	12 U	12 U	12 U	12 U
1,1-DICHLOROETHANE	12 U	12 U	12 U	12 U
1,1-DICHLOROETHENE	12 U	12 U	12 U	12 U
1,2,4-TRICHLOROBENZENE	12 U	12 U	12 U	12 U
1,2-DIBROMO-3-CHLOROPROPANE	12 U	12 U	12 U	12 U
1,2-DIBROMOETHANE	12 U	12 U	12 U	12 U
1,2-DICHLOROBENZENE	12 U	12 U	12 U	12 U
1,2-DICHLOROETHANE	12 U	12 U	12 U	12 U
1,2-DICHLOROPROPANE	12 U	12 U	12 U	12 U
1,3-DICHLOROBENZENE	12 U	12 U	12 U	12 U
1,4-DICHLOROBENZENE	12 U	12 U	12 U	12 U
2-BUTANONE	12 U	12 U	12 U	12 U
2-HEXANONE	12 U	12 U	12 U	12 U
4-METHYL-2-PENTANONE	12 U	12 U	12 U	12 U
ACETONE	12 U	12 U	12 U	12 U
BENZENE	12 U	12 U	12 U	12 U
BROMODICHLOROMETHANE	12 U	12 U	12 U	12 U
BROMOFORM	12 U	12 U	12 U	12 U
BROMOMETHANE	12 U	12 U	12 U	12 U
CARBON DISULFIDE	12 U	12 U	12 U	12 U
CARBON TETRACHLORIDE	12 U	12 U	12 U	12 U
CHLOROBENZENE	12 U	12 U	12 U	12 U
CHLOROETHANE	12 U	12 U	12 U	12 U
CHLOROFORM	12 U	12 U	12 U	12 U
CHLOROMETHANE	12 U	12 U	12 U	12 U
CIS-1,2-DICHLOROETHENE	12 U	12 U	12 U	12 U
CIS-1,3-DICHLOROPROPENE	12 U	12 U	12 U	12 U
CYCLOHEXANE	12 U	12 U	12 U	12 U
DIBROMOCHLOROMETHANE	12 U	12 U	12 U	12 U
DICHLORODIFLUOROMETHANE	12 U	12 U	12 U	12 U
ETHYLBENZENE	12 U	12 U	12 U	12 U
ISOPROPYLBENZENE	12 U	12 U	12 U	12 U
VOLATILES (ug/kg) (cont.)				
METHYL ACETATE	12 U	12 U	12 U	12 U
METHYL-TERT-BUTYL ETHER	12 U	12 U	12 U	12 U
METHYLCYCLOHEXANE	12 U	12 U	12 U	12 U
METHYLENE CHLORIDE	12 U	12 U	12 U	12 U

CHEATHAM ANNEX
SITE 7N
SUBSURFACE SOIL - ORGANIC COMPOUNDS
(DUPLICATES COMBINED)

SITE SAMPLE I.D.	CAX-07N-SB5-01	CAX-07N-SB6-01	CAX-07N-SB7-01	CAX-07N-SB9-01
LAB SAMPLE I.D.	239311	239313	239315	239318
SAMPLE DATE	03-03-2004	03-03-2004	03-03-2004	03-03-2004
STYRENE	12 U	12 U	12 U	12 U
TETRACHLOROETHENE	12 U	12 U	12 U	12 U
TOLUENE	12 U	12 U	12 U	12 U
TRANS-1,2-DICHLOROETHENE	12 U	12 U	12 U	12 U
TRANS-1,3-DICHLOROPROPENE	12 U	12 U	12 U	12 U
TRICHLOROETHENE	12 U	12 U	12 U	12 U
TRICHLOROFLUOROMETHANE	12 U	12 U	12 U	12 U
VINYL CHLORIDE	12 U	12 U	12 U	12 U
XYLENE (TOTAL)	12 U	12 U	12 U	12 U
SEMIVOLATILES (ug/kg)				
1,1'-BIPHENYL	400 U	390 U	380 U	390 U
2,2'-OXYBIS(1-CHLOROPROPANE)	400 U	390 U	380 U	390 U
2,4,5-TRICHLOROPHENOL	1000 U	980 U	970 U	980 U
2,4,6-TRICHLOROPHENOL	400 U	390 U	380 U	390 U
2,4-DICHLOROPHENOL	400 U	390 U	380 U	390 U
2,4-DIMETHYLPHENOL	400 U	390 U	380 U	390 U
2,4-DINITROPHENOL	1000 U	980 U	970 U	980 U
2,4-DINITROTOLUENE	400 U	390 U	380 U	390 U
2,6-DINITROTOLUENE	400 U	390 U	380 U	390 U
2-CHLORONAPHTHALENE	400 U	390 U	380 U	390 U
2-CHLOROPHENOL	400 U	390 U	380 U	390 U
2-METHYLNAPHTHALENE	400 U	390 U	380 U	390 U
2-METHYLPHENOL	400 U	390 U	380 U	390 U
2-NITROANILINE	1000 U	980 U	970 U	980 U
2-NITROPHENOL	400 U	390 U	380 U	390 U
3,3'-DICHLOROBENZIDINE	400 U	390 U	380 U	390 U
3-NITROANILINE	1000 U	980 U	970 U	980 U
4,6-DINITRO-2-METHYLPHENOL	1000 U	980 U	970 U	980 U
4-BROMOPHENYL-PHENYLETHER	400 U	390 U	380 U	390 U
4-CHLORO-3-METHYLPHENOL	400 U	390 U	380 U	390 U
SEMIVOLATILES (ug/kg) (cont.)				
4-CHLOROANILINE	400 U	390 U	380 U	390 U
4-CHLOROPHENYL-PHENYLETHER	400 U	390 U	380 U	390 U
4-METHYLPHENOL	400 U	390 U	380 U	390 U
4-NITROANILINE	1000 U	980 U	970 U	980 U
4-NITROPHENOL	1000 U	980 U	970 U	980 U
ACENAPHTHENE	400 U	390 U	380 U	390 U
ACENAPHTHYLENE	400 U	390 U	380 U	390 U
ACETOPHENONE	400 U	390 U	380 U	390 U
ANTHRACENE	400 U	390 U	380 U	390 U

CHEATHAM ANNEX
SITE 7N
SUBSURFACE SOIL - ORGANIC COMPOUNDS
(DUPLICATES COMBINED)

SITE SAMPLE I.D.	CAX-07N-SB5-01	CAX-07N-SB6-01	CAX-07N-SB7-01	CAX-07N-SB9-01
LAB SAMPLE I.D.	239311	239313	239315	239318
SAMPLE DATE	03-03-2004	03-03-2004	03-03-2004	03-03-2004
ATRAZINE	400 U	390 U	380 U	390 U
BENZALDEHYDE	400 U	390 U	380 U	390 U
BENZO(A)ANTHRACENE	400 U	390 U	380 U	390 U
BENZO(A)PYRENE	400 U	390 U	380 U	390 U
BENZO(B)FLUORANTHENE	400 U	390 U	380 U	390 U
BENZO(G,H,I)PERYLENE	400 U	390 U	380 U	390 U
BENZO(K)FLUORANTHENE	400 U	390 U	380 U	390 U
BIS(2-CHLOROETHOXY) METHANE	400 U	390 U	380 U	390 U
BIS(2-CHLOROETHYL) ETHER	400 U	390 U	380 U	390 U
BIS(2-ETHYLHEXYL) PHTHALATE	160 B	390 U	380 U	390 U
BUTYLBENZYL PHTHALATE	400 U	390 U	380 U	390 U
CAPROLACTAM	400 U	390 U	380 U	390 U
CARBAZOLE	400 U	390 U	380 U	390 U
CHRYSENE	400 U	390 U	380 U	390 U
DI-N-BUTYL PHTHALATE	400 U	390 U	380 U	390 U
DI-N-OCTYL PHTHALATE	400 U	390 U	380 U	390 U
DIBENZO(A,H)ANTHRACENE	400 U	390 U	380 U	390 U
DIBENZOFURAN	400 U	390 U	380 U	390 U
DIETHYLPHTHALATE	400 U	390 U	380 U	390 U
DIMETHYLPHTHALATE	400 U	390 U	380 U	390 U
FLUORANTHENE	400 U	390 U	380 U	390 U
FLUORENE	400 U	390 U	380 U	390 U
HEXACHLOROBENZENE	400 U	390 U	380 U	390 U
HEXACHLOROBUTADIENE	400 U	390 U	380 U	390 U
HEXACHLOROCYCLOPENTADIENE	400 U	390 U	380 U	390 U
HEXACHLOROETHANE	400 U	390 U	380 U	390 U
SEMIVOLATILES (ug/kg) (cont.)				
INDENO(1,2,3-CD)PYRENE	400 U	390 U	380 U	390 U
ISOPHORONE	400 U	390 U	380 U	390 U
N-NITROSO-DI-N-PROPYLAMINE	400 U	390 U	380 U	390 U
N-NITROSODIPHENYLAMINE	400 U	390 U	380 U	390 U
NAPHTHALENE	400 U	390 U	380 U	390 U
NITROBENZENE	400 U	390 U	380 U	390 U
PENTACHLOROPHENOL	1000 U	980 U	970 U	980 U
PHENANTHRENE	400 U	390 U	380 U	390 U
PHENOL	400 U	390 U	380 U	390 U
PYRENE	400 U	390 U	380 U	390 U
PESTICIDES (ug/kg)				
4,4'-DDD	4 U	3.9 U	3.8 U	3.9 U
4,4'-DDE	4 U	3.9 U	3.8 U	3.9 U

CHEATHAM ANNEX
SITE 7N
SUBSURFACE SOIL - ORGANIC COMPOUNDS
(DUPLICATES COMBINED)

SITE SAMPLE I.D.	CAX-07N-SB5-01	CAX-07N-SB6-01	CAX-07N-SB7-01	CAX-07N-SB9-01
LAB SAMPLE I.D.	239311	239313	239315	239318
SAMPLE DATE	03-03-2004	03-03-2004	03-03-2004	03-03-2004
4,4'-DDT	4 U	3.9 U	3.8 U	3.9 U
ALDRIN	2 U	2 U	2 U	2 U
ALPHA-BHC	2 U	2 U	2 U	2 U
ALPHA-CHLORDANE	2 U	2 U	2 U	1.7 J
BETA-BHC	2 U	0.77 J	2 U	2 U
DELTA-BHC	2 U	2 U	2 U	2 U
DIELDRIN	4 U	3.9 U	3.8 U	3.9 U
ENDOSULFAN I	2 U	2 U	2 U	2 U
ENDOSULFAN II	4 U	3.9 U	3.8 U	3.9 U
ENDOSULFAN SULFATE	4 U	3.9 U	3.8 U	3.9 U
ENDRIN	4 U	3.9 U	3.8 U	3.9 U
ENDRIN ALDEHYDE	4 U	3.9 U	3.8 U	3.9 U
ENDRIN KETONE	4 U	3.9 U	3.8 U	3.9 U
GAMMA-BHC (LINDANE)	2 U	2 U	2 U	2 U
GAMMA-CHLORDANE	2 U	2 U	2 U	2 U
HEPTACHLOR	2 U	2 U	2 U	2 U
HEPTACHLOR EPOXIDE	2 U	9	2 U	2 U
METHOXCHLOR	20 U	20 U	20 U	20 U
TOXAPHENE	200 U	200 U	200 U	200 U

CHEATHAM ANNEX
SITE 7N
SUBSURFACE SOIL - ORGANIC COMPOUNDS
(DUPLICATES COMBINED)

SITE SAMPLE I.D.	CAX-07N-SB5-01	CAX-07N-SB6-01	CAX-07N-SB7-01	CAX-07N-SB9-01
LAB SAMPLE I.D.	239311	239313	239315	239318
SAMPLE DATE	03-03-2004	03-03-2004	03-03-2004	03-03-2004
PCBs (ug/kg)				
AROCLOR-1016	40 U	39 U	38 U	39 U
AROCLOR-1221	81 U	79 U	78 U	79 U
AROCLOR-1232	40 U	39 U	38 U	39 U
AROCLOR-1242	40 U	39 U	38 U	39 U
AROCLOR-1248	40 U	39 U	38 U	39 U
AROCLOR-1254	40 U	39 U	38 U	39 U
AROCLOR-1260	40 U	39 U	38 U	39 U
PAHs (ug/kg)				
1-METHYLNAPHTALENE	10 U	9.8 U	9.7 U	9.8 U
2-METHYLNAPHTHALENE	10 U	9.8 U	9.7 U	9.8 U
ACENAPHTHENE	10 U	9.8 U	9.7 U	9.8 U
ACENAPHTHYLENE	10 U	9.8 U	9.7 U	9.8 U
ANTHRACENE	10 U	9.8 U	9.7 U	9.8 U
BENZO(A)ANTHRACENE	10 U	9.8 U	9.7 U	9.8 U
BENZO(A)PYRENE	10 U	9.8 U	9.7 U	9.8 U
BENZO(B)FLOURANTHENE	10 U	9.8 U	9.7 U	9.8 U
BENZO(G,H,I)PERYLENE	10 U	9.8 U	9.7 U	9.8 U
BENZO(K)FLUORANTHENE	10 U	9.8 U	9.7 U	9.8 U
CHRYSENE	10 U	9.8 U	9.7 U	9.8 U
DIBENZO(A,H)ANTHRACENE	10 U	9.8 U	9.7 U	9.8 U
FLUORANTHENE	10 U	9.8 U	9.7 U	9.8 U
FLUORENE	10 U	9.8 U	9.7 U	9.8 U
INDENO(1,2,3-CD)PYRENE	6.5 B	9.5 U	6.5 B	6.6 B
NAPHTHALENE	10 U	9.8 U	9.7 U	9.8 U
PHENANTHRENE	10 U	9.8 U	9.7 U	9.8 U
PYRENE	10 U	9.8 U	9.7 U	9.8 U

CHEATHAM ANNEX
SITE 7N
SUBSURFACE SOIL - DIOXINS

SITE SAMPLE I.D.	CAX-07N-SB4-01
LAB SAMPLE I.D.	239309
SAMPLE DATE	03-03-2004
DIOXINS AND FURANS (ng/kg)	
1,2,3,4,6,7,8-HpCDD	105
1,2,3,4,6,7,8-HpCDF	6.14
1,2,3,4,7,8,9-HpCDF	0.765 J
1,2,3,4,7,8-HxCDD	14.6
1,2,3,4,7,8-HxCDF	1.4 J
1,2,3,6,7,8-HxCDD	18.7
1,2,3,6,7,8-HxCDF	1.55 J
1,2,3,7,8,9-HxCDD	21.5
1,2,3,7,8,9-HxCDF	0.773 J
1,2,3,7,8-PeCDD	19.1
1,2,3,7,8-PeCDF	0.833 J
2,3,4,6,7,8-HxCDF	2.27 J
2,3,4,7,8-PeCDF	1.84 J
2,3,7,8-TCDD	4.88
2,3,7,8-TCDF	0.478 J
OCDD	195
OCDF	5.32 J
Total HpCDDs	257
Total HpCDFs	18.3
Total HxCDDs	455
Total HxCDFs	35.4
Total PeCDDs	473
Total PeCDFs	31.4
Total TCDDs	325
Total TCDFs	30

CHEATHAM ANNEX
SITE 7N
SUBSURFACE SOIL - INORGANIC COMPOUNDS
(DUPLICATES COMBINED)

SITE SAMPLE I.D.	CAX-07N-SB1-01	CAX-07N-SB1-02	CAX-07N-SB2-01	CAX-07N-SB2-02	CAX-07N-SB3-01
LAB SAMPLE I.D.	239302	239303	239305	239306	239308
SAMPLE DATE	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004
METALS (mg/kg)					
ALUMINUM	9800	9550	9400	9990	9450
ANTIMONY	0.49 UJ	0.48 UJ	0.5 UJ	0.47 UJ	0.46 UJ
ARSENIC	3.2	2.7	3.8	2.7	2.5
BARIUM	156	85.4	206	117	101
BERYLLIUM	0.85 B	0.72 B	0.79 B	0.88 B	0.74 B
CADMIUM	0.047 U	0.045 U	0.29 B	0.044 U	0.076 B
CALCIUM	2100	1110 J	3080	1760	1150
CHROMIUM	13.2	7.5	33.8	11.9	8.2
COBALT	4.5 J	4 J	4.8 J	5 J	3.5 J
COPPER	41.4	7.2	50.3	18.4	9.6
CYANIDE	0.18 B	0.12 B	0.28 B	0.25 B	0.21 B
IRON	6690	6330	7150	6120	5820
LEAD	176	40.7	583	117	118
MAGNESIUM	699 J	547 J	1230	700 J	529 J
MANGANESE	207	193	308	330	210
MERCURY	0.041 U	0.057 U	1.9	0.052 U	0.042 U
NICKEL	6.6 J	5.4 J	9.2 J	6.3 J	5.1 J
POTASSIUM	409 J	311 J	543 J	363 J	249 J
SELENIUM	0.47 U	0.45 U	0.51 B	0.45 U	0.44 U
SILVER	0.12 U	0.11 U	0.23 B	0.11 U	0.11 U
SODIUM	52.7 U	51.4 U	94 J	50.3 U	53.5 J
THALLIUM	0.74 U	0.73 U	0.76 U	0.71 U	0.7 U
VANADIUM	12.2	11.3 J	13.3	11 J	10 J
ZINC	105	29.2	268	58.7	93

CHEATHAM ANNEX
SITE 7N
SUBSURFACE SOIL - INORGANIC COMPOUNDS
(DUPLICATES COMBINED)

SITE SAMPLE I.D.	CAX-07N-SB4-01	CAX-07N-SB5-01	CAX-07N-SB6-01	CAX-07N-SB7-01	CAX-07N-SB9-01
LAB SAMPLE I.D.	239309	239311	239313	239315	239318
SAMPLE DATE	03-03-2004	03-03-2004	03-03-2004	03-03-2004	03-03-2004
METALS (mg/kg)					
ALUMINUM	5130	13100	12700	9300	8450
ANTIMONY	1.1 B	0.47 UJ	0.5 UJ	0.48 UJ	0.47 UJ
ARSENIC	4.8	5.4	4	2.5	2.6
BARIUM	264	58.2	89.2	59.5	69.2
BERYLLIUM	0.41 B	0.4 B	0.49 B	0.5 B	0.74 B
CADMIUM	0.2 B	0.045 U	0.047 U	0.046 U	0.044 U
CALCIUM	8880	1430	1110 J	794 J	569 J
CHROMIUM	14.4	18.7	15.9	8.7	6.7
COBALT	6.3 J	1.7 J	1.6 J	3.1 J	3.8 J
COPPER	69.2	5.8	34.7	2.4 J	3 J
CYANIDE	0.83 B	0.16 B	0.18 B	0.093 B	0.28 B
IRON	4670	24800	18100	7860	5920
LEAD	283	27.5	174	12.8	8.7
MAGNESIUM	1140 J	881 J	1060 J	604 J	519 J
MANGANESE	289	40.8	135 J	79.9	164
MERCURY	0.24	0.042 U	0.061 J	0.04 U	0.045 U
NICKEL	13.6	4.3 J	5.6 J	4.3 J	4.7 J
POTASSIUM	993 J	510 J	369 J	291 J	242 J
SELENIUM	1 B	0.84 B	0.63 B	0.46 U	0.76 B
SILVER	0.36 B	0.11 U	0.12 U	0.11 U	0.11 U
SODIUM	369 J	50.7 U	53.5 U	51.6 U	50.4 U
THALLIUM	0.86 U	0.72 U	0.76 U	0.73 U	0.71 U
VANADIUM	17.9	29.1	27.9	15.4	10.7 J
ZINC	182	23.6	80.5	12.1	14.7

CHEATHAM ANNEX
SITE 7N
QAQC DATA - ORGANIC COMPOUNDS

SITE SAMPLE I.D.	CAX-07N-FB01	CAX-07N-RB01	CAX-07N-TRIP
LAB SAMPLE I.D.	239602	239601	239603
SAMPLE DATE	03-03-2004	03-03-2004	03-03-2004
VOLATILES (ug/L)			
1,1,1-TRICHLOROETHANE	10 U	10 U	10 U
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	10 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	10 U	10 U	10 U
1,1,2-TRICHLOROETHANE	10 U	10 U	10 U
1,1-DICHLOROETHANE	10 U	10 U	10 U
1,1-DICHLOROETHENE	10 U	10 U	10 U
1,2,4-TRICHLOROBENZENE	10 U	10 U	10 U
1,2-DIBROMO-3-CHLOROPROPANE	10 U	10 U	10 U
1,2-DIBROMOETHANE	10 U	10 U	10 U
1,2-DICHLOROBENZENE	10 U	10 U	10 U
1,2-DICHLOROETHANE	10 U	10 U	10 U
1,2-DICHLOROPROPANE	10 U	10 U	10 U
1,3-DICHLOROBENZENE	10 U	10 U	10 U
1,4-DICHLOROBENZENE	10 U	10 U	10 U
2-BUTANONE	10 U	2 J	10 U
2-HEXANONE	10 U	10 U	10 U
4-METHYL-2-PENTANONE	10 U	10 U	10 U
ACETONE	10 U	3 J	3 J
BENZENE	10 U	10 U	10 U
BROMODICHLOROMETHANE	10 U	10 U	10 U
BROMOFORM	10 U	10 U	10 U
BROMOMETHANE	10 U	10 U	10 U
CARBON DISULFIDE	10 U	10 U	10 U
CARBON TETRACHLORIDE	10 U	10 U	10 U
CHLOROBENZENE	10 U	10 U	10 U
CHLOROETHANE	10 U	10 U	10 U
CHLOROFORM	10 U	10 U	10 U
CHLOROMETHANE	10 U	10 U	10 U
CIS-1,2-DICHLOROETHENE	10 U	10 U	10 U
CIS-1,3-DICHLOROPROPENE	10 U	10 U	10 U
CYCLOHEXANE	10 U	10 U	10 U
DIBROMOCHLOROMETHANE	10 U	10 U	10 U
DICHLORODIFLUOROMETHANE	10 U	10 U	10 U
ETHYLBENZENE	10 U	10 U	10 U
ISOPROPYLBENZENE	10 U	10 U	10 U
METHYL ACETATE	10 U	10 U	10 U
METHYL-TERT-BUTYL ETHER	10 U	10 U	10 U
METHYLCYCLOHEXANE	10 U	10 U	10 U
METHYLENE CHLORIDE	2 J	2 J	1 J
STYRENE	10 U	10 U	10 U
TETRACHLOROETHENE	10 U	10 U	10 U
TOLUENE	10 U	10 U	10 U
TRANS-1,2-DICHLOROETHENE	10 U	10 U	10 U
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	10 U
TRICHLOROETHENE	10 U	10 U	10 U
TRICHLOROFLUOROMETHANE	10 U	10 U	10 U
VINYL CHLORIDE	10 U	10 U	10 U
XYLENE (TOTAL)	10 U	10 U	10 U

CHEATHAM ANNEX
SITE 7N
QAQC DATA - ORGANIC COMPOUNDS

SITE SAMPLE I.D.	CAX-07N-FB01	CAX-07N-RB01	CAX-07N-TRIP
LAB SAMPLE I.D.	239602	239601	239603
SAMPLE DATE	03-03-2004	03-03-2004	03-03-2004
SEMIVOLATILES (ug/L)			
1,1'-BIPHENYL	10 U	10 U	N/A
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 U	N/A
2,4,5-TRICHLOROPHENOL	25 U	25 U	N/A
2,4,6-TRICHLOROPHENOL	10 U	10 U	N/A
2,4-DICHLOROPHENOL	10 U	10 U	N/A
2,4-DIMETHYLPHENOL	10 U	10 U	N/A
2,4-DINITROPHENOL	25 U	25 U	N/A
2,4-DINITROTOLUENE	10 U	10 U	N/A
2,6-DINITROTOLUENE	10 U	10 U	N/A
2-CHLORONAPHTHALENE	10 U	10 U	N/A
2-CHLOROPHENOL	10 U	10 U	N/A
2-METHYLNAPHTHALENE	10 U	10 U	N/A
2-METHYLPHENOL	10 U	10 U	N/A
2-NITROANILINE	25 U	25 U	N/A
2-NITROPHENOL	10 U	10 U	N/A
3,3'-DICHLOROBENZIDINE	10 U	10 U	N/A
3-NITROANILINE	25 U	25 U	N/A
4,6-DINITRO-2-METHYLPHENOL	25 U	25 U	N/A
4-BROMOPHENYL-PHENYLETHER	10 U	10 U	N/A
4-CHLORO-3-METHYLPHENOL	10 U	10 U	N/A
4-CHLOROANILINE	10 U	10 U	N/A
4-CHLOROPHENYL-PHENYLETHER	10 U	10 U	N/A
4-METHYLPHENOL	10 U	10 U	N/A
4-NITROANILINE	25 U	25 U	N/A
4-NITROPHENOL	25 U	25 U	N/A
ACENAPHTHENE	10 U	10 U	N/A
ACENAPHTHYLENE	10 U	10 U	N/A
ACETOPHENONE	10 U	10 U	N/A
ANTHRACENE	10 U	10 U	N/A
ATRAZINE	10 U	10 U	N/A
BENZALDEHYDE	10 U	10 U	N/A
BENZO(A)ANTHRACENE	10 U	10 U	N/A
BENZO(A)PYRENE	10 U	10 U	N/A
BENZO(B)FLUORANTHENE	10 U	10 U	N/A
BENZO(G,H,I)PERYLENE	10 U	10 U	N/A
BENZO(K)FLUORANTHENE	10 U	10 U	N/A
BIS(2-CHLOROETHOXY) METHANE	10 U	10 U	N/A
BIS(2-CHLOROETHYL) ETHER	10 U	10 U	N/A
BIS(2-ETHYLHEXYL) PHTHALATE	3 J	10 U	N/A
BUTYLBENZYL PHTHALATE	10 U	10 U	N/A
CAPROLACTAM	10 U	10 U	N/A
CARBAZOLE	10 U	10 U	N/A
CHRYSENE	10 U	10 U	N/A
DI-N-BUTYL PHTHALATE	10 U	10 U	N/A
DI-N-OCTYL PHTHALATE	10 U	10 U	N/A
DIBENZO(A,H)ANTHRACENE	10 U	10 U	N/A
DIBENZOFURAN	10 U	10 U	N/A
DIETHYLPHTHALATE	10 U	10 U	N/A
DIMETHYLPHTHALATE	10 U	10 U	N/A
FLUORANTHENE	10 U	10 U	N/A
FLUORENE	10 U	10 U	N/A
HEXACHLOROBENZENE	10 U	10 U	N/A
HEXACHLOROBUTADIENE	10 U	10 U	N/A
HEXACHLOROCYCLOPENTADIENE	10 U	10 U	N/A
HEXACHLOROETHANE	10 U	10 U	N/A
INDENO(1,2,3-CD)PYRENE	10 U	10 U	N/A
ISOPHORONE	10 U	10 U	N/A
N-NITROSO-DI-N-PROPYLAMINE	10 U	10 U	N/A
SEMIVOLATILES (ug/L) (cont.)			
N-NITROSODIPHENYLAMINE	10 U	10 U	N/A
NAPHTHALENE	10 U	10 U	N/A
NITROBENZENE	10 U	10 U	N/A
PENTACHLOROPHENOL	25 U	25 U	N/A
PHENANTHRENE	10 U	10 U	N/A
PHENOL	10 U	10 U	N/A

CHEATHAM ANNEX
SITE 7N
QAQC DATA - ORGANIC COMPOUNDS

SITE SAMPLE I.D.	CAX-07N-FB01	CAX-07N-RB01	CAX-07N-TRIP
LAB SAMPLE I.D.	239602	239601	239603
SAMPLE DATE	03-03-2004	03-03-2004	03-03-2004
PYRENE	10 U	10 U	N/A
PESTICIDES (ug/L)			
4,4'-DDD	0.10 U	0.10 U	N/A
4,4'-DDE	0.10 U	0.10 U	N/A
4,4'-DDT	0.10 U	0.10 U	N/A
ALDRIN	0.050 U	0.050 U	N/A
ALPHA-BHC	0.050 U	0.050 U	N/A
ALPHA-CHLORDANE	0.050 U	0.050 U	N/A
BETA-BHC	0.050 U	0.050 U	N/A
DELTA-BHC	0.050 U	0.050 U	N/A
DIELDRIN	0.10 U	0.10 U	N/A
ENDOSULFAN I	0.050 U	0.050 U	N/A
ENDOSULFAN II	0.10 U	0.10 U	N/A
ENDOSULFAN SULFATE	0.10 U	0.10 U	N/A
ENDRIN	0.10 U	0.10 U	N/A
ENDRIN ALDEHYDE	0.10 U	0.10 U	N/A
ENDRIN KETONE	0.10 U	0.10 U	N/A
GAMMA-BHC (LINDANE)	0.050 U	0.050 U	N/A
GAMMA-CHLORDANE	0.050 U	0.050 U	N/A
HEPTACHLOR	0.050 U	0.050 U	N/A
HEPTACHLOR EPOXIDE	0.050 U	0.050 U	N/A
METHOXCHLOR	0.50 U	0.50 U	N/A
TOXAPHENE	5.0 U	5.0 U	N/A
PCBs (ug/L)			
AROCLOR-1016	1.0 U	1.0 U	N/A
AROCLOR-1221	2.0 U	2.0 U	N/A
AROCLOR-1232	1.0 U	1.0 U	N/A
AROCLOR-1242	1.0 U	1.0 U	N/A
AROCLOR-1248	1.0 U	1.0 U	N/A
AROCLOR-1254	1.0 U	1.0 U	N/A
AROCLOR-1260	1.0 U	1.0 U	N/A
SIM PAH (ug/L)			
1-METHYLNAPHTALENE	0.25 U	0.25 U	N/A
2-METHYLNAPHTHALENE	0.25 U	0.25 U	N/A
ACENAPHTHENE	0.25 U	0.25 U	N/A
ACENAPHTHYLENE	0.25 U	0.25 U	N/A
ANTHRACENE	0.25 U	0.25 U	N/A
BENZO(A)ANTHRACENE	0.25 U	0.25 U	N/A
BENZO(A)PYRENE	0.25 U	0.25 U	N/A
BENZO(B)FLOURANTHENE	0.25 U	0.25 U	N/A
BENZO(G,H,I)PERYLENE	0.25 U	0.25 U	N/A
BENZO(K)FLUORANTHENE	0.25 U	0.25 U	N/A
CHRYSENE	0.25 U	0.25 U	N/A
DIBENZO(A,H)ANTHRACENE	0.25 U	0.25 U	N/A
FLUORANTHENE	0.25 U	0.25 U	N/A
FLUORENE	0.25 U	0.25 U	N/A
INDENO(1,2,3-CD)PYRENE	0.25 U	0.25 U	N/A
NAPHTHALENE	0.25 U	0.25 U	N/A
PHENANTHRENE	0.25 U	0.25 U	N/A
PYRENE	0.25 U	0.25 U	N/A

CHEATHAM ANNEX
SITE 7N
QAQC DATA - INORGANIC COMPOUNDS

SITE SAMPLE I.D.	CAX-07N-FB01	CAX-07N-RB01
LAB SAMPLE I.D.	239602	239601
SAMPLE DATE	03-03-2004	03-03-2004
METALS (ug/L)		
ALUMINUM	21.2 U	21.2 U
ANTIMONY	2.3 J	3.5 J
ARSENIC	2.1 U	2.1 U
BARIUM	0.30 U	0.59 J
BERYLLIUM	0.20 U	0.20 U
CADMIUM	0.20 U	0.20 U
CALCIUM	52.4 U	52.4 U
CHROMIUM	1.0 J	0.90 J
COBALT	0.60 U	0.60 U
COPPER	0.80 U	0.92 J
CYANIDE	0.60 U	0.71 J
IRON	20.9 J	13.1 J
LEAD	1.3 U	1.3 U
MAGNESIUM	11.3 U	11.3 U
MANGANESE	0.20 U	0.31 J
MERCURY	0.10 U	0.10 U
NICKEL	1.0 U	1.0 U
POTASSIUM	30.3 U	30.3 U
SELENIUM	2.0 U	2.0 U
SILVER	0.66 J	0.50 U
SODIUM	226 U	226 U
THALLIUM	3.2 U	3.2 U
VANADIUM	0.60 U	0.60 U
ZINC	3.0 J	2.4 J

BHATE
Environmental Associates, Inc.
1608 13th Avenue South, Suite 300
Birmingham, Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

7 day TAT

Chain of Custody and Analytical Request

Page 1 of 33

Project Number: SITE 7 N

Chain of Custody Number [1]: 03632004 1

LIMS Number:

Facility/Base I.D.: Cheatham Annex Site 7 North

Project Name / Site Name: CAX-07N

Client Name: LANTDIV

Collected by: Barb Frey Marlene Ivester

Field Sample ID (10 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code [2]	Sample Number [3]	Sample Matrix [4]	Number of containers	TCL VOC	TCL SVOC	SIM PAH	TCL PEST / PCB	TAL metals	Cyanide	DIOXIN	Full TCLP + Ignitability + Corrosivity + Reactivity	Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
CAX-07N-SS-00	CAX07NSS100	3-3-04	1000	0 - 6"	N	1	SO	4	X	X	X	X	X	X						
CAX-07N-SB1-01	CAX07NSB101		1015	6" - 12"	N	1	SO													
CAX-07N-SB1-02	CAX07NSB102		1020	12" - 18"	N	1	SO													
CAX-07N-SS2-00	CAX07NSS200		1030	0 - 6"	N	1	SO													
CAX-07N-SB2-01	CAX07NSB201		1040	6" - 12"	N	1	SO													
CAX07N-SB2-02	CAX07NSB202		1050	12" - 18"	N	1	SO													
CAX-07N-SS3-00	CAX-07NSS300		1305	0 - 6"	N	1	SO													
CAX07N-SB3-01	CAX07NSB301		1310	6" - 12"	N	1	SO													
CAX-07N-SS4-00	CAX07NSS400		1200		N	1	SO										→ No Sample Collected			
CAX-07N-SB4-01	CAX-07NSB401		1200	16" - 18"	N	1	SO	8						X	X					
CAX-07N-SS5-00	CAX07NSS500	↓	1455	0 - 6"	N	1	SO	↓	↓	↓	↓	↓	↓	↓						

Sample Analysis Requested [5] | Quality Assurance Samples [6]

COMMENTS:

Coolers received @ 1.4°C to 2.1°C

Custody Transfers Prior to Receipt by Laboratory

	Relinquished by (Signed)	Date	Time	Received by (Signed)	Date	Time
1.		3/3/04	1900		3/4/04	0900
2.						
3.						

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: Shipped No.:

Method of Shipment: Fed-Ex Airbill Number: 839189927022

Analytical Lab: Delivery Location:

Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number. Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc.), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control)

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Environmental Associates, Inc.
1608 13th Avenue South, Suite 300
Birmingham, Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

7 day TAT.

Chain of Custody and Analytical Request

Project Number: Site 7 42000

Chain of Custody Number [1]: 03032001

LIMS Number: _____

Facility/Base I.D.: Cheatham Annex Site 7 (North)

Project Name / Site Name: CAX-07N

Client Name: LANTDIV

Collected by: B. Frey M. Ivester

Field Sample ID (30 Character Max)	ERPIMS LOCID (15 Character Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code [2]	Sample Number [3]	Sample Matrix [4]	Number of containers	TAL VOCs	TAL SVOCs	SIM PAHs	TAL PEST / PCBs	TAL Metals	Cyanide	Dioxin	Full TCLP	Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
CAX-07N-SB5-01	CAX07NSB501	3-3-04	~~1515~~ 1335	~~30"~~ 8" - ~~30"~~ 6"	N	1	SO	5	X	X	X	X	X	X						
CAX-07N-SS4-00	CAX07NSS400		1345	~~8"~~ 0 - ~~24"~~ 6"	N	1	SO													
CAX-07N-SB6-01	CAX-07N-SB601		1345	6" - 24"	N	1	SO													
CAX-07N-SS7-00	CAX07NSS700		1420	0 - 6"	N	1	SO													
CAX-07N-SB7-01	CAX07NSB701		1425	4 - 12"	N	1	SO													
CAX-07N-SS8-00	CAX07NSS800		1315	0 - 6"	N	1	SO													
~~CAX-07N-SB8-01~~	~~CAX07NSB801~~			-	W	1	SO	→									No sample collected			
CAX-07N-SS9-00	CAX07NSS900		1435	0 - 6"	N	1	SO													
CAX07N-SB9-01	CAX07NSB901		1440	6 - 12"	N	1	SO													
CAX07N-SS100-00	CAX07NSS10000		1000	0 - 6"	FD	2	SO										d			
CAX-07N-SB10-01	CAX07NSB1001	↓	1345	6" - 24"	FD	2	SO	↓	↓	↓	↓	↓	↓	↓			d			

Sample Analysis Requested [5] | Quality Assurance Samples [6]

COMMENTS: Coolers rec'd @ 1.4°C to 2.1°C

Custody Transfers Prior to Receipt by Laboratory

	Relinquished by (Signed)	Date	Time	Received by (Signed)	Date	Time
1.	[signature]	3/3/04	1400	[signature]	3/4/04	0900
2.						
3.						

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped No.: _____

Method of Shipment: Fed-Ex Airbill Number: 839189927022

Analytical Lab: _____ Delivery Location: _____

Lab Recipient: _____ Delivery Date/Time: _____

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes. N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes. GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc.), SQ = Soil Blanks

5.) Sample Analysis Requested Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control)

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Environmental Associates, Inc.
1608 13th Avenue South, Suite 300
Birmingham, Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

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Chain of Custody and Analytical Request

Page 3 of 3

Project Number: Site 7

Chain of Custody Number [1]: 08032004 1

LIMS Number:

00025

Facility/Base I.D.: Chatham Annex Site 7 (NORTH)

Project Name / Site Name: CAX-07N

Client Name: LAW/BT DIV

Collected by: B. Frey M. Investr

Field Sample ID (10 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code [2]	Sample Number [3]	Sample Matrix [4]	Number of containers	TCL VOCs	TCL SVOCs	SIM PAHs	TCL Pest/PCBs	TAL metals	Cyanide	Dioxin	Full TAL - Ignitability, Corrosivity, Reactivity	Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
CAX-07N-SB101 (ERSMSD)	CAX07NSB1001 (ERSMSD)	3-3-04	1345	6"-24"	MS/SD	3	SO	4/5	X	X	X	X	X	X						
CAX07N	CAX07N			-			SO	1							X		→ no sample			
CAX07N	CAX07N			-			SO	3								X	→ no sample			
CAX07N-RB01	CAX07NRB3 01	3-3-04	1615	-	EB	1	WQ		X	X	X	X	X	X						
MX-07N-FB01	MX07NFB01	3-3-04	1630	-	EB	1	WQ		X	X	X	X	X	X						
CAX-07N-TRIP	CAX07N TRIP	3-3-04	-	-	TB	3	WS	3	X								one trip blank vial w/ pea-size air bubble			

COMMENTS: "Cyanide portion of CAX-07N-FB01 & CAX-07N-RB01 transferred to NaOH preserved poly upon receipt (per Clients request) 3/4/04

Custody Transfers Prior to Receipt by Laboratory

	Relinquished By (Signed)	Date	Time	Received By (Signed)	Date	Time
1.		3/3/04	1900		3/4/04	0900
2.						
3.						

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: Shipped No.:
Method of Shipment: Fed Ex Airbill Number: 839189927022
Analytical Lab: Delivery Location.
Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)
2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)
3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)
4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc.), SQ = Soil Blanks
5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.
6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control)

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S 11731

SUBCONTRACT CHAIN-OF-CUSTODY RECORD

COMPUCHEM
a division of Liberty Analytical Corp.

501 Madison Avenue
Cary, NC 27513
1-800-833-5097

Project Name: CAX-07N
TAT: 7 calendar days
Report style: Level IV
Disk requirement: Terrabase (w/ MDLs)

Samples shipped to: Paradigm
Contact: Chris Cornwell
Address: 5500 Business Drive
Wilmington, NC 28405-7419
Phone: (910) 350 1403
Project Locale (state): VA

CompuChem point-of-contact: (4) DIANE BYRD / CATHY BAKER
Phone: (919) 379-4100 X 4009/4089
Fax: (919) 379-4050
Sampling complete? (Y) or N (see Note 1)
Project-specific (PS) or Batch (B) QC? _____

BOX #1: 1. Surface Water, 2. Ground Water, 3. Leachate, 4. Rinsate, 5. Soil / Sediment / Sludge, 6. Trip Blank, 7. Oil, 8. Waste, 9. Other _____

BOX #2: A. HCl + Ice, B. HNO_3 + Ice, C. NaOH + Ice, D. H_2SO_4 + Ice, E. Unpreserved, F. Ice Only, G. Other _____, H. $NaHSO_4$ + Ice, I. ZnAc+NaOH + Ice, J. Methanol

BOX #3: F- Filtered, U- Unfiltered

BOX #4: H- High, M- Medium, L- Low

BOX #5: C- CLP, T- TCLP, S- SW-846, W- CWA 600-series, O- Other _____

Sample ID	Date / Year 2004	Time	Box #1 Matrix	Box #2 Preservative	Box #3 Filtered / Unfiltered	Box #4 Expected Conc.	Box #5 Method	# of Bottles	Use for Lab QC (MS or DUP)	PARAMETERS: DIOXIN 8290	CCN	Remarks / Comments (see Notes 2 & 3)
												G349-88
CAX-07N-SB4-01	3/3	1200	5	F	U		S	1		✓	239701	*quote ≥ $800 for 7 day TAT

Clients Special Instructions:

Temperature 4.1 °C

Lab: Received in good condition? Y or N Describe any problems:

#1 Relinquished by:(sig)	Date: 3.4.04	#2 Relinquished by:(sig)	Date:	Relinquished by:(sig)	Date:
Company Name: CompuChem	Time: 1615	Company Name:	Time:	Company Name:	Time:
#1 Received by:(sig)	Date: 3/5/04	#2 Received by:(sig)	Date:	#2 Received by:(sig)	Date:
Company Name: Paradigm Labs (courier)	Time: 1000	Company Name:	Time:	Company Name:	Time:

Note (1) If "N" lab should batch samples to await remainder of project - maximizing batch size and minimizing QC ratio; if "Y" lab should begin processing batches now.
Note (2) Samples should be stored 60 days after date report mailed at no extra charge.
Note (3) All lab copies of data should be retained for a minimum of 3 years.
Note (4) Please call point-of-contact to verify receipt of samples.

Revision 0 2-10-99

April (Cabin 170) Sampling Event

(Results Not Validated)

CHEATHAM ANNEX
SITE 7N
SURFACE SOIL - ORGANIC COMPOUNDS
RAW UNVALIDATED DATA

	07N-SS10-00 0-6" 04/22/2004	07N-SS12-00 0-6" 04/22/2004	07N-SS13-00 0-6" 4/22/2004	07N-SS14-00 0-6" 4/22/2004	07N-SS15-00 0-6" 4/22/2004
SEMIVOLATILES (ug/kg)					
1,1'-BIPHENYL	420 U	380 U	380 U	380 U	390 U
2,2'-OXYBIS(1-CHLOROPROPANE)	420 U	380 U	380 U	380 U	390 U
2,4,5-TRICHLOROPHENOL	1100 U	950 U	970 U	950 U	980 U
2,4,6-TRICHLOROPHENOL	420 U	380 U	380 U	380 U	390 U
2,4-DICHLOROPHENOL	420 U	380 U	380 U	380 U	390 U
2,4-DIMETHYLPHENOL	420 U	380 U	380 U	380 U	390 U
2,4-DINITROPHENOL	1100 U	950 U	970 U	950 U	980 U
2,4-DINITROTOLUENE	420 U	380 U	380 U	380 U	390 U
2,6-DINITROTOLUENE	420 U	380 U	380 U	380 U	390 U
2-CHLORONAPHTHALENE	420 U	380 U	380 U	380 U	390 U
2-CHLOROPHENOL	420 U	380 U	380 U	380 U	390 U
2-METHYLNAPHTHALENE	420 U	380 U	380 U	380 U	390 U
2-METHYLPHENOL	420 U	380 U	380 U	380 U	390 U
2-NITROANILINE	1100 U	950 U	970 U	950 U	980 U
2-NITROPHENOL	420 U	380 U	380 U	380 U	390 U
3,3'-DICHLOROBENZIDINE	420 U	380 U	380 U	380 U	390 U
3-NITROANILINE	1100 U	950 U	970 U	950 U	980 U
4,6-DINITRO-2-METHYLPHENOL	1100 U	950 U	970 U	950 U	980 U
4-BROMOPHENYL-PHENYLETHER	420 U	380 U	380 U	380 U	390 U
4-CHLORO-3-METHYLPHENOL	420 U	380 U	380 U	380 U	390 U
4-CHLOROANILINE	420 U	380 U	380 U	380 U	390 U
4-CHLOROPHENYL-PHENYLETHER	420 U	380 U	380 U	380 U	390 U
4-METHYLPHENOL	420 U	380 U	380 U	380 U	390 U
4-NITROANILINE	1100 U	950 U	970 U	950 U	980 U
4-NITROPHENOL	1100 U	950 U	970 U	950 U	980 U
ACENAPHTHENE	420 U	380 U	380 U	380 U	390 U
ACENAPHTHYLENE	420 U	380 U	380 U	380 U	390 U
ACETOPHENONE	420 U	380 U	380 U	380 U	390 U
ANTHRACENE	420 U	380 U	380 U	380 U	390 U
ATRAZINE	420 U	380 U	380 U	380 U	390 U
BENZALDEHYDE	420 U	380 U	380 U	380 U	390 U
BENZO(A)ANTHRACENE	420 U	380 U	380 U	380 U	390 U
BENZO(A)PYRENE	420 U	380 U	380 U	380 U	390 U
BENZO(B)FLUORANTHENE	420 U	380 U	380 U	380 U	390 U
BENZO(G,H,I)PERYLENE	420 U	380 U	380 U	380 U	390 U
BENZO(K)FLUORANTHENE	420 U	380 U	380 U	380 U	390 U

CHEATHAM ANNEX
SITE 7N
SURFACE SOIL - ORGANIC COMPOUNDS
RAW UNVALIDATED DATA

	07N-SS10-00 0-6" 04/22/2004	07N-SS12-00 0-6" 04/22/2004	07N-SS13-00 0-6" 4/22/2004	07N-SS14-00 0-6" 4/22/2004	07N-SS15-00 0-6" 4/22/2004
SEMIVOLATILES (ug/kg)					
BIS(2-CHLOROETHOXY) METHANE	420 U	380 U	380 U	380 U	390 U
BIS(2-CHLOROETHYL) ETHER	420 U	380 U	380 U	380 U	390 U
BIS(2-ETHYLHEXYL) PHTHALATE	420 U	380 U	380 U	990	190 J
BUTYLBENZYL PHTHALATE	420 U	380 U	380 U	380 U	390 U
CAPROLACTAM	420 U	380 U	380 U	380 U	390 U
CARBAZOLE	420 U	380 U	380 U	380 U	390 U
CHRYSENE	420 U	380 U	380 U	380 U	390 U
DI-N-BUTYL PHTHALATE	420 U	380 U	380 U	380 U	390 U
DI-N-OCTYL PHTHALATE	420 U	380 U	380 U	380 U	97 J
DIBENZO(A,H)ANTHRACENE	420 U	380 U	380 U	380 U	390 U
DIBENZOFURAN	420 U	380 U	380 U	380 U	390 U
DIETHYLPHTHALATE	420 U	380 U	380 U	380 U	390 U
DIMETHYLPHTHALATE	420 U	380 U	380 U	380 U	390 U
FLUORANTHENE	420 U	380 U	380 U	380 U	390 U
FLUORENE	420 U	380 U	380 U	380 U	390 U
HEXACHLOROBENZENE	420 U	380 U	380 U	380 U	390 U
HEXACHLOROBUTADIENE	420 U	380 U	380 U	380 U	390 U
HEXACHLOROCYCLOPENTADIENE	420 U	380 U	380 U	380 U	390 U
HEXACHLOROETHANE	420 U	380 U	380 U	380 U	390 U
INDENO(1,2,3-CD)PYRENE	420 U	380 U	380 U	380 U	390 U
ISOPHORONE	420 U	380 U	380 U	380 U	390 U
N-NITROSO-DI-N-PROPYLAMINE	420 U	380 U	380 U	380 U	390 U
N-NITROSODIPHENYLAMINE	420 U	380 U	380 U	380 U	390 U
NAPHTHALENE	420 U	380 U	380 U	380 U	390 U
NITROBENZENE	420 U	380 U	380 U	380 U	390 U
PENTACHLOROPHENOL	1100 U	950 U	970 U	950 U	980 U
PHENANTHRENE	420 U	380 U	380 U	380 U	390 U
PHENOL	420 U	380 U	380 U	380 U	390 U
PYRENE	420 U	380 U	380 U	380 U	390 U
PESTICIDES/PCBs (ug/kg)					
4,4'-DDD	4.2 U	3.8 U	3.8 U	3.8 U	3.9 U
4,4'-DDE	4.2 U	2 J	3.8 U	3.8 U	3.9 U
4,4'-DDT	2 J	1.3 JP	3.8 U	3.8 U	3.9 U
ALDRIN	2.2 U	2 U	2 U	2 U	2 U
ALPHA-BHC	2.2 U	2 U	2 U	2 U	2 U

CHEATHAM ANNEX
SITE 7N
SURFACE SOIL - ORGANIC COMPOUNDS
RAW UNVALIDATED DATA

	07N-SS10-00 0-6" 04/22/2004	07N-SS12-00 0-6" 04/22/2004	07N-SS13-00 0-6" 4/22/2004	07N-SS14-00 0-6" 4/22/2004	07N-SS15-00 0-6" 4/22/2004
PESTICIDES/PCBs (ug/kg)					
ALPHA-CHLORDANE	2.2 U	0.46 JP	2 U	2 U	2 U
AROCLOR-1016	42 U	38 U	38 U	38 U	39 U
AROCLOR-1221	86 U	77 U	78 U	77 U	79 U
AROCLOR-1232	42 U	38 U	38 U	38 U	39 U
AROCLOR-1242	42 U	38 U	38 U	38 U	39 U
AROCLOR-1248	42 U	38 U	38 U	38 U	39 U
AROCLOR-1254	42 U	38 U	38 U	38 U	39 U
AROCLOR-1260	42 U	38 U	38 U	38 U	39 U
BETA-BHC	0.93 JP	1.1 JP	2 U	2 U	2 U
DELTA-BHC	2.2 U	2 U	2 U	2 U	2 U
DIELDRIN	4.2 U	3.8 U	3.8 U	3.8 U	3.9 U
ENDOSULFAN I	2.2 U	2 U	2 U	2 U	2 U
ENDOSULFAN II	4.2 U	3.8 U	3.8 U	3.8 U	3.9 U
ENDOSULFAN SULFATE	4.2 U	3.8 U	3.8 U	3.8 U	3.9 U
ENDRIN	4.2 U	3.8 U	3.8 U	3.8 U	3.9 U
ENDRIN ALDEHYDE	4.2 U	3.8 U	3.8 U	3.8 U	3.9 U
ENDRIN KETONE	4.2 U	3.8 U	3.8 U	3.8 U	3.9 U
GAMMA-BHC (LINDANE)	2.2 U	2 U	2 U	2 U	2 U
GAMMA-CHLORDANE	2.2 U	2 U	2 U	2 U	2 U
HEPTACHLOR	2.2 U	2 U	2 U	2 U	2 U
HEPTACHLOR EPOXIDE	1.2 J	2 U	2 U	2 U	2 U
METHOXCHLOR	22 U	20 U	20 U	20 U	20 U
TOXAPHENE	220 U	200 U	200 U	200 U	200 U
SIM PAHs (ug/kg)					
1-METHYLNAPHTALENE	11 U	9.5 U	9.7 U	9.5 U	9.8 U
2-METHYLNAPHTHALENE	11 U	9.5 U	9.7 U	9.5 U	9.8 U
ACENAPHTHENE	11 U	9.5 U	9.7 U	9.5 U	9.8 U
ACENAPHTHYLENE	11 U	9.5 U	9.7 U	9.5 U	9.8 U
ANTHRACENE	11 U	9.5 U	9.7 U	9.5 U	9.8 U
BENZO(A)ANTHRACENE	11 U	9.5 U	9.7 U	9.5 U	9.8 U
BENZO(A)PYRENE	11 U	9.5 U	9.7 U	9.5 U	9.8 U
BENZO(B)FLOURANTHENE	11 U	9.5 U	9.7 U	9.5 U	9.8 U
BENZO(G,H,I)PERYLENE	11 U	9.5 U	9.7 U	9.5 U	9.8 U
BENZO(K)FLUORANTHENE	11 U	4.7 J	9.7 U	9.5 U	9.8 U
CHRYSENE	11 U	5 J	9.7 U	9.5 U	9.8 U

CHEATHAM ANNEX
SITE 7N
SURFACE SOIL - ORGANIC COMPOUNDS
RAW UNVALIDATED DATA

	07N-SS10-00 0-6" 04/22/2004	07N-SS12-00 0-6" 04/22/2004	07N-SS13-00 0-6" 4/22/2004	07N-SS14-00 0-6" 4/22/2004	07N-SS15-00 0-6" 4/22/2004
SIM PAHs (ug/kg)					
DIBENZO(A,H)ANTHRACENE	11 U	9.5 U	9.7 U	9.5 U	9.8 U
FLUORANTHENE	11 U	6.7 J	4.6 J	9.5 U	4.4 J
FLUORENE	11 U	9.5 U	9.7 U	9.5 U	9.8 U
INDENO(1,2,3-CD)PYRENE	11 U	9.5 U	9.7 U	9.5 U	9.8 U
NAPHTHALENE	11 U	9.5 U	9.7 U	9.5 U	9.8 U
PHENANTHRENE	11 U	5.4 J	4.8 J	9.5 U	9.8 U
PYRENE	11 U	6.8 J	9.7 U	9.5 U	9.8 U

CHEATHAM ANNEX
SITE 7N
SUBSURFACE SOIL - INORGANIC COMPOUNDS
RAW UNVALIDATED DATA

	07N-SB10-01 6"-24" 04/22/2004	07N-SB10-01A 6"-24" 04/22/2004	07N-SB11-01 6"-24" 04/22/2004	07N-SB12-01 6"-24" 04/22/2004	07N-SB13-01 6"-24" 04/22/2004	07N-SB14-01 6"-24" 04/22/2004	07N-SB15-01 6"-24" 04/22/2004
METALS (mg/kg)							
ALUMINUM	10300	12400	9640	9300	10300	9290	9770
ANTIMONY	0.78 BN	0.94 BN	0.41 UN	0.6 BN	0.42 UN	0.41 UN	0.42 UN
ARSENIC	4.2	4.8	2.4	3.3	2.4	2.3	2.6
BARIUM	20.5 B	42.1 B	53.9	64.1	65.6	61.5	61
BERYLLIUM	0.18 B	0.23 B	0.43 B	1.6	0.48 B	0.54 B	0.48 B
CADMIUM	0.088 U	0.091 U	0.087 U	0.087 U	0.089 U	0.087 U	0.088 U
CALCIUM	994 B	1250	724 B	930 B	806 B	1050 B	902 B
CHROMIUM	16.6 E	18.4 E	9.2 E	7.2 E	8.7 E	6.9 E	7.4 E
COBALT	0.8 B	0.88 B	2 B	2.6 B	2.4 B	2.8 B	2.4 B
COPPER	2.1 B	4.1 B	4.2 B	3.3 B	3.1 B	2.4 B	2.7 B
CYANIDE	0.036 U	0.052 B	0.088 B	0.09 B	0.048 B	0.058 B	0.12 B
IRON	17000	24000	8130	14600	8060	6440	6870
LEAD	8.6	95.2	14.6	19.3	11.9	8.5	9.1
MAGNESIUM	886 B	1000 B	536 B	535 B	573 B	478 B	492 B
MANGANESE	8.9	15.4	33.8	134	99	122	123
MERCURY	0.049 U	0.059 B	0.054 B	0.05 U	0.042 U	0.046 U	0.049 U
NICKEL	2.1 B	3 B	3.9 B	4.5 B	3.9 B	4.2 B	4.1 B
POTASSIUM	513 BE	575 BE	312 BE	291 BE	319 BE	270 BE	284 BE
SELENIUM	0.53 U	0.55 U	0.52 U	0.53 U	0.53 U	0.52 U	0.53 U
SILVER	0.088 U	0.091 U	0.087 U	0.087 U	0.089 U	0.087 U	0.088 U
SODIUM	68.3 B	91.7 B	72.9 B	77.8 B	71.8 B	70.6 B	71.4 B
THALLIUM	0.7 U	0.73 U	0.7 U	0.7 U	0.71 U	0.7 U	0.71 U
VANADIUM	29.4	28.7	15.7	12.9	15.3	11.4	12.8
ZINC	10	17.4	19.1	19.2	14.3	12.5	13

CHEATHAM ANNEX
SITE 7N
SUBSURFACE SOIL - ORGANIC COMPOUNDS
RAW UNVALIDATED DATA

	07N-SB10-01 6"-24" 04/22/2004	07N-SB10-01A 6"-24" 04/22/2004	07N-SB11-01 6"-24" 04/22/2004	07N-SB12-01 6"-24" 04/22/2004	07N-SB13-01 6"-24" 04/22/2004	07N-SB14-01 6"-24" 04/22/2004	07N-SB15-01 6"-24" 04/22/2004
SEMIVOLATILES (ug/kg)							
1,1'-BIPHENYL	390 U	390 U	380 U	380 U	380 U	390 U	390 U
2,2'-OXYBIS(1-CHLOROPROPANE)	390 U	390 U	380 U	380 U	380 U	390 U	390 U
2,4,5-TRICHLOROPHENOL	990 U	990 U	950 U	950 U	940 U	990 U	980 U
2,4,6-TRICHLOROPHENOL	390 U	390 U	380 U	380 U	380 U	390 U	390 U
2,4-DICHLOROPHENOL	390 U	390 U	380 U	380 U	380 U	390 U	390 U
2,4-DIMETHYLPHENOL	390 U	390 U	380 U	380 U	380 U	390 U	390 U
2,4-DINITROPHENOL	990 U	990 U	950 U	950 U	940 U	990 U	980 U
2,4-DINITROTOLUENE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
2,6-DINITROTOLUENE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
2-CHLORONAPHTHALENE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
2-CHLOROPHENOL	390 U	390 U	380 U	380 U	380 U	390 U	390 U
2-METHYLNAPHTHALENE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
2-METHYLPHENOL	390 U	390 U	380 U	380 U	380 U	390 U	390 U
2-NITROANILINE	990 U	990 U	950 U	950 U	940 U	990 U	980 U
2-NITROPHENOL	390 U	390 U	380 U	380 U	380 U	390 U	390 U
3,3'-DICHLOROBENZIDINE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
3-NITROANILINE	990 U	990 U	950 U	950 U	940 U	990 U	980 U
4,6-DINITRO-2-METHYLPHENOL	990 U	990 U	950 U	950 U	940 U	990 U	980 U
4-BROMOPHENYL-PHENYLETHER	390 U	390 U	380 U	380 U	380 U	390 U	390 U
4-CHLORO-3-METHYLPHENOL	390 U	390 U	380 U	380 U	380 U	390 U	390 U
4-CHLOROANILINE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
4-CHLOROPHENYL-PHENYLETHER	390 U	390 U	380 U	380 U	380 U	390 U	390 U
4-METHYLPHENOL	390 U	390 U	380 U	380 U	380 U	390 U	390 U
4-NITROANILINE	990 U	990 U	950 U	950 U	940 U	990 U	980 U
4-NITROPHENOL	990 U	990 U	950 U	950 U	940 U	990 U	980 U
ACENAPHTHENE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
ACENAPHTHYLENE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
ACETOPHENONE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
ANTHRACENE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
ATRAZINE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
BENZALDEHYDE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
BENZO(A)ANTHRACENE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
BENZO(A)PYRENE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
BENZO(B)FLUORANTHENE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
BENZO(G,H,I)PERYLENE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
BENZO(K)FLUORANTHENE	390 U	390 U	380 U	380 U	380 U	390 U	390 U

CHEATHAM ANNEX
SITE 7N
SUBSURFACE SOIL - ORGANIC COMPOUNDS
RAW UNVALIDATED DATA

	07N-SB10-01 6"-24" 04/22/2004	07N-SB10-01A 6"-24" 04/22/2004	07N-SB11-01 6"-24" 04/22/2004	07N-SB12-01 6"-24" 04/22/2004	07N-SB13-01 6"-24" 04/22/2004	07N-SB14-01 6"-24" 04/22/2004	07N-SB15-01 6"-24" 04/22/2004
SEMIVOLATILES (ug/kg)							
BIS(2-CHLOROETHOXY) METHANE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
BIS(2-CHLOROETHYL) ETHER	390 U	390 U	380 U	380 U	380 U	390 U	390 U
BIS(2-ETHYLHEXYL) PHTHALATE	110 J	390 U	380 U	380 U	89 J	94 J	390 U
BUTYLBENZYL PHTHALATE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
CAPROLACTAM	390 U	390 U	380 U	380 U	380 U	390 U	390 U
CARBAZOLE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
CHRYSENE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
DI-N-BUTYL PHTHALATE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
DI-N-OCTYL PHTHALATE	210 J	390 U	380 U	380 U	170 J	82 J	390 U
DIBENZO(A,H)ANTHRACENE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
DIBENZOFURAN	390 U	390 U	380 U	380 U	380 U	390 U	390 U
DIETHYLPHTHALATE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
DIMETHYLPHTHALATE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
FLUORANTHENE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
FLUORENE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
HEXACHLOROBENZENE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
HEXACHLOROBUTADIENE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
HEXACHLOROCYCLOPENTADIENE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
HEXACHLOROETHANE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
INDENO(1,2,3-CD)PYRENE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
ISOPHORONE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
N-NITROSO-DI-N-PROPYLAMINE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
N-NITROSODIPHENYLAMINE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
NAPHTHALENE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
NITROBENZENE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
PENTACHLOROPHENOL	990 U	990 U	950 U	950 U	940 U	990 U	980 U
PHENANTHRENE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
PHENOL	390 U	390 U	380 U	380 U	380 U	390 U	390 U
PYRENE	390 U	390 U	380 U	380 U	380 U	390 U	390 U
PESTICIDES/PCBs (ug/kg)							
4,4'-DDD	3.9 U	3.9 U	3.8 U	3.8 U	3.8 U	3.9 U	3.9 U
4,4'-DDE	3.9 U	3.9 U	3.8 U	3.8 U	3.8 U	3.9 U	3.9 U
4,4'-DDT	3.9 U	3.9 U	3.8 U	3.8 U	3.8 U	3.9 U	3.9 U
ALDRIN	2 U	2 U	2 U	2 U	1.9 U	2 U	2 U
ALPHA-BHC	2 U	2 U	2 U	2 U	1.9 U	2 U	2 U

CHEATHAM ANNEX
SITE 7N
SUBSURFACE SOIL - ORGANIC COMPOUNDS
RAW UNVALIDATED DATA

	07N-SB10-01 6"-24" 04/22/2004	07N-SB10-01A 6"-24" 04/22/2004	07N-SB11-01 6"-24" 04/22/2004	07N-SB12-01 6"-24" 04/22/2004	07N-SB13-01 6"-24" 04/22/2004	07N-SB14-01 6"-24" 04/22/2004	07N-SB15-01 6"-24" 04/22/2004
PESTICIDES/PCBs (ug/kg)							
ALPHA-CHLORDANE	2 U	2 U	2 U	2 U	1.9 U	2 U	2 U
AROCLOR-1016	39 U	39 U	38 U	38 U	38 U	39 U	39 U
AROCLOR-1221	80 U	80 U	77 U	77 U	76 U	80 U	79 U
AROCLOR-1232	39 U	39 U	38 U	38 U	38 U	39 U	39 U
AROCLOR-1242	39 U	39 U	38 U	38 U	38 U	39 U	39 U
AROCLOR-1248	39 U	39 U	38 U	38 U	38 U	39 U	39 U
AROCLOR-1254	39 U	39 U	38 U	38 U	38 U	39 U	39 U
AROCLOR-1260	39 U	39 U	38 U	38 U	38 U	39 U	39 U
BETA-BHC	2 U	2 U	2 U	2 U	1.9 U	2 U	2 U
DELTA-BHC	2 U	2 U	2 U	2 U	1.9 U	2 U	2 U
DIELDRIN	3.9 U	3.9 U	3.8 U	3.8 U	3.8 U	3.9 U	3.9 U
ENDOSULFAN I	2 U	2 U	2 U	2 U	1.9 U	2 U	2 U
ENDOSULFAN II	3.9 U	3.9 U	3.8 U	3.8 U	3.8 U	3.9 U	3.9 U
ENDOSULFAN SULFATE	3.9 U	3.9 U	3.8 U	3.8 U	3.8 U	3.9 U	3.9 U
ENDRIN	3.9 U	3.9 U	3.8 U	3.8 U	3.8 U	3.9 U	3.9 U
ENDRIN ALDEHYDE	3.9 U	3.9 U	3.8 U	3.8 U	3.8 U	3.9 U	3.9 U
ENDRIN KETONE	3.9 U	3.9 U	3.8 U	3.8 U	3.8 U	3.9 U	3.9 U
GAMMA-BHC (LINDANE)	2 U	2 U	2 U	2 U	1.9 U	2 U	2 U
GAMMA-CHLORDANE	2 U	2 U	2 U	2 U	1.9 U	2 U	2 U
HEPTACHLOR	2 U	2 U	2 U	2 U	1.9 U	2 U	2 U
HEPTACHLOR EPOXIDE	2 U	2 U	2 U	2 U	1.9 U	2 U	2 U
METHOXCHLOR	20 U	20 U	20 U	20 U	19 U	20 U	20 U
TOXAPHENE	200 U	200 U	200 U	200 U	190 U	200 U	200 U
PAHs (ug/kg)							
1-METHYLNAPHTALENE	9.9 U	9.9 U	9.5 U	9.5 U	9.4 U	9.9 U	9.8 U
2-METHYLNAPHTHALENE	9.9 U	9.9 U	9.5 U	9.5 U	9.4 U	9.9 U	9.8 U
ACENAPHTHENE	9.9 U	9.9 U	9.5 U	9.5 U	9.4 U	9.9 U	9.8 U
ACENAPHTHYLENE	9.9 U	9.9 U	9.5 U	9.5 U	9.4 U	9.9 U	9.8 U
ANTHRACENE	9.9 U	9.9 U	9.5 U	9.5 U	9.4 U	9.9 U	9.8 U
BENZO(A)ANTHRACENE	9.9 U	9.9 U	9.5 U	9.5 U	9.4 U	9.9 U	9.8 U
BENZO(A)PYRENE	9.9 U	9.9 U	9.5 U	9.5 U	9.4 U	9.9 U	9.8 U
BENZO(B)FLOURANTHENE	9.9 U	9.9 U	9.5 U	9.5 U	9.4 U	9.9 U	9.8 U
BENZO(G,H,I)PERYLENE	9.9 U	9.9 U	9.5 U	9.5 U	9.4 U	9.9 U	9.8 U
BENZO(K)FLUORANTHENE	9.9 U	9.9 U	9.5 U	9.5 U	9.4 U	9.9 U	9.8 U
CHRYSENE	9.9 U	9.9 U	9.5 U	9.5 U	9.4 U	9.9 U	9.8 U

CHEATHAM ANNEX
SITE 7N
SUBSURFACE SOIL - ORGANIC COMPOUNDS
RAW UNVALIDATED DATA

	07N-SB10-01 6"-24" 04/22/2004	07N-SB10-01A 6"-24" 04/22/2004	07N-SB11-01 6"-24" 04/22/2004	07N-SB12-01 6"-24" 04/22/2004	07N-SB13-01 6"-24" 04/22/2004	07N-SB14-01 6"-24" 04/22/2004	07N-SB15-01 6"-24" 04/22/2004
PAHs (ug/kg)							
DIBENZO(A,H)ANTHRACENE	9.9 U	9.9 U	9.5 U	9.5 U	9.4 U	9.9 U	9.8 U
FLUORANTHENE	9.9 U	6.1 J	9.5 U	9.5 U	9.4 U	9.9 U	9.8 U
FLUORENE	9.9 U	9.9 U	9.5 U	9.5 U	9.4 U	9.9 U	9.8 U
INDENO(1,2,3-CD)PYRENE	9.9 U	9.9 U	9.5 U	9.5 U	9.4 U	9.9 U	9.8 U
NAPHTHALENE	9.9 U	9.9 U	9.5 U	9.5 U	9.4 U	9.9 U	9.8 U
PERYLENE-D12	79 E	79 E	77 E	77 E	76 E	79 E	78 E
PHENANTHRENE	9.9 U	8.8 J	9.5 U	9.5 U	9.4 U	9.9 U	9.8 U
PYRENE	9.9 U	9.9 U	9.5 U	9.5 U	9.4 U	9.9 U	9.8 U
METALS (mg/kg)							
ALUMINUM	10300	12400	9640	9300	10300	9290	9770
ANTIMONY	0.78 BN	0.94 BN	0.41 UN	0.6 BN	0.42 UN	0.41 UN	0.42 UN
ARSENIC	4.2	4.8	2.4	3.3	2.4	2.3	2.6
BARIUM	20.5 B	42.1 B	53.9	64.1	65.6	61.5	61
BERYLLIUM	0.18 B	0.23 B	0.43 B	1.6	0.48 B	0.54 B	0.48 B
CADMIUM	0.088 U	0.091 U	0.087 U	0.087 U	0.089 U	0.087 U	0.088 U
CALCIUM	994 B	1250	724 B	930 B	806 B	1050 B	902 B
CHROMIUM	16.6 E	18.4 E	9.2 E	7.2 E	8.7 E	6.9 E	7.4 E
COBALT	0.8 B	0.88 B	2 B	2.6 B	2.4 B	2.8 B	2.4 B
COPPER	2.1 B	4.1 B	4.2 B	3.3 B	3.1 B	2.4 B	2.7 B
CYANIDE	0.036 U	0.052 B	0.088 B	0.09 B	0.048 B	0.058 B	0.12 B
IRON	17000	24000	8130	14600	8060	6440	6870
LEAD	8.6	95.2	14.6	19.3	11.9	8.5	9.1
MAGNESIUM	886 B	1000 B	536 B	535 B	573 B	478 B	492 B
MANGANESE	8.9	15.4	33.8	134	99	122	123
MERCURY	0.049 U	0.059 B	0.054 B	0.05 U	0.042 U	0.046 U	0.049 U
NICKEL	2.1 B	3 B	3.9 B	4.5 B	3.9 B	4.2 B	4.1 B
POTASSIUM	513 BE	575 BE	312 BE	291 BE	319 BE	270 BE	284 BE
SELENIUM	0.53 U	0.55 U	0.52 U	0.53 U	0.53 U	0.52 U	0.53 U
SILVER	0.088 U	0.091 U	0.087 U	0.087 U	0.089 U	0.087 U	0.088 U
SODIUM	68.3 B	91.7 B	72.9 B	77.8 B	71.8 B	70.6 B	71.4 B
THALLIUM	0.7 U	0.73 U	0.7 U	0.7 U	0.71 U	0.7 U	0.71 U
VANADIUM	29.4	28.7	15.7	12.9	15.3	11.4	12.8
ZINC	10	17.4	19.1	19.2	14.3	12.5	13

CHEATHAM ANNEX
SITE 7N
SUBSURFACE SOIL - INORGANIC COMPOUNDS
RAW UNVALIDATED DATA

	07N-SB10-01 6"-24" 04/22/2004	07N-SB10-01A 6"-24" 04/22/2004	07N-SB11-01 6"-24" 04/22/2004	07N-SB12-01 6"-24" 04/22/2004	07N-SB13-01 6"-24" 04/22/2004	07N-SB14-01 6"-24" 04/22/2004	07N-SB15-01 6"-24" 04/22/2004
METALS (mg/kg)							
ALUMINUM	10300	12400	9640	9300	10300	9290	9770
ANTIMONY	0.78 BN	0.94 BN	0.41 UN	0.6 BN	0.42 UN	0.41 UN	0.42 UN
ARSENIC	4.2	4.8	2.4	3.3	2.4	2.3	2.6
BARIUM	20.5 B	42.1 B	53.9	64.1	65.6	61.5	61
BERYLLIUM	0.18 B	0.23 B	0.43 B	1.6	0.48 B	0.54 B	0.48 B
CADMIUM	0.088 U	0.091 U	0.087 U	0.087 U	0.089 U	0.087 U	0.088 U
CALCIUM	994 B	1250	724 B	930 B	806 B	1050 B	902 B
CHROMIUM	16.6 E	18.4 E	9.2 E	7.2 E	8.7 E	6.9 E	7.4 E
COBALT	0.8 B	0.88 B	2 B	2.6 B	2.4 B	2.8 B	2.4 B
COPPER	2.1 B	4.1 B	4.2 B	3.3 B	3.1 B	2.4 B	2.7 B
CYANIDE	0.036 U	0.052 B	0.088 B	0.09 B	0.048 B	0.058 B	0.12 B
IRON	17000	24000	8130	14600	8060	6440	6870
LEAD	8.6	95.2	14.6	19.3	11.9	8.5	9.1
MAGNESIUM	886 B	1000 B	536 B	535 B	573 B	478 B	492 B
MANGANESE	8.9	15.4	33.8	134	99	122	123
MERCURY	0.049 U	0.059 B	0.054 B	0.05 U	0.042 U	0.046 U	0.049 U
NICKEL	2.1 B	3 B	3.9 B	4.5 B	3.9 B	4.2 B	4.1 B
POTASSIUM	513 BE	575 BE	312 BE	291 BE	319 BE	270 BE	284 BE
SELENIUM	0.53 U	0.55 U	0.52 U	0.53 U	0.53 U	0.52 U	0.53 U
SILVER	0.088 U	0.091 U	0.087 U	0.087 U	0.089 U	0.087 U	0.088 U
SODIUM	68.3 B	91.7 B	72.9 B	77.8 B	71.8 B	70.6 B	71.4 B
THALLIUM	0.7 U	0.73 U	0.7 U	0.7 U	0.71 U	0.7 U	0.71 U
VANADIUM	29.4	28.7	15.7	12.9	15.3	11.4	12.8
ZINC	10	17.4	19.1	19.2	14.3	12.5	13

CHEATHAM ANNEX
SITE 7N
QA/QC SAMPLE
RAW UNVALIDATED DATA

	CAX-07N-RB01 4/22/2004
SEMIVOLATILES (ug/l)	
1,1'-BIPHENYL	10 U
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U
2,4,5-TRICHLOROPHENOL	25 U
2,4,6-TRICHLOROPHENOL	10 U
2,4-DICHLOROPHENOL	10 U
2,4-DIMETHYLPHENOL	10 U
2,4-DINITROPHENOL	25 U
2,4-DINITROTOLUENE	10 U
2,6-DINITROTOLUENE	10 U
2-CHLORONAPHTHALENE	10 U
2-CHLOROPHENOL	10 U
2-METHYLNAPHTHALENE	10 U
2-METHYLPHENOL	10 U
2-NITROANILINE	25 U
2-NITROPHENOL	10 U
3,3'-DICHLOROBENZIDINE	10 U
3-NITROANILINE	25 U
4,6-DINITRO-2-METHYLPHENOL	25 U
4-BROMOPHENYL-PHENYLETHER	10 U
4-CHLORO-3-METHYLPHENOL	10 U
4-CHLOROANILINE	10 U
4-CHLOROPHENYL-PHENYLETHER	10 U
4-METHYLPHENOL	10 U
4-NITROANILINE	25 U
4-NITROPHENOL	25 U
ACENAPHTHENE	10 U
ACENAPHTHENE-D10	18
ACENAPHTHYLENE	10 U
ACETOPHENONE	10 U
ANTHRACENE	10 U
ATRAZINE	10 U
BENZALDEHYDE	10 U
BENZO(A)ANTHRACENE	10 U
BENZO(A)PYRENE	10 U
BENZO(B)FLUORANTHENE	10 U
BENZO(G,H,I)PERYLENE	10 U
BENZO(K)FLUORANTHENE	10 U
BIS(2-CHLOROETHOXY) METHANE	10 U

CHEATHAM ANNEX
SITE 7N
QA/QC SAMPLE
RAW UNVALIDATED DATA

	CAX-07N-RB01 4/22/2004
SEMIVOLATILES (ug/l)	
BIS(2-CHLOROETHYL) ETHER	10 U
BIS(2-ETHYLHEXYL) PHTHALATE	2 JB
BUTYLBENZYL PHTHALATE	10 U
CAPROLACTAM	10 U
CARBAZOLE	10 U
CHRYSENE	10 U
DI-N-BUTYL PHTHALATE	10 U
DI-N-OCTYL PHTHALATE	10 U
DIBENZO(A,H)ANTHRACENE	10 U
DIBENZOFURAN	10 U
DIETHYLPHTHALATE	10 U
DIMETHYLPHTHALATE	10 U
FLUORANTHENE	10 U
FLUORENE	10 U
HEXACHLOROBENZENE	10 U
HEXACHLOROBUTADIENE	10 U
HEXACHLOROCYCLOPENTADIENE	10 U
HEXACHLOROETHANE	10 U
INDENO(1,2,3-CD)PYRENE	10 U
ISOPHORONE	10 U
N-NITROSO-DI-N-PROPYLAMINE	10 U
N-NITROSODIPHENYLAMINE	10 U
NAPHTHALENE	10 U
NITROBENZENE	10 U
PENTACHLOROPHENOL	25 U
PHENANTHRENE	10 U
PHENOL	10 U
PYRENE	10 U
PESTICIDES/PCBs (ug/l)	
4,4'-DDD	0.1 U
4,4'-DDE	0.1 U
4,4'-DDT	0.1 U
ALDRIN	0.05 U
ALPHA-BHC	0.05 U
ALPHA-CHLORDANE	0.05 U
AROCLOR-1016	1 U
AROCLOR-1221	2 U

CHEATHAM ANNEX
SITE 7N
QA/QC SAMPLE
RAW UNVALIDATED DATA

	CAX-07N-RB01 4/22/2004
PESTICIDES/PCBs (ug/l)	
AROCLOR-1232	1 U
AROCLOR-1242	1 U
AROCLOR-1248	1 U
AROCLOR-1254	1 U
AROCLOR-1260	1 U
BETA-BHC	0.05 U
DELTA-BHC	0.05 U
DIELDRIN	0.1 U
ENDOSULFAN I	0.05 U
ENDOSULFAN II	0.1 U
ENDOSULFAN SULFATE	0.1 U
ENDRIN	0.1 U
ENDRIN ALDEHYDE	0.1 U
ENDRIN KETONE	0.1 U
GAMMA-BHC (LINDANE)	0.05 U
GAMMA-CHLORDANE	0.05 U
HEPTACHLOR	0.05 U
HEPTACHLOR EPOXIDE	0.05 U
METHOXCHLOR	0.5 U
TOXAPHENE	5 U
SIM PAHs (ug/l)	
1-METHYLNAPHTALENE	0.25 U
2-METHYLNAPHTHALENE	0.25 U
ACENAPHTHENE	0.25 U
ACENAPHTHYLENE	0.25 U
ANTHRACENE	0.25 U
BENZO(A)ANTHRACENE	0.25 U
BENZO(A)PYRENE	0.25 U
BENZO(B)FLOURANTHENE	0.25 U
BENZO(G,H,I)PERYLENE	0.25 U
BENZO(K)FLUORANTHENE	0.25 U
CHRYSENE	0.25 U
DIBENZO(A,H)ANTHRACENE	0.25 U
FLUORANTHENE	0.25 U
FLUORENE	0.25 U
INDENO(1,2,3-CD)PYRENE	0.25 U
NAPHTHALENE	0.25 U

CHEATHAM ANNEX
SITE 7N
QA/QC SAMPLE
RAW UNVALIDATED DATA

	CAX-07N-RB01 4/22/2004
PAHs (ug/l)	
PHENANTHRENE	0.25 U
PYRENE	0.25 U
PESTICIDES/PCBs (ug/l)	
4,4'-DDD	0.1 U
4,4'-DDE	0.1 U
4,4'-DDT	0.1 U
ALDRIN	0.05 U
ALPHA-BHC	0.05 U
ALPHA-CHLORDANE	0.05 U
AROCLOR-1016	1 U
AROCLOR-1221	2 U
AROCLOR-1232	1 U
AROCLOR-1242	1 U
AROCLOR-1248	1 U
AROCLOR-1254	1 U
AROCLOR-1260	1 U
BETA-BHC	0.05 U
DELTA-BHC	0.05 U
DIELDRIN	0.1 U
ENDOSULFAN I	0.05 U
ENDOSULFAN II	0.1 U
ENDOSULFAN SULFATE	0.1 U
ENDRIN	0.1 U
ENDRIN ALDEHYDE	0.1 U
ENDRIN KETONE	0.1 U
GAMMA-BHC (LINDANE)	0.05 U
GAMMA-CHLORDANE	0.05 U
HEPTACHLOR	0.05 U
HEPTACHLOR EPOXIDE	0.05 U
METHOXCHLOR	0.5 U
TOXAPHENE	5 U
METALSs (ug/l)	
ALUMINUM	27.7 U
ANTIMONY	2.4 B
ARSENIC	2.5 U
BARIUM	2.3 U

CHEATHAM ANNEX
SITE 7N
QA/QC SAMPLE
RAW UNVALIDATED DATA

	CAX-07N-RB01 4/22/2004
METALSs (ug/l)	
BERYLLIUM	0.3 U
CADMIUM	0.4 U
CALCIUM	27 B
CHROMIUM	0.8 U
COBALT	0.7 U
COPPER	1.3 U
IRON	29.1 U
LEAD	2.7 B
MAGNESIUM	11.8 U
MANGANESE	0.77 B
MERCURY	0.1 U
NICKEL	0.7 U
POTASSIUM	24.1 U
SELENIUM	2.4 U
SILVER	0.44 B
SODIUM	202 U
THALLIUM	8.5 B
VANADIUM	0.4 U
ZINC	3.9 B

BHATE
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14 ~~=~~ day TAT

Chain of Custody and Analytical Request

Page ____ of ____

Project Number: 9030080
SITE 7N

Chain of Custody Number [1]: ____

LIMS Number: ____

Facility/Base I.D.: Cheatham Annex Site 7(North)

Project Name / Site Name: CAX-07N

Client Name: LANTDIV

Collected by: B. Frey M. Ivester

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code [2]	Sample Number [3]	Sample Matrix [4]	Number of containers	Sample Analysis Requested [5]: TAL SVOCs	SIM PAHs	TAL PEST/PCBs	TAL Metals	Cyanide	Full TCLP suite			Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
CAX-07N-SS10-00	CAX07NSS1000	4/22/04	0910	0 - 6"	N	1	SO	4	X	X	X	X	X							
SB10-01	SB1001		0916	6" - 24"	N	1	SO	4												
SB11-01	SB1101		1010	6" - 24"	N	1	SO	4												
SS12-00	SS1200		1110	0 - 6"	N	1	SO	4												
SB12-01	SB1201		1120	6" - 24"	N	1	SO	4												
SS13-00	SS1300		1240	0 - 6"	N	1	SO	4												
SB13-01	SB1301		1300	6" - 24"	N	1	SO	3												
SS14-00	SS1400		1330	0 - 6"	N	1	SO	3												
SB14-01	SB1401		1345	6" - 24"	N	1	SO	3												
SS15-00	SS1500		1350	0 - 6"	N	1	SO	3												
SB15-01	SB1501		1400	6" - 24"	N	1	SO	3												

COMMENTS: ____

Custody Transfers Prior to Receipt by Laboratory

	Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1.	[signature]	4/22/04				
2.						
3.						

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped No.: ____
Method of Shipment: ____ Airbill Number: ____
Analytical Lab: ____ Delivery Location: ____
Lab Recipient: ____ Delivery Date/Time: ____

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)
2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)
3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)
4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc.), SQ = Soil Blanks
5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.
6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control)

DISTRIBUTION: WHITE COPY - Project File YELLOW COPY - Lab Copy PINK COPY - Working File

BHATE
Environmental Associates, Inc.
1608 13th Avenue South, Suite 300
Birmingham, Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

14 day TAT

Chain of Custody and Analytical Request

Page 2 of 2

Project Number: 9030080 SITE 7N

Chain of Custody Number [1]: _____

LIMS Number: _____

Facility/Base I.D.: Chatham Annex Site 7 (North)

Project Name / Site Name: CAX-07N

Client Name: LANTDIV

Collected by: B. Frey M. Ivester

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code [2]	Sample Number [3]	Sample Matrix [4]	Number of containers	Sample Analysis Requested [5]: TCL SVOCs	TAL SVOCs	SIM PAHs	TCL PEST/PCBs	TAL Metals	Cyanide	Full TCL (3)	Ignitability/Corrosivity/Reactivity	Quality Assurance Samples [6]: Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
CAX-07N-SB10-0004	CAX07NSB10004	4-22-04	0915	6" - 24"	SA	2	SO	4		X	X	X	X	X	X					
CAX-07N-SS12-0004MSMSD	CAX07NSS12004MSD	4-22-04	1110	0 - 6"	MS SD	2	SO	4		X	X	X	X	X	X					
CAX-07N-RB01	CAX07NRB01	4-22-04	1300	- - -	EB	1	WQ	7		X	X	X	X	X	X	*	BD			
CAX-07N-IDW	CAX07NIDW	4-22-04	1430	- - -	N	1	WQ	3								X				
				-																
				-																
				-																
				-																
				-																
				-																
				-																

COMMENTS: * Please pull cyanide from one of the aters for the rinsate

Custody Transfers Prior to Receipt by Laboratory

	Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1.	[signature]	4/22/04				
2.						
3.						

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped No.: _____

Method of Shipment: _____ Airbill Number: _____

Analytical Lab: _____ Delivery Location: _____

Lab Recipient: _____ Delivery Date/Time: _____

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc.), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control)

Response to Comments
Draft Trenching Letter Report
Site 7N
Naval Weapons Station Yorktown, Cheatham Annex Site
Williamsburg, Virginia

The Draft Trenching Letter Report for Site 7N at Naval Weapons Station Yorktown, Cheatham Annex Site was submitted for review on March 19, 2004. The Navy provided the following comments to Baker in an email dated April 8, 2004. Given that more than trenching was conducted at Site 7N, the report title has been changed, and The Final Trenching and Limited Field Investigation Report for Site 7N was revised to incorporate these comments, as applicable and noted in the responses below.

Navy Comments:

1. **Comment:** Page 6, 2nd paragraph. The Navy did not concur with the proposed sampling plan. CNRMA indicates that they did not have an opportunity to comment. Please reference any email correspondence indicating concurrence with sampling plan.

   Response: Baker did not receive written or oral concurrence on the proposed sampling plan; therefore, the statement that "The Navy concurred with the proposed sampling plan" was removed from the document.

   Please note that Baker submitted the proposed sampling plan to NAVFAC the morning of Thursday, February 26, 2004. By 12:13 p.m. of the same day, NAVFAC emailed the proposed plan to the entire Yorktown Partnering Team and told the Team that sampling was scheduled to commence on Monday, March 1, 2004. From the start of this project, it was understood that this work was on an expedited time scale (trenching February 9 and 10, 2004, RAB meeting presentation February 18, 2004, proposed sampling plan created and submitted within five business days after the RAB meeting, etc.). Baker and Bhate Environmental, Inc. conducted the waste boundary edge refinement Monday, March 1, 2004 and didn't actually begin sample collection until Wednesday, March 3, 2004.

2. **Comment:** Page 7, 3rd paragraph. Please elaborate. Which analytes exceeded which category (cleanup goals or background)?

   Response: The text has been revised to incorporate specific detect information.

3. **Comment:** Page 7, 4th paragraph. Based on these findings, the comment about the paint from the cabin appears tenuous because SS2 only exceeds SS3 by 21% while SS2 and SS3 exceed background for soil group association #2 by 600% or 2.5 orders of magnitude.

   Response: Agreed that relating the lead detection in SS3-00 to lead paint is not solidly based. Therefore, speculation on the origin of the lead has been removed from the document.

4. **Comment:** Page 8, 1st paragraph. Please explain why we only performed one sample for dioxin. Why didn't we sample the ash layer around the cabin?

Response: The sample analyses were on a rapid turn around (7-Day) timeframe, which means the cost per sample is approximately double the price for normal (28-Day) turn. The cost for rapid turn dioxin analysis is expensive (approximately $850/sample). Therefore, Baker limited the number of dioxin samples to one from where the ash was thickest (i.e., along the exposed slope), assuming that this sample would represent "worst case" conditions. The thought was to determine if dioxin was present where it was most expected prior to "chasing it" in other areas of the site. If present, then the dioxin result could be handled in one and/or two ways: (1) assume that result is representative of all ash across the site and/or (2) take additional samples on a normal turn (i.e., less expensive) prior to a removal action. An explanation why only one dioxin sample was collected has been added as a footnote to this section.

5. **Comment:** Page 8, 3rd paragraph, 1st bullet. Six and eight have detects for lead and zinc. We have not bounded the northern waste boundary either vertically or horizontally and, therefore, should say as much.

Response: Agreed. Text has been revised.

6. **Comment:** Page 8, 3rd paragraph, 2nd bullet. See comment about boundary line on Figure 5.

Response: The Figure 5 comment states that the green (i.e., clean) line should be north of sample SS9 since SS9 defines the clean southeast boundary. Agreed. Figure 5 has been revised.

7. **Comment:** Page 8, 3rd paragraph, 3rd bullet. Replace "corner" with "quadrant". Because sample 6 is elevated, as is 7, all we can say is that the quadrant has not been defined. It would be more accurate to state that the north and southwest quadrants have not been defined.

Response: Agreed. Text has been revised.

8. **Comment:** Figure 5. If SS9 is clean then the green line should be north of the sample.

Response: Agreed. See also response to Comment 6 above.

9. **Comment:** Figure 6. The drop-off is much steeper, i.e., the distance horizontally is not as great as depicted. A' is shown to the right of SB4 in Figure 5. Are you saying that the debris goes beyond Figure 5 boundary? Recommend having this figure reviewed by a mechanical or civil engineer who can provide guidance on using drawing sections and details.

Response: No, the debris does not go beyond the Figure 5 boundary. We agree that the drop-off is much steeper and the A-A' line on both figures lends to a bit of confusion. Figure 6 was created prior to the Site 7N topographic survey and based on limited GPS data. It does contribute significantly to this document; therefore, it has been removed from the report. (However, now that the Site 7N topographic survey is complete, a more accurate figure similar to Figure 6 will be created at a future date as part of the stabilization design.)

Also, please note that Figures 1 to 5 have been updated with the topographic survey data. Therefore, the steepness of the slope, as well as other key site features, is now clearly defined.

10. **Comment:** Table 2. Please explain, was the entire area underlain with a gravel sub-base at 8?

Response: (Note: Table 2 of the draft is now Table 3 for the final.) The sampling team did not know the extent (horizontal and vertical) of the gravel sub-base. Based on the hand-dug holes used to refine the northern waste boundary, it appeared to extend from the fence line (near where sample point #8 was located) west toward the single-vehicle, asphalt, parking area between Cabins 169 and 170. The sampling team could not determine how thick the gravel layer was because hand augering and hand digging could not penetrate much more than the top three-four inches of the gravel sub-base. A note has been added to the table to reflect this information.

11. **Comment:** Table 3. Where is SB8? Did you attempt to move over a foot or two and re-auger?

Response: (Note: Table 3 of the draft is now Table 4 for the final.) At sample location #8, around nine inches below ground surface (bgs), the sampling team crew encountered the gravel layer. Several attempts were made with the hand auger and with a sampling spoon to break through the gravel layer and get to the soil below, but the gravel was large (about 3" long) and fairly compact. The sampling team offset from the original sample location by about one and half feet on three separate tries [to the west (once) and to the north (twice)] and each time encountered the gravel layer around nine inches bgs and could not break through it.

Field conditions suggested that continuing to move north to try to get out of the gravel would move the sample location too far from what was considered the "clean" boundary (i.e., where there was no visible ash or debris), thus possibly creating an unnecessary extension of the northern waste boundary by 15 to 20 feet (or more). Therefore, the sampling team declared subsurface refusal at this location. This information, along with the response to Comment 10, has been added to a note on (new) Table 3; therefore, a note on (new) Table 4 will be unnecessary.

12. **Comment:** Page 6, 2nd paragraph. Recommend that you speculate what the gravel might mean, i.e., septic tank drain field.

Response: Agreed. Baker did not receive requested utility maps to confirm the location of the septic drain field. Nonetheless, while collecting the samples around Cabin 170, Baker revisited this area and it appears to be gravel for an old road/parking area. A footnote has been added to the text to reflect that the gravel could be related to either a drain field or former road bed.

13. **Comment:** Page 9, continuation of page 8. Please explain why removal of the 650 cy would require shoreline stabilization. Or are you talking about erosion control from storm water runoff?

Response: Debris removal could undermine the slope. Therefore, some form of slope stabilization may be required as part of any removal action. Stabilization could include

cutting back the top of the slope to create a more steady condition. Stabilizing the slope, as part of a removal action, also would help minimize the affects of stormwater erosion. This information has been added to the text.

14. **Comment:** Table 5. Do we need more data to assess risk?

Response:

A. (Note: Table 5 for the draft is now Table 8 for the final.) Specific to Dioxin: Dawn Ioven with the U.S. EPA stated in an email dated April 28, 2004 that the risk shown from the single dioxin sample "falls within EPA's acceptable range of 1E-06 to 1E-04" and that "the detected concentration is less than [the EPA's residential soil clean-up standard for dioxin – 1 ppb or 1E-03 ppm]." Her recommendation was to "move forward with the current path (i.e., temporary shoreline protection to prevent further erosion and exposure until a removal action can be performed) and, in the near future, collect two or three more soil samples for dioxin analysis just to make sure we're not missing more significant levels."

Patricia McMurray and Stephen Mihalko with the Virginia Department of Environmental Quality, in an email dated April 30, 2004, agreed with the EPA. Their recommendation was to "continue with the removal process" and "since the levels [were] below 1 ppb, there should b e no restrictions on disposal of the ash and soil in a permitted landfill in Virginia." Further, VDEQ suggested that "the results of this sampling event coupled with the generator knowledge gained from the dioxin study at the Weapons Station [means] there should not be a need for further sampling."

Given the conservative factors used to calculate the residential RBC for dioxin (refer to discussion under "Dioxin" heading of Section 5.1), the reported dioxin value suggests that while present at this location, dioxin presents no unacceptable human heath risks. However, as suggested by Dawn Ioven, additional samples would help verify these results.

The "dioxin" subsection of Section 5.1 has been revised. In addition, copies of the EPA and VDEQ emails are included in Appendix F of the document.

B. In terms of overall risks, there is enough data to calculate human health risks and screen for any ecological risks.

15. **Comment:** General. What is appropriate for an initial action? We didn't sample for nitromine. There are hooks in the waste that were used in handling bombs.

Response: The initial action should be to prevent further erosion of the ash and debris layer along the exposed slope.

Baker did not propose conducting nitromine (explosive) compound analysis because the bulk of the debris disposed at the site was dinnerware (plates, cups, bowls, etc.) or building materials (wire insulators, ceramic electrical components, metal piping, etc.). The only possible, explosive-related item noted were eyehooks (referred to by Navy personnel as "padeyes") that can be used to move munitions. Padeyes (Appendix C – Photo 1 8) are used to hoist a variety of things, including bombs. Whether or not these padeyes were used for bomb handling is unknown; they could have been discarded

unused as well. Granted, this waste is Penniman Era and Penniman was a shell loading facility. Nonetheless, other than the presence of padeyes, there was no other evidence that suggested bomb/explosive materials were disposed at the site.

To ease current concerns about the possible presence of explosives contamination, Baker suggests collecting two to three soil samples and conducting nitromine analysis prior to a future removal action.

16. **Comment:** General. Did we capture the issues in our conference call of 22 March 2004? I haven't seen any meeting/conference call minutes from the call. Please ensure those issues are captured.

Response: Yes, Baker took minutes during the meeting. (Don Joiner emailed the meeting minutes to the Team on April 23, 2004, which was after NAVFAC submitted these comments.) The issues discussed during the conference call (i.e., the "path forward," both immediate and future) for Site 7N have been added to the document in a new section entitled "Recommendations."

A copy of the March 22, 2004 meeting minutes is part of Appendix E and follows this Response to Comments.

March 22, 2004 9:30 am

Attendees: **Steve Mihalko**
Linda Cole
Channing Blackwell
Marlene Ivester
Greyson Franklin (via conference call)
Don Joiner (via conference call)
Mary Mullen (via conference call)
Shana Conley (via conference call)

Subject: **CAX Site 7 Trenching Report and Time-Critical Removal Action**

Summary of Discussion Items:

- Marlene Ivester presented a summary of the Draft Trenching Report that was submitted on Friday, March 19, 2004. Linda Cole and Marlene emphasized that the soil sampling data has not yet been validated. Twenty surface and subsurface samples were collected from the site. Sampling was conducted near trenches with identified waste to check for contamination. A sample was collected from each of the four corners of the site to attempt to determine a clean boundary. These locations were hand dug to confirm that the locations were visually free of contamination.
- Marlene discussed the sampling locations as shown on Figure 4 of the Draft Trenching Report. Sample location CAX-07N-SB4 is difficult to show graphically without the use of topographical contours. Don Joiner reiterated the lack of vertical control. Vertical control is not accurate with the Geographical Positioning System and is more accurate with a true survey of the site.
- Analytical results indicate the presence of metals, primarily copper, lead, and zinc. One sample location was analyzed for the presence of dioxins in the ash layer. Channing Blackwell asked why only one location was analyzed for dioxins. Don explained that the sample was biased towards worst-case contamination. In addition, dioxin analysis is an expensive test. Channing asked if we are saying that we have risk throughout the site with dioxin as a driver. Don stated that dioxin data alone may suggest cleanup is required. Linda stated that where we have ash there's a likelihood that there are dioxins. Mary Mullen stated that the level of dioxins may vary across the site. One sample should not be used to characterize the site. Don indicated that this one sample was used more as a screen to show that dioxins may be a risk driver. Steve Mihalko asked what the dioxins do to the disposal cost. The TCLP results confirm that the waste is non-hazardous. Andy Rider at Bhate will be contacted to discuss the impact of dioxins on the disposal cost with his disposal contractor. Linda asked why the ash is assumed to be the worst type of waste versus glass or some other type of debris. Don explained that it is the breakdown components of ash that are of concern.
- Channing suggested that nitroaromatics analysis may be pertinent to characterize the site. There is no documentation that explosives were not dumped. Information on the disposal area indicates that this was a household dump versus a munitions dump. Channing stated that the lack of explosives analysis may be a data gap.
- Don referenced Figure 5 of the Draft Trenching Report. The hatched area shows the primary area of concern. This is the area of debris that is most vulnerable to a storm. This area is vulnerable to shoreline erosion from surface runoff and storm surge from the York River.

- Channing stated that MWR is interested in relocating Cabin 169 to another location. The Draft Trenching Report indicates that the northern waste boundary has been identified. Channing stated that we have not bounded this edge based on lead and zinc contamination in the subsurface. MWR is interested in knowing if the contamination extends to Cabin 170. Channing asked if the northern edge needs to be better characterized near Cabin 170. Based on the trenching, there was no visible debris or soil staining in this area. The Team agreed that a HAZWOPER certified person will be involved with the relocation of Cabin 169. Channing stated that the Navy intends to put up new fencing to restrict access to Cabin 169. Greyson stated that signs should also be posted. In addition, a barrier will be placed on Davis Road to restrict access.
- Linda has funding to do a portion of the ash and debris removal. She recommended having Bhate begin handpicking the debris on the beach. Linda was told she could not have Bhate begin work at Site 7 without documentation. Linda agreed to take full responsibility for Bhate beginning work without this documentation. Bhate will use existing funds from Site 1 to complete the beach cleanup. While Bhate conducts the beach cleanup, Baker will develop a Draft Action Memorandum. The Final Action Memorandum is anticipated to be signed by the end of April or early May.
- Two options were presented to address the time-critical removal action. Option 1 would be to remove the hatched area. The concern is that there is not enough funding to complete the removal action. The potential exists for exposed waste to be left in place with no money to complete the removal action. Option 2 would be to stabilize the shoreline. The hatched area and remaining area shown in Figure 5 of the Draft Trenching Report would be addressed at a future date when funding becomes available.
- The Team agreed to conduct the beach cleanup and draft an action memo addressing shoreline stabilization. Linda and Channing recommended that shoreline stabilization alternatives only include onshore alternatives such as a revetment or geotubes.

Summary

Bhate will complete the beach cleanup with existing funds from CAX Site 1. Baker will draft an action memo addressing shoreline stabilization. Following signature of the Final Action Memo, the time-critical removal action will be implemented. The Team will revisit the site later when additional funding is available. This may include an EE/CA to address the hatched area and remaining area shown in Figure 5 of the Draft Trenching Report. A consensus statement will be drafted outlining the path forward for the time-critical removal action.

From: "Cole, Linda L CIV Env Engineering" <linda.cole@navy.mil>
To: "Marlene Ivester" <mivester@mbakercorp.com>
Date: 4/8/2004 3:37:36 PM
Subject: RE: Comments to Draft Trenching Report (CAX Site 7)

Please find attached Navy comments to the Draft Trenching Letter Report-Site 7-NWSY Cheatham Annex as requested. Please advise on date that final trenching letter report will be issued.

Thanks!

Linda
-----Original Message-----
From: Marlene Ivester [mailto:mivester@mbakercorp.com]
Sent: Monday, April 05, 2004 9:55
To: Cole, Linda L CIV Env Engineering
Cc: mmullen@adelphia.net; wandybrowne@aol.com; samihalko@deq.state.va.us; Franklin.Greyson@epamail.epa.gov; Don Joiner; BlackwellWC@PWCNORVA.NAVY.MIL
Subject: Re: Comments to Draft Trenching Report (CAX Site 7)

Linda,

Thank for the Heads Up. Thursday is no problem for me.

I should have the validated results early this week, so things are still moving along nicely.

I'll send a reminder email to the Team.

Marlene

>>> "Cole, Linda L CIV Env Engineering" <linda.cole@navy.mil> 04/02/2004 2:57:44 PM >>>
Dear Marlene,

You requested comments NLT COB today, 02 April 2004. I am requesting an extension. I will complete my review by COB, Thursday, 08 April 2004. I apologize for the inconvenience but I appreciate your patience.

Dear Team,

Code EV2 is in the process of boxing up all of our STUFF and moving downstairs. The move is supposed to take place Monday or Tuesday of next week. If you find that it is difficult getting in touch with one of us, please be patient. Try our phones. Try email. Try smoke signals. It is going to be a trying time for all of us...trying to find our phones, trying to find our computers...

I'll be at CAX Monday morning meeting with the ROICC and Bhate about the beach clean up at Site 7. We should have that complete in a couple of weeks. I'll be in the office later in the morning looking for my STUFF.

Please feel free to use my mobile (757)218-8747 if you need to get in

touch with me. Since I pay for it out-of-pocket, I do ask that you use my mobile only if you really need to speak with me.

Thanks!

Linda

P.S. If it seems that I'm unusually confused after the move, please don't think that I'm off my meds again. I probably just can't find my STUFF.

L. L. Cole, P.E.
Remedial Project Manager
NAVFAC EFDLANT
6506 Hampton Blvd.
Norfolk, VA 23508-1278
Work: (757)322-4734
Fax: (757)322-4805

CC: <mmullen@adelphia.net>, <samihalko@deq.state.va.us>, <Franklin.Greyson@epamail.epa.gov>, "Don Joiner" <DJOINER@mbakercorp.com>, <BlackwellWC@PWCNORVA.NAVY.MIL>

U. S. NAVY COMMENTS TO DRAFT TRENCHING LETTER REPORT
SITE 7
NAVAL WEAPONS STATION CHEATHAM ANNEX
YORKTOWN, VIRGINIA

1. Page 6, 2nd paragraph. The Navy did not concur with the proposed sampling plan. CNRMA indicates that they did not have an opportunity to comment. Please reference any email correspondence indicating concurrence with sampling plan.

2. Page 7, 3rd paragraph. Please elaborate. Which analytes exceeded which category (cleanup goals or background)?

3. Page 7, 4th paragraph. Based on these findings, the comment about the paint from the cabin appears tenuous because SS2 only exceeds SS3 by 21% while SS2 and SS3 exceed background for soil group association #2 by 600% or 2.5 orders of magnitude.

4. Page 8, 1st paragraph. Please explain why we only performed one sample for dioxin. Why didn't we sample the ash layer around the cabin?

5. Page 8, 3rd paragraph, 1st bullet. Six and eight have detects for lead and zinc. We have not bounded the northern waste boundary either vertically or horizontally and, therefore, should say as much.

6. Page 8, 3rd paragraph, 2nd bullet. See comment about boundary line on Figure 5.

7. Page 8, 34d paragraph, 3rd bullet. Replace "corner" with "quadrant". Because sample 6 is elevated, as is 7, all we can say is that the quadrant has not been defined. It would be more accurate to state that the north and southwest quadrants have not been defined.

8. Figure 5. If SS9 is clean then the green line should be north of the sample.

9. Figure 6. The drop-off is much steeper, i.e., the distance horizontally is not as great as depicted. A' is shown to the right of SB4 in Figure 5. Are you saying that the debris goes beyond Figure 5 boundary? Recommend having this figure reviewed by a mechanical or civil engineer who can provide guidance on using drawing sections and details.

10. Table 2. Please explain, was the entire area underlain with a gravel sub-base at 8?

11. Table 3. Where is SB8? Did you attempt to move over a foot or two and re-auger?

12. Page 6, 2nd paragraph. Recommend that you speculate what the gravel might mean, i.e., septic tank drain field.

13. Page 9, continuation of page 8. Please explain why removal of the 650 cy would require shoreline stabilization. Or are you talking about erosion control from storm water

U. S. NAVY COMMENTS TO DRAFT TRENCHING LETTER REPORT
SITE 7
NAVAL WEAPONS STATION CHEATHAM ANNEX
YORKTOWN, VIRGINIA

runoff?

14. Table 5. Do we need more data to assess risk?

15. General. What is appropriate for an initial action? We didn't sample for nitromine. There are hooks in the waste that were used in handling bombs.

16. General. Did we capture the issues in our conference call of 22 March 2004? I haven't seen any meeting/conference call minutes from the call. Please ensure those issues are captured.

From: <Franklin.Greyson@epamail.epa.gov>
To: Marlene Ivester <mivester@mbakercorp.com>
Date: 4/12/2004 11:00:52 AM
Subject: Re: Last Call for Comments - CAX Site 7 Trenching Report

HI Marlene,
I do not have any comments on the draft document.
Greyson

|-------+------------------------>
	Marlene Ivester
	<mivester@mbakerc
	orp.com>
	04/05/2004 10:13
	AM
-------+------------------------>
>---|
To: samihalko@deq.state.va.us, Greyson Franklin/R3/USEPA/US@EPA, Don Joiner
<DJOINER@mbakercorp.com>, Mary Mullen|
<MMullen@mbakercorp.com>, linda.cole@navy.mil, blackwellwc@pwcnorva.navy.mil
cc:
Subject: Last Call for Comments - CAX Site 7 Trenching Report
>---|

All:

Comments on the referenced draft document (that was submitted electronically to the Team on 19 MAR 04) were requested by COB 2 APR 04. To date, I have received no comments.

I will be receiving the validated data package this week and can extend the comment period to COB 9 APR 04. Therefore, please provide your comments by this Friday. If this Friday does not work for you, please let me know. Please "cc" Linda when you do.

Thank you.

Marlene

From: "Mihalko,Stephen" <samihalko@deq.state.va.us>
To: "Marlene Ivester" <mivester@mbakercorp.com>, <linda.cole@navy.mil>
Date: 4/15/2004 10:16:29 AM
Subject: RE: Comments to Draft Trenching Report (CAX Site 7)

I have no comments ont he report

> -----Original Message-----
> From: Marlene Ivester [SMTP:mivester@mbakercorp.com]
> Sent: Thursday, April 08, 2004 5:09 PM
> To: linda.cole@navy.mil
> Cc: mmullen@adelphia.net; Mihalko,Stephen; Franklin.Greyson@epamail.epa.gov; Don Joiner; BlackwellWC@PWCNORVA.NAVY.MIL
> Subject: RE: Comments to Draft Trenching Report (CAX Site 7)
>
> Thank you, Linda. I have received comments from you and Channing, but
> have not heard from Steve or Greyson. I am awaiting a response from
> them before I set the date for the final.
>
> We can discuss on Monday when we meet for the Penniman site visit.
>
> Happy Easter and have a nice weekend.
>
> Marlene
>
> >>> "Cole, Linda L CIV Env Engineering" <linda.cole@navy.mil> 04/08/04
> 3:36 PM >>>
> Please find attached Navy comments to the Draft Trenching Letter
> Report-Site 7-NWSY Cheatham Annex as requested. Please advise on date
> that final trenching letter report will be issued.
>
> Thanks!
>
> Linda
> -----Original Message-----
> From: Marlene Ivester [mailto:mivester@mbakercorp.com]
> Sent: Monday, April 05, 2004 9:55
> To: Cole, Linda L CIV Env Engineering
> Cc: mmullen@adelphia.net; wandybrowne@aol.com;
> samihalko@deq.state.va.us; Franklin.Greyson@epamail.epa.gov; Don Joiner;
> BlackwellWC@PWCNORVA.NAVY.MIL
> Subject: Re: Comments to Draft Trenching Report (CAX Site 7)
>
>
> Linda,
>
> Thank for the Heads Up. Thursday is no problem for me.
>
> I should have the validated results early this week, so things are
> still moving along nicely.
>
> I'll send a reminder email to the Team.
>
> Marlene
>
> >>> "Cole, Linda L CIV Env Engineering" <linda.cole@navy.mil>

APPENDIX F – Preliminary Dioxin Result Discussion w/ EPA and VDEQ

From: "Mihalko,Stephen" <samihalko@deq.state.va.us>
To: <loven.Dawn@epamail.epa.gov>, "Marlene Ivester" <mivester@mbakercorp.com>
Date: 4/30/2004 2:44:36 PM
Subject: RE: Request from Yorktown Partnering Team - Take 2

The State agrees with EPA in this matter. Our recommendation is to continue with the removal process. Since the levels are below 1ppb there should be no restrictions on disposal of the ash and soil in a permitted landfill in Virginia. Also, with the results of this sampling event coupled with the generator knowledge gained from the dioxin study at the Weapons Station there should not be a need for further sampling.

> -----Original Message-----
> From: loven.Dawn@epamail.epa.gov [SMTP:loven.Dawn@epamail.epa.gov]
> Sent: Wednesday, April 28, 2004 1:15 PM
> To: Marlene Ivester
> Cc: blackwellwc@pwcnorva.navy.mil; Don Joiner; greyson@epamail.epa.gov; linda.cole@navy.mil; Mary Mullen; McMurray,Patricia; Mihalko,Stephen; Shana Conley
> Subject: Re: Request from Yorktown Partnering Team - Take 2
>
>
>
>
>
> Marlene,
>
> Sorry for not responding sooner, but I've been on travel most of the
> last two weeks. I reviewed the dioxin results for the sample collected
> from the referenced site. The TEF concentration is reported to be 2.3
> E-05 pg/g, or 2.3E-05 ppt. This concentration is very low -- below, in
> fact, the analytical detection limit for dioxin in soil. I suspect that
> these units are incorrect, and should actually be mg/kg, or ppm.
>
> Assuming this assumption is correct, we can compare the TEF
> concentration in soil (2.3E-05 ppm) to the generic residential RBC (4.3
> E-06 ppm). The soil concentration of dioxin is about an order of
> magnitude higher, which equates to an excess risk of approximately
> 1E-05. This risk falls within EPA's acceptable range of 1E-06 to 1E-04.
> Further, EPA's current default clean-up standard for dioxin in
> residential soil is 1 ppb, or 1E-03 ppm. The detected concentration is
> less than this standard. (I am not familiar with the eco standard,
> which may be more stringent.)
>
> My recommendation is to move forward with the current path and, in the
> near future, collect two or three more soil samples for dioxin analysis
> -- just to make sure we're not missing more significant levels. If you
> have any questions, please let me know. Thanks.
>
> Dawn
>
>
>
>
> Marlene Ivester
> <mivester@mbakerc To: pamcmurray@deq.state.va.us, Dawn loven/R3/USEPA/US@EPA
> orp.com> cc: samihalko@deq.state.va.us, Greyson

Franklin/R3/USEPA/US@EPA, Don
> Joiner <DJOINER@mbakercorp.com>, Mary Mullen
<MMullen@mbakercorp.com>, Shana
> 04/20/2004 05:47 Conley <sconley@mbakercorp.com>, linda.cole@navy.mil,
> PM blackwellwc@pwcnorva.navy.mil
> Subject: Request from Yorktown Partnering Team - Take 2
>
>
>
>
>
> One more time, with the attachment!
>
> Dawn and Pat:
>
> I am with Baker Environmental and am sending this request per the Naval
> Weapons Station Yorktown Partnering Team, which is meeting this week in
> Richmond.
>
> One of the topics of discussion today was Cheatham Annex Site 7, which
> is located along the York River. Hurricane Isabel washed away a good
> portion of the shoreline slope and exposed ash and various debris
> (mostly pieces of metal, ceramic dishes, and glassware) that had been
> disposed at the site sometime around the World War I era (when Cheatham>
> Annex was known as the Penniman Property and was operated by the DuPont
> company).
>
> Since there is an ash layer present, one sample was analyzed for
> dioxin. The results of the dioxin analysis are attached. The
> Partnering Team requests that each of you review the results, and based
> on this one sample, relay what concerns, if any, you may have. Note the
> total toxic equivalent exceeds Region 3 RBC value, but we have not
> coonducted a risk assesment. Would Site 7 need to be remediated for
> dioxin or should more sampling be done?
>
> The current path for Site 7 is to temporarily provide shoreline
> protection to prevent further erosion and exposure until a removal
> action can be performed.
>
> Should you have any questions, please contact Shana Conley at 631-5440,
> as I will be out of the office for the next two days, or Don Joiner at
> 631-5416 (or on his cell (757) 749-8156 if you call sometime over the
> next three days).
>
> Thank you for your time and consideration.
>
> Marlene Ivester
> (See attached file: Dioxin Table-Val.pdf) << File: Dioxin Table-Val.pdf >>

CC: <blackwellwc@pwcnorva.navy.mil>, "Don Joiner" <DJOINER@mbakercorp.com>, <greyson@epamail.epa.gov>, <linda.cole@navy.mil>, "Mary Mullen" <MMullen@mbakercorp.com>, "McMurray,Patricia" <pamcmurray@deq.state.va.us>, "Shana Conley" <sconley@mbakercorp.com>, "Willis,Durwood" <dhwillis@deq.state.va.us>

From: "McMurray,Patricia" <pamcmurray@deq.state.va.us>
To: "Marlene Ivester" <mivester@mbakercorp.com>
Date: 4/28/2004 1:32:37 PM
Subject: RE: Request from Yorktown Partnering Team - Take 2

I've responded to Steve and we'll get back to you once we've had a chance to discuss.

Patricia McMurray
Scientist
Virginia Department of Environmental Quality
629 E. Main Street
Richmond, VA 23219
Phone 804-698-4186
Fax 804-698-4234

> -----Original Message-----
> From: Marlene Ivester [SMTP:mivester@mbakercorp.com]
> Sent: Tuesday, April 20, 2004 5:48 PM
> To: McMurray,Patricia; ioven.dawn@epa.gov
> Cc: Mihalko,Stephen; greyson@epa.gov; Don Joiner; Mary Mullen; Shana Conley; linda.cole@navy.mil; blackwellwc@pwcnorva.navy.mil
> Subject: Request from Yorktown Partnering Team - Take 2
>
> One more time, with the attachment!
>
> Dawn and Pat:
>
> I am with Baker Environmental and am sending this request per the Naval
> Weapons Station Yorktown Partnering Team, which is meeting this week in
> Richmond.
>
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> is located along the York River. Hurricane Isabel washed away a good
> portion of the shoreline slope and exposed ash and various debris
> (mostly pieces of metal, ceramic dishes, and glassware) that had been
> disposed at the site sometime around the World War I era (when Cheatham
> Annex was known as the Penniman Property and was operated by the DuPont
> company).
>
> Since there is an ash layer present, one sample was analyzed for
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> 631-5416 (or on his cell (757) 749-8156 if you call sometime over the
> next three days).
>

> Thank you for your time and consideration.
>
> Marlene Ivester << File: Dioxin Table-Val.pdf >>

CC: "Mihalko,Stephen" <samihalko@deq.state.va.us>, "Dawn Ioven" <ioven.dawn@epamail.epa.gov>

From: <loven.Dawn@epamail.epa.gov>
To: Marlene Ivester <mivester@mbakercorp.com>
Date: 4/28/2004 1:16:56 PM
Subject: Re: Request from Yorktown Partnering Team - Take 2

Marlene,

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Assuming this assumption is correct, we can compare the TEF concentration in soil (2.3E-05 ppm) to the generic residential RBC (4.3 E-06 ppm). The soil concentration of dioxin is about an order of magnitude higher, which equates to an excess risk of approximately 1E-05. This risk falls within EPA's acceptable range of 1E-06 to 1E-04. Further, EPA's current default clean-up standard for dioxin in residential soil is 1 ppb, or 1E-03 ppm. The detected concentration is less than this standard. (I am not familiar with the eco standard, which may be more stringent.)

My recommendation is to move forward with the current path and, in the near future, collect two or three more soil samples for dioxin analysis -- just to make sure we're not missing more significant levels. If you have any questions, please let me know. Thanks.

Dawn

Marlene Ivester <mivester@mbakercorp.com> 04/20/2004 05:47 PM

To: pamcmurray@deq.state.va.us, Dawn loven/R3/USEPA/US@EPA
cc: samihalko@deq.state.va.us, Greyson Franklin/R3/USEPA/US@EPA, Don Joiner <DJOINER@mbakercorp.com>, Mary Mullen <MMullen@mbakercorp.com>, Shana Conley <sconley@mbakercorp.com>, linda.cole@navy.mil, blackwellwc@pwcnorva.navy.mil
Subject: Request from Yorktown Partnering Team - Take 2

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Thank you for your time and consideration.

Marlene Ivester
(See attached file: Dioxin Table-Val.pdf)

CC: <blackwellwc@pwcnorva.navy.mil>, Don Joiner <DJOINER@mbakercorp.com>, <greyson@epamail.epa.gov>, <linda.cole@navy.mil>, Mary Mullen <MMullen@mbakercorp.com>, <pamcmurray@deq.state.va.us>, <samihalko@deq.state.va.us>, Shana Conley <sconley@mbakercorp.com>

DIOXIN TOXICITY EQUIVALENT CONCENTRTATIONS SUMMARY CAX SITE 7

VALIDATED

Analyte	07N-SB4-01 pg/g	mg/kg	Toxic Equivalent Factor	Toxic Equivalent Concentrations	Validator Qualifier
2,3,7,8-TCDD	4.88	4.88E-06	1	4.88E-06	
1,2,3,7,8-PeCDD	19.1	1.91E-05	0.5	9.55E-06	
1,2,3,4,7,8-HxCDD	14.6	1.46E-05	0.1	1.46E-06	
1,2,3,6,7,8-HxCDD	18.7	1.87E-05	0.1	1.87E-06	
1,2,3,7,8,9-HxCDD	21.5	2.15E-05	0.1	2.15E-06	
1,2,3,4,6,7,8-HpCDD	105	1.05E-04	0.01	1.05E-06	
OCDD	195	1.95E-04	0.001	1.95E-07	
2,3,7,8-TCDF	0.478	4.78E-07	0.1	4.78E-08	J
1,2,3,7,8-PeCDF	0.833	8.33E-07	0.05	4.17E-08	J
2,3,4,7,8-PeCDF	1.84	1.84E-06	0.5	9.20E-07	J
1,2,3,4,7,8-HxCDF	1.4	1.40E-06	0.1	1.40E-07	J
1,2,3,6,7,8-HxCDF	1.55	1.55E-06	0.1	1.55E-07	J
2,3,4,6,7,8-HxCDF	2.27	2.27E-06	0.1	2.27E-07	J
1,2,3,7,8,9-HxCDF	0.773	7.73E-07	0.1	7.73E-08	J
1,2,3,4,6,7,8-HpCDF	6.14	6.14E-06	0.01	6.14E-08	J
1,2,3,4,7,8,9-HpCDF	0.765	7.65E-07	0.01	7.65E-09	J
OCDF	5.32	5.32E-06	0.001	5.32E-09	
			TOTAL	2.28E-05	
			USEPA Region III RBC	4.26E-06	

J = The analyte was positively identified; however, the concentration value is an estimate. Also used if a result was measured at a concentration below the Contract Required Quantification Limit (CRQL) or Contract Required Detection Limit (CRDL).

From: <Franklin.Greyson@epamail.epa.gov>
To: <djoiner@mbakercorp.com>, <mmullen@mbakercorp.com>, <samihalko@deq.state.va.us>, <BlackwellWC@PWCNORVA.NAVY.MIL>, <linda.cole@navy.mil>, <wandybrowne@aol.com>
Date: 03/22/2004 3:57:44 PM
Subject: Dioxin waste question

Team:

I spoke to Doug Donor in our RCRA group after this morning's call. Basically he said that the dioxin waste is not a RCRA waste and it would not have to be classified as an F-listed waste since it is not a result of a manufacturing process at the site. He said how we dispose of it is dependent on the facility that takes it and whether they are permitted to take dioxin waste. He said there are facilities that will take it, but we did not get into the specifics of which landfills they are. It would be worthwhile to have someone investigate which landfills might be permitted in the area in order to estimate removal costs for the forthcoming EECA.

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