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NAWC WARMINSTER
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SITE 6
REMOVAL EVALUATION REPORT

Naval Air Warfare Center
Warminster, Pennsylvania

Northern Division
Naval Facilities Engineering Command

Contract No. N62472-90-D-1298
Contract Task Order 252

AUGUST 1996

Brown & Root Environmental

A Division of Halliburton NUS Corporation

R-51-6-6-5

SITE 6
REMOVAL EVALUATION REPORT

NAVAL AIR WARFARE CENTER
WARMINSTER, PENNSYLVANIA

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
Northern Division
Environmental Branch, Code 14
Naval Facilities Engineering Command
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Contract No. N62472-90-D-1298
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1.0 INTRODUCTION

This report has been prepared for the Northern Division, Naval Facilities Engineering Command as authorized under Contract Task Order (CTO) 252 under Contract N62472-90-D-1298. This work is part of the Navy's Installation Restoration Program (IRP), which is designed to identify contamination of Navy and Marine Corps facilities resulting from past operations and to institute corrective measures, as needed.

1.1 PURPOSE OF REPORT

The purpose of this removal evaluation report is to present the findings of an investigation conducted at Site 6 within Area B of the Naval Air Warfare Center (NAWC), Warminster, Pennsylvania. The scope of this investigation was limited to excavating test pits, advancing boreholes, and collecting samples in and around suspected disposal and groundwater contamination source locations within Site 6.

Previously completed and ongoing studies used to identify potential source areas and to define the scope of this investigation included the Environmental Photographic Interpretation Center (EPIC) Report [United States Environmental Protection Agency (EPA), 1994], Remedial Investigation (RI) Report for OU-1 [Halliburton NUS Corporation (HNUS), 1993], Phase II RI Report (HNUS, 1992a), Phase III RI Work Plan (HNUS, 1995a), and ongoing Phase III RI efforts being conducted by Brown & Root (B&R) Environmental including geophysical, soil gas, and surface and subsurface soil sampling. The purpose of this investigation was to further identify the presence and characteristics of waste materials and contaminant sources within the suspected disposal areas at Site 6. The resultant site characterization data were used to evaluate the need for a removal action or other response actions at the site.

1.2 SITE BACKGROUND

Site 6 reportedly consists of an unknown number of disposal trenches and pits located on the southern side of the NAWC Warminster main runway and north of the facility patrol road (see Figure 1-1). The area slopes gently to the south-southeast and is overgrown by brush. The southern, southeastern, and southwestern boundaries of the site are marked by a steep decline from the general site plateau to the NAWC Warminster patrol road. This embankment and the area leading to it are wooded. The southwestern boundary area supports a relatively thick stand of young trees. Base housing is located immediately southeast of the site.

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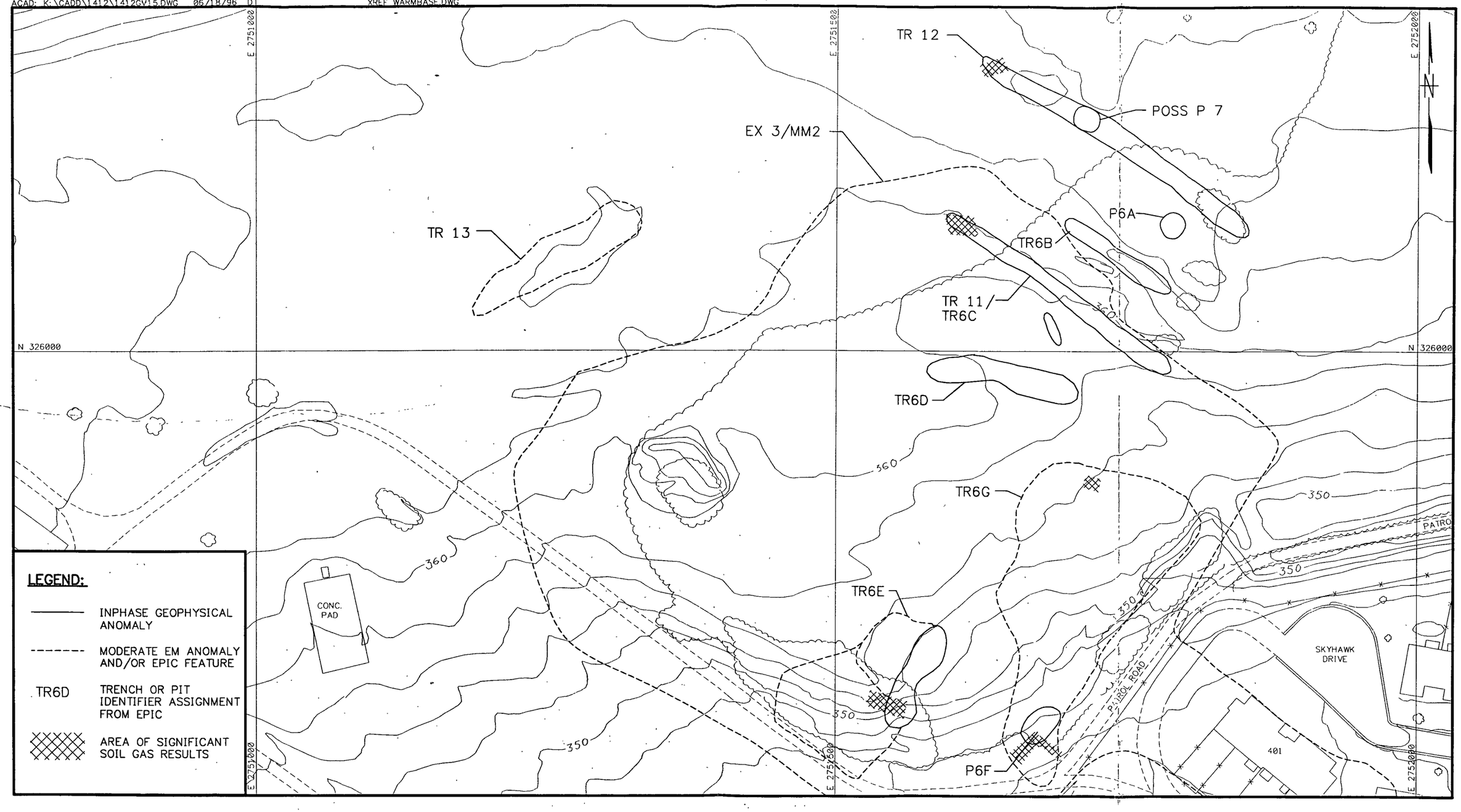

SUSPECTED DISPOSAL AREA LOCATION MAP
AREA B – SITE 6
NAWC, WARMINSTER, PA

0 80 160
SCALE IN FEET

FIGURE 1–1

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According to previous investigations, the site allegedly received paint, solvent, demolition, oil, flammable, and grease trap wastes from 1960 to 1980. Detailed information regarding the operation of the disposal locations and sources of these waste is not available. Aerial photographic interpretation, geophysical and soil gas studies, and limited surface and subsurface sampling have identified the possible locations of 13 suspected disposal areas. Groundwater monitoring and sampling in the area have identified low-level contamination with volatile organic compounds (VOCs). The maximum levels of groundwater contamination, in excess of Maximum Contaminant Levels (MCLs), have been reported as 12 ug/l of trichloroethene (TCE) and 20 ug/l of benzene.

Further details regarding the site background and each of these previous investigations are presented in the Phase I and Phase II RI reports for NAWC Warminster, the preliminary investigation reports for the Phase III RI, and are further summarized in the sampling and analysis plan (B&R Environmental, 1995) for the subject investigation.

The results of three previous investigations were used to develop the scope of work for this investigation. A total of 26 test pits and 13 borings were installed in and adjacent to the suspected disposal areas. A total of 38 samples, plus quality assurance/quality control samples, were collected and analyzed. Section 2.0 of this report presents a summary of the field efforts and observations. Section 3.0 presents the analytical results from the sample analysis, and Section 4.0 provides an evaluation of these results and the investigation findings.

2.0 FIELD INVESTIGATION

The Site 6 field investigation was conducted between April 10 and 19, 1996. Mobilization efforts began on March 26 when test pit and boring locations were field marked. The project team selected locations based on the findings from previous geophysical and soil gas study results. The field locations were staked using existing grid coordinates that had been established for these studies and that had been previously surveyed. Figure 2-1 depicts the locations of the identified suspect disposal areas, along with test pit and boring locations.

Test pits were excavated using a backhoe to a maximum depth of 15 feet, to bedrock, or to native soil, whichever was encountered first. Each excavation was observed, logged, and monitored with field instruments for VOCs to determine health and safety concerns and to identify possible waste sources. In general, test pits were excavated to about 20 feet in length and 4 feet in width. In suspected disposal trench areas, test pits were excavated perpendicular to and extended across the suspected disposal trench. A total of 26 test pits were excavated, logged, and backfilled. .

Borings were advanced using hand augers and extended to a total depth of 10 feet or to bedrock. Cuttings from each boring were logged and monitored, using field instruments, for VOCs. In general, borings were located in areas immediately outside suspected disposal trenches, between test pits within suspected disposal areas, and in areas of concern as identified by previous studies. A total of 13 borings (including a background location) were advanced, logged, and backfilled.

Sampling efforts were performed in accordance with the procedures established in the sampling and analysis plan and in accordance with the Quality Assurance Program Plan (QAPP) approved for the Phase III RI activities (HNUS, 1995b) and Phase II Work Plan Sampling Plan Addendum for NAWC, Warminster (HNUS, 1992a). The field team collected test pits samples directly from the excavation wall, from excavated material, or from the backhoe bucket. Samples from the borings were collected directly from the auger used to advance the boring. The backhoe and auger were decontaminated between locations, and disposable sampling equipment was used to collect the actual soil samples for analysis.

Significant observations and findings from the test excavations and soil borings are presented below. Detailed logs for both the test pits and the borings are presented in Appendices A and B, respectively. The results of the field effort are presented in groupings that correspond to the suspected disposal area location, as depicted in previous studies and identified in Figure 2-1.

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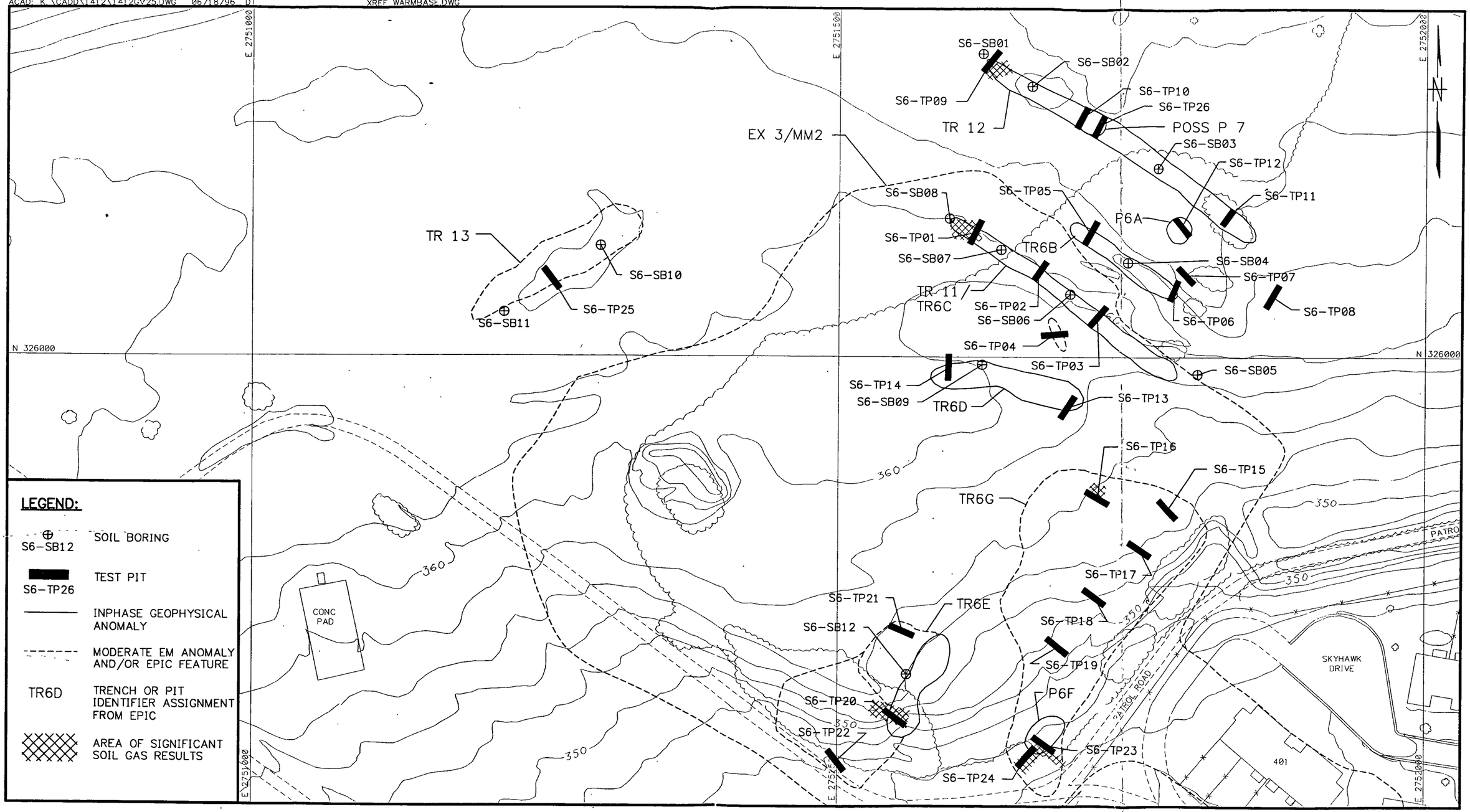

LEGEND:

- S6-SB12 — SOIL BORING
- S6-TP26 — TEST PIT
- INPHASE GEOPHYSICAL ANOMALY
- MODERATE EM ANOMALY AND/OR EPIC FEATURE
- TR6D — TRENCH OR PIT IDENTIFIER ASSIGNMENT FROM EPIC
- AREA OF SIGNIFICANT SOIL GAS RESULTS

0 80 160
SCALE IN FEET

FIGURE 2-1

1996 TEST PIT AND SOIL BORING LOCATION MAP
AREA B – SITE 6
NAWC, WARMINSTER, PA

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2.1 TRENCH 12/POSSIBLE PIT 7 (TR12/P7)

This feature was identified through aerial photographic and geophysical studies. Four test pits (S6-TP09, S6-TP10, S6-TP11, and S6-TP26) and three borings (S6-SB01, S6-SB02, and S6-SB03) were placed in this area, and seven samples were collected from this feature.

Test pit S6-TP09 (see Figure 2-1) was excavated from the northwestern end of the suspected trench area in a location that revealed limited positive soil gas measurements during previous investigations. No field instrument readings above background were encountered during the excavation or from the excavated material. The encountered material consisted of brown clayey silt to 2.5 feet below ground surface, where general trash and debris were encountered. The debris consisted of household trash, asphalt pieces, and general construction debris to a depth of about 6.5 feet. Bedrock was encountered at a depth of 7.5 feet. Sample S6-TP09-01 (see Figure 2-2) was collected from the soil immediately below the layer of trash encountered at 6.5 feet.

Test pit S6-TP10 was excavated from the northwestern third of the suspected trench area. This test pit was located in an area of strong geophysical anomalies. Crushed brick, concrete block, and a crushed deteriorated drum were encountered immediately below the surface of this test pit. Field HNu readings from inside the drum registered as high as 50 ppm above background. The drum contained a thick, semi-hardened black viscose material. A sample and a sample duplicate (S6-TP10-01 and S6-TP10-03) were collected from the material inside the drum. An additional sample, S6-TP-02, was collected from the soil immediately below the drum, at a depth of 2 feet. The drum was removed from the pit and removed for proper disposal by the Navy. Further excavation of this pit revealed general debris including wood, aluminum, scrap metal, and roofing tile, before the test pit was terminated at 3.5 feet, where a large red cylinder was encountered. The cylinder was approximately 8 feet long and 2 feet in diameter. The Navy was notified about the cylinder and no further excavation was performed. Subsequent investigations by the Navy determined that the cylinder was an empty, discarded spare fuel tank. The drop tank was left in place.

Test pit S6-TP26 was excavated about 20 feet southeast of test pit S6-TP10. This pit was excavated to further characterize the suspected trench area adjacent to test pit S6-TP10. At approximately 1.5 feet below the surface, general debris, including metal signposts, air ducts, scrap metal, wire, vinyl window shades, and three crushed drums was encountered. Two of the drums were empty, and the third contained what appeared to be a dark black-stained soil-like material. No elevated HNu readings were recorded in or around the drums. Sample S6-TP26-01 was obtained from within the drum. The drums were removed from the pit and collected by the Navy for proper disposal. Further excavation revealed

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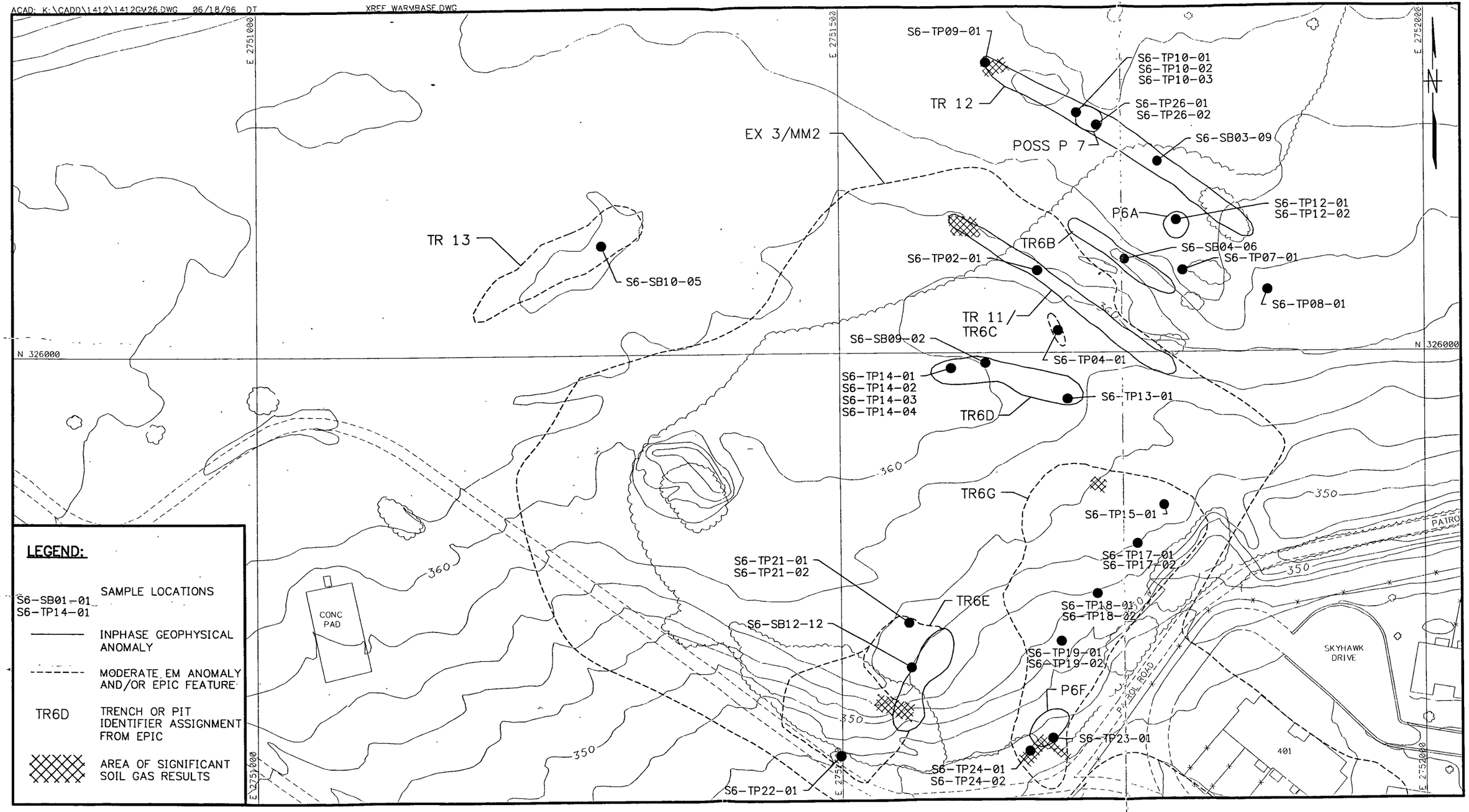

FIGURE 2-2

1996 TEST PIT AND BORING SAMPLE LOCATION MAP
AREA B - SITE 6
NAWC, WARMINSTER, PA

0 80 160
SCALE IN FEET

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light-brown silty clay to red-gray sandy silt to a depth of 6 feet, where sandstone bedrock was encountered.

A sample, S6-TP26-02, was obtained from immediately below the layer that contained the drums and other debris, at 4 feet below ground surface.

Test pit S6-TP11 was located at the southeastern end of the suspected trench area. Excavation of this pit revealed clayey-silt, clay, and silty clay to a depth of 8.5 feet, where weathered bedrock was encountered. No waste material was encountered and no samples were obtained.

Three soil borings were advanced in this suspected trench area. Boring S6-SB01, advanced immediately northwest of test pit S6-TP09 (see Figure 2-1), encountered silty-clay and fine-grained sandy silt-clay to a depth of 8 feet, where sandstone pebbles and very fine-grained sandstone was encountered. No HNu readings above background were recorded and no samples were taken from this boring.

Boring S6-SB02, located within the northwestern third of the suspected trench area, encountered silty-clay to a depth of about 2 feet before encountering general fill material. The fill material included insulation, wood, aluminum foil, shoelaces, and other household debris to a depth of 8 feet where bedrock was encountered. No samples or elevated field readings were obtained.

Soil boring S6-SB03 was advanced in the southeast portion of the trench area. This boring did not encounter any waste material, but an elevated HNu reading of 0.8 ppm was obtained at a depth of 1.5 feet below ground surface. Sample S6-SB03-09 was collected from this horizon for analysis. Material encountered in the boring included sandy silty-clays and sandy clay to a depth of 10 feet, where bedrock was encountered.

2.2 POSSIBLE PIT 6A (P6A)

This feature was identified through geophysical studies and visual observation during the field reconnaissance. One test pit (S6-TP12) was placed in the area and two soil samples were collected. See Figure 2-2 for test pit and sample locations. Trash and debris were encountered from the ground surface to a depth of 6 feet; bedrock was encountered at 6.5 feet. The debris consisted of general construction debris (concrete blocks, manhole frames), chainlink fence lengths, scrap metal, rubber floor mats, charred wood, styrofoam, and plastic sheeting. Several paint-can-sized metal cans were discovered. One can, which contained a white paste, was labeled "Poison Diazanon Dust." Another can, which was empty, was labeled "Poison Malathion." Sample S6-TP12-01 (see Figure 2-2) was collected

from the soil surrounding these cans. A second soil sample, S6-TP12-02, was collected from a pale green, clay-like material encountered within the general debris, at a depth of about 5 feet. The cans encountered in this test pit were removed by the Navy for proper handling and disposal.

Based on available information, the approximate dimensions of P6A are 30 feet by 30 feet.

2.3 TRENCH 6B (TR6B)

This feature was identified through aerial photographs and geophysical studies. Two test pits, S6-TP05 and S6-TP06, and one boring, S6-SB04, were placed in this area. One sample was collected from this feature. See Figures 2-1 and 2-2 for test pit, boring, and sample locations.

Test pit S6-TP05 was excavated at the northwestern end of the suspected trench area. No field instrument readings above background were encountered during the excavation or from the excavated material. The test pit profile consisted of silty clay to clayey silt from the ground surface to the top of bedrock at 7 feet. No soil sample was collected.

Test pit S6-TP06 was excavated at the southeastern end of the suspected trench area. No field instrument readings above background were encountered during the excavation or from the excavated material. A large concrete block was visible at the ground surface. Roof shingles and pieces of asbestos sheeting were encountered in the top 1.5 feet of the excavation. Below 1.5 feet, clean fill, consisting of silty clay and sandy clayey silt, extended to the top of bedrock at 5 feet. No soil sample was collected. It is estimated that surface debris at TR6B covers an area of about 1,600 square feet.

Boring S6-SB04 was advanced in the middle of the suspended trench area, between the two test pits. Debris consisting of plastic sheeting and metal springs was encountered in the top 2.5 feet of the boring. Silty clay and silty fine-grained sand were encountered from a depth of 2.5 feet to the top of bedrock at 6 feet. Sample S6-SB04-06 was collected from the soil immediately above bedrock.

2.4 TRENCH 11/TRENCH 6C (TR11/6C)

This feature was identified through aerial photographs and geophysical studies. Soil gas studies identified a localized area of concern within the northwestern end of this feature. Three test pits (S6-TP01, S6-TP02, and S6-TP03) and four borings (S6-SB05, S6-SB06, S6-SB07, and S6-SB08) were placed in this area. One sample was collected from this feature. See Figures 2-1 and 2-2 for test pit, boring, and sample locations.

Test pit S6-TP01 was excavated at the northwestern end of the suspected trench area. No field instrument readings above background were encountered during the excavation or from the excavated material. The excavation profile consisted of slabs of concrete and asphalt mixed with trash (bottles, cans, plastic) from the ground surface to a depth of 3.5 feet and red clay from 3.5 feet to the top of bedrock at 6 feet. No sample was collected.

Test pit S6-TP02 was excavated southeast of S6-TP01, near the middle of the suspected trench area. No field instrument readings above background were encountered during the excavation or from the excavated material. A layer of clayey silt was encountered from the ground surface to a depth of 1 foot, concrete slabs and pieces of asphalt pavement were encountered from 1 to 2.5 feet, and silty sand/sandy silt was encountered from 2.5 feet to the top of bedrock at 8 feet. Within this bottom layer was a pocket of charred debris from around 4.5 feet to 7 feet in depth, corresponding to the center line of the suspected trench. Sample S6-TP02-01 was collected from this charred material.

Test pit S6-TP03 was excavated southeast of S6-TP02, toward the southeastern end of the suspected trench. No field instrument readings above background were encountered during excavation or from the excavated material. The test pit profile consisted of layers of clayey silt and silty clay from the ground surface to the top of bedrock at 7.5 feet. A pocket of trash about 5 feet wide was encountered from 1.5 feet to 5 feet. The trash consisted of scrap wood and metal and an empty, crushed 55-gallon drum. No soil samples were collected.

Four soil borings were advanced in the suspected trench area. Boring S6-SB08 was located at the northwestern end of the suspected trench. This boring encountered chunks of asphalt and concrete between 1.5 and 3 feet in depth; otherwise, only silty clay was encountered. Bedrock was at 7 feet. No samples or elevated field readings were obtained.

Boring S6-SB07 was advanced between test pits S6-TP01 and S6-TP02. This boring encountered a thin layer of asphalt at a depth of 1.5 feet. This layer revealed an HNu reading of 0.8 ppm. The rest of the boring consisted of silty clay. Bedrock was at 5.5 feet. No samples or elevated HNu readings were obtained.

Boring S6-SB06 was advanced between test pits S6-TP02 and S6-TP03. This boring did not encounter any waste materials. No elevated HNu readings were obtained and no soil sample was collected.

Boring S6-SB05 was advanced at the southeastern end of the suspected trench area, southeast of test pit S6-TP03. This boring encountered silty clay from the ground surface to the top of bedrock at 4 feet.

The only trash encountered was a metal pulley at a depth of 1.5 feet. No elevated HNu readings were obtained and no sample was collected.

2.5 TRENCH 6D (TR6D)

This feature was identified through geophysical studies. Two test pits (S6-TP13 and S6-TP14) and one boring (S6-SB09) were placed in this area. Five samples were collected from this feature. Figures 2-1 and 2-2 shows the test pit, soil boring, and sample locations.

Test pit S6-TP13 was excavated at the eastern end of the suspected trench. The excavation profile consisted of clayey silt from the ground surface to a depth of 3 feet. Rusted pieces of a farm implement, a disc harrow, were encountered at a depth of 1.5 feet. Pieces of asphalt pavement were encountered at 3 feet, followed by sandy clayey silt from 3 feet to 7 feet, clayey silt with decomposed plant matter from 7 feet to 8 feet (the probable original topsoil layer), and clay below 8 feet. The excavation stopped at a depth of 10.5 feet. Sample S6-TP13-01 was collected from the soil at a depth of 2 feet. No elevated HNu readings were obtained during the excavation or from the excavated material.

Test pit S6-TP14 was excavated at the western end of the suspected trench. The excavation stopped at a depth of 3 feet because perched groundwater was encountered. Debris was encountered at 2 feet; it consisted of fire bricks, a concrete slab, tiles, a tire, and two partially crushed 55-gallon drums containing a beige, pasty substance. HNu readings of 1 ppm to 5 ppm were obtained inside the drums. Sample S6-TP14-01 was collected from the contents of the drums. Sample S6-TP14-02 was collected from the soil underneath the drums. Sample S6-TP14-03 was collected from the saturated soil at a depth of 3.5 feet. The drums were removed by the Navy for proper disposal.

Soil boring S6-SB09 was advanced between the two test pits. This boring encountered silty clay to sandy silty clay from the ground surface to the top of bedrock at 7 feet. No elevated HNu readings were encountered. Sample S6-SB09-02 was collected from the soil at a depth of 2 feet.

2.6 TRENCH 6G (TR6G)

This feature was identified through aerial photographic and geophysical studies and through visual observations. Much of the northern and northwestern third of this feature contains concrete slabs and general construction debris that are exposed at the surface. This debris covers an area of about 5,000 square feet. Five test pits (S6-TP15, S6-TP16, S6-TP17, S6-TP18, and S6-TP19) were placed in this area, and six samples were collected. Figures 2-1 and 2-2 show the locations of the test pits and the soil samples.

Test pit S6-TP15 was excavated at the northeastern end of the suspected trench area. A layer of construction debris was encountered from a depth of 3 feet to 6.5 feet. The debris consisted of large concrete blocks, rebar, wood, scrap metal, pieces of asphalt pavement, wire, and bottles. The probable original topsoil layer was encountered at a depth of 6.5 feet. The excavation stopped at a depth of 7 feet. Sample S6-TP15-01 was collected from the soil at a depth of 1.5 feet. No HNu readings above background were recorded during the excavation or from the excavated material.

Test pit S6-TP16 was excavated west of test pit S6-TP15, near the northeastern end of the suspected trench. Low-level soil gas readings were reported from this area in previous studies. Construction and miscellaneous debris was encountered from the ground surface to a depth of 7 feet. The debris consisted of pieces of asphalt and concrete, ceramic fragments, rotted wood, rusted cans, and cloth. Small pockets of a light blue, crystalline material were encountered within this debris layer. This material was sampled as part of composite sample, S6-TP-comp, which consisted of this material from test pits 16, 17, and 18. The possible original topsoil layer was encountered at a depth of 8 feet; below were layers of silty clay and clay. The excavation stopped at a depth of 10 feet. No elevated HNu readings were encountered during the excavation.

Test pit S6-TP17 was excavated southwest of test pit S6-TP15, along the long axis of the suspected trench/disposal area. Construction debris, consisting primarily of large concrete blocks, was encountered from 1.5 feet to 7.5 feet below the ground surface. The original layer of topsoil (brownish-gray clayey silt with grass roots) was encountered at a depth of 7.5 feet, below which were a layer of silty clay at a depth of 8 feet and clay at 9 feet. The excavation stopped at a depth of 9 feet. Sample S6-TP17-01 and duplicate sample S6-TP17-02 were collected from the soil at a depth of 1.5 feet. No elevated HNu readings were encountered during the excavation.

Test pit S6-TP18 was excavated southwest of test pit S6-TP17, along the long axis of the suspected trench. A crushed 55-gallon drum was encountered at a depth of 2 feet. The drum contained a black sandy tar-like material, which did not give an elevated HNu reading. Sample S6-TP18-01 was collected from the contents of the drum; sample S6-TP18-02 was collected from the soil beneath the drum. The drum was removed for proper disposal by the Navy. Large concrete blocks and some scrap metal were encountered from a depth of 2 feet to the bottom of the excavation at 6 feet. The excavation stopped because of perched groundwater.

Test pit S6-TP19 was excavated southwest of test pit S6-TP18, near the southwestern end of the suspected trench. An empty, crushed 55-gallon drum was encountered immediately beneath the ground surface. No HNu reading above background was obtained from inside the drum. At a depth of 1 foot, a

non-intact metal container containing a light gray clay-like material was encountered. The material did not give an elevated HNu reading. Sample S6-TP19-01 was collected from the contents of the metal container. Sample S6-TP19-02 was collected from the soil underlying the container at a depth of 2 feet. The drum and the container were removed for proper disposal by the Navy. Clayey silt containing rotting plant matter was encountered between 2 feet and 4.5 feet in depth, followed by sandy clayey silt at 4.5 feet, the original topsoil layer at 7 feet, red clay at 8 feet, and bedrock at 12.5 feet. No elevated HNu readings were encountered during the excavation.

2.7 POSSIBLE PIT 6F (P6F)

This feature was identified through aerial photographic, geophysical, and soil gas studies. Two test pits (S6-TP23 and S6-TP24) were placed in this area, and three soil samples were collected. See Figures 2-1 and 2-2 for the test pit and sample locations.

Test pit S6-TP 23 was excavated in the area of significant soil gas readings and within the edge of the suspected pit area in a northwest-southeast direction. The excavation encountered charred debris from a depth of 3 feet to the top of bedrock at 6 feet. The debris included wires, bottles, scrap metal, concrete, bricks, and china. Perched groundwater was encountered at 5.5 feet. Sample S6-TP23-01 was collected from a depth of 5 feet. No HNu readings above background were recorded.

Test pit S6-TP24 was excavated perpendicular to test pit S6-TP23. Reddish-brown clay was encountered from 2 feet to 3 feet in depth. An elevated HNu reading of 3 ppm was obtained from this material, which was sampled and designated sample S6-TP24-01. Charred debris similar to that found in test pit S6-TP23 was encountered from 3 feet to 6 feet in depth. Sample S6-TP24-02 was collected from this layer of debris at a depth of 5.5 feet. An elevated HNu reading of 3 ppm was obtained from the sampled material.

Based on available information, the approximate dimensions of P6F are 80 feet by 40 feet or 3,200 square feet.

2.8 POSSIBLE TRENCH 6E (TR6E)

This feature was identified through aerial photographic and geophysical studies. A localized area of low-level soil gas measurements was also reported from within this feature. The feature consists of an area of strong geophysical readings surrounded by areas of moderate readings. The entire feature is wooded, and large concrete slabs and general construction debris are visible throughout the area. The approximate surface area of debris is 800 square feet. Three test pits (S6-TP20, S6-TP21, and S6-

TP22) and one boring (S6-SB12) were placed in this area, and three samples and one duplicate sample were collected from this feature. Test pit, boring, and sample locations are shown in Figure 2-2.

Test pit S6-TP20 was excavated at the southern end of the suspected trench in the area of reported soil gas readings. The excavation encountered debris consisting of scrap metal, asphalt, concrete, and plastic at a depth of 3 feet and large blocks of concrete from 3 to 10 feet in depth. At 10 feet, the original topsoil layer was encountered. The excavation stopped at 10.5 feet. No elevated HNu readings were encountered, and no sample was collected from the excavation.

Test pit S6-TP21 was excavated at the northern end of the suspected disposal area. Pieces of concrete and asphalt were encountered from 2 feet to 4.5 feet in depth, and miscellaneous trash and construction debris (ceramic, bricks, glass, wire, metal scrap, cans, styrofoam, and plastic) were encountered from 4.5 to 8 feet. Below 8 feet was clean fill consisting of clayey silt to a depth of 11 feet, where the original topsoil was encountered. The excavation stopped at 12 feet. Sample S6-TP21-01 and duplicate sample S6-TP21-02 were collected from the soil at 7 feet in depth, near the bottom of the trash layer. No HNu readings above background were encountered during the excavation.

Test pit S6-TP22 was excavated approximately 30 feet southwest and downgradient of suspected Trench 6E, adjacent to an area of construction debris. This excavation encountered a natural soil profile. No HNu readings above background were recorded. Sample S6-TP22-01 was collected from the soil at a depth of 2 feet.

Soil boring S6-SB12 was advanced near the center of the suspected trench, between test pits S6-TP20 and S6-TP21. This boring encountered fill material consisting of bricks, asphalt, and cinders from 1 foot to 2.5 feet. Auger refusal occurred at 4 feet due to concrete. Sample S6-SB12-02 was collected from a depth of 2 feet. No HNu readings above background were recorded.

2.9 TRENCH 13 (TR13)

This feature was identified through aerial photographic studies. The suspected trench area is seen as a slight depression or low spot in the mowed field northwest of the main suspected disposal area. One test pit (S6-TP25) and two soil borings (S6-SB10 and S6-SB11) were placed in this area, and one soil sample was collected. Figures 2-1 and 2-2 show the test pit, soil boring, and sample locations.

Test pit S6-TP25 was excavated near the middle of the suspected trench area. The excavation revealed a natural soil profile; no fill material was encountered. Bedrock was 6 feet deep. No sample was collected and no elevated HNu readings were recorded.

Soil boring S6-SB10 was advanced in the northeastern third of the suspected trench area. This boring encountered silty clay from the ground surface to auger refusal at 5 feet. Sample S6-SB10-05 was collected from the soil at a depth of 5 feet. No elevated HNu readings were recorded.

Soil boring S6-SB11 was advanced in the southwestern third of the suspected trench area. This boring encountered the same soil profile as boring S6-SB10. No elevated HNu readings were recorded and no sample was collected.

2.10 MISCELLANEOUS TEST PITS AND OTHER SURFACE DEBRIS

The locations of the following test pits S6-TP07, S6-TP08, and S6-TP04 were determined based on visual observations of current site conditions. A total of three samples were obtained from these test pits. Figures 2-1 and 2-2 show the test pit and sample locations.

Test pit S6-TP07 was excavated in a mound of dirt adjacent to the southeastern end of Trench 6B. The mound of dirt consisted of silty clay to clayey silt. Sample S6-TP07-01 was collected from the soil at a depth of 2 feet from the top of the mound. The test pit excavation proceeded to a depth of 3 feet below the ground surface; more clayey silt and silty clay were encountered. No HNu readings above background were obtained during the excavation.

Test pit S6-TP08 was excavated in a surface depression approximately 50 feet southeast of the southeastern end of Trench 12. The excavation profile consisted of sandy clayey silt from the ground surface to a depth of 2 feet, red clay with a small amount of debris (a piece of rebar, a piece of wood, and a shovel head) from 2 feet to 8 feet, and silty sand to the top of bedrock at 9 feet. Sample S6-TP08-01 was collected from the red clay at a depth of 2 feet. No elevated HNu readings were recorded during the excavation.

Test pit S6-TP04 was excavated in a surface depression located between Trench 11/Trench 6C and Trench 6D. This excavation encountered silty clay and clayey silt to a depth of 7 feet, where weathered bedrock was encountered. Sample S6-TP04-01 was collected from the soil at a depth of 1.5 feet. No elevated HNu readings were recorded during the excavation.

The southern boundary of Site 6 contains an area with significant amounts of exposed construction debris, including reinforced pipe sections, rock, broken bricks, cement block fragments, and some metal objects. This area includes portions of TR6G and TR6E. Test pit S6-TP22 was excavated in the general vicinity of the exposed construction debris area. This area is about 10,000 square feet in size and lies adjacent to and north of the base patrol road.

3.0 ANALYTICAL RESULTS

A total of 38 samples, including duplicates, were collected from suspected disposal locations throughout Site 6. As detailed in Section 2.0, these samples were obtained from test pits and borings. All samples were collected between April 10 and 19, 1996. Sample collection was performed according to standard protocols and procedures, as detailed in the approved RI QAPP. Sample analysis and validation were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) guidelines and protocols, as described in the sampling and analysis plan for this investigation. Table 3-1 presents the samples collected and a summary of the significant observations for each sampling location. Figure 3-1 depicts the sample locations.

Soil and suspected waste samples were generally analyzed for Target Compound List (TCL) VOCs and Target Analyte List (TAL) metals. Selected samples were also analyzed for full TCL organic analysis. Two samples were analyzed for RCRA characteristics.

In addition to this sampling effort, previous investigations of Site 6 included the collection of surface and subsurface soil samples. During the field effort associated with the Phase III RI, 21 surface soil samples were obtained from throughout the site area. Subsurface sampling was limited to the collection of three samples from the western portion of the site during the Phase II RI. These sampling locations are presented in Figure 3-2. All of these samples were analyzed for full TCL organics and TAL metals. A full data validation review was completed on all analytical results reported for both investigations.

The discussion of analytical findings presented below includes the data from previous RI work and that reported from this more extensive subsurface investigation. The validated analytical data, with qualifiers, from both investigations is presented in Appendix C. The data presented in the following discussion is presented without data qualifiers. The summary of organic results is presented first, followed by a discussion of inorganic data.

3.1 ORGANIC ANALYTICAL DATA

During the Phase III RI sampling a total of 21 surface soil samples were collected. Low levels of trichloroethene (TCE) were detected in one half of these samples. The concentrations of TCE ranged from 1 to 32 ug/kg. The highest concentrations were identified in surface samples collected at P6F, see Figure 3-2. TCE was present in only 3 of the 34 discrete subsurface samples collected and analyzed for VOCs under

TABLE 3-1
SAMPLE LOG
SITE 6 REMOVAL EVALUATION REPORT
NAWC, WARMINSTER

Sampl Number	Date	Location	Description	Analysis	Comments
S6-TP02-01	4/10/96	Trench (TR) 11	Dark-brown to black clayey sand with charred debris	TCL VOC, PEST/PCB TCLP, ignitability, reactivity	• 4.5 feet below ground surface (bgs) • charred material, glass, ceramic, and metal
S6-TP04-01	4/11/96	Depression, TR 11	Brown clayey silt	TCL VOC, TAL METALS	• 18 inches bgs
S6-TP07-01	4/11/96	Mound, TR 6B	Brown clayey silt	TCL VOC, TAL METALS	• 18 inches - 24 inches bgs • damp • mound adjacent to TR 6B
S6-TP08-01	4/11/96	Depression, NE Corner	Dark red clay	TCL VOC, TAL METALS	• 2 feet bgs • damp.
S6-TP09-01	4/12/96	TR 12	Brown sandy to clayey silt	TCL VOC, TAL METALS	• 6.5 feet bgs • damp • below trash horizon
S6-TP10-01	4/12/96	TR 12	Black, tarry waste	TCL VOC, SVOC, PEST/PCB TAL metals, TCLP, ignitability, reactivity	• Contents from crushed drum at 1 feet bgs. • HNu reading of 50 ppm
S6-TP10-02	4/12/96	TR 12	Brown clayey silt	TCL VOC, SVOC, PEST/PCB TAL metals	• 2 feet bgs • soil below crushed drum
S6-TP10-03	4/12/96	TR 12	See comment	See comment	• Duplicate of S6-TP10-01
S6-TP12-01	4/12/96	PIT 6A	Brown clayey silt	TCL VOC, PEST/PCB TAL metals	• 4.5 feet bgs • soil from around cans Malathion and Diazanon labels • See Test Pit log S6-TP12 • HNu reading 7 ppm in one can.
S6-TP12-02	4/12/96	PIT 6A	Pale green clay-like material	TCL VOC, TAL metals	• 5 feet bgs near bottom of debris layer.
S6-TP13-01	4/15/96	TR 6D	Brown clayey silt	TCL VOC, SVOC, PEST/PCB TAL metals	• 18 inches bgs • damp

TABLE 3-1
SAMPLE LOG
SITE 6 REMOVAL EVALUATION REPORT
NAWC, WARMINSTER
PAGE 2 OF 4

Sampl Number	Date	Location	Description	Analysis	Comments
S6-TP14-01	4/15/96	TR 6D	Beige paste-like material	TCL VOC, SVOC, PEST/PCB TAL metals	• Contents from crushed drum at 2 feet bgs • HNu reading of 1 to 5 ppm
S6-TP14-02	4/15/96	TR 6D	Brown clayey silt	TCL VOC, SVOC, PEST/PCB TAL metals	• 2 to 2.5 feet bgs • Soil from below drums • Damp
S6-TP14-03	4/15/96	TR 6D	Brown clayey silt	TCL VOC, SVOC, PEST/PCB TAL metals	• 3.5 feet bgs • Saturated soil at perched water table
S6-TP14-04	4/15/96	TR 6D	See comment	See comment	• Duplicate of S6-TP14-02
S6-TP15-01	4/15/96	TR 6G	Dark brown clayey silt	TCL VOC, TAL metals	• 18 inches bgs
S6-TP17-01	4/17/96	TR 6G	Dark brown clayey silt	TCL VOC, TAL metals	• 18 inches bgs
S6-TP17-02	4/17/96	TR 6G	See comment	See comment	• Duplicate of S6-TP17-01
S6-TP18-01	4/17/96	TR 6G	Black sandy tar-like material, semi-hardened	TCL VOC, SVOC, PEST/PCB TAL metals	• Contents of crushed drum at 2 feet bgs • HNu reading of 0 ppm
S6-TP18-02	4/17/96	TR 6G	Brown clayey silt	TCL VOC, SVOC, PEST/PCB TAL metals	• 3 feet bgs • Soil from below drum
S6-TP19-01	4/17/96	TR 6G	Light gray clay-like material	TCL VOC, TAL metals	• Contents from split metal container at 1 foot bgs. • HNu reading of 0 ppm
S6-TP19-02	4/18/96	TR 6G	Brown clayey silt	TCL VOC, TAL metals	• 2 feet bgs • Soil below container • Metal scraps and rotted plant material • Decaying odor

TABLE 3-1
SAMPLE LOG
SITE 6 REMOVAL EVALUATION REPORT
NAWC, WARMINSTER
PAGE 3 OF 4

Sample Number	Date	Location	Description	Analysis	Comments
S6-TP21-01	4/18/96	TR 6E	Dark brown sandy-clayey silt	TCL VOC, SVOC, PEST/PCB TAL metals	• 7 feet bgs • Below trash and debris. hoizon • See test pit log S6-TP21
S6-TP21-02	4/18/96	TR 6E	See comment	See Comment	• Duplicate of S6-TP21-01
S6-TP22-01	4/18/96	TR 6E	Light brown silty clay	TCL VOC, metals	• 2 feet bgs
S6-TP23-01	4/19/96	PIT 6F	Gray brown silty sand	TCL VOC, PEST/PCB TAL metals	• 5 feet bgs • Cinders, glass, melted bottles, etc. • See test pit log S6-TP23
S6-TP24-01	4/19/96	PIT 6F	Red-brown silty clay	TCL VOC, TAL metals	• 2.5 feet bgs • HNu reading of 3 ppm Immediately above assorted debris/refuse
S6-TP24-02	4/19/96	PIT 6F	Dark brown sandy silt	TCL VOC, PEST/PCB TAL metals	• 5 feet bgs • Wet, cinders, and glass throughout sample
S6-TP26-01	4/19/96	TR 12	Black silty sand	TCL VOC, TAL metals	• Contents of drum at 1.5 feet bgs • Cinders present in sample • HNu reading of 0 ppm
S6-TP26-02	4/19/96	TR 12	See comment	See comment	• Duplicate of S6-TP26-01
S6-TP26-03	4/19/96	TR 12	Brown clayey silt	TCL VOC, TAL metals	• 4 feet bgs • Below fill material
S6-TP-Comp	4/17/96	TP16, TP17, TP18	Blue crystalline material	TAL metals	• Composite of blue crystalline material • Corrosion-like substance appearing in multiple pits

TABLE 3-1
SAMPLE LOG
SITE 6 REMOVAL EVALUATION REPORT
NAWC, WARMINSTER
PAGE 4 OF 4

Sampl Number	Date	Location	Description	Analysis	Comments
S6-SB03-09	4/15/96	TR 12	Red-brown very fine grained sandy silt	TCL VOC, TAL metals	• 9.0 feet to 9.5 feet bgs
S6-SB04-06	4/15/96	TR 6B	Brown silty fine grained sand	TCL VOC, TAL metals	• 6.0 feet to 6.3 feet bgs • Moist
S6-SB09-02	4/15/96	TR 6D	Light to dark-brown silty clay	TCL VOC, SVOC, PEST/PCB TAL metals	• 18 inches to 24 inches bgs • Surface soil sample
S6-SB10-05	4/15/96	TR 13	Light-brown silty clay	TCL VOC, TAL metals	• 5 feet bgs
S6-SB12-02	4/17/96	TR 6E	Dark red-brown silty clay	TCL VOC, SVOC, PEST/PCB TAL metals	• 18 inches to 24 inches bgs • Concrete and brick fragments
S6-SB13-05	4/17/96	Monitoring Well HN01	Light-brown clayey silt	TCL VOC, SVOC, PEST/PCB TAL metals	• 4.5 feet to 5.0 feet bgs • Background

Notes

PEST/PCB - pesticide/polychlorinated biphenyls
TCLP - toxicity characteristic leachate procedure

TABLE 3-1
SAMPLE LOG
SITE 6 REMOVAL EVALUATION REPORT
NAWC, WARMINSTER
PAGE 4 OF 4

Sampl Number	Date	Location	Description	Analysis	Comments
S6-SB03-09	4/15/96	TR 12	Red-brown very fine grained sandy silt	TCL VOC, TAL metals	• 9.0 feet to 9.5 feet bgs
S6-SB04-06	4/15/96	TR 6B	Brown silty fine grained sand	TCL VOC, TAL metals	• 6.0 feet to 6.3 feet bgs • Moist
S6-SB09-02	4/15/96	TR 6D	Light to dark-brown silty clay	TCL VOC, SVOC, PEST/PCB TAL metals	• 18 inches to 24 inches bgs • Surface soil sample
S6-SB10-05	4/15/96	TR 13	Light-brown silty clay	TCL VOC, TAL metals	• 5 feet bgs
S6-SB12-02	4/17/96	TR 6E	Dark red-brown silty clay	TCL VOC, SVOC, PEST/PCB TAL metals	• 18 inches to 24 inches bgs • Concrete and brick fragments
S6-SB13-05	4/17/96	Monitoring Well HN01	Light-brown clayey silt	TCL VOC, SVOC, PEST/PCB TAL metals	• 4.5 feet to 5.0 feet bgs • Background

Notes

PEST/PCB - pesticide/polychlorinated biphenyls
TCLP - toxicity characteristic leachate procedure

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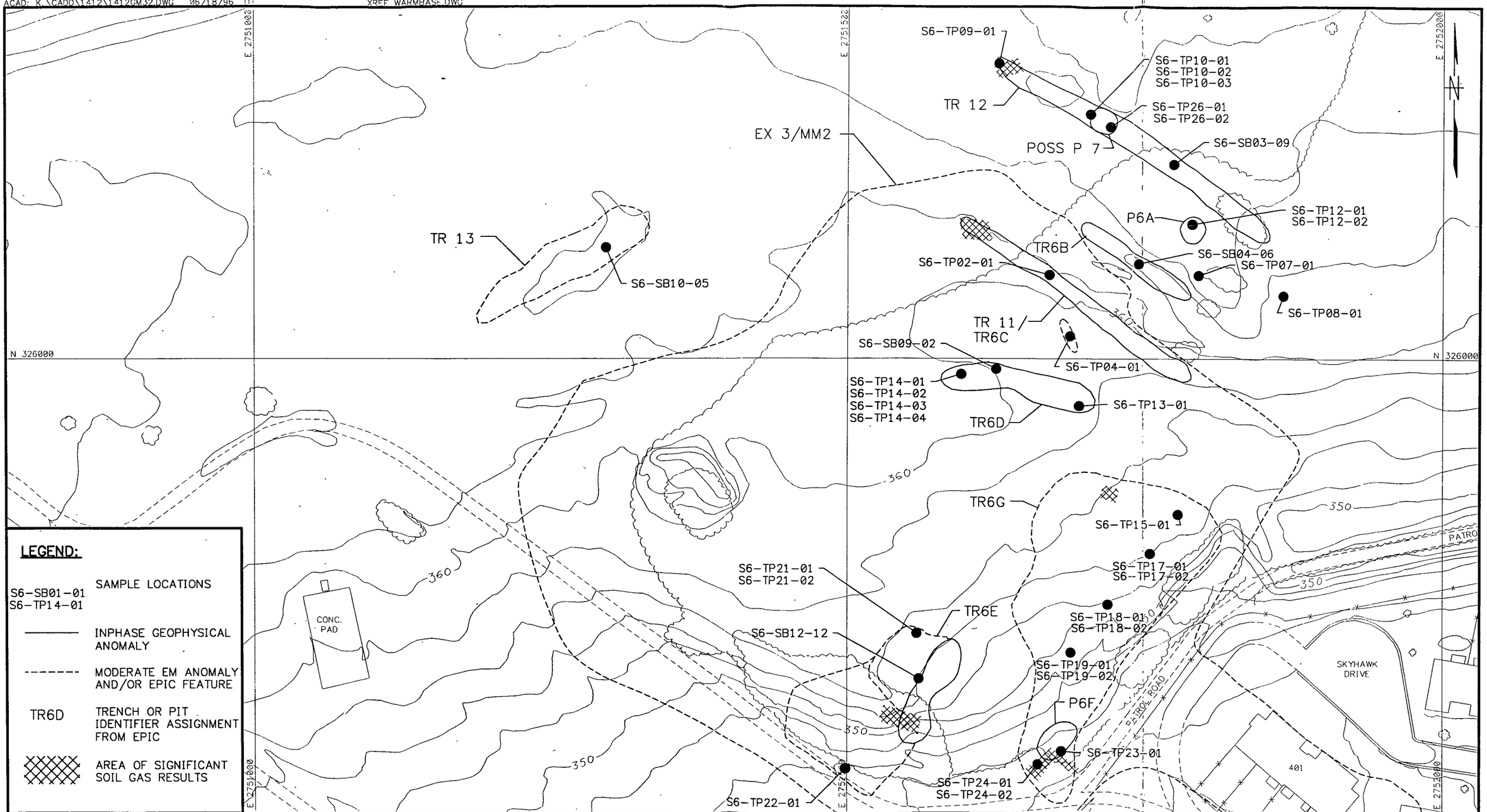

FIGURE 3-1

1996 TEST PIT AND BORING SAMPLE LOCATION MAP
AREA B – SITE 6
NAWC, WARMINSTER, PA

0 80 160
SCALE IN FEET

Brown & Root Environmental

ACAD. K:\CADD\1412\1412GM31.DWG 06/18/96 DT XREF WARMBASE.DWG

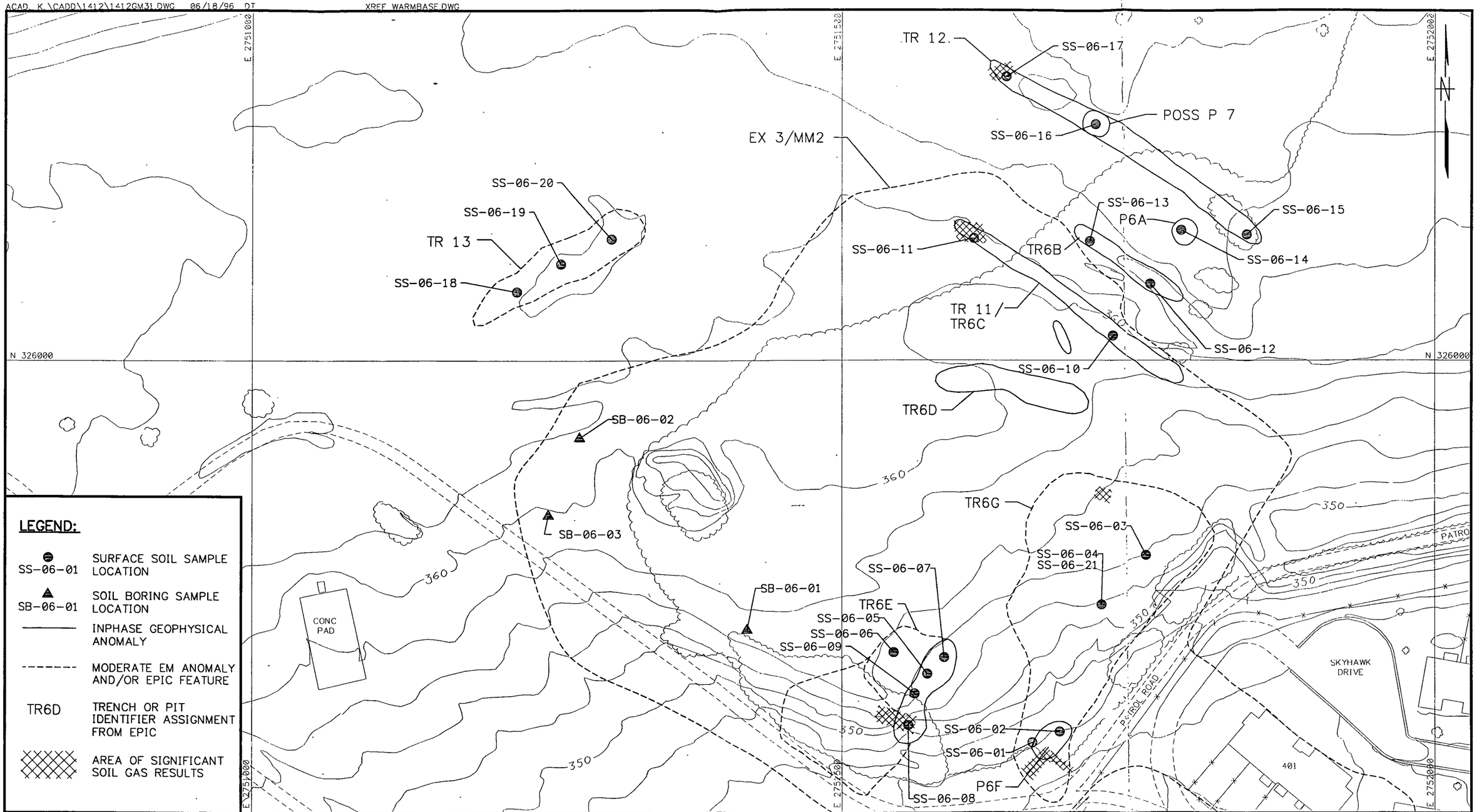

FIGURE 3-2

RI/FS SOIL SAMPLE LOCATION MAP
AREA B – SITE 6
NAWC, WARMINSTER, PA

Brown & Root Environmental

this investigation. The three positive detections ranged from 690 to 2,500 ug/kg. All three positive detections were from samples collected from within P6F. Tetrachloroethene (PCE) was also detected in the surface and subsurface samples collected from this area. Only trace levels of PCE were identified in the surface samples at estimated concentrations between 2 and 8 ug/kg. Subsurface sample concentrations ranged from 100 to 450 ug/kg. One other Site 6 sample, (duplicate results for samples S6-TP26-01 and -02), a subsurface sample collected from TR12, contained an estimated trace level of PCE at 4 ug/kg. Subsurface samples from P6F also contained the only positive detections of 1,2-Dichloroethene identified. Concentrations ranged from 92 to 200 ug/kg.

Other significant concentrations of volatile organics were associated with samples collected from material available from crushed drums excavated from TR12 and TR6D. The drum contents from TR12 contained 50,000 ug/kg of toluene, 140,000 ug/kg of ethylbenzene, 180,000 ug/kg of total xylenes, and an estimated concentration of 1,000 ug/kg of acetone. The soil excavated below this drum contained only an estimated concentration of 3 ug/kg of xylene. The drum excavated from TR6D contained material that exhibited similar concentrations of the same compounds; toluene was estimated at 690 ug/kg; ethylbenzene estimated at 2,200 ug/kg; xylene 21,000 ug/kg; acetone estimated at 2,600 ug/kg. Soils collected from below the drum did not contain any measurable level of volatile organic contamination. The only other VOC of notable concentration identified in subsurface samples was 2-Butanone at an averaged concentration of 79 ug/kg in duplicate samples, (S6-TP21-01 and -02) from TR6E.

Concentrations of semi-volatile compounds were unremarkable in surface samples collected from Site 6. Subsurface samples exhibited a wide range of compounds and concentrations of mainly poly-aromatic hydrocarbons (PAHs) and phthalates. The most notable levels of PAHs occurred in duplicate samples obtained from TR6E. The highest concentrations, (averaged between the duplicate samples S6-TP21-01 and 02) of benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene (1,470 ug/kg, 1,385 ug/kg, and 2,000 ug/kg respectively) were detected below a horizon of trash and debris encountered between 4 and 7 feet below ground surface.

Pesticides were identified at relatively typical concentrations compared to background levels identified for NAWC Warminster soils. The pesticides identified included 4,4-DDD, 4,4-DDE, 4,4-DDT, alpha-chlordane, dieldrin, endosulfan, endrin, gamma-chlordane, heptachlor, and methoxychlor. The widest variety of pesticides and the highest concentrations were identified in samples collected from TR6E from below the trash horizon and from samples collected from P6F. Only trace or low-level pesticide contamination (4,4-DDT 5.9 ug/kg, alpha-chlordane 5.9 ug/kg, dieldrin 4.8 ug/kg, and gamma-chlordane 7.9 ug/kg) was present in the soils sampled from around the containers labeled as containing pesticides encountered within disposal area P6A.

Aroclor-1254 was the most common form of PCB identified in samples collected from Site 6. It was the only PCB contaminant found in surface soils and occurred in only one surface sample (SS-06-03 at 490 ug/kg) taken from the north end of TR6G. Aroclor-1254 was identified at concentrations ranging from 7.2 ug/kg to 1,200 ug/kg in 10 of the 18 subsurface samples analyzed for PCBs. The highest concentration was identified in the duplicate samples collected from below the trash and debris horizon encountered within TR6E (samples S6-TP21-01 and 02). Aroclor-1242 and Aroclor-1260 were identified in one sample each. The soil sample S6-TP18-02, collected from below a drum encountered in TR6G, contained 21 ug/kg of Aroclor-1242. Aroclor-1260 was identified at a concentration of 5,000 ug/kg in a soil sample taken from the mixed debris encountered from within the suspected pit P6F (sample S6-TP24-02).

3.2 INORGANIC ANALYTICAL DATA

Inorganic sample analysis results for surface and subsurface samples collected from Site 6 were compared to background concentrations identified for NAWC Warminster soils. The frequency and range of detection for both sample populations was compared for each analyte to determine if th samples from Site 6 exceeded the typical concentrations identified in background samples. The results of this statistical comparison, summarized in Appendix C, identified antimony, barium, chromium, copper, lead, manganese, mercury, nickel, and zinc as analytes with concentrations present in Site 6 samples exceeding background concentrations.

Surface soils exhibited concentrations of copper, lead, and zinc at representative concentrations of 3 to 5 times the representative background concentration. The highest levels of copper and zinc (316 mg/kg and 360 mg/kg respectively) were identified in the sample collected from the northern end of disposal area TR6G, (sample SS-06-03). The highest surface concentration of lead, 634 mg/kg, was identified in sample SS-06-14 collected from P6A located in the northeast portion of the site.

Subsurface samples collected from Site 6 contained representative concentrations of antimony, chromium, copper, lead, mercury, nickel, and zinc at orders of magnitude greater than background. It should be noted that the Site 6 sample population includes actual waste samples collected from within crushed drums and from deposited debris and trash. The highest levels of antimony (731 mg/kg), chromium (10,100 mg/kg), and mercury (9.9 mg/kg) were present in a pale green clay-like material encountered within P6A (sample S6-TP12-02). The highest concentrations of barium, (922 mg/kg), lead, (39,300 mg/kg), and nickel, (345 mg/kg), were identified in what appeared to be charred debris and trash containing ceramic and metal encountered in TR11 (sample S6-TP02-01). The highest levels of zinc, (5,320 mg/kg), were found in the mixed debris and soil sample taken from P6F (sample S6-TP24-02). Sample S6-TP-Comp contained the highest copper concentrations, (14,300 mg/kg), present at the site.

This sample was a composite sample of a blue, crystalline, corrosion-like material encountered within test pits 16, 17, and 18 located within TR6G.

Two samples and one duplicate sample were collected and analyzed for RCRA TCLP and characteristic parameters. The results from these analysis were unremarkable with the exception of the lead TCLP result from sample S6-TP02-01. This sample was collected from the charred mixed debris material encountered within TR11. The TCLP Lead result for this sample was 40,100 ug/l.

4.0 RISKS AND CONCLUSIONS

The subsurface investigation and sampling effort completed within Site 6 has confirmed the presence of multiple former disposal trenches and pits. In addition, it appears as if portions of the site were used to deposit construction debris type waste on the surface. These areas now form the southeast and southwest boundaries of the plateau area of Site 6. Test pits from within these areas have identified what appears to be the native surface soil at depths of 6.5 to 11 feet below current ground surface. These large areas also contained various debris and trash.

With the exception of TR13, the investigation has confirmed the previous limited findings that multiple trenching operations were apparently used as a means to dispose of waste materials throughout the Site 6 area. Subsurface investigations and sample analysis from TR13 failed to identify a disposal location. Similarly, investigations of the mound and depression in the areas of TR6B and TR11 did not identify any significant evidence of disposal or filling.

4.1 COMPARISON TO SOIL CRITERIA

4.1.1 Surface Soils

A comparison of representative surface soil contamination results to U. S. Environmental Protection Agency (EPA, 1996a and 1996b) and Pennsylvania Department of Environmental Protection (PADEP) soil criteria (PADEP, 1995 and 1996), see Table 4-1, identified that Aroclor-1254 and tetrachloroethene exceed the cited standards. The representative concentration for Aroclor-1254 has been calculated as 84.23 ug/kg. This concentration is generally equal to the EPA risk based standard for residential areas, 83 ug/kg. Only one surface sample, SS-06-03, contained Aroclor-1254 at a concentration greater than detection limits. The reported concentration was 490 ug/kg. The PADEP clean-up criteria for PCB is 5,000 ug/kg. Additional sampling in the area, test pits SS-TP15, 17, and 18, failed to reveal the presence of any significant PCB contamination in the area. It is questionable whether this one sample should require any action based on the fact that it does not exceed the PADEP standard and appears to be an isolated finding. The risk, if any, associated with this single finding is minimal. It should also be noted that the level of contamination is below the acceptable clean fill standard, 1,000 ug/kg, established by PADEP.

Tetrachloroethene and trichloroethene were detected in one surface sample at concentrations greater than the EPA criteria (3 ug/kg) established to protect groundwater. Sample SS-06-01, collected from the surface of P6F, contained 8 ug/kg of tetrachloroethene and 32 ug/kg of trichloroethene. No other criteria were exceeded in surface samples.

TABLE 4-1

COMPARISON OF STATE AND FEDERAL SOIL CRITERIA TO SITE-RELATED CONCENTRATIONS OF INORGANICS AND ORGANICS IN SURFACE SOIL AT SITE 06

WARMINSTER, PENNSYLVANIA

SUBSTANCE	SITE-RELATED FREQUENCY OF DETECTION	SITE-RELATED RANGE OF POSITIVE DETECTION*	SITE-RELATED REPRESENTATIVE CONCENTRATION	PADEP Criteria Ingestion Nonresidential (1)	PADEP Criteria Ingestion Residential (1)	EPA Criteria Ingestion Industrial RBC (2)	EPA Criteria Ingestion Residential RBC (2)	PADEP Criteria Soil to Groundwater (1)	Soil to Groundwater 1 = DAF (2)	RC EXCEEDS ANY CRITERIA
COPPER	20 / 20	7.3 - 316	64 97	37000	700	82000	3100	100	NL	NO
LEAD	20 / 20	8 3 - 634	124.58	600	200	NL	400 (3)	NL	400	NO
ZINC	20 / 20	25 - 360	106 17	30000	1000	610000	23000	NL	1400	NO
4,4'-DDD	1 / 19	7 7	2 84	24000	20000	24000	2700	500000	800	NO
4,4'-DDT	4 / 19	4 3 - 7 9	3 58	17000	10000	17000	1900	500000	2000	NO
ALPHA-CHLORDANE	1 / 20	8 2	2 01	5000	300	4400	490	500000	500	NO
AROCLOR-1254	1 / 20	490	84 23	NL	5000	740	83	NL	1000	YES
BENZO(A)ANTHRACENE	1 / 20	42	42	8000	6000	7800	880	500000	80	NO
BENZO(A)PYRENE	1 / 20	45	45	800	600	780	88	500000	400	NO
BENZO(B)FLUORANTHENE	2 / 20	54 - 61	61	8000	6000	7800	880	500000	300	NO
BENZO(G,H,I)PERYLENE	2 / 20	41 - 48	48	NL	5000	740	83	NL	NL	NO
BROMOMETHANE	1 / 20	3	3	1400000	109000	2900000	110000	10000	NL	NO
BUTYL BENZYL PHTHALATE	1 / 20	49	49	200000000	16000000	410000000	16000000	100000	810000	NO
CHRYSENE	1 / 20	53	53	800000	600000	780000	88000	500000	8000	NO
ENDRIN	1 / 20	14	3.65	300000	20000	610000	23000	500000	50	NO
FLUORANTHENE	1 / 20	95	95	40000000	3000000	82000000	3100000	400000	210000	NO
INDENO(1,2,3-CD)PYRENE	1 / 20	49	49	8000	6000	7800	880	500000	700	NO
PYRENE	1 / 20	73	73	30000000	2000000	61000000	2300000	300000	210000	NO
TETRACHLOROETHENE	2 / 20	2 - 8	6 73	10000000	700000	110000	12000	2000	3	NO
TOLUENE	12 / 20	1 - 15	5 98	200000000	16000000	410000000	16000000	100000	600	NO
TRICHLOROETHENE	10 / 20	1 - 32	8 12	520000	400000	520000	58000	2000	3	NO

FOR ALL VALUES SHOWN ON THIS TABLE, INORGANICS ARE REPORTED IN MG/KG, ORGANICS ARE REPORTED IN UG/KG

* = QUALIFIERS FOR DATA ARE PRESENTED IN DATA PRESENTATION TABLES

1. Pennsylvania Land Recycling and Environmental Remediation Standards Act - Act 2, 1995. Statewide Human Health Standards Rev. 1, April 26, 1996
2. U. S. EPA, Region III Risk-based Concentration Tables January - June 1996
3. U.S EPA, Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action, 1994

4.1.2. Subsurface Soils

A similar comparison of subsurface analytical results, see Table 4-2, identified several metals and organic contaminants in excess of criteria. In reviewing these data it is important to note that the samples were collected in excess of 2 feet below ground surface and in some instances from drum contents. Drums excavated and sampled during this investigation were removed from the site for proper disposal. It should be further noted that the groundwater associated with Site 6 has been studied and is being considered for a final remedy (B&R Environmental, 1996b). The results from previous groundwater investigations and an evaluation of the nature and extent of the contamination in and around Site 6 has concluded that the groundwater is contaminated with volatile organics; more specifically trichloroethene and benzene. An analysis of the groundwater data collected has concluded that inorganic contamination is not of concern within this area. Future land use plans for this area are currently being evaluated. The most likely future use identified to date reserves this tract of land as open space, which is consistent with the groundwater remedial actions being considered and evaluated. Because of these factors, metals identified in subsurface samples have not be considered as major groundwater factors in this review.

Further evaluation of the data presented in Table 4-2 identifies several significant findings in regard to the specific samples that exceed the cited risk-based standards for inorganics. The representative concentration for antimony is reported as 79 mg/kg. This concentration is in excess of the PADEP and EPA residential risk-based concentration (RBC) for ingestion of contaminated soil. Of the 35 samples analyzed, only five samples exceeded this concentration. Sample S6-TP08-01, collected from a depression in the northeast portion of the site, contained 164 mg/kg of antimony. Sample S6-TP12-02, collected from a thin horizon of pale green, clay-like material 5 feet below ground surface in P6A, contained 731 mg/kg. Three other samples, S6-TP23-01, S6-TP24-01, and S6-TP24-02, collected from P6F contained levels of 37.7 mg/kg, 175 mg/kg, and 114 mg/kg, respectively.

Representative concentrations of chromium are reported to exceed the PADEP and EPA RBC for residential areas. Only five samples contained concentrations of chromium greater than the PADEP RBC (1,000 mg/kg), and no sample contained concentrations greater than the EPA criterion of 78,000 mg/kg. The five samples exceeding the PADEP criteria were from the depression located in the northeast corner of the site, sample S6-TP08-01, and from P6A and P6F (samples S6-TP12-01, S6-TP12-02, S6-TP24-01, and S6-P24-02).

The EPA RBC for copper, 3,100 mg/kg, was exceeded in only one sample (S6-TP-COMP). This sample material was not soil. The sample consisted of a composite of what appeared to be a corroded metal. This material also was found to contain slightly elevated levels of zinc. Because this material is likely a

TABLE 4-6
COMPARISON OF STATE AND FEDERAL SOIL CRITERIA TO SITE-RELATED CONCENTRATIONS OF INORGANICS AND ORGANICS IN SUBSURFACE SOIL AT SITE 06
WARMINSTER, PENNSYLVANIA

SUBSTANCE	SITE-RELATED FREQUENCY OF DETECTION	SITE-RELATED RANGE OF POSITIVE DETECTION*	SITE-RELATED REPRESENTATIVE CONCENTRATION	PADEP Criteria Ingestion Nonresidential (1)	PADEP Criteria Ingestion Residential (1)	EPA Criteria Ingestion Industrial RBC (2)	EPA Criteria Ingestion Residential RBC (2)	PADEP Criteria Soil to Groundwater (1)	Soil to Groundwater 1 = DAF (2)	RC EXCEEDS ANY CRITERIA
ANTIMONY	15 / 35	9 4 - 731	79	400	30	820	31	NL	0 3	YES
BARIUM	32 / 35	6 - 922	245	70000	6000	140000	5500	NL	86	YES
CHROMIUM	29 / 31	17 1 - 10100	1726	1000000	1000	1000000	78000	10	2	YES
COPPER	32 / 35	4 6 - 14300	1372	37000	700	82000	3100	100	NL	YES
LEAD	33 / 33	3.8 - 39300	3585	600	200	NL	400 (3)	NL	400	YES
MANGANESE	33 / 33	25 4 - 1210	755	5000	400	10000	1800	NL	NL	YES
MERCURY	18 / 33	0 06 - 9 9	2	300	20	610	23	NL	NL	NO
NICKEL	34 / 35	4 6 - 345	57	20000	200	41000	1600	NL	7	YES
ZINC	32 / 35	11 4 - 5320	1042	30000	1000	610000	23000	NL	1400	YES
1,1,1-TRICHLOROETHANE	1 / 34	4	4	90000000	7000000	180000000	7000000	20000	100	NO
1,2-DICHLOROETHENE (TOTAL)	3 / 34	92 - 200	200	10000000	800000	18000000	700000	7000	20	YES
2-BUTANONE	1 / 34	79	79	600000000	40000000	1000000000	47000000	50	NL	YES
2-METHYLNAPHTHALENE	2 / 14	50 - 6700	6700	NL	1000000	NL	NL	20000	NL	NO
4,4'-DDD	2 / 18	23 - 530	94 84	24000	20000	24000	2700	500000	800	NO
4,4'-DDE	2 / 18	5 5 - 101 5	32.91	17000	10000	17000	1900	500000	3000	NO
4,4'-DDT	6 / 18	4 8 - 94 5	39.42	17000	10000	17000	1900	500000	2000	NO
ACENAPHTHYLENE	1 / 14	61	61	NL	NL	NL	NL	33000	NL	NO
ACETONE	3 / 34	380 - 10000	896 51	100000000	8000000	200000000	7800000	30	800	YES
ALPHA-CHLORDANE	3 / 18	5.9 - 170	33.48	5000	300	4400	490	500000	500	NO
ANTHRACENE	1 / 14	311.5	311.50	300000000	23000000	610000000	23000000	70000	590000	NO
AROCLOR-1242	1 / 18	21	21	NL	5000	740	83	NL	1000	NO
AROCLOR-1254	10 / 18	7 2 - 1200	379 47	NL	5000	740	83	NL	1000	YES
AROCLOR-1260	1 / 18	5000	893 16	NL	5000	740	83	NL	1000	YES
BENZO(A)ANTHRACENE	4 / 14	48 - 1470	1470	8000	6000	7800	880	500000	80	YES
BENZO(A)PYRENE	4 / 14	68 - 1385	1385	800	600	780	88	500000	400	YES
BENZO(B)FLUORANTHENE	4 / 14	82 - 2000	2000	8000	6000	7800	880	500000	300	YES
BENZO(K)FLUORANTHENE	2 / 14	180 - 730	730	80000	60000	78000	8800	500000	2000	NO
BIS(2-ETHYLHEXYL)PHTHALATE	4 / 14	67 - 1900	1900	400000	300000	410000	46000	400000	180000	NO
BUTYL BENZYL PHTHALATE	1 / 14	5100	5100	200000000	16000000	410000000	16000000	100000	810000	NO
CARBAZOLE	1 / 14	74	74	NL	NL	290000	32000	NL	30	YES
CARBON DISULFIDE	1 / 34	2	2	100000000	7000000	200000000	7800000	800	2000	NO
CHRYSENE	5 / 14	59 - 3300	3300	800000	600000	780000	88000	500000	8000	NO
DI-N-BUTYL PHTHALATE	1 / 14	44	44	100000000	8000000	NL	NL	300000	270000	NO
DIELDRIN	2 / 16	4 8 - 6 1	6.10	400	300	360	40	90000	0 2	YES
ENDOSULFAN I	1 / 18	2 2	2.2	6000000	500000	12000000	470000	70000	900	NO
ENDOSULFAN II	1 / 18	17	17	6000000	500000	12000000	470000	70000	900	NO
ENDRIN	1 / 15	21	21	300000	20000	610000	23000	500000	50	NO
ETHYLBENZENE	3 / 34	7 - 140000	11159 31	100000000	7000000	200000000	7800000	70000	700	YES
FLUORANTHENE	5 / 14	54 - 3285	3285	40000000	3000000	82000000	3100000	400000	210	YES
GAMMA-CHLORDANE	5 / 18	4 8 - 210	41 36	4000	3000	4400	490	500000	500	NO
HEPTACHLOR	1 / 18	11	11	1300000	1000	1300	140	400000	1000	NO
INDENO(1,2,3-CD)PYRENE	3 / 14	46 - 830	830	8000	6000	7800	880	500000	700	YES
METHOXYCHLOR	1 / 18	18	18	5000000	300000	10000000	390000	200000	8000	NO
NAPHTHALENE	1 / 14	76	76	40000000	3000000	82000000	3100000	8000	4000	NO
PYRENE	6 / 14	50 - 3000	3000	30000000	2000000	61000000	2300000	300000	210000	NO
TETRACHLOROETHENE	4 / 34	4 - 450	450	10000000	700000	110000	12000	2000	3	YES
TOLUENE	2 / 34	690 - 50000	3989 72	200000000	16000000	410000000	16000000	100000	600	YES
TOTAL XYLENES	4 / 34	3 - 180000	14912.30	1000000000	100000000	1000000000	160000000	1000000	10000	YES
TRICHLOROETHENE	3 / 34	690 - 2500	849.38	520000	400000	520000	58000	2000	3	YES

FOR ALL VALUES SHOWN ON THIS TABLE, INORGANICS ARE REPORTED IN MG/KG, ORGANICS ARE REPORTED IN UG/KG

* = QUALIFIERS FOR DATA ARE PRESENTED IN DATA PRESENTATION TABLES

1 Pennsylvania Land Recycling and Environmental Remediation Standards Act - Act 2, 1995 Statewide Human Health Standards Rev. 1, April 26, 1996

2 U. S. EPA, Region III Risk-based Concentration Tables January - June 1996.

3. U.S EPA, Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action, 1994.

metal alloy of some kind it is questionable whether the application of the soil ingestion RBC to this material is appropriate. The PADEP RBC for copper, 700 mg/kg, was exceeded in 4 other samples. One of these samples, S6-TP19-01, was collected from a crushed container. This container and the contents have been removed from the site and disposed of by the Navy. The other samples exceeding the PADEP RBC include samples from a discrete isolated pocket of charred material encountered in TR11, sample S6-TP02-01 at 1,880 mg/kg, and two samples from pit P6F, samples S6-TP23-01 and S6-TP24-02, with concentrations of 2,460 and 1,080 mg/kg, respectively.

Lead was identified in four samples at levels in excess of the PADEP residential RBC (200 mg/kg). The sample collected from the isolated pocket of charred material in TR11, sample S6-TP02-01, contained 39,300 mg/kg of lead. This material was also analyzed for RCRA TCLP metals. The analysis identified that the material leached lead concentrations, 40,100 ug/L, in excess of the RCRA waste standard of 5,000 ug/L (see Appendix C for results). This material also was found to contain manganese, nickel, and zinc in excess of RBCs but did not exceed any other standard. A review of the test pit logs indicates that this material was an isolated pocket encountered at about 4.5 feet below ground surface and that the entire pocket of material was excavated in completing the trench. Subsequent handling of the excavated material and backfilling of the pit has most likely made it impossible to locate this isolated material. The other three samples that contained lead concentrations in excess of the PADEP RBC were collected from pits P6A and P6F; sample S6-TP12-02 from P6A contained 7,230 mg/kg; samples S6-TP23-01 and S6-TP24-02 from P6F contained 1,600 mg/kg and 960 mg/kg, respectively.

The representative concentration of manganese was reported in excess of the PADEP RBC for residential areas. A review of the data for NAWC Warminster reveals that the native background for the area also exceeds these criteria. The representative background concentration for manganese is 495 mg/kg as opposed to the PADEP and EPA RBCs of 400 mg/kg and 1,800 mg/kg, respectively. Manganese is a naturally occurring element and has been reported in background samples at ranges of 124 mg/kg to 718 mg/kg. The sample concentrations found in Site 6 soils that exceed the representative background concentration are within two times this level with the exception of one sample collected from pit P6F. Sample S6-TP24-02 contained the highest levels of manganese at 1,210 mg/kg.

Three soil samples exceeded the PADEP RBC (1,000 mg/kg) for zinc. None of these samples exceeded the EPA RBC (23,000 mg/kg) for residential areas. The three samples that exceeded the PADEP criteria were from pits P6A and P6F; sample S6-TP12-02 contained 1,410 mg/kg, and samples S6-TP23-01 and S6-TP24-02 contained 3,650 mg/kg and 5,320 mg/kg respectively.

A comparison of organic contamination, considering both human health and groundwater protection criteria, has also been included in Table 4-2. A review of organic contaminant concentrations,

considering both human health and groundwater protection criteria, further defines the extent and nature of the risks associated with Site 6.

The three positive detections of 1,2-dichloroethene found in subsurface samples all exceed the EPA groundwater protection criteria (20 ug/kg). All three of these samples, S6-2301-01, 26-TP24-01, and S6-TP24-02, were collected from the pit P6F area. Concentrations ranged from 92 to 200 ug/kg.

The PADEP groundwater protection criteria for 2-butanone was exceeded in only one sample and a duplicate at an average concentration of 79 ug/kg. This sample, taken from 7 feet below ground surface, contains levels considerably below the PADEP and EPA residential RBCs of 40,000,000 ug/kg and 47,000,000 ug/kg.

Acetone was identified in three samples at concentrations that exceed the PADEP groundwater protection criteria. No sample contained concentrations of acetone in excess of the EPA residential RBC. The two highest concentrations of acetone identified on site, 10,000 ug/kg and 2,600 ug/kg, were from samples of material contained in drums which have been removed from the site. The other sample that contained acetone, sample S6-TP21-01 and duplicate sample S6-TP21-02, contained an average concentration of 380 ug/kg, well below the EPA RBC of 7,800,000 ug/kg. It should also be noted that acetone is a common laboratory contaminant and this level of acetone is not considered remarkable especially as it appears as an isolated occurrence.

Although Table 4-2 indicates that the representative concentration for Aroclor-1254 exceeds criteria, no sample contained Aroclor-1254 in excess of the PADEP clean-up criteria of 5,000 ug/kg. Four samples exceeded the EPA residential RBC for ingestion of contaminated soil. One of these samples, S6-TP10-01, was collected from the contents of a crushed drum which has been removed from the site. The other sample locations that exceeded the EPA RBC of 83 ug/kg were collected from pits P6A and P6F and from the northwest corner of TR6E at depths of 5-7 feet below ground surface. Sample S6-TP12-02, located in P6A, contained 470 ug/kg, sample S6-TP21-01 and duplicate sample S6-TP21-02 from one test pit in possible trench TR6E contained an average concentration of 1,200 ug/kg, and sample S6-TP23-01 from P6F contained 360 ug/kg. These results are below or generally within the range of PADEP clean fill criteria of 1,000 ug/kg.

One sample from Site 6 exceeded any criteria for Aroclor-1260. Sample S6-TP24-02, collected from pit P6F, contained 5,000 ug/kg of Aroclor-1260. This concentration is at the PADEP clean-up criteria and exceeds the EPA residential RBC of 83 ug/kg.

The EPA residential ingestion RBC for benzo(a)anthracene was exceeded in one of the four positive detections in subsurface samples. Sample S6-TP21-01 and duplicate sample S6-TP21-02, collected from seven feet below ground surface in one of the three test pits in possible trench TR6E, contained an average concentration of 1,470 ug/kg. This concentration is greater than the EPA residential criteria of 880 ug/kg and the EPA groundwater protection criteria of 80 ug/kg. One other sample, S6-TP14-03 collected from TR6D, exceeded the groundwater criteria but not the RBC. The reported concentration for this sample was 200 ug/kg.

Benzo(a)pyrene was also present in sample S6-TP21-01 and the duplicate collected from TR6E. The reported average concentration of 1,385 ug/kg exceeded the EPA residential criteria of 88 ug/kg and the groundwater protection criteria of 300 ug/kg. One other isolated sample from possible trench TR6D, sample S6-TP14-03 collected 3.5 feet below ground surface, exceeded this criteria. The reported concentration, 390 ug/kg, does not exceed any other cited criteria.

Benzo(b)fluoranthene was also present in sample S6-TP21-01 and the duplicate sample S6-TP21-02 at concentrations in excess of the EPA residential ingestion criteria of 880 ug/kg and groundwater protection criteria of 300 ug/kg. This sample contained an average concentration of 2,000 ug/kg. As noted above this sample was collected from seven feet below ground surface in TR6E.

The EPA groundwater protection criteria for carbazole (30 ug/kg) was exceeded in one sample collected from the northwest portion of TR6E. Sample S6-TP21-02 contained 74 ug/kg of carbazole.

Dieldrin was present in two soil samples (S6-TP02-01 and S6-TP12-01) at concentrations, 6.1 ug/kg and 4.8 ug/kg respectively, that exceed the EPA groundwater protection criteria of 0.2 ug/kg. As indicated above, sample S6-TP02-01 was taken of an isolated pocket of charred material which was completely excavated during the test pit investigation. The other sample exceeding this criteria was taken from pit P6A.

The two samples that exceeded criteria for ethylbenzene, toluene, and total xylenes were collected from drums. These drums were removed from Site 6 for proper disposal by the Navy. Soil samples from around these drums did not reveal significant contamination.

One set of duplicate samples (S6-TP21-01 and S6-TP21-02) collected from the trash layer encountered in TR6E contained fluoranthene above the EPA groundwater criteria of 210 ug/kg. The average concentration at this sampling point, 3,285 ug/kg, was the only sample that exceeded any criteria for this compound. This same sampling location contained 830 ug/kg of indeno(1,2,3-CD)pyrene. This concentration exceeds the groundwater protection criteria of 700 ug/kg. No other criteria were exceeded.

Sample S6-TP23-01, collected from P6F, contained concentrations of heptachlor (11 ug/kg) in excess of the EPA groundwater protection criteria. This sample, along with samples S6-TP24-01 and S6-TP24-02 collected from P6F, were the only samples to exceed any criteria for tetrachloroethene and trichloroethene. The concentrations in these samples exceed the EPA groundwater protection criteria for both compounds. The tetrachloroethene concentrations in these samples ranged from 100 ug/kg to 450 ug/kg. Trichloroethene concentrations ranged from 690 ug/kg to 2,500 ug/kg.

4.2 SUMMARY AND CONCLUSIONS

The subsurface investigation and analysis of surface and subsurface samples collected from Site 6 have confirmed the former use of the area for disposal and the presence of disposal trenches and pits. The material encountered during the subsurface investigation suggests that the area was used for the disposal of both construction type debris as well as household and industrial wastes. The disposal of construction debris appears to have occurred mainly at the surface and is visible throughout the area. It is estimated that this debris covers a surface area of about 0.5 acres throughout Site 6. Test pit observations indicate that this surface deposition has raised the natural elevation of the southeast and southwest perimeters by 6.5 to 11 feet. In addition it appears that a series of trenches and pits were used for the disposal of debris, trash, and waste of varying nature.

Site 6 is located in an area of the base that is scheduled for closure and transfer of ownership. The groundwater associated with Site 6 is contaminated with low levels of volatile organic compounds. Final remedial actions to address this contamination are being evaluated. The eventual transfer of this property will require that potential threats to human health and the environment be addressed by the Navy before final transfer. The identified potential future uses for this tract of land involve the preservation of the area as open space. The response actions being considered to remediate the groundwater associated with Site 6 are consistent with this potential use and include the preparation of deed restrictions and institutional controls to ensure this future land use.

The evaluation of data from the investigation of the disposal areas indicates that the surface soils associated with Site 6 do not pose unsafe risks. Subsurface investigations indicate that three areas within Site 6 present the majority of potential risks and possible sources of groundwater contamination. Samples from pits P6F and P6A, see Figure 4-1, present the majority of potential risks and concentrations of contaminants greater than PADEP and EPA criteria. Pit P6F also contained the only remarkable concentrations of volatile organic compounds identified in soil samples collected from Site 6. An area containing a layer of debris and trash from 4.5 to 7 feet below ground surface located in the northwest corner of TR6E, was found to contain concentrations of several organic compounds and

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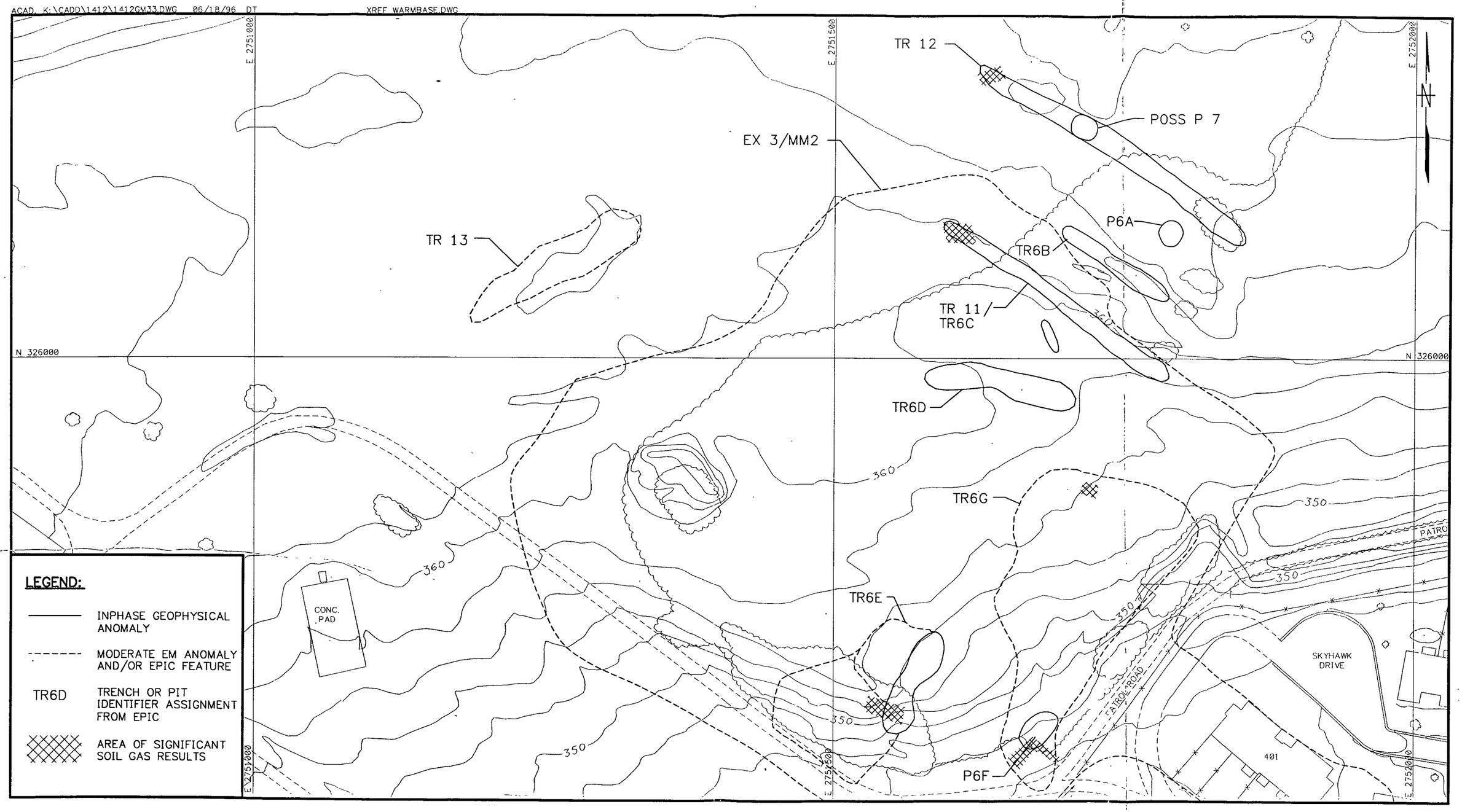

SUSPECTED DISPOSAL AREA LOCATION MAP
AREA B – SITE 6
NAWC, WARMINSTER, PA

0 80 160
SCALE IN FEET

FIGURE 4–1

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concentrations of contaminants in this area consistently exceed PADEP and EPA RBCs established for the protection of human health.

Possible removal response actions to mitigate the identified risks and possible source of groundwater contamination should be considered for these three areas within Site 6. Excavation and off-site disposal of the materials from these areas would effectively reduce any potential risks and groundwater contamination sources associated with the site. If necessary, the construction debris scattered throughout the surface of the site could also be removed, which would restore the aesthetic value of this portion of the base.

The approximate volume of material contained in the three areas is estimated to total 1,240 cubic yards. The estimated area of pit P6F, based on geophysical and subsurface investigations, is 80 feet by 40 feet. The depth to bedrock in the area has been identified, through test pit excavations, to be about 6 feet. Pit P6A is estimated to be 30 feet square and the depth to bedrock in this area is approximately 7 feet. The area of trash disposal in TR6E is estimated to be 40 feet by 20 feet. Test pit excavations in this area identified a clay layer below the fill at a depth of 8 to 10 feet and the original top soil was encountered at a depth of 11 feet. It is estimated that excavation would be to the average depth of 10 feet in this area.

The remaining suspected disposal areas within Site 6 do not appear to present a consistent or persistent threat or risk to groundwater or human health, considering the proposed future land use for the site. Given a limited removal action, preliminary risk calculations were performed to estimate the risks to human health for remaining residual soil contamination. These calculations were based on a recreational exposure scenario for the remaining contamination, and are provided in Appendix D. The preliminary risk calculations assumed complete removal actions would be conducted at the three areas of concern within Site 6 and that the drums and the contents of the drums discovered during the Site 6 investigation had been removed by the Navy.

Table D-1 summarizes the comparison of soil screening criteria for soil contamination not associated with the contents of the drums and the three areas of concern (i.e., remaining residual soil contamination). The preliminary risk calculations involved selecting chemicals of potential concern by comparing RBCs for residential land use and calculated RBCs for recreational land use to the representative concentrations for site-related chemicals. Lead was excluded as a chemical of potential concern because it was only found at elevated levels in one sample from TR11 and in samples from the two pits of concern. Based on these calculations, total estimated risks for noncarcinogenics and carcinogens were well below EPA's acceptable targets. For noncarcinogenics, the Hazard Index (HI) was 0.11, while carcinogenic risks were estimated at 5.69×10^{-7}.

In the event a removal action is selected for Site 6, target cleanup concentrations will be developed at a later date, consistent with State and Federal cleanup levels, risk-based concentrations, and current EPA risk assessment procedures.

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TEST PIT LOG

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PROJECT: NAWC Warminster TEST PIT NO.: S6-TP-01

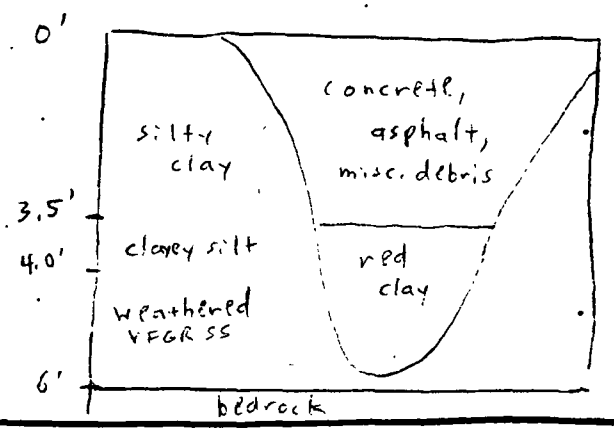
PROJECT NO.: DATE: 4-10-96

LOCATION: Site 6, Trench 11 at Grid location S125, P110

FIELD GEOLOGIST: D. Whalen

DEPTH (Ft.)	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION (Soil Density / Consistency, Color)	USCS	REMARKS
0.		red-brown clayey silt with grass roots		damp/moist 0ppm
		brown clayey silt to silty clay		0ppm
2.0		large slabs of asphalt and pieces		
		of concrete; small amount of		
		miscellaneous debris (beer bottle		damp 0ppm
		cap, plastic lid to a cup, thin metal		
		bar ~4' long, crushed metal can) - in		0ppm
		brown clayey silt matrix		
3.5				
		red clay, wet/moist		0ppm
6				
		bedrock - red gray VFGR		
		sandstone		

Test Pit Cross Section and / or Plan View



REMARKS no sample taken
trench length: 33'

PHOTO LOG no photo

TEST PIT

PAGE OF

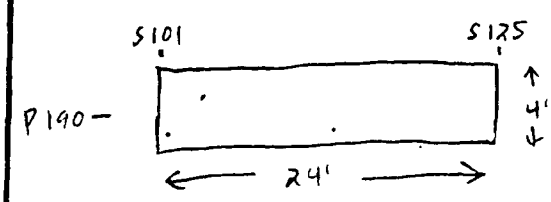
TEST PIT LOG

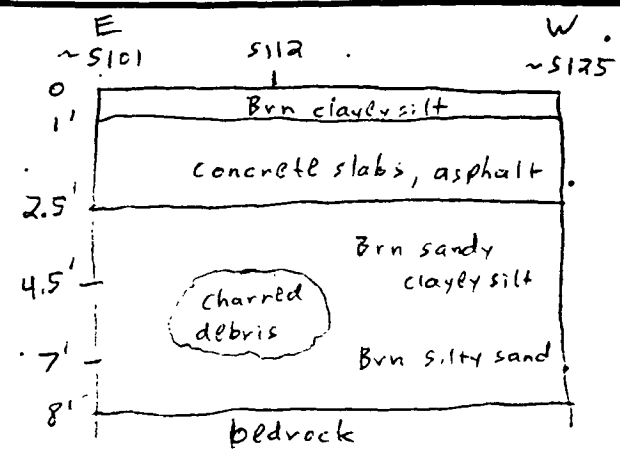
Brown & Root Environmental

PROJECT: NAWC Warminster TEST PIT NO.: S6-TP02
PROJECT NO.: 6883 DATE: 4/10/96
LOCATION: Area B, Site 6 TB 11 Station 110, Profile 190
FIELD GEOLOGIST: D. Whalen

DEPTH (FT.)	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION (Soil Density / Consistency, Color)	USCS	REMARKS
0.0		Brn clayey silt		damp / moist 0 ppm
1.0		concrete slabs, pieces of asphalt		
		pavement		
		rocky lt. brown sandy clayey silt		damp
2.5		some red clay		
		rocky sandy clayey silt		
4.5		soda bottle, light green crystalline		
		material (small pocket), charred		
		material: transistors, metal scrap,		
		ceramic, glass pieces, metal screen,		
		roof tiles (terra cotta and asbestos),		
		wire, part of tree trunk		
5.5		Brn silty sand, chunks of weathered		
		sandstone		
8.0		bedrock - FGR sandstone		

Test Pit Cross Section and / or Plan View





REMARKS 1250 sample S6-TP02-01 taken; depth 4.5', app. 11' from E end of test pit; dark brn to black clayey sandy silt containing various charred debris - ceramic, glass, transistors, metal

PHOTO LOG R1P1 of N wall of pit
R1P2 of S wall of pit

TEST PIT ____

PAGE ____ OF ____

TEST PIT LOG

Brown & Root Environmental

PROJECT: NAWC Warminster TEST PIT NO.: S6-TP03

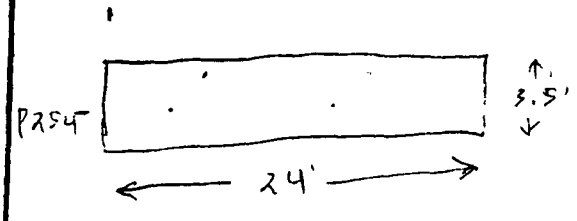
PROJECT NO.: 6883 DATE: 4/10/96

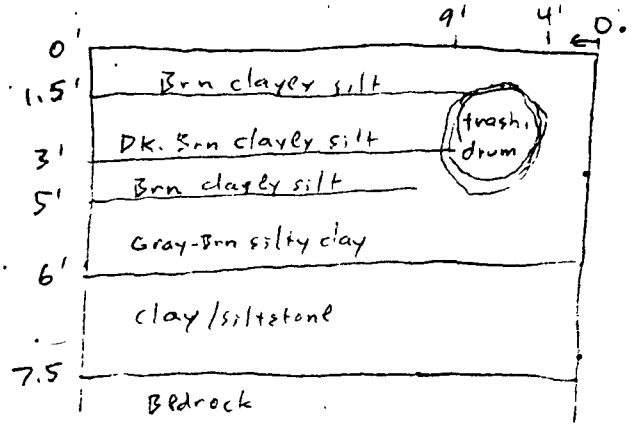
LOCATION: Area B Site 6 Poss. TR 6C (TR 11 Ext.) S100, P250

FIELD GEOLOGIST: P. Whalen

DEPTH (FL)	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION (Soil Density / Consistency, Color)	USCS	REMARKS
0		Brn clayey silt, grass roots		
				damp/moist
2		Dark Brn clayey silt some lt green		
		crystalline material, crushed red 55-gal		
		drum (empty) w/ words "Fire Only"		may have read "Chemical Fire
		visible on it		only" or "Wood Fire Only"
		steel rail connector		
3'		large chunks of what looks like solidified		damp
		tar stuck on pieces of wood		
4		large pieces of native weathered FGR		
		sandstone		damp
		Gray-Brn silty clay		
6		lt. orange-Brn to lt. gray brn clay /		
		siltstone		
7.5				
		weathered gray-Brn FGR sandstone		

Test Pit Cross Section and / or Plan View





REMARKS: no sample taken

PHOTO LOG: R1P3 of N wall of pit

TEST PIT

PAGE OF

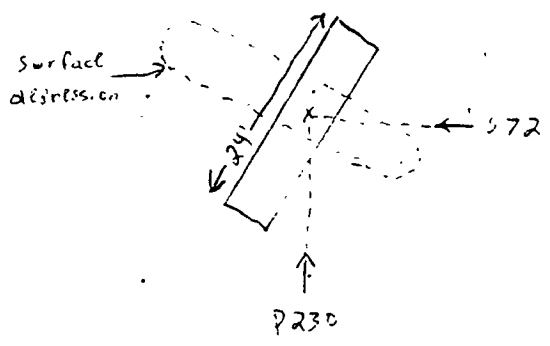
TEST PIT LOG

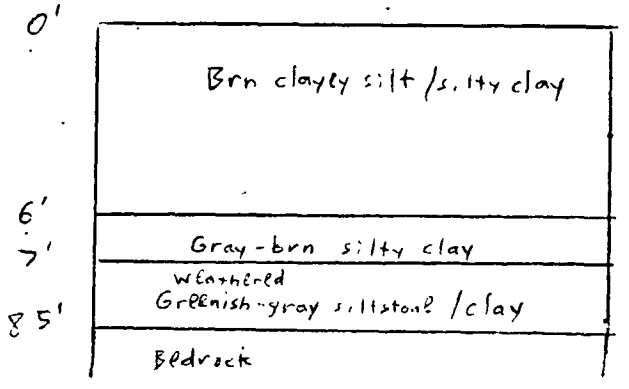
Brown & Root Environmental

PROJECT: NAWC Warminster TEST PIT NO.: S6-TP04
PROJECT NO.: 6883 DATE: 4-11-96
LOCATION: Area B, Site 6, TRI/IZ area Surface depression at S72, P230
FIELD GEOLOGIST: D. Whalen

DEPTH (FT.)	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION (Soil Density / Consistency, Color)	USCS	REMARKS
0.0		Brn clayey silt to silty clay		damp 0ppm
				damp 0ppm
5.0				
6.0		Gray-Brn silty clay, some pieces of		damp 0 ppm
		weathered gray-Brn FGR sandstone		
7.0		weathered greenish-gray siltstone		very soft, waxy
		some weathered red-gray VFGR sandstone		damp 0ppm
8.5		bedrock - brief MGR to CGR		
		sandstone, almost conglomeritic,		
		angular quartz pebbles		

Test Pit Cross Section and / or Plan View





REMARKS No waste materials encountered
0840 Sample S6-TP04-01 collected; 18" deep Brn clayey silt damp 0ppm

PHOTO LOG R1 P4 of N wall of pit

TEST PIT

PAGE OF

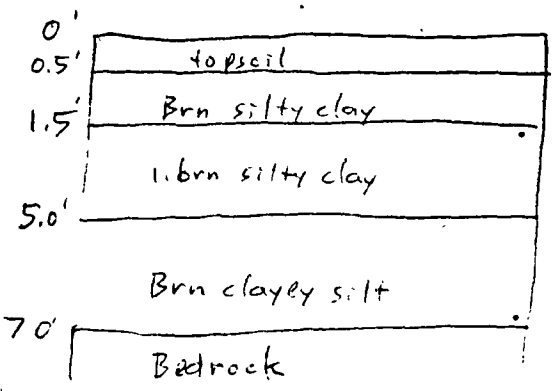
TEST PIT LOG

Brown & Root Environmental

PROJECT: NAWC Warminster TEST PIT NO.: S6-TP05
PROJECT NO.: DATE: 4/11/96
LOCATION: Area B, Site 6 TR 6B S160, P210
FIELD GEOLOGIST: D. Whalen

DEPTH (FT.)	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION (Soil Density / Consistency, Color)	USCS	REMARKS
0		Brn clayey silt topsoil grass roots		damp/moist
0.5		Brn silty clay		0 ppm
1.5		lt. Brn silty clay, micaceous		stiff compacted damp
				0 ppm
5.0		Brn clayey silt		0 ppm
		pieces of red-gray FGR sandstone		
6.0		weathered gray-brn FGR sandstone		
		in sandy clayey silt		damp 0 ppm
7.0		red-gray FGR sandstone		bedrock

Test Pit Cross Section and / or Plan View



REMARKS No sample taken
No waste encountered
Trench length: 24'

PHOTO LOG 1100 RIP5 and RIP6 of test pit

TEST PIT

PAGE OF

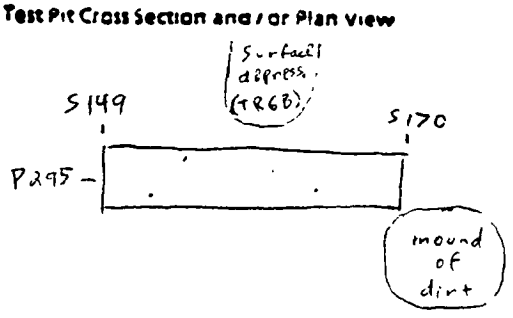
TEST PIT LOG

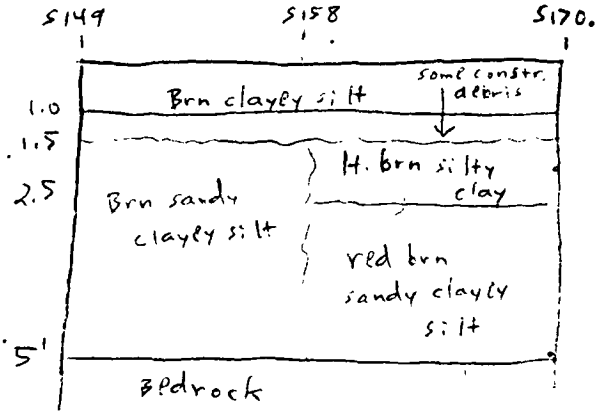
Brown & Root Environmental

PROJECT: NAWC Warminster TEST PIT NO.: S6-TP06
PROJECT NO.: 6733 DATE: 4-11-96
LOCATION: Area B, site 6 TR 6B S 160, P 295
FIELD GEOLOGIST:

DEPTH (ft.)	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION (Soil Density / Consistency, Color)	USCS	REMARKS
0.0		large concrete block ~4'x4'x0.5'		0 ppm
		Brn clayey silt		
		roof shingles, pieces of asbestos		
		roofing		
1.0		lt. brn silty clay micaceous		stiff 0 ppm
2.5		red-brn sandy clayey silt		
3.5		large slabs of gray-brn FGR		0 ppm
		sandstone		
5.0		gray-brn FGR sandstone		bedrock

Test Pit Cross Section and / or Plan View





REMARKS no sample taken

PHOTO LOG RIP7 of pit N wall

TEST PIT

PAGE OF

TEST PIT LOG

Brown & Root Environmental

PROJECT: NAWC Warminster TEST PIT NO.: S6-TP07

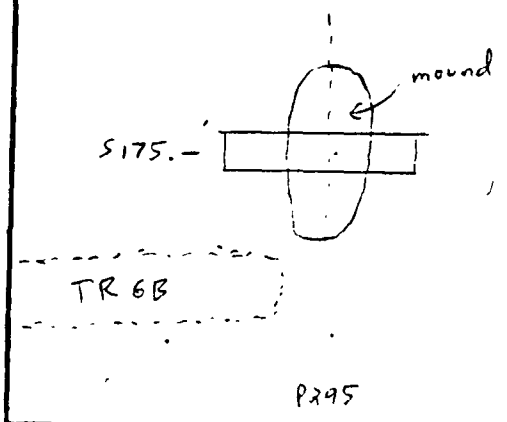
PROJECT NO.: DATE:

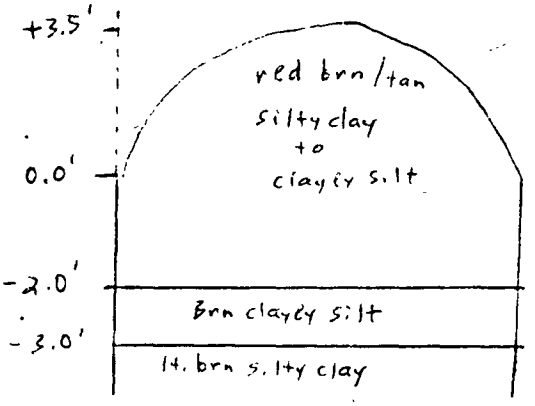
LOCATION: Area B, Site 6, Mound S175, P295

FIELD GEOLOGIST:

DEPTH (FL)	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION (Soil Density / Consistency, Color)	USCS	REMARKS
+3.5		red brn/tan silty clay to clayey silt		damp 0 ppm
-2.0		brn clayey silt		damp 0 ppm
-3.0		lt. brn silty clay		damp 0 ppm
	T.D.			

Test Pit Cross Section and / or Plan View





REMARKS 1405 sample S6-TP07-01 collected; depth: 18"-24" (from top of mound) red brn silty clay 0 ppm

PHOTO LOG

TEST PIT

PAGE OF

TEST PIT LOG

Brown & Root Environmental

PROJECT: NAWC Warminster TEST PIT NO.: S6-TP08

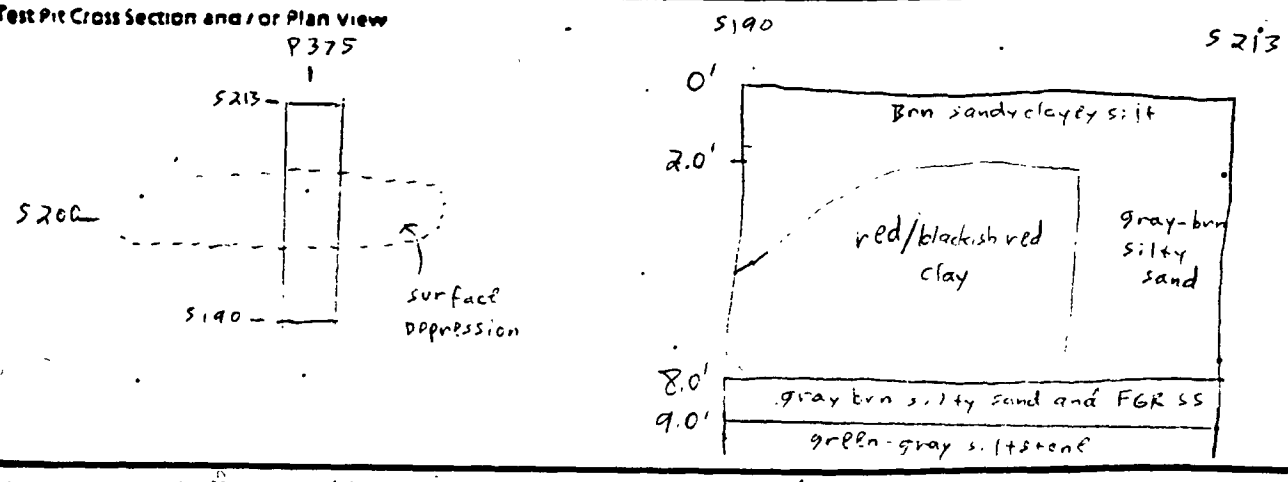
PROJECT NO.: 6883 DATE: 4-11-96

LOCATION: Area B, Site 6, TR11/12 Area Surface Depression at S200, P375

FIELD GEOLOGIST: D. Whalen

DEPTH (ft.)	LITHOLOGY CHANGE (Boundary)	MATERIAL DESCRIPTION (Soil Density / Consistency, Color)	USCS	REMARKS
0.0		Brn sandy clayey silt		damp 0 ppm
		tree roots		
2.0		dark red/blackish red clay		
2.5		shovel head		
4.5		5' long piece of timber		
		2' long piece of rebar		
				moist 0 ppm
8.0		gray brn silty sand and pieces of		0 ppm
		weathered gray-brn FGR sandstone		
9.0		greenish-gray weathered siltstone		

Test Pit Cross Section and / or Plan View



REMARKS 1515 sample S6-TP08-01 collected from 2' deep red to red-black clay; 0 ppm

PHOTO LOG

TEST PIT

PAGE OF

TEST PIT LOG

Brown & Root Environmental

PROJECT: NAWC Warminster TEST PIT NO.: 56-TP09

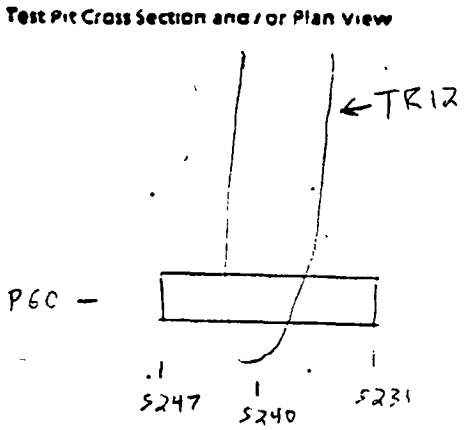
PROJECT NO.: 6783 DATE: 4/12/96

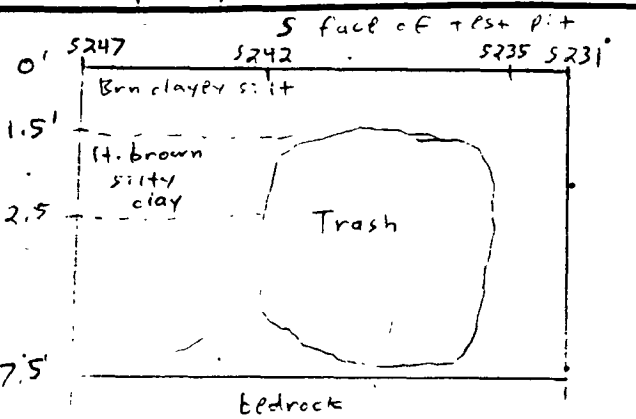
LOCATION: Area B, Site 6 Trench 12 S240.260

FIELD GEOLOGIST: D. Whalen

DEPTH (FT.)	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION (Soil Density / Consistency, Color)	USCS	REMARKS
0.0		Brn clayey silt topsoil, grass roots		damp 0 ppm
1.0		lt. brn silty clay		damp/moist 0 ppm
2.5		asphalt pieces, remains of a chair (cloth,		
		springs) burnt wood		
		metal post w/concrete cover		
		pieces of plastic, metal bed frame		
		foam rubber, styrofoam cup, plastic pretzel		
		bag, 1/2" rubber-coated wire cable, pig		
		carton, pierced metal plank (		
		soda cans, alum. foil, metal scrap, bottles		
		can of tar compound (solidified) for laying		
		tile		
7.5		weathered lt brn FGR sandstone		

Test Pit Cross Section and/or Plan View





REMARKS 0945 Sample 56-TP09-01 taken from 6.5' deep at bottom of trash. brn sandy silt w/ red brn clayey silt, 0 ppm, damp

PHOTO LOG R1 P10 of pit wall
R1 P11 of pit S wall

TEST PIT

PAGE OF

TEST PIT LOG — Brown & Root Environmental

PROJECT: NAWC Warminster — TEST PIT NO.: S6-TP10
PROJECT NO.: 6883 — DATE: 4-12-96
LOCATION: Area B Site 6 Trench 12 at S 240, P 150
FIELD GEOLOGIST: D. Whalen

DEPTH (FT.)	LITHOLOGY CHANGE (DEGRAD.FT.)	MATERIAL DESCRIPTION (Soil Density / Consistency, Color)	USCS	REMARKS
0.0		Brn clayey silt grass roots		
		concrete block; crushed, non-intact		
		55 gal drum containing black tarry		HNU 500ppm inside drum
		waste		
1.5		a few transite (asbestos) chips		
2.5		piece of wood soda can metal		
		bar, small patch of green crystalline material		
		crumpled aluminum sheet		
		cylindrical metal object ~2' dia. x		Stop Excavating because
		~3' long, painted red		of possible safety threat posed
3.5'				by cylindrical object (ordnance?)
	T.D			Call Navy.

Test Pit Cross Section and / or Plan View

REMARKS: 1115 sample S6-TP10-01 taken black waste inside drum HNU 50ppm and dup S6-TP10-03 (TCLP only)
S6-TP10-02 taken of soil beneath drums ~2' deep

PHOTO LOG: R1 P12 of pit showing red cylindrical metal object

TEST PIT: S6-TP10

PAGE ____ OF ____

TEST PIT LOG

Brown & Root Environmental

PROJECT: NAWC Warminster TEST PIT NO.: S6-TP11

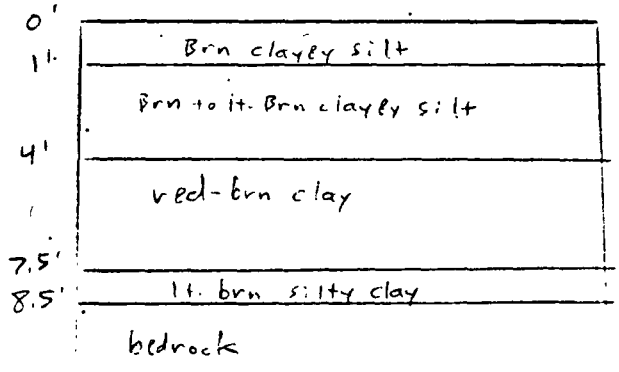
PROJECT NO.: 6233 DATE: 4-12-96

LOCATION: Area B, Site 6 Trench 12 at Station 240 Profile 300

FIELD GEOLOGIST: D. Whalen

DEPTH (ft.)	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION (Soil Density / Consistency, Color)	USCS	REMARKS
0		Brn clayey silt		
1.0		Brn - lt brn clayey silt		0 ppm
4.0		red-brn clay		damp 0 ppm
7.5		lt. brn. silty clay		0 ppm
8.5		weathered purple siltstone		0 ppm damp/moist
	ll=ll=ll			

Test Pit Cross Section and/or Plan View



REMARKS no waste encountered
Trench length 16'

PHOTO LOG R1 P13 of pit looking west

TEST PIT S6-TP11

PAGE ____ OF ____

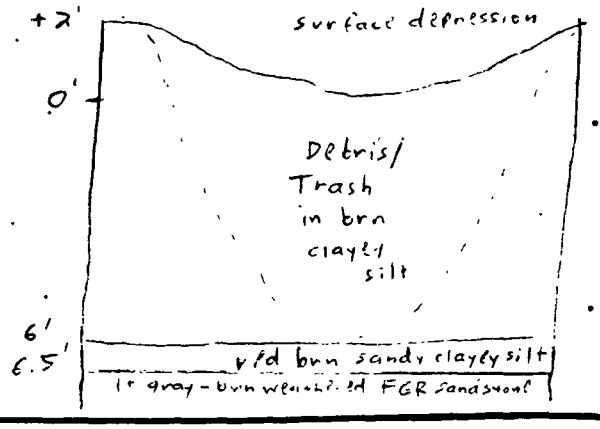
TEST PIT LOG

Brown & Root Environmental

PROJECT: NAWC Warminster TEST PIT NO.: S6-TP12
PROJECT NO.: 6883 DATE: 4-12-96
LOCATION: Area B, Site 6, Prob. P6A S.265, P.275
FIELD GEOLOGIST: D. Whalen

DEPTH (FT.)	LITHOLOGY CHANGE (Boundary)	MATERIAL DESCRIPTION (Soil Density / Consistency, Color)	USCS	REMARKS
0		red-brn clayey silt silty clay		damp 0 ppm
		rubber floor mat, manhole w/		
		concrete frame, pieces of chain-		
		link fence, scrap metal		0 ppm
3.5		more floor mat and chain-link fence		
		concrete block (1'x3'x4') styrofoam,		
		tree parts		
4.5		5 metal cans ~paint can size		
		- rectangular can, top open 7ppm inside		
		- red can ~1' high, 9" dia. some white		Printed on can: "Poison Diazinon Dust"
		- 2 crushed small cans 0 ppm		
		- red can ~1.5' high, 1' dia.		"Poison Malathion"
5.0		charred wood, plastic sheeting		
		empty vehicle fuel tank (0 ppm inside)		
		pieces of asphalt roofing, concrete blocks		
		non-intact empty 55 gal drum (0 ppm)		T.D. = 6.5' (see below)

Test Pit Cross Section and / or Plan View



REMARKS 1610 sample S6-TP12-01 taken; depth 4.5' (soil around cans)
1630 sample S6-TP12-02 taken; depth ~5', pale green clay-like material

PHOTO LOG R1 P14

TEST PIT

PAGE OF

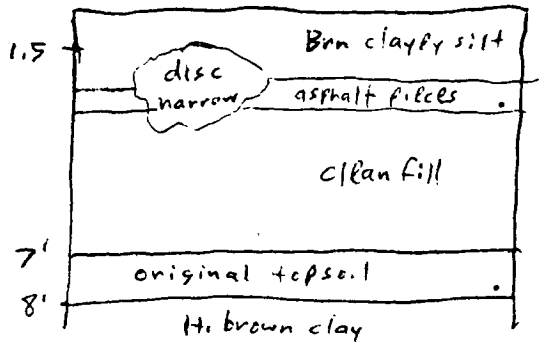
TEST PIT LOG

Brown & Root Environmental

PROJECT: NAWC Warminster TEST PIT NO.: S6-TP13
PROJECT NO.: 6883 DATE: 4/15/96
LOCATION: Area B, Site 6 Pass TR 6D Station 25, Profile 270
FIELD GEOLOGIST: D. Whalen

DEPTH (ft.)	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION (Soil Density / Consistency, Color)	USCS	REMARKS
0		Dark Brn clayey silt		damp 0ppm
1.5		rusted pieces of a disc harrow		
		(farm implement)		
3.0		pieces of asphalt pavement		damp 0ppm
		reddish-brown sandy clayey silt		
		piece of broken china		
6.0		lt. brn sandy clayey silt, pieces of		damp 0ppm
		sandstone		
7.0		Gray-brn clayey silt with rotted weeds		original topsoil
		and grass, some black decomposed plant		0ppm
		matter		
8.0		lt. brn silty clay		
10.5				
	T.D.			

Test Pit Cross Section and/or Plan View



REMARKS no sample collected
Trench length: 23'

PHOTO LOG R2 P1 of disc harrow
R2 P2 of test pit N wall facing NW

TEST PIT

PAGE OF

TEST PIT LOG

Brown & Root Environmental

PROJECT: NAWC Warminster TEST PIT NO.: S6-TP14
PROJECT NO.: 6883 DATE: 4/15/96
LOCATION: Area B, Site 6 pass TR 6D Station 0, Profile 170
FIELD GEOLOGIST: D. Whalen

DEPTH (FT.)	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION (Soil Density / Consistency, Color)	USCS	REMARKS
0.0		Dark Brn clayey silt topsoil		damp 0 ppm
		Brn clayey silt		
2.0		slab of concrete, five bricks,		
		tiles, a tire		
		2 - 55 gal drums, no lids, partially		
		crushed - contain beige pasty material		1-5 ppm inside drums
3.0		perched water zone		water pouring into
	T.D.			pit at 3' depth - stop
				excavating

Test Pit Cross Section and / or Plan View

REMARKS 1200 sample S6-TP14-01 collected; beige paste inside drum
1210 sample S6-TP14-02 and dup S6-TP14-04 collected, tan clay silt beneath drums; 0 ppm
1220 sample S6-TP14-03 collected, saturated soil at 3.5'

PHOTO LOG R2P3 of test pit looking N
R2P4 of 2 drums

TEST PIT

PAGE ____ OF ____

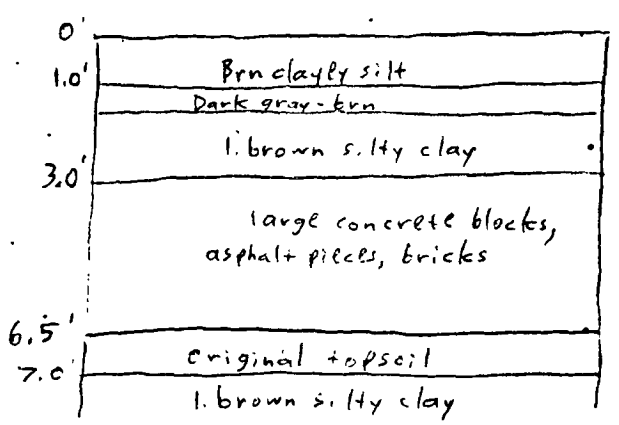
TEST PIT LOG

Brown & Root Environmental

PROJECT: NAWC Warminster TEST PIT NO.: S6-TP15
PROJECT NO.: 6883 DATE: 4/15/96
LOCATION: Area B, Site 6, TR Station 200, Profile 0
FIELD GEOLOGIST: D. Whalen

DEPTH (ft.)	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION (Soil Density / Consistency, Color)	USCS	REMARKS
1.0		Brn clayey silt, grass roots		damp
		dark brn clayey silt, melted coke		
		bottle, some blue-green crystalline material		0 ppm
		lt. brn silty clay		
3.0		large concrete blocks, rebar, pieces		0 ppm
		of plastic, wire, bottles		
4.0		wood, asphalt pavement pieces		0 ppm
		scrap metal		
6.5		gray-brn clayey silt		original topsoil
7.0		lt brown silty clay		damp

Test Pit Cross Section and / or Plan View



REMARKS 1500 sample S6-TP15-01 collected; depth 18" brn clayey silt, damp 0 ppm

PHOTO LOG R2 P4 - of pit, looking N
R2 P5 - of pile of excavated dirt/concrete blocks

TEST PIT

PAGE ____ OF ____

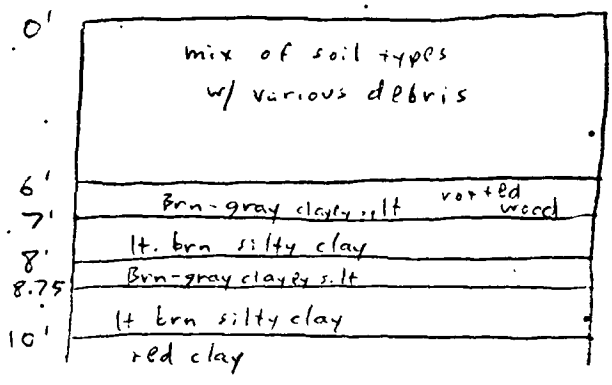
TEST PIT LOG

Brown & Root Environmental

PROJECT: NAWC Warminster TEST PIT NO.: S6-TP16
PROJECT NO.: 6083 DATE: 4/17/96
LOCATION: Area B, Site 6, TR 66 S155, P35
FIELD GEOLOGIST: D. Whalen

DEPTH (ft.)	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION (Soil Density / Consistency, Color)	USCS	REMARKS
		Brn clayey silt		damp 0ppm
		rusted can, piece of cloth		
		pockets of light blue clay		
		Brn silty clay to Brn sandy clayey silt		damp 0ppm
		pieces of asphalt and concrete		
4.5		large concrete block, more asphalt		
		brown clayey silt, ceramic pieces		
6.0		gray-brn clayey silt; pieces of rotted		0ppm
		wood		
		rotted wood, asphalt pieces		
7		lt. brn silty clay		stiff 0ppm
8		gray-brn clayey silt		poss. original topsoil
8.75		lt brn silty clay		damp 0ppm
10		red clay		

Test Pit Cross Section and / or Plan View



REMARKS

PHOTO LOG R2P7 of pit

TEST PIT

PAGE OF

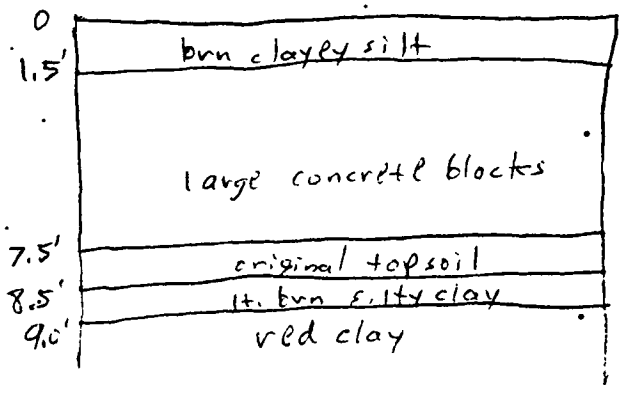
TEST PIT LOG

Brown & Root Environmental

PROJECT: NAWC Warminster TEST PIT NO.: S6-TP17
PROJECT NO.: 6883 DATE: 4/17/96
LOCATION: Area B, Site 6, TR 6G S 200, D 45
FIELD GEOLOGIST: D. whalen

DEPTH (ft.)	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION (Soil Density / Consistency, Color)	USCS	REMARKS
		Brn clayey silt / silty clay		damp 0ppm
1.5'		pieces of scrap metal, wire, broken		
		glass, asphalt pieces		
3.0'		chunk of concrete, bricks		0ppm
		asphalt pieces		
		large concrete blocks		0ppm
7.5'		Brn-gray clayey silt w/ grass roots		original topsoil
				0ppm
8.5'		lt. brn clayey sil		
9.0		red clay		0ppm
	T.P.			

Test Pit Cross Section and / or Plan View



REMARKS 1105 sample S6-TP17-01 and duplicate S6-TP17-02 collected from 18" depth, dark brn clayey silt

PHOTO LOG 1155 R2P8 of pit looking SE

TEST PIT

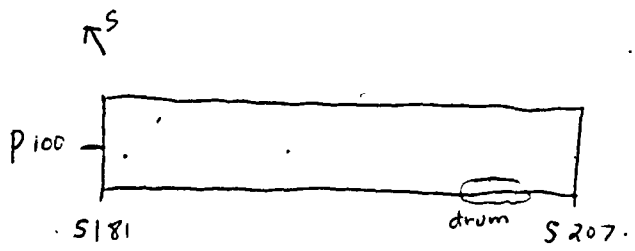
PAGE OF

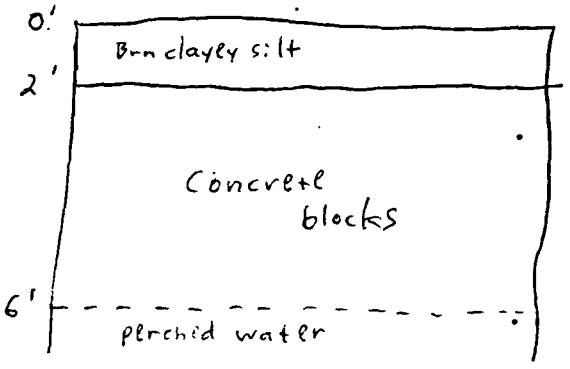
TEST PIT LOG — Brown & Root Environmental

PROJECT: NAWC Warminster — TEST PIT NO.: S6-TP18
PROJECT NO.: 6823 — DATE: 4/17/96
LOCATION: Area B, Site 6, TR 66 — S 190, P 100
FIELD GEOLOGIST: D. Whalen

DEPTH (FT.)	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION (Soil Density / Consistency, Color)	USCS	REMARKS
0.0		Brn clayey silt, some broken glass		damp 0ppm
		1" dia. wire cable near surface ~20' long		
		lt. brown silty clay		
2.0		flattened 55 gal. drum, black, semi-		
		hard sandy / tar-like material accessible		0ppm
		from top		
2.5		large concrete slab ~5'x4'x9"		
		concrete blocks, some		
		metal scrap		
6.0		water seeps into pit		0ppm stop
	T.D.			excavating due

Test Pit Cross Section and / or Plan View





REMARKS: 1430 sample S6-TP18-01 taken from drum
1440 S6-TP18-02 collected from soil beneath drum

PHOTO LOG: R2P9 of inside of pit facing S
R2P10 of drum on ground

TEST PIT ____

PAGE ____ OF ____

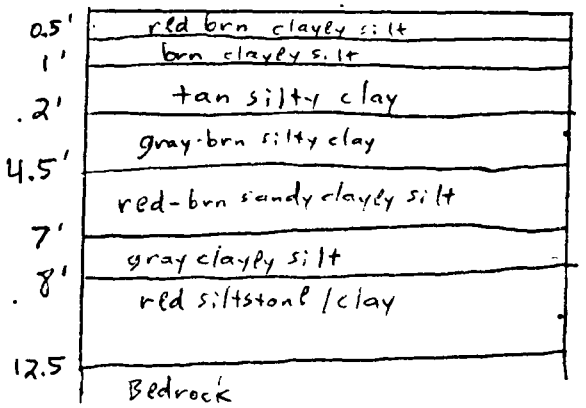
TEST PIT LOG

Brown & Root Environmental

PROJECT: NAWC Warminster TEST PIT NO.: S6-TP19
PROJECT NO.: 6883 DATE: 4/17 and 18/96
LOCATION: Area B, Site 6 TR 6G S 185, P 150
FIELD GEOLOGIST: D. Whalen

DEPTH (ft.)	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION (Soil Density / Consistency, Color)	USCS	REMARKS
0.0		red-brn clayey silt empty crushed drum		0 ppm
0.5		brn clayey silt		
1.0		tan silty clay non-intact metal container containing gray clayey silt material		
2.0		various metal scrap		0 ppm
		gray-brn clayey silt w/ rotted plant matter		slight odor of decaying organic matter
4.0		rotted plant matter		
4.5		red-brn sandy clayey silt, some plant		0 ppm
		roots, small stones		
7.0		gray clayey silt w/ black decomposed		
		plant matter		0 ppm, damp
		gray-brn clayey silt		less original topsoil
8.0		red silty clay w/ red		
10.0		water seep		0 ppm
12.5				
	||=||=||	red-gray VFGR silty sandstone		

Test Pit Cross Section and / or Plan View



REMARKS 1625 sample S6-TP19-01 collected from metal container at 1' depth
4/18 0905 sample S6-TP19-02 collected 2' deep brn clayey silt

PHOTO LOG R2 P11 of pit, looking N

TEST PIT

PAGE OF

TEST PIT LOG

Brown & Root Environmental

PROJECT: NAWC Warminster TEST PIT NO.: S6-TP20

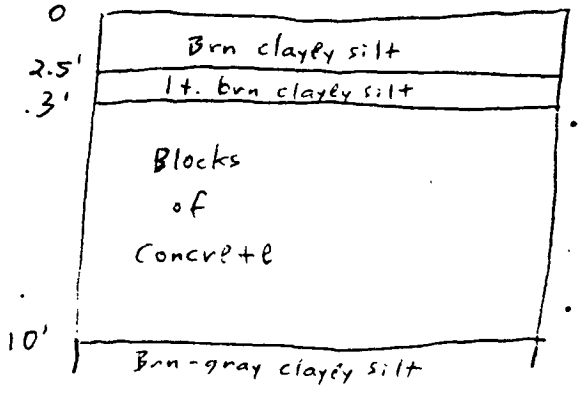
PROJECT NO.: 6883 DATE: 4/18/96

LOCATION: Area B, Site 6 Poss. TR 6E Station 100, Profile 270

FIELD GEOLOGIST: D. Whalen

DEPTH (FT.)	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION (Soil Density / Consistency, Color)	USCS	REMARKS
0.0		Brn clayey silt		damp
2.5		lt. brn clayey silt		damp 0 ppm
3.0		scrap metal, pieces of asphalt,		
		concrete chunks, piece of plastic		0 ppm
		large blocks of concrete		
8.5		water		0 ppm
10.0		Brn-gray clayey silt with		original topsoil
10.5		plant roots		
	T.D.			

Test Pit Cross Section and / or Plan View



REMARKS

PHOTO LOG RZ P12 of pit, facing N

TEST PIT

PAGE OF

TEST PIT LOG

Brown & Root Environmental

PROJECT: NAWC Warminster TEST PIT NO.: S6-TP21

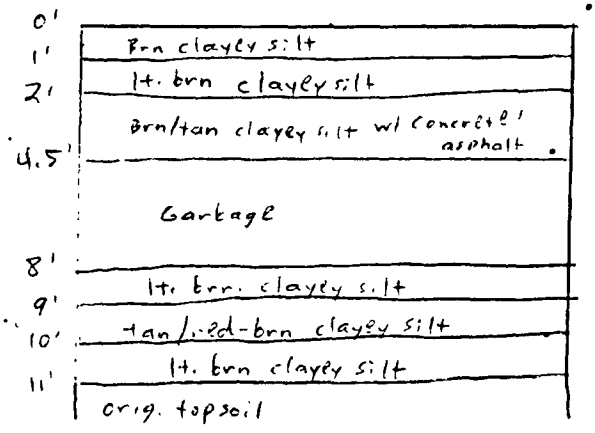
PROJECT NO.: 6883 DATE: 4/18/96

LOCATION: Area B, Site 6 Pass TR 6E Station 6.5, Profile 210

FIELD GEOLOGIST: D. Whalen

DEPTH (ft.)	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION (Soil Density / Consistency, Color)	USCS	REMARKS
0.0		Brn clayey silt		damp 0ppm
1.0		lt. brn clayey silt		
2.0		Brn/tan/red-brn clayey silt		very tight compacted
		asphalt, concrete pieces		
4.5		dark gray-brn sandy clayey silt		0ppm
		trash/debris: ceramic bricks		
		glass, wire, metal scrap, cans		0ppm
		styrofoam, welding rod, plastic		
8.0		lt brn clayey silt		damp 0ppm
9.0		tan/red-brn clayey silt w/ weathered		
		VFGR sandstone fragments		
10.0		lt. brn clayey silt		
11.0		dark Brn-gray clayey silt w/ black		original topsoil
		decomposed plant matter, roots stalks		
12.0		light gray silty clay		

Test Pit Cross Section and / or Plan View



REMARKS 1410 Sample S6-TP21-01 and dup. sample S6-TP21-02 collected depth 7', sandy clayey silt

PHOTO LOG R3 P13 of inside of pit

TEST PIT

PAGE OF

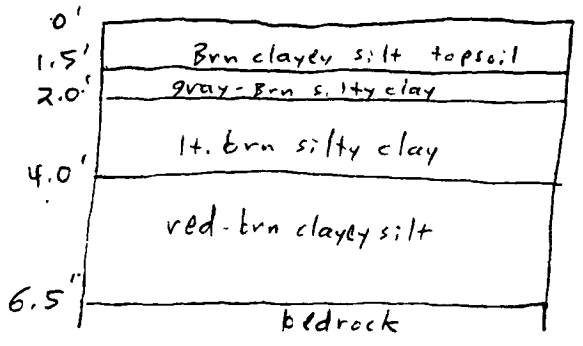
TEST PIT LOG

Brown & Root Environmental

PROJECT: NAWC Warminster TEST PIT NO.: S6-TP22
PROJECT NO.: 6283 DATE: 4/18/96
LOCATION: Area B, Site 6 TR 4 area S 75 P 335
FIELD GEOLOGIST: D. Whalen

DEPTH (FT.)	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION (Soil Density / Consistency, Color)	USCS	REMARKS
		Brn clayey silt		damp
1.5		gray-Brn clayey silt/silty clay w/roots		damp 0ppm
2.0		light-brn silty clay		damp 0ppm
4.0		red-brn clayey silt/silty clay		damp 0ppm
6.5		weathered red-gray VFGR silty		
	||=||=||	sandstone micaceous		
				Natural soil profile
				no fill

Test Pit Cross Section and / or Plan View



REMARKS 1535 Sample S6-TP22-01 MS/MSD collected; depth 2'; lt. Brn silty clay

PHOTO LOG 1555 R2 P14 of pit facing N

TEST PIT

PAGE ..... OF .....

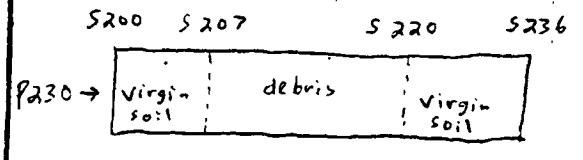
TEST PIT LOG

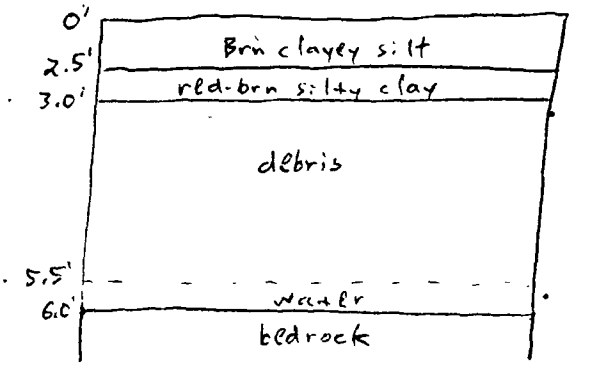
Brown & Root Environmental

PROJECT: NAWC Warminster TEST PIT NO.: S6-TP23
PROJECT NO.: 6883 DATE: 4/19/96
LOCATION: P6F Station 230, Profile 230 to S 200, P230
FIELD GEOLOGIST: D. Whalen

DEPTH (ft.)	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION (Soil Density / Consistency, Color)	USCS	REMARKS
		Brn clayey silt grass roots		0 ppm, damp
2.5		red-brn silty clay		0 ppm
3.0		gray-brn silt, sand rocks, cinders w/		
		various debris: broken glass, wires, partially		
		melted bottles, pockets of green-blue		0 ppm
		crystalline material, chunk of concrete,		
		rusted metal scrap, china cups, bricks		
5.5		water		
6.0		red-gray VFGR silty sandstone,		
		micaceous		

Test Pit Cross Section and / or Plan View





REMARKS: Sample S6-TP23-01 collected; 5' deep; gray-brn sandy silt, cinders, glass

PHOTO LOG: P3 P1, P2, P3 of pit from various angles
P3 P4: excavated pile of dirty fill material

TEST PIT

PAGE ____ OF ____

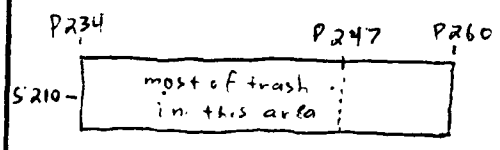
TEST PIT LOG

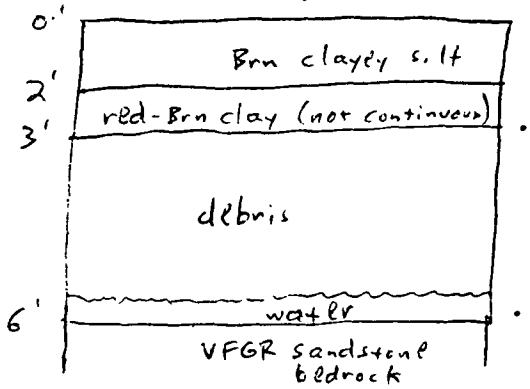
Brown & Root Environmental

PROJECT: NAWC Warminster TEST PIT NO.: S6-TP24
PROJECT NO.: 6883 DATE: 4/19/96
LOCATION: P.6E along Station #210 from Profile 230 to 260
FIELD GEOLOGIST: D. Whalen

DEPTH (FT.)	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION (Soil Density / Consistency, Color)	USCS	REMARKS
0.0		Brn clayey silt		damp 0 ppm
2.0		red-brn clay		0 to 3 ppm
3.0		some lt. blue crystalline material		Dirty fill material
		assorted debris/refuse: soda bottles,		
		china cups, small bottles, cans, wire,		0 to 3 ppm, damp
		small pieces of rusted metal in a gray-		
		Brn mix of sand silt stones cinders:		
		chunk of concrete bricks		
5.5		water		
6.0		weathered red-gray VFGR		
		silty sandstone		

Test Pit Cross Section and / or Plan View





REMARKS 1120 Sample S6-TP24-01 collected; depth 2.5'; red-brn silty clay; ~3 ppm
location: S210, P236
1210 Sample S6-TP24-02 collected; depth 5.5'; wet, silt, sand, rocks, cinders, glass

PHOTO LOG R3 P5 of pit facing W

TEST PIT

PAGE OF

TEST PIT LOG

Brown & Root Environmental

PROJECT: NAWC Warminster TEST PIT NO.: S6-TP25

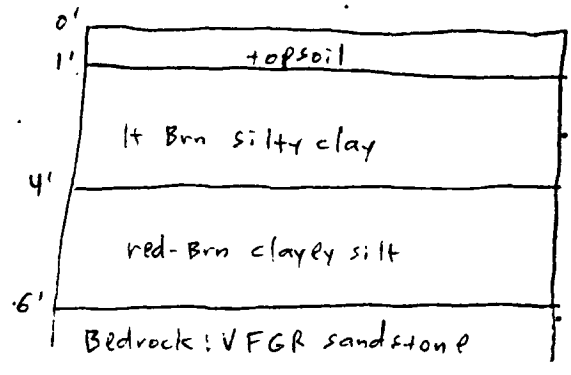
PROJECT NO.: 6883 DATE: 4/19/96

LOCATION: middle of TR 13 (area of pond'd surface water) 150.0

FIELD GEOLOGIST: D. Whalen

DEPTH (FT.)	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION (Soil Density / Consistency, Color)	USCS	REMARKS
1.0		Brn / Gray-Brn clayey silt topsoil		moist; grass roots
3.0		lt. Brn silty clay		damp 0 ppm
4.0		red-Brn clayey silt w/ pieces of red-gray VFGR silty sandstone		damp 0 ppm
				water
6.0		weathered VFGR silty sandstone		
	T.D.			

Test Pit Cross Section and / or Plan View



REMARKS natural soil profile - no fill encountered
Trench length 22'

PHOTO LOG R3 P6 of pit facing NW
R3 P7 of pit facing N

TEST PIT

TEST PIT LOG

Brown & Root Environmental

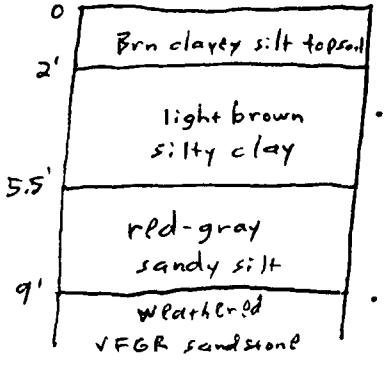
PROJECT: NAWC Warminster TEST PIT NO.: S6-TP26
PROJECT NO.: 6883 DATE: 4/19/96
LOCATION: Area B, Site 6 Prob. TR 12 S 240, P 165
FIELD GEOLOGIST: D. Whalen

DEPTH (ft.)	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION (Soil Density / Consistency, Color)	USCS	REMARKS
		Brn clayey silt		0ppm
1.0.5		metal sign post w/ concrete footer		
		3 crushed 55-gal drums; 2 appear		0ppm inside drums
		to be empty, one (which was torn open)		
		contains what appears to be black-stained soil		
		6" dia. flexible air duct, scrap metal		
		folding vinyl curtain w/ steel wires		
		6 steel sign posts w/ concrete footers		
3.0		red-gray sandy silt		0ppm
6.0		weathered VFGR sandstone		
	T.D.			

Test Pit Cross Section and / or Plan View

Middle of Pit

Ends of Pit



REMARKS 1530 Sample S6-TP26-01 collected from drum contents: black silty sand

1545 Sample S6-TP26-02 collected; depth 4' (bottom of visual); brown clayey silt 0ppm

PHOTO LOG R3 P8 of pit showing torn open drum
R3 P9 of pit at completion of excavation

TEST PIT S6-TP26

PAGE ____ OF ____

BORING LOG

HALLIBURTON NU

PROJECT NAWC- WARMINSTER BORING NO. S6-SB04
PROJECT NO. CTO-252 / 6883 DATE 4-15-96 DRILLER PAUL DAVIS
ELEVATION FIELD GEOLOGIST PAUL DAVIS
WATER LEVEL DATA
(DATE, TIME & CONDITIONS) From TR-6B (250, 160)

SAMPLE NO.	DEPTH FT.	BLOWS 6" N/A	SAMPLE RECOVERY LENGTH N/A	LITHOLOGY CHANGE	MATERIAL DESCRIPTION* SOIL DENSITY HARDNESS (N/A)	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
						Brown	Silty fine grained		NO HNU
	1.0						Sand with some pebbles		readings
							(Plastic sheeting & metal		
	2.0						springs)		
							↓		
	3.0					reddish Brown	Sandy silty clay		
						Brown	Silty fine grained		
	4.0						Sand with some clay		
							↓		
	5.0								
	6.0						↓		
						grayish maroon	Sandstone		
	7.0								
							-EOB-		

REMARKS 3"-diameter HAND AUGER
collected S6-SB04-06 for chemical analysis

S6-SB04
BORING

PAGE 1 OF

* See Legend on back

BORING LOG

HALLIBURTON N

PROJECT NAWC- WARMINSTER
BORING NO. 56-SB05
PROJECT NO. CTO-252 / 6883
DATE 4-15-96
DRILLER PAUL DAVIS
ELEVATION
FIELD GEOLOGIST PAUL DAVIS
WATER LEVEL DATA
(DATE, TIME & CONDITIONS) From TR-6C (350, 100)

SAMPLE NO.	DEPTH FT.	BLOWS 6" N/A	SAMPLE RECOVERY LENGTH N/A	LITHOLOGY CHANGE	MATERIAL DESCRIPTION* SOIL DENSITY HARDNESS (N/A)	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
						Brown	silty clay (TOP soil)		NO HNU
	1.0					Brown	silty clay with		readings
							(1) metal ring-pulley		
	2.0								
	3.0								
	4.0					Dark red-brown	silty clay		
							Sandstone		
							-EOB-		

REMARKS 3"-diameter HAND AUGER
NO subsurface soil samples were collected for analysis

56-SB05
BORING

PAGE 1 OF

* See Legend on back

BORING LOG

HALLIBURTON NL

PROJECT NAWC- WARMINSTER
BORING NO. S6-SB06
PROJECT NO. CTO-252 / 6883
DATE 4-15-96
DRILLER PAUL DAVIS
ELEVATION
FIELD GEOLOGIST PAUL DAVIS
WATER LEVEL DATA
(DATE, TIME & CONDITIONS) From TR-6C (220, 105)

SAMPLE NO.	DEPTH FT.	BLOWS 6" N/A	SAMPLE RECOVERY LENGTH N/A	LITHOLOGY CHANGE	MATERIAL DESCRIPTION* SOIL DENSITY HARDNESS (N/A)	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
						Brown	Silty Clay (Top Soil)		No Hnu
	1.0						↓		readings
						light Brown	Silty clay (some pebbles)		
	2.0					Brown	Silty Clay		
							↓		
	3.0								
							↓		
	4.0					reddish Brown	Silty clay - Sandstone frags		
						Gray	Sandstone		↓
							EOB		

REMARKS 3"-diameter HAND AUGER
No subsurface soil samples were collected for chemical analysis

S6-SB06
BORING

PAGE 1 OF

* See Legend on back

BORING LOG

HALLIBURTON NU

PROJECT NAWC- WARMINSTER BORING NO. SB-SB07

PROJECT NO. CTO-252 / 6883 DATE 4-15-96 DRILLER PAUL DAVIS

ELEVATION FIELD GEOLOGIST PAUL DAVIS

WATER LEVEL DATA

(DATE, TIME & CONDITIONS) From TR-11 (150, 110)

SAMPLE NO.	DEPTH FT.	BLOWS 6" N/A	SAMPLE RECOVERY LENGTH N/A	LITHOLOGY CHANGE	MATERIAL DESCRIPTION* SOIL DENSITY HARDNESS (N/A)	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
						Reddish Brown	Silty Clay		
	1.0						↓		
							(black asphalt layer)		Hnu: 0.8 ppm
	2.0						↓		
						Brown	Silty Clay		NO Hnu
	3.0						↓		readings
	4.0								
							↓		
	5.0					Reddish Brown	Silty Clay		
							Siltstone		↓
	6.0						— EOB —		

REMARKS 3"-diameter HAND AUGER
NO subsurface soil samples were collected for analysis

SB-SB07
BORING

PAGE 1 OF

* See Legend on back

BORING LOG

HALLIBURTON NL

PROJECT NAWC- WARMINSTER BORING NO. S6-SB08
PROJECT NO. CTO-252 / 6883 DATE 4-15-96 DRILLER PAUL DAVIS
ELEVATION FIELD GEOLOGIST PAUL DAVIS
WATER LEVEL DATA
(DATE, TIME & CONDITIONS) From TR-11 (100, 110)

SAMPLE NO.	DEPTH FT.	BLOWS 6" N/A	SAMPLE RECOVERY LENGTH N/A	LITHOLOGY CHANGE	MATERIAL DESCRIPTION* SOIL DENSITY HARDNESS (N/A)	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
						Reddish Brown	Silty clay (Top Soil)		NO HNU
	1.0					Brown	Silty clay		readings
							Some asphalt chunks		
	2.0						and concrete		
	3.0								
						Dark reddish Brown	- Silty clay - Some		
	4.0						Sandstone and Silt-		
							Stone angular pebbles		
	5.0								
	6.0								
	7.0								
						Maroon	Siltstone Bedrock		
							- EOB -		

REMARKS 3"-diameter HAND AUGER
NO Samples were collected for chemical analysis

S6-SB08
BORING

PAGE 1 OF

* See Legend on Back

BORING LOG

HALLIBURTON NU

PROJECT NAWC- WARMINSTER BORING NO. 56-SB09
PROJECT NO. CTO-252 / 6883 DATE 4-15-96 DRILLER PAUL DAVIS
ELEVATION FIELD GEOLOGIST PAUL DAVIS
WATER LEVEL DATA
(DATE, TIME & CONDITIONS) From TR-6D (190, 20)

SAMPLE NO.	DEPTH FT.	BLOWS 6" N/A	SAMPLE RECOVERY LENGTH N/A	LITHOLOGY CHANGE	MATERIAL DESCRIPTION* SOIL DENSITY HARDNESS (N/A)	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
						Brown	Silty clay (TOP Soil)		No HNU
	1.0								readings
	2.0					light Brown	Silty clay		
	3.0								
						maroon	Fine grained Sandy Silty Clay		
	4.0					Light Brown	Silty clay		
	5.0								
	6.0								
	7.0					Grayish Brown	Siltstone		
							-EOB-		

REMARKS 3"-diameter HAND AUGER
collected 56-SB09-02 for chemical analysis; taken as a Surface Soil Sample

56-SB09
BORING

PAGE 1 OF

* See Legend on back

BORING LOG

HALLIBURTON NL

PROJECT NAWC- WARMINSTER BORING NO. S6-SB10
PROJECT NO. CTO-252 / 6883 DATE 4-15-96 DRILLER PAUL DAVIS
ELEVATION FIELD GEOLOGIST PAUL DAVIS
WATER LEVEL DATA
(DATE, TIME & CONDITIONS) From TR-13 (200 00)

SAMPLE NO.	DEPTH FT.	BLOWS 6" N/A	SAMPLE RECOVERY LENGTH N/A	LITHOLOGY CHANGE	MATERIAL DESCRIPTION* SOIL DENSITY HARDNESS (N/A)	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
						Grayish Brown	Silty clay		NO HNU
	1.0								readings
						light Brown	Silty clay		
	2.0						↓		
	3.0					Grayish Brown	Silty clay		
							↓		
	4.0								
							↓		
	5.0					reddish Brown	Silty clay		
						reddish Brown	Sandstone/siltstone		
							-EOB-		

REMARKS 3"-diameter HAND AUGER
collected S6-SB10-05 for chemical analysis

S6-SB10
BORING

PAGE 1 OF

* See Legend on back

BORING LOG

HALLIBURTON N

PROJECT NAWC- WARMINSTER
BORING NO. S6- SB11
PROJECT NO. CTO-252 / 6883
DATE 4-17-96
DRILLER PAUL DAVIS
ELEVATION
FIELD GEOLOGIST PAUL DAVIS
WATER LEVEL DATA
(DATE, TIME & CONDITIONS) From TR-13 (100,100)

SAMPLE NO.	DEPTH FT.	BLOWS 6" N/A	SAMPLE RECOVERY LENGTH N/A	LITHOLOGY CHANGE	MATERIAL DESCRIPTION* SOIL DENSITY HARDNESS (N/A)	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
						Grayish Brown	Silty Clay		No HNO
	1.0						↓		readings
						light Brown	Silty Clay		
	2.0						↓		
						Brown	Sandy Clay with		
	3.0						Some siltstone pebbles		
							↓		
	4.0								
						reddish Brown	Sandy silt - w/ sandstone		
	5.0						siltstone pebbles		
							- E OB -		

REMARKS 3"-diameter HAND AUGER
NO subsurface soil samples collected for analysis

S6-SB11
BORING

PAGE 1 OF

* See Legend on back

BORING LOG

HALLIBURTON NU

PROJECT NAWC- WARMINSTER BORING NO. S6- SB 12
PROJECT NO. CTO-252 / 6883 DATE 4-17-96 DRILLER PAUL DAVIS
ELEVATION FIELD GEOLOGIST PAUL DAVIS
WATER LEVEL DATA
(DATE, TIME & CONDITIONS) From TR-6E (240 90)

SAMPLE NO.	DEPTH FT.	BLOWS 6" N/A	SAMPLE RECOVERY LENGTH N/A	LITHOLOGY CHANGE	MATERIAL DESCRIPTION* SOIL DENSITY HARDNESS (N/A)	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
						Brown	Silty Clay		no Hnu
	1.0					Dark	↓		readings
						reddish Brown	Silty clay (some fill mtrl. bricks, net, wire)		↓
	2.0					light Brown	Clayey silt - black cinders		
							and asphalt.		
	3.0					light Brown	Clayey Silt		
							↓		
	4.0						(concrete/asphalt)		↓
							Auger refusal		

REMARKS 3"-diameter HAND AUGER
collected S6-SB12-02 for chemical analysis

S6-SB12
BORING

PAGE 1 OF 1

* See Legend on back

BORING LOG

HALLIBURTON NL

PROJECT NAWC- WARMINSTER
BORING NO. S6-SB13
PROJECT NO. CTO-252 / 6883
DATE 4-17-96
DRILLER PAUL DAVIS
ELEVATION
FIELD GEOLOGIST PAUL DAVIS
WATER LEVEL DATA
(DATE, TIME & CONDITIONS) Background Soil Boring

SAMPLE NO.	DEPTH FT.	BLOWS 6" N/A	SAMPLE RECOVERY LENGTH N/A	LITHOLOGY CHANGE	MATERIAL DESCRIPTION* SOIL DENSITY HARDNESS (N/A)	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
						Dark Brown	Silty Clay (TOPSoil)		NO HNU
	1.0					light Brown	Clayey Silt		readings
						dk. reddish Brown	Clayey Silt w/siltstone cobbles		
	2.0					Brown	Clayey Silt		
							↓		
	3.0					light Brown	Clayey Silt		
							↓		
	4.0								
	5.0						↓		
						Maroon	Siltstone / sandstone		↓
							- EOB -		

REMARKS 3"-diameter HAND AUGER
collected S6-SB13-05 for chemical analysis

S6-SB13
BORING

PAGE 1 OF 1

* See Legend on back

BORING LOG

HALLIBURTON NL

PROJECT NAWC- WARMINSTER
BORING NO. S6- SB01
PROJECT NO. CTO-252 / 6883
DATE 4-12-96
DRILLER PAUL DAVIS
ELEVATION
FIELD GEOLOGIST PAUL DAVIS
WATER LEVEL DATA
(DATE, TIME & CONDITIONS) FROM TR-12 (SO, 24h)

SAMPLE NO.	DEPTH FT.	BLOWS 6" N/A	SAMPLE RECOVERY LENGTH N/A	LITHOLOGY CHANGE	MATERIAL DESCRIPTION* SOIL DENSITY HARDNESS (N/A)	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
						Dark Brown	Silty Clay		
	1.0						(Top Soil)		NO HNU
						Light Brown	Silty Clay		readings
	2.0								
	3.0								
	4.0								
						Reddish Brown	Silty Clay		
	5.0								
	6.0					Light Brown	Fine grained Sandy		
							Silty clay with some		
	7.0						Sandstone pebbles		
						Beige	Sandstone (fine grained)		
	8.0					White	very fine grained Sandy Silt		
							-EOB-		

REMARKS 3"-diameter HAND AUGER
NO Subsurface Soil samples collected for analysis

S6-SB01
BORING

PAGE 1 OF

* See Legend on Back

BORING LOG HALLIBURTON NU

PROJECT NAWC- WARMINSTER BORING NO. S6-SB02
PROJECT NO. CTO-252 / 6883 DATE 4-12-96 DRILLER PAUL DAVIS
ELEVATION FIELD GEOLOGIST PAUL DAVIS
WATER LEVEL DATA
(DATE, TIME & CONDITIONS) From TR-12 (100, 240)

SAMPLE NO.	DEPTH FT.	BLOWS 6" N/A	SAMPLE RECOVERY LENGTH N/A	LITHOLOGY CHANGE	MATERIAL DESCRIPTION* SOIL DENSITY HARDNESS (N/A)	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
						Dark Brown	Silty clay		NO HNU
	1.0						(TOP SOIL)		readings
						Brown	Silty clay (some concrete fragments)		
	2.0						some fill material:		
							pink insulation, wood		
	3.0						pieces, tinfoil, shoe		
							lace)		
	4.0								
	5.0								
	6.0								
	7.0								
	8.0					Grayish Maroon	weathered very fine grained		
							sand stone		
							- E O B -		

REMARKS 3"-diameter HAND AUGER
no subsurface soil samples collected for analysis

S6-SB02
BORING

PAGE 1 OF

* See Legend on back

BORING LOG

HALLIBURTON NL

PROJECT NAWC- WARMINSTER BORING NO. S6-SB03
PROJECT NO. CTO-252 / 6883 DATE 4-15-96 DRILLER PAUL DAVIS
ELEVATION FIELD GEOLOGIST PAUL DAVIS
WATER LEVEL DATA
(DATE, TIME & CONDITIONS) From TR-12 (230, 240)

SAMPLE NO.	DEPTH FT.	BLOWS 6" N/A	SAMPLE RECOVERY LENGTH N/A	LITHOLOGY CHANGE	MATERIAL DESCRIPTION* SOIL DENSITY HARDNESS (N/A)	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
						Brown	Silty Clay		
	1.0						(TOP SOIL)		
						Reddish Brown	very fine grained Sandy		Hnu: 0.8 ppm
	2.0						Silty Clay		
							↓		NO Hnu
	3.0					Brown	Sandy Silty Clay		readings
						Reddish-	very fine grained		
	4.0					Brown	Sandy Silty Clay		
	5.0								
	6.0								
	7.0								
	8.0								
	9.0						↓		
						Brown	Sandy Clay		↓
	10.0						Blocky - Sandstone		
							- EOB -		

REMARKS 3"-diameter HAND AUGER
Collected S6-SB03-09 for analysis

S6-SB03
BORING

PAGE 1 OF

* See Legend on back

Sample Results
Site 6
Naval Air Warfare Center (NAWC)
Warminster, Pennsylvania

The following evaluation criteria were applied in determining representative concentrations:

Duplicate Samples

The representative concentration for duplicate samples is considered to be the average of the positive detected concentrations reported for the set of duplicates. If only one of the samples was reported as a positive result, the following two rules apply; 1) if the positive results is less than 1/2 of the non-detect value, the positive result is selected as the concentration for that sampling location, 2) if the positive result is greater than 1/2 of the non-detect value, the positive result is averaged with 1/2 of the non-detect value and that average concentration is reported as the concentration for the sampling location. If both samples are reported as non-detect, the lower of the detection limits is used as the concentration for that sampling point.

Representative Concentrations

The representative concentration for a given compound for the data set is determined as the upper 95% confidence limit (UCL) on the mean based on a normal or lognormal distribution of the reported results unless the UCL on the mean is greater than the maximum concentration detected for that compound. If the UCL on the mean is greater than the maximum detected concentration, the representative concentration is reported as the highest positive result for that compound. For risk assessment purposes, samples reported as non-detect are considered as positive results equal to 1/2 the detection limit.

TABLE C-1

OCCURRENCE AND DISTRIBUTION OF INORGANICS IN SURFACE SOIL AT SITE 06
WARMINSTER, PENNSYLVANIA
(mg/kg)

	BACKGROUND	SITE-RELATED				
SUBSTANCE	REPRESENTATIVE CONCENTRATION	FREQUENCY OF DETECTION	RANGE OF POSITIVE DETECTION*	STATISTICAL DISTRIBUTION	REPRESENTATIVE CONCENTRATION	POPULATION COMPARISIONS**
ALUMINUM	16481.16	20 / 20	11500 - 22100	NORMAL	15895.78	NOT DIFFERENT
ARSENIC	12.1	20 / 20	4.2 - 7.5	NORMAL	5.80	NOT DIFFERENT
BARIUM	81.71	20 / 20	32 - 161	NORMAL	84.87	NOT DIFFERENT
BERYLLIUM	0.88	20 / 20	0.47 - 1.9	NONPARAMETRIC DIST	1.08	NOT DIFFERENT
CADMIUM	-	2 / 20	5.9 - 8.8	NORMAL OVER LOGNORMAL	2.10	NOT DIFFERENT
CHROMIUM	24.66	20 / 20	14.05 - 414	NORMAL OVER LOGNORMAL	105.46	NOT DIFFERENT
COBALT	10.34	20 / 20	5.1 - 15.95	NONPARAMETRIC DIST	10.88	NOT DIFFERENT
COPPER	12.51	20 / 20	7.3 - 316	NORMAL OVER LOGNORMAL	64.97	SITE > BACKGROUND
CYANIDE	-	3 / 20	3.9 - 4.7	NORMAL OVER LOGNORMAL	1.65	NOT DIFFERENT
IRON	25442.54	20 / 20	16400 - 31700	NONPARAMETRIC DIST	22951 34	NOT DIFFERENT
LEAD	26.47	20 / 20	8.3 - 634	NORMAL OVER LOGNORMAL	124.58	SITE > BACKGROUND
MANGANESE	495.07	20 / 20	123 - 3040	NORMAL	818.34	NOT DIFFERENT
MERCURY	-	9 / 20	0.05 - 0.57	NORMAL OVER LOGNORMAL	0.13	NOT DIFFERENT
NICKEL	13.42	9 / 20	12.1 - 19.6	NORMAL OVER LOGNORMAL	11.31	NOT DIFFERENT
SILVER	-	7 / 20	0.77 - 22.3	NORMAL OVER LOGNORMAL	4.93	NOT DIFFERENT
VANADIUM	37.58	20 / 20	23.2 - 41.7	NONPARAMETRIC DIST	33.38	NOT DIFFERENT
ZINC	37.86	20 / 20	25 - 360	NORMAL OVER LOGNORMAL	106.17	SITE > BACKGROUND

* = QUALIFIERS FOR DATA ARE PRESENTED IN DATA PRESENTATION TABLES

** = STATISTICAL COMPARISON OF SITE TO BACKGROUND DISTRIBUTIONS TO DETERMINE WHETHER THE SITE-RELATED POOL OF CONCENTRATIONS IS ELEVATED RELATIVE TO BACKGROUND

NOT DIFFERENT - THE CHEMICAL IS EXCLUDED FROM CONSIDERATION AS HAVING SITE-RELATED CONCENTRATIONS
(i.e. USING NON-NORMAL STATISTICS, THE SITE-RELATED POPULATION IS STATISTICALLY INDISTINGUISHABLE FROM BACKGROUND)

SITE > BACKGROUND = THE POPULATION OF THE SITE IS STATISTICALLY HIGHER THAN THE POPULATION OF BACKGROUND

TABLE C-2
OCCURRENCE AND DISTRIBUTION OF ORGANICS IN SURFACE SOIL AT SITE 06
WARMINSTER, PENNSYLVANIA
(ug/kg)

SUBSTANCE	BACKGROUND	SITE-RELATED			
	REPRESENTATIVE CONCENTRATION*	FREQUENCY OF DETECTION	RANGE OF POSITIVE DETECTION*	STATISTICAL DISTRIBUTION	REPRESENTATIVE CONCENTRATION
4,4'-DDD	4.77	1 / 19	7.7	NORMAL OVER LOGNORMAL	2.84
4,4'-DDT	286.61	4 / 19	4.3 - 7.9	NORMAL OVER LOGNORMAL	3.58
ALPHA-CHLORDANE	-	1 / 20	8.2	NORMAL OVER LOGNORMAL	2.01
AROCLOR-1254	51	1 / 20	490	NORMAL OVER LOGNORMAL	84.23
BENZ(A)ANTHRACENE	-	1 / 20	42	LOGNORMAL OVER NORMAL	42
BENZO(A)PYRENE	-	1 / 20	45	LOGNORMAL OVER NORMAL	45
BENZO(B)FLUORANTHENE	58	2 / 20	54 - 61	LOGNORMAL OVER NORMAL	61
BENZO(G,H,I)PERYLENE	-	2 / 20	41 - 48	LOGNORMAL OVER NORMAL	48
BROMOMETHANE	-	1 / 20	3	LOGNORMAL OVER NORMAL	3
BUTYLBENZYL PHTHALATE	-	1 / 20	49	LOGNORMAL OVER NORMAL	49
CHRYSENE	51	1 / 20	53	LOGNORMAL OVER NORMAL	53
ENDRIN	-	1 / 20	14	NORMAL OVER LOGNORMAL	3.65
FLUORANTHENE	92	1 / 20	95	LOGNORMAL OVER NORMAL	95
INDENO(1,2,3-CD)PYRENE	-	1 / 20	49	LOGNORMAL OVER NORMAL	49
PYRENE	100	1 / 20	73	LOGNORMAL OVER NORMAL	73
TETRACHLOROETHENE	-	2 / 20	2 - 8	LOGNORMAL OVER NORMAL	6.73
TOLUENE	-	12 / 20	1 - 15	NORMAL OVER LOGNORMAL	5.98
TRICHLOROETHENE	-	10 / 20	1 - 32	NORMAL OVER LOGNORMAL	8.12

* = QUALIFIERS FOR DATA ARE PRESENTED IN DATA PRESENTATION TABLES

TABLE C-3

OCCURRENCE AND DISTRIBUTION OF INORGANICS IN SUBSURFACE SOIL AT SITE 06

WARMINSTER, PENNSYLVANIA

(mg/kg)

	BACKGROUND	SITE-RELATED				
SUBSTANCE	REPRESENTATIVE CONCENTRATION	FREQUENCY OF DETECTION	RANGE OF POSITIVE DETECTION*	STATISTICAL DISTRIBUTION	REPRESENTATIVE CONCENTRATION	POPULATION COMPARISIONS**
ALUMINUM	16481.16	35 / 35	2080 - 251000	NORMAL OVER LOGNORMAL	40451.67	NOT DIFFERENT
ANTIMONY	8.510291	15 / 35	9.4 - 731	NORMAL OVER LOGNORMAL	79.08	SITE > BACKGROUND
ARSENIC	12.1	32 / 35	0.86 - 80.7	NORMAL OVER LOGNORMAL	10.63	NOT DIFFERENT
BARIUM	81.71	32 / 35	6 - 922	NORMAL	244.95	SITE > BACKGROUND
BERYLLIUM	0.88	28 / 35	0.46 - 2.3	NORMAL OVER LOGNORMAL	0.99	NOT DIFFERENT
CADMIUM	-	18 / 35	0.41 - 78.2	NORMAL OVER LOGNORMAL	17.20	NOT DIFFERENT
CALCIUM	898	32 / 35	165 - 116000	NORMAL OVER LOGNORMAL	17862.31	NOT DIFFERENT
CHROMIUM	24.66	29 / 31	17.1 - 10100	NORMAL OVER LOGNORMAL	1725.81	SITE > BACKGROUND
COBALT	10.34	29 / 35	4.2 - 92.5	NORMAL OVER LOGNORMAL	18.92	NOT DIFFERENT
COPPER	12.51	32 / 35	4.6 - 14300	NORMAL OVER LOGNORMAL	1372	SITE > BACKGROUND
IRON	25442.54	35 / 35	4120 - 246000	NORMAL OVER LOGNORMAL	52946.91	NOT DIFFERENT
LEAD	26.47	33 / 33	3.8 - 39300	NORMAL OVER LOGNORMAL	3585.02	SITE > BACKGROUND
MAGNESIUM	2722.56	33 / 35	230 - 23700	NORMAL OVER LOGNORMAL	4329.48	NOT DIFFERENT
MANGANESE	495.07	33 / 33	25.4 - 1210	LOGNORMAL	755.38	SITE > BACKGROUND
MERCURY	-	18 / 33	0.06 - 9.9	NORMAL OVER LOGNORMAL	1.83	SITE > BACKGROUND
NICKEL	13.42	34 / 35	4.6 - 345	NORMAL OVER LOGNORMAL	56.68	SITE > BACKGROUND
POTASSIUM	1050.17	35 / 35	84.5 - 1690	LOGNORMAL	1280.46	NOT DIFFERENT
SELENIUM	-	6 / 35	0.83 - 5	NORMAL OVER LOGNORMAL	0.93	NOT DIFFERENT
SILVER	-	14 / 35	1.8 - 330	NORMAL OVER LOGNORMAL	59.89	NOT DIFFERENT
SODIUM	73.2	20 / 35	29.1 - 2200	NORMAL OVER LOGNORMAL	289.58	NOT DIFFERENT
VANADIUM	37.58	32 / 35	2.7 - 154	LOGNORMAL OVER NORMAL	110.92	NOT DIFFERENT
ZINC	37.86	32 / 35	11.4 - 5320	NORMAL OVER LOGNORMAL	1041.67	SITE > BACKGROUND

* = QUALIFIERS FOR DATA ARE PRESENTED IN DATA PRESENTATION TABLES

** = STATISTICAL COMPARISON OF SITE TO BACKGROUND DISTRIBUTIONS TO DETERMINE WHETHER THE SITE-RELATED POOL OF CONCENTRATIONS IS ELEVATED RELATIVE TO BACKGROUND

NOT DIFFERENT - THE CHEMICAL IS EXCLUDED FROM CONSIDERATION AS HAVING SITE-RELATED CONCENTRATIONS

(i.e. USING NON-NORMAL STATISTICS, THE SITE-RELATED POPULATION IS STATISTICALLY INDISTINGUISHABLE FROM BACKGROUND)

SITE > BACKGROUND = THE POPULATION OF THE SITE IS STATISTICALLY HIGHER THAN THE POPULATION OF BACKGROUND

TABLE C-4
OCCURRENCE AND DISTRIBUTION OF ORGANICS IN SUBSURFACE SOIL AT SITE 06
WARMINSTER, PENNSYLVANIA
(ug/kg)

SUBSTANCE	BACKGROUND REPRESENTATIVE CONCENTRATION	SITE-RELATED FREQUENCY OF DETECTION	RANGE OF POSITIVE DETECTION*	STATISTICAL DISTRIBUTION	REPRESENTATIVE CONCENTRATION
1,1,1-TRICHLOROETHANE	-	1 / 34	4	NORMAL OVER LOGNORMAL	4
1,2-DICHLOROETHENE (TOTAL	-	3 / 34	92 - 200	NORMAL OVER LOGNORMAL	200
2-BUTANONE	-	1 / 34	79	NORMAL OVER LOGNORMAL	79
2-METHYLNAPHTHALENE	-	2 / 14	50 - 6700	NORMAL OVER LOGNORMAL	6700
4,4'-DDD	4.771006	2 / 18	23 - 530	NORMAL OVER LOGNORMAL	94.84
4,4'-DDE	163.901658	2 / 18	5.5 - 101.5	NORMAL OVER LOGNORMAL	32.91
4,4'-DDT	286.61	6 / 18	4.8 - 94.5	NORMAL OVER LOGNORMAL	39 42
ACENAPHTHYLENE	-	1 / 14	61	NORMAL OVER LOGNORMAL	61
ACETONE	2	3 / 34	380 - 10000	NORMAL OVER LOGNORMAL	896.51
ALPHA-CHLORDANE	-	3 / 18	5.9 - 170	NORMAL OVER LOGNORMAL	33.48
ANTHRACENE	-	1 / 14	311.5	NORMAL OVER LOGNORMAL	311.50
AROCLOR-1242	-	1 / 18	21	NORMAL OVER LOGNORMAL	21
AROCLOR-1254	51	10 / 18	7.2 - 1200	NORMAL OVER LOGNORMAL	379.47
AROCLOR-1260	-	1 / 18	5000	NORMAL OVER LOGNORMAL	893.16
BENZ(A)ANTHRACENE	-	4 / 14	48 - 1470	NORMAL OVER LOGNORMAL	1470
BENZO(A)PYRENE	-	4 / 14	68 - 1385	NORMAL OVER LOGNORMAL	1385
BENZO(B)FLUORANTHENE	58.00	4 / 14	82 - 2000	NORMAL OVER LOGNORMAL	2000
BENZO(G,H,I)PERYLENE	-	4 / 14	53 - 2000	NORMAL OVER LOGNORMAL	2000
BENZO(K)FLUORANTHENE	46	2 / 14	180 - 730	NORMAL OVER LOGNORMAL	730
BIS(2-ETHYLHEXYL)PHTHAL	50	4 / 14	67 - 1900	NORMAL OVER LOGNORMAL	1900
BUTYLBENZYL PHTHALATE	-	1 / 14	5100	NORMAL OVER LOGNORMAL	5100
CARBAZOLE	-	1 / 14	74	NORMAL OVER LOGNORMAL	74
CARBON DISULFIDE	-	1 / 34	2	NORMAL OVER LOGNORMAL	2
CHRYSENE	51	5 / 14	59 - 3300	NORMAL OVER LOGNORMAL	3300
DI-N-BUTYL PHTHALATE	-	1 / 14	44	NORMAL OVER LOGNORMAL	44
DIELDRIN	-	2 / 16	4.8 - 6.1	NORMAL OVER LOGNORMAL	6.10
ENDOSULFAN I	-	1 / 18	2.2	NORMAL OVER LOGNORMAL	2.2
ENDOSULFAN II	-	1 / 18	17	NORMAL OVER LOGNORMAL	17
ENDRIN	-	1 / 15	21	NORMAL OVER LOGNORMAL	21
ENDRIN KETONE	-	1 / 18	8.2	NORMAL OVER LOGNORMAL	8.2
ETHYLBENZENE	-	3 / 34	7 - 140000	NORMAL OVER LOGNORMAL	11159.31
FLUORANTHENE	92	5 / 14	54 - 3285	NORMAL OVER LOGNORMAL	3285
GAMMA-CHLORDANE	-	5 / 18	4.8 - 210	NORMAL OVER LOGNORMAL	41.36
HEPTACHLOR	-	1 / 18	11	NORMAL OVER LOGNORMAL	11
INDENO(1,2,3-CD)PYRENE	-	3 / 14	46 - 830	NORMAL OVER LOGNORMAL	830
METHOXYCHLOR	-	1 / 18	18	NORMAL OVER LOGNORMAL	18
NAPHTHALENE	-	1 / 14	76	NORMAL OVER LOGNORMAL	76
PYRENE	100	6 / 14	50 - 3000	NORMAL OVER LOGNORMAL	3000
TETRACHLOROETHENE	-	4 / 34	4 - 450	NORMAL OVER LOGNORMAL	450
TOLUENE	-	2 / 34	690 - 50000	NORMAL OVER LOGNORMAL	3989.72
TOTAL XYLENES	-	4 / 34	3 - 180000	NORMAL OVER LOGNORMAL	14912.30
TRICHLOROETHENE	-	3 / 34	690 - 2500	NORMAL OVER LOGNORMAL	849.38

* = QUALIFIERS FOR DATA ARE PRESENTED IN DATA PRESENTATION TABLES

TABLE 1

06/13/96

NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

INORGANIC RESULTS FOR SURFACE SOIL SITE 6

MG/KG

DRAFT

SAMPLE NUMBER:	SS-06-01		SS-06-02		SS-06-03		SS-06-04		SS-06-05		SS-06-06		SS-06-07	
INORGANICS														
ALUMINUM	11700		11500		13800		12200		16900		15100		16600	
ANTIMONY	6.1	UR	6.3	UR	6.1	UR	5.7	UR	6.6	UR	6.4	UR	6.3	UR
ARSENIC	5.1	L	4.9	L	7.5	L	4.8	L	5.7	L	5.0	L	6.1	L
BARIUM	76.5		66.2		161		48.2		103		50.9		58.3	
BERYLLIUM	0.79		0.83		1.3		1.0		1.3		0.74		0.92	
CADMIUM	8.8		1.4	B	5.9		0.79	B	0.60	U	0.59	U	0.57	U
CALCIUM	1060		1130		2750		936		671		689		771	
CHROMIUM	414		69.9		25.0		13 6		17.5		15.5		23.4	
COBALT	11.7		9.7		12.5		11 0		10.0		8.0		10.0	
COPPER	50.3		15.1		316		40 6		7.3		10.6		11.9	
CYANIDE	4.1		1.0	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U
IRON	31700		18900		27400		18200		16400		19000		23500	
LEAD	49.7		15.0		278		9.1		16.3		8.9		11.8	
MAGNESIUM	1790		1940		3010		1870		1820		1870		2530	
MANGANESE	391		454		958		450		944		286		362	
MERCURY	0.57		0.050	U	0.050	U	0.060	U	0.050	U	0.060	U	0 050	U
NICKEL	14.5		9.0	B	19.6		9.9	B	12.1		9.0	B	14.2	
POTASSIUM	513		543		973		546		537		562		840	
SELENIUM	0.74	UL	0.76	U	0.74	UL	0.69	U	0.80	U	0.78	U	0.77	U
SILVER	22.3	K	0.77	K	11.4	K	0.69	U	0.80	U	0.78	U	0.77	U
SODIUM	69.3	B	60.7	B	132	B	54.3	B	70.3	B	66.3	B	63 9	B
THALLIUM	0.92	U	1.0	U	0.92	U	0.87	U	1.0	U	1.0	U	1.0	U
VANADIUM	35.7		26.6		35.1		25.5		28.8		27.9		37.4	
ZINC	151	K	54.9	K	360	K	30.0	K	40.8	K	25.0	K	40 6	K

TABLE 1

06/13/96

NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

INORGANIC RESULTS FOR SURFACE SOIL SITE 6

MG/KG

DRAFT

SAMPLE NUMBER:	SS-06-08		SS-06-09		SS-06-10		SS-06-11		SS-06-12		SS-06-13		SS-06-14	
INORGANICS														
ALUMINUM	14000		14200		15400		14100		17300		13900		15400	
ANTIMONY	5.9	UR	6.6	UR	6.0	UR	5.6	UR	6.6	UR	6.0	UR	6.9	UR
ARSENIC	5.4	L	5.1	L	5.1	L	5.1	L	5.6	L	5.7	L	4.2	L
BARIUM	80.6		141		61.6		51.1		56.5		55.5		60.4	
BERYLLIUM	1.0		1.2		0.85		0.69		0.82		0.68		1.4	
CADMIUM	2 0	B	2.6	B	3.7	B	1.1	B	1.1	B	0.69	B	1.7	B
CALCIUM	737		1610		1410		4620		936		879		3040	
CHROMIUM	18.3		19.6		129		81.3		133		20.2		232	
COBALT	8.3		8.7		10.4		6.5		12.7		8.1		14.2	
COPPER	30.3		140		23.4		15.5		17.0		7.6		14.3	
CYANIDE	1.2	U	1.1	U	3.9		1.1	U	1.1	U	1.2	U	4.7	
IRON	17000		19400		23600		17900		23700		20600		25200	
LEAD	20.8		171		22.5		12.2		13.8		10.9		634	
MAGNESIUM	1960		2290		2090		2430		2290		1890		2750	
MANGANESE	448		762		379		265		442		304		478	
MERCURY	0.10		0.12		0.19		0.090		0.050		0.11		0.080	
NICKEL	10.2	B	16.6		12.5		7.4	B	11.3	B	8.0	B	16.1	
POTASSIUM	706		828		861		650		749		492		1290	
SELENIUM	0.71	U	0.80	U	0.72	U	0.68	U	0.80	U	0.73	U	0.84	U
SILVER	0.71	U	1.9	K	10.1	K	0.68	U	1.9	K	0.73	U	2.2	K
SODIUM	63.8	B	87.5	B	69.1	B	68.8	B	64.9	B	68.6	B	94.5	B
THALLIUM	0.89	U	1.0	U	0.90	U	0.85	U	1.0	U	0.91	U	1.1	U
VANADIUM	27.0		32.9		28.3		28.9		33.1		31.7		23.2	
ZINC	47.8	K	153	K	52.5	K	30.8	K	35.7	K	28.0	K	228	K

TABLE 1

NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

INORGANIC RESULTS FOR SURFACE SOIL SITE 6

MG/KG

SAMPLE NUMBER:	SS-06-15		SS-06-16		SS-06-17		SS-06-18		SS-06-19		SS-06-20		SS-06-21	
INORGANICS														
ALUMINUM	13500		14100		17800		15200		22100		13900		14100	
ANTIMONY	5.9	UR	6.5	UR	6.1	UR	6.7	UL	7.2	UL	5.6	UL	6.0	UR
ARSENIC	5.1	L	5.5	L	7.3	L	4.8	L	6.0		5.8		4.6	L
BARIUM	32.0		68.7		42.1		39.9		124		44.7		62.1	
BERYLLIUM	0.47		0.87		0.77		0 51		1.9		0.49		1.1	
CADMIUM	0.54	U	0.59	U	0.70	B	0.68	B	1.0	B	0.68	B	0.54	U
CALCIUM	713		787		824		740		877		774		1150	
CHROMIUM	18.0		15.2		27.5		22.6		22.6		23.7		14.5	
COBALT	7.3		8.2		9.6		6.2		9.7		5.1		20.9	
COPPER	8.7		7.4		11.6	L	8.7		8.6		9.0		17.6	
CYANIDE	1.2	U	1.1	U	1.2	U	1.2	U	1.2	U	1.1	U	1.1	U
IRON	20700		17800		26000		21000		18100		20900		19400	
LEAD	8.3		10.2		9.9		9.5		13.3		10.3		9.3	
MAGNESIUM	1790		1710		2270		1920		1690		1850		1900	
MANGANESE	202		378		284		141		3040		123		1250	
MERCURY	0.050	U	0.050	U	0.050	U	0.050	U	0.060		0.050	U	0.050	U
NICKEL	9.1	B	9.2	B	10.8	B	8.6	B	14.1		8.3	B	13.8	
POTASSIUM	475		421		635		480		487		403		571	
SELENIUM	0.71	U	0.79	U	0.73	UL	0.81	U	0.87	U	0.68	U	0.72	U
SILVER	0.71	U	0.79	U	0.73	UL	0.81	U	0.87	U	0.68	U	0.72	U
SODIUM	51.4	B	67.2	B	65.3	B	47.9	B	54.4	B	62 0	B	63.5	B
THALLIUM	0.89	U	1.0	U	0.92	U	1.0	U	1.1	U	0.85	U	0.90	U
VANADIUM	33.6		27.5		41.7		36.2		31.6		35.7		24.7	
ZINC	26.3	K	26.4	K	33.2	K	25.0		35.2		27.6		29.3	K

TABLE 2

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NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

VOLATILE ORGANIC RESULTS FOR SURFACE SOIL SITE 6

UG/KG

DRAFT

SAMPLE NUMBER:	SS-06-01		SS-06-02		SS-06-03		SS-06-04		SS-06-05		SS-06-06		SS-06-07	
VOLATILES														
1,1,1-TRICHLOROETHANE	12.0	U	12.0	U	11.0	UJ	12.0	U	13.0	U	12.0	U	12.0	U
1,1,2,2-TETRACHLOROETHANE	12.0	U	12.0	U	11.0	UJ	12.0	U	13.0	U	12.0	U	12.0	U
1,1,2-TRICHLOROETHANE	12.0	U	12.0	U	11.0	UJ	12.0	U	13.0	U	12.0	U	12.0	U
1,1-DICHLOROETHANE	12.0	U	12.0	U	11.0	UJ	12.0	U	13.0	U	12.0	U	12.0	U
1,1-DICHLOROETHENE	12.0	U	12.0	U	11.0	UJ	12.0	U	13.0	U	12.0	U	12.0	U
1,2-DICHLOROETHANE	12.0	U	12.0	U	11.0	UJ	12.0	U	13.0	U	12.0	U	12.0	U
1,2-DICHLOROETHENE (TOTAL)	12.0	U	12.0	U	11.0	UJ	12.0	U	13.0	U	12.0	U	12.0	U
1,2-DICHLOROPROPANE	12.0	U	12.0	U	11.0	UJ	12.0	U	13.0	U	12.0	U	12.0	U
2-BUTANONE	12.0	U	12.0	U	11.0	UJ	12.0	U	13.0	U	12.0	U	12.0	U
2-HEXANONE	12.0	U	12.0	U	11.0	UJ	12.0	U	16.0	B	12.0	U	12.0	U
4-METHYL-2-PENTANONE	12.0	U	12.0	U	11.0	UJ	12.0	U	8.0	B	12.0	U	12.0	U
ACETONE	12.0	U	12.0	U	11.0	UJ	12.0	U	38.0	B	16.0	B	12.0	U
BENZENE	12.0	U	12.0	U	11.0	UJ	12.0	U	13.0	U	12.0	U	12.0	U
BROMODICHLOROMETHANE	12.0	U	12.0	U	11.0	UJ	12.0	U	13.0	U	12.0	U	12.0	U
BROMOFORM	12.0	U	12.0	U	11.0	UJ	12.0	U	13.0	U	12.0	U	12.0	U
BROMOMETHANE	12.0	U	12.0	U	11.0	UJ	12.0	U	13.0	U	12.0	U	12.0	U
CARBON DISULFIDE	12.0	U	12.0	U	11.0	UJ	12.0	U	13.0	U	12.0	U	12.0	U
CARBON TETRACHLORIDE	12.0	U	12.0	U	11.0	UJ	12.0	U	13.0	U	12.0	U	12.0	U
CHLOROBENZENE	12.0	U	12.0	U	11.0	UJ	12.0	U	13.0	U	12.0	U	12.0	U
CHLOROETHANE	12.0	U	12.0	U	11.0	UJ	12.0	U	13.0	U	12.0	U	12.0	U
CHLOROFORM	12.0	U	12.0	U	11.0	UJ	12.0	U	13.0	U	12.0	U	12.0	U
CHLOROMETHANE	12.0	U	12.0	U	11.0	UJ	12.0	U	13.0	U	12.0	U	12.0	U
CIS-1,3-DICHLOROPROPENE	12.0	U	12.0	U	11.0	UJ	12.0	U	13.0	U	12.0	U	12.0	U
DIBROMOCHLOROMETHANE	12.0	U	12.0	U	11.0	UJ	12.0	U	13.0	U	12.0	U	12.0	U
ETHYLBENZENE	12.0	U	12.0	U	11.0	UJ	12.0	U	13.0	U	12.0	U	12.0	U
METHYLENE CHLORIDE	12.0	U	2.0	B	11.0	UJ	2.0	B	27.0	B	2.0	B	12.0	U
STYRENE	12.0	U	12.0	U	11.0	UJ	12.0	U	13.0	U	12.0	U	12.0	U
TETRACHLOROETHENE	8.0	J	2.0	J	11.0	UJ	12.0	U	13.0	U	12.0	U	12.0	U
TOLUENE	5.0	J	2.0	J	15.0	J	12.0	U	5.0	J	1.0	J	12.0	U
TRANS-1,3-DICHLOROPROPENE	12.0	U	12.0	U	11.0	UJ	12.0	U	13.0	U	12.0	U	12.0	U
TRICHLOROETHENE	32.0		3.0	J	2.0	J	1.0	J	2.0	J	12.0	U	12.0	U
VINYL CHLORIDE	12.0	U	12.0	U	11.0	UJ	12.0	U	13.0	U	12.0	U	12.0	U
XYLENE (TOTAL)	12.0	U	12.0	U	11.0	UJ	12.0	U	13.0	U	12.0	U	12.0	U

TABLE 2

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NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

VOLATILE ORGANIC RESULTS FOR SURFACE SOIL SITE 6

UG/KG

DRAFT

SAMPLE NUMBER:	SS-06-08		SS-06-09		SS-06-10		SS-06-11		SS-06-12		SS-06-13		SS-06-14	
VOLATILES														
1,1,1-TRICHLOROETHANE	12.0	U	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U
1,1,2,2-TETRACHLOROETHANE	12.0	U	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U
1,1,2-TRICHLOROETHANE	12.0	U	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U
1,1-DICHLOROETHANE	12.0	U	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U
1,1-DICHLOROETHENE	12.0	U	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U
1,2-DICHLOROETHANE	12.0	U	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U
1,2-DICHLOROETHENE (TOTAL)	12.0	U	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U
1,2-DICHLOROPROPANE	12.0	U	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U
2-BUTANONE	12.0	U	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U
2-HEXANONE	12.0	U	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U
4-METHYL-2-PENTANONE	12.0	U	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U
ACETONE	14.0	B	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U
BENZENE	12.0	U	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U
BROMODICHLOROMETHANE	12.0	U	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U
BROMOFORM	12.0	U	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U
BROMOMETHANE	12.0	U	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U
CARBON DISULFIDE	12.0	U	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U
CARBON TETRACHLORIDE	12.0	U	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U
CHLOROBENZENE	12.0	U	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U
CHLOROETHANE	12.0	U	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U
CHLOROFORM	12.0	U	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U
CHLOROMETHANE	12.0	U	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U
CIS-1,3-DICHLOROPROPENE	12.0	U	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U
DIBROMOCHLOROMETHANE	12.0	U	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U
ETHYLBENZENE	12.0	U	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U
METHYLENE CHLORIDE	18.0	B	2.0	B	13.0	B	9.0	B	6.0	B	6.0	B	13.0	U
STYRENE	12.0	U	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U
TETRACHLOROETHENE	12.0	U	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U
TOLUENE	12.0	U	13.0	U	1.0	J	12.0	U	2.0	J	3.0	J	13.0	U
TRANS-1,3-DICHLOROPROPENE	12.0	U	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U
TRICHLOROETHENE	12.0	U	13.0	U	13.0	U	2.0	J	1.0	J	1.0	J	13.0	U
VINYL CHLORIDE	12.0	U	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U
XYLENE (TOTAL)	12.0	U	13.0	U	13.0	U	12.0	U	12.0	U	12.0	U	13.0	U

TABLE 2

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NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

VOLATILE ORGANIC RESULTS FOR SURFACE SOIL SITE 6

UG/KG

DRAFT

SAMPLE NUMBER:	SS-06-15		SS-06-16		SS-06-17		SS-06-18		SS-06-19		SS-06-20		SS-06-21	
VOLATILES														
1,1,1-TRICHLOROETHANE	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U
1,1,2,2-TETRACHLOROETHANE	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U
1,1,2-TRICHLOROETHANE	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U
1,1-DICHLOROETHANE	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U
1,1-DICHLOROETHENE	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U
1,2-DICHLOROETHANE	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U
1,2-DICHLOROETHENE (TOTAL)	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U
1,2-DICHLOROPROPANE	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U
2-BUTANONE	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U
2-HEXANONE	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U
4-METHYL-2-PENTANONE	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U
ACETONE	12.0	U	12.0	U	12.0	U	12.0	U	5.0	B	12.0	U	4.0	B
BENZENE	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U
BROMODICHLOROMETHANE	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U
BROMOFORM	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U
BROMOMETHANE	12.0	U	12.0	U	3.0	J	12.0	U	12.0	U	12.0	U	12.0	U
CARBON DISULFIDE	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U
CARBON TETRACHLORIDE	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U
CHLOROBENZENE	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U
CHLOROETHANE	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U
CHLOROFORM	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U
CHLOROMETHANE	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U
CIS-1,3-DICHLOROPROPENE	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U
DIBROMOCHLOROMETHANE	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U
ETHYLBENZENE	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U
METHYLENE CHLORIDE	12.0	U	12.0	U	12.0	U	12.0	U	1.0	B	12.0	U	12.0	U
STYRENE	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U
TETRACHLOROETHENE	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U
TOLUENE	12.0	U	6.0	J	12.0	U	12.0	U	2.0	J	2.0	J	2.0	J
TRANS-1,3-DICHLOROPROPENE	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U
TRICHLOROETHENE	12.0	U	4.0	J	2.0	J	12.0	U	12.0	U	12.0	U	1.0	J
VINYL CHLORIDE	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U
XYLENE (TOTAL)	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U

TABLE 3

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NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

SEMIVOLATILE ORGANIC RESULTS FOR SURFACE SOIL SITE 6

UG/KG

DRAFT

SAMPLE NUMBER:	SS-06-01		SS-06-02		SS-06-03		SS-06-04		SS-06-05		SS-06-06		SS-06-07	
SEMIVOLATILES														
1,2,4-TRICHLOROBENZENE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
1,2-DICHLOROBENZENE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
1,3-DICHLOROBENZENE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
1,4-DICHLOROBENZENE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
2,2'-OXYBIS(1-CHLOROPROPANE)	400	U	400	U	410	U	400	U	420	U	400	U	390	U
2,4,5-TRICHLOROPHENOL	960	U	970	U	980	U	970	U	1000	U	960	U	940	U
2,4,6-TRICHLOROPHENOL	400	U	400	U	410	U	400	U	420	U	400	U	390	U
2,4-DICHLOROPHENOL	400	U	400	U	410	U	400	U	420	U	400	U	390	U
2,4-DIMETHYLPHENOL	400	U	400	U	410	U	400	U	420	U	400	U	390	U
2,4-DINITROPHENOL	960	U	970	U	980	U	970	U	1000	U	960	U	940	U
2,4-DINITROTOLUENE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
2,6-DINITROTOLUENE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
2-CHLORONAPHTHALENE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
2-CHLOROPHENOL	400	U	400	U	410	U	400	U	420	U	400	U	390	U
2-METHYLNAPHTHALENE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
2-METHYLPHENOL	400	U	400	U	410	U	400	U	420	U	400	U	390	U
2-NITROANILINE	960	U	970	U	980	U	970	U	1000	U	960	U	940	U
2-NITROPHENOL	400	U	400	U	410	U	400	U	420	U	400	U	390	U
3,3'-DICHLOROBENZIDINE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
3-NITROANILINE	960	U	970	U	980	U	970	U	1000	U	960	U	940	U
4,6-DINITRO-2-METHYLPHENOL	960	U	970	U	980	U	970	U	1000	U	960	U	940	U
4-BROMOPHENYL PHENYL ETHER	400	U	400	U	410	U	400	U	420	U	400	U	390	U
4-CHLORO-3-METHYLPHENOL	400	U	400	U	410	U	400	U	420	U	400	U	390	U
4-CHLOROANILINE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
4-CHLOROPHENYL PHENYL ETHER	400	U	400	U	410	U	400	U	420	U	400	U	390	U
4-METHYLPHENOL	400	U	400	U	410	U	400	U	420	U	400	U	390	U
4-NITROANILINE	960	U	970	U	980	U	970	U	1000	U	960	U	940	U
4-NITROPHENOL	960	UJ	970	UJ	980	UJ	970	UJ	1000	U	960	UJ	940	U
ACENAPHTHENE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
ACENAPHTHYLENE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
ANTHRACENE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
BENZ(A)ANTHRACENE	400	U	400	U	42.0	J	400	U	420	U	400	U	390	U
BENZO(A)PYRENE	400	U	400	U	410	U	400	U	45.0	J	400	U	390	U
BENZO(B)FLUORANTHENE	400	U	400	U	61.0	J	400	U	54.0	J	400	U	390	U
BENZO(G,H,I)PERYLENE	400	U	400	U	410	U	400	U	48.0	J	400	U	390	U

TABLE 3

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NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

SEMIVOLATILE ORGANIC RESULTS FOR SURFACE SOIL SITE 6

UG/KG

DRAFT

SAMPLE NUMBER:	SS-06-01		SS-06-02		SS-06-03		SS-06-04		SS-06-05		SS-06-06		SS-06-07	
SEMIVOLATILES														
BENZO(K)FLUORANTHENE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
BIS(2-CHLOROETHOXY)METHANE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
BIS(2-CHLOROETHYL)ETHER	400	U	400	U	410	U	400	U	420	U	400	U	390	U
BIS(2-ETHYLHEXYL)PHTHALATE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
BUTYLBENZYLPHTHALATE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
CARBAZOLE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
CHRYSENE	400	U	400	U	53.0	J	400	U	420	U	400	U	390	U
DI-N-BUTYLPHTHALATE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
DI-N-OCTYLPHTHALATE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
DIBENZOFURAN	400	U	400	U	410	U	400	U	420	U	400	U	390	U
DIETHYLPHTHALATE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
DIMETHYLPHTHALATE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
FLUORANTHENE	400	U	400	U	95.0	J	400	U	420	U	400	U	390	U
FLUORENE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
HEXACHLOROBENZENE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
HEXACHLOROBUTADIENE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
HEXACHLOROCYCLOPENTADIENE	400	UJ	400	UJ	410	UJ	400	UJ	420	U	400	UJ	390	U
HEXACHLOROETHANE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
INDENO(1,2,3-CD)PYRENE	400	U	400	U	410	U	400	U	49.0	J	400	U	390	U
ISOPHORONE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
N-NITROSO-DI-N-PROPYLAMINE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
N-NITROSODIPHENYLAMINE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
NAPHTHALENE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
NITROBENZENE	400	U	400	U	410	U	400	U	420	U	400	U	390	U
PENTACHLOROPHENOL	960	U	970	U	980	U	970	U	1000	U	960	U	940	U
PHENANTHRENE	400	U	400	U	53.0	J	400	U	420	U	400	U	390	U
PHENOL	400	U	400	U	410	U	400	U	420	U	400	U	390	U
PYRENE	400	U	400	U	73.0	J	400	U	420	U	400	U	390	U

TABLE 3

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NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

SEMIVOLATILE ORGANIC RESULTS FOR SURFACE SOIL SITE 6

UG/KG

DRAFT

SAMPLE NUMBER:	SS-06-08		SS-06-09		SS-06-10		SS-06-11		SS-06-12		SS-06-13		SS-06-14	
SEMIVOLATILES														
1,2,4-TRICHLOROBENZENE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
1,2-DICHLOROBENZENE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
1,3-DICHLOROBENZENE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
1,4-DICHLOROBENZENE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
2,2'-OXYBIS(1-CHLOROPROPANE)	400	U	410	U	410	U	380	U	400	U	390	U	410	U
2,4,5-TRICHLOROPHENOL	960	U	990	U	1000	U	930	U	960	U	950	U	1000	U
2,4,6-TRICHLOROPHENOL	400	U	410	U	410	U	380	U	400	U	390	U	410	U
2,4-DICHLOROPHENOL	400	U	410	U	410	U	380	U	400	U	390	U	410	U
2,4-DIMETHYLPHENOL	400	U	410	U	410	U	380	U	400	U	390	U	410	U
2,4-DINITROPHENOL	960	U	990	U	1000	U	930	U	960	U	950	U	1000	U
2,4-DINITROTOLUENE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
2,6-DINITROTOLUENE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
2-CHLORONAPHTHALENE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
2-CHLOROPHENOL	400	U	410	U	410	U	380	U	400	U	390	U	410	U
2-METHYLNAPHTHALENE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
2-METHYLPHENOL	400	U	410	U	410	U	380	U	400	U	390	U	410	U
2-NITROANILINE	960	U	990	U	1000	U	930	U	960	U	950	U	1000	U
2-NITROPHENOL	400	U	410	U	410	U	380	U	400	U	390	U	410	U
3,3'-DICHLOROBENZIDINE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
3-NITROANILINE	960	U	990	U	1000	U	930	U	960	U	950	U	1000	U
4,6-DINITRO-2-METHYLPHENOL	960	U	990	U	1000	U	930	U	960	U	950	U	1000	U
4-BROMOPHENYL PHENYL ETHER	400	U	410	U	410	U	380	U	400	U	390	U	410	U
4-CHLORO-3-METHYLPHENOL	400	U	410	U	410	U	380	U	400	U	390	U	410	U
4-CHLOROANILINE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
4-CHLOROPHENYL PHENYL ETHER	400	U	410	U	410	U	380	U	400	U	390	U	410	U
4-METHYLPHENOL	400	U	410	U	410	U	380	U	400	U	390	U	410	U
4-NITROANILINE	960	U	990	U	1000	U	930	U	960	U	950	U	1000	U
4-NITROPHENOL	960	UJ	990	UJ	1000	U	930	U	960	U	950	U	1000	U
ACENAPHTHENE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
ACENAPHTHYLENE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
ANTHRACENE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
BENZ(A)ANTHRACENE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
BENZO(A)PYRENE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
BENZO(B)FLUORANTHENE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
BENZO(G,H,I)PERYLENE	400	U	410	U	410	U	41.0	J	400	U	390	U	410	U

TABLE 3

NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

SEMIVOLATILE ORGANIC RESULTS FOR SURFACE SOIL SITE 6

UG/KG

SAMPLE NUMBER:	SS-06-08		SS-06-09		SS-06-10		SS-06-11		SS-06-12		SS-06-13		SS-06-14	
SEMIVOLATILES														
BENZO(K)FLUORANTHENE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
BIS(2-CHLOROETHOXY)METHANE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
BIS(2-CHLOROETHYL)ETHER	400	U	410	U	410	U	380	U	400	U	390	U	410	U
BIS(2-ETHYLHEXYL)PHTHALATE	400	U	410	U	410	U	380	U	46.0	B	50.0	B	410	U
BUTYLBENZYLPHTHALATE	400	U	49.0	J	410	U	380	U	400	U	390	U	410	U
CARBAZOLE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
CHRYSENE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
DI-N-BUTYLPHTHALATE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
DI-N-OCTYLPHTHALATE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
DIBENZOFURAN	400	U	410	U	410	U	380	U	400	U	390	U	410	U
DIETHYLPHTHALATE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
DIMETHYLPHTHALATE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
FLUORANTHENE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
FLUORENE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
HEXACHLOROBENZENE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
HEXACHLOROBUTADIENE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
HEXACHLOROCYCLOPENTADIENE	400	UJ	410	UJ	410	U	380	U	400	U	390	U	410	U
HEXACHLOROETHANE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
INDENO(1,2,3-CD)PYRENE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
ISOPHORONE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
N-NITROSO-DI-N-PROPYLAMINE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
N-NITROSODIPHENYLAMINE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
NAPHTHALENE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
NITROBENZENE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
PENTACHLOROPHENOL	960	U	990	U	1000	U	930	U	960	U	950	U	1000	U
PHENANTHRENE	400	U	410	U	410	U	380	U	400	U	390	U	410	U
PHENOL	400	U	410	U	410	U	380	U	400	U	390	U	410	U
PYRENE	400	U	410	U	410	U	380	U	400	U	390	U	410	U

TABLE 3

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NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

SEMIVOLATILE ORGANIC RESULTS FOR SURFACE SOIL SITE 6

UG/KG

DRAFT

SAMPLE NUMBER:	SS-06-15		SS-06-16		SS-06-17		SS-06-18		SS-06-19		SS-06-20		SS-06-21	
SEMIVOLATILES														
1,2,4-TRICHLOROBENZENE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
1,2-DICHLOROBENZENE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
1,3-DICHLOROBENZENE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
1,4-DICHLOROBENZENE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
2,2'-OXYBIS(1-CHLOROPROPANE)	370	U	400	U	410	U	400	U	450	U	400	U	410	U
2,4,5-TRICHLOROPHENOL	890	U	960	U	980	U	970	U	1100	U	970	U	990	U
2,4,6-TRICHLOROPHENOL	370	U	400	U	410	U	400	U	450	U	400	U	410	U
2,4-DICHLOROPHENOL	370	U	400	U	410	U	400	U	450	U	400	U	410	U
2,4-DIMETHYLPHENOL	370	U	400	U	410	U	400	U	450	U	400	U	410	U
2,4-DINITROPHENOL	890	U	960	U	980	U	970	U	1100	U	970	U	990	U
2,4-DINITROTOLUENE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
2,6-DINITROTOLUENE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
2-CHLORONAPHTHALENE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
2-CHLOROPHENOL	370	U	400	U	410	U	400	U	450	U	400	U	410	U
2-METHYLNAPHTHALENE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
2-METHYLPHENOL	370	U	400	U	410	U	400	U	450	U	400	U	410	U
2-NITROANILINE	890	U	960	U	980	U	970	U	1100	U	970	U	990	U
2-NITROPHENOL	370	U	400	U	410	U	400	U	450	U	400	U	410	U
3,3'-DICHLOROBENZIDINE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
3-NITROANILINE	890	U	960	U	980	U	970	U	1100	U	970	U	990	U
4,6-DINITRO-2-METHYLPHENOL	890	U	960	U	980	U	970	U	1100	U	970	U	990	U
4-BROMOPHENYL PHENYL ETHER	370	U	400	U	410	U	400	U	450	U	400	U	410	U
4-CHLORO-3-METHYLPHENOL	370	U	400	U	410	U	400	U	450	U	400	U	410	U
4-CHLOROANILINE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
4-CHLOROPHENYL PHENYL ETHER	370	U	400	U	410	U	400	U	450	U	400	U	410	U
4-METHYLPHENOL	370	U	400	U	410	U	400	U	450	U	400	U	410	U
4-NITROANILINE	890	U	960	U	980	U	970	U	1100	U	970	U	990	U
4-NITROPHENOL	890	U	960	U	980	U	970	U	1100	U	970	U	990	UJ
ACENAPHTHENE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
ACENAPHTHYLENE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
ANTHRACENE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
BENZ(A)ANTHRACENE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
BENZO(A)PYRENE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
BENZO(B)FLUORANTHENE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
BENZO(G,H,I)PERYLENE	370	U	400	U	410	U	400	U	450	U	400	U	410	U

TABLE 3

NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

SEMIVOLATILE ORGANIC RESULTS FOR SURFACE SOIL SITE 6

UG/KG

SAMPLE NUMBER:	SS-06-15		SS-06-16		SS-06-17		SS-06-18		SS-06-19		SS-06-20		SS-06-21	
SEMIVOLATILES														
BENZO(K)FLUORANTHENE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
BIS(2-CHLOROETHOXY)METHANE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
BIS(2-CHLOROETHYL)ETHER	370	U	400	U	410	U	400	U	450	U	400	U	410	U
BIS(2-ETHYLHEXYL)PHTHALATE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
BUTYLBENZYLPHTHALATE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
CARBAZOLE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
CHRYSENE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
DI-N-BUTYLPHTHALATE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
DI-N-OCTYLPHTHALATE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
DIBENZOFURAN	370	U	400	U	410	U	400	U	450	U	400	U	410	U
DIETHYLPHTHALATE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
DIMETHYLPHTHALATE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
FLUORANTHENE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
FLUORENE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
HEXACHLOROBENZENE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
HEXACHLOROBUTADIENE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
HEXACHLOROCYCLOPENTADIENE	370	U	400	U	410	U	400	U	450	U	400	U	410	UJ
HEXACHLOROETHANE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
INDENO(1,2,3-CD)PYRENE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
ISOPHORONE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
N-NITROSO-DI-N-PROPYLAMINE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
N-NITROSODIPHENYLAMINE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
NAPHTHALENE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
NITROBENZENE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
PENTACHLOROPHENOL	890	U	960	U	980	U	970	U	1100	U	970	U	990	U
PHENANTHRENE	370	U	400	U	410	U	400	U	450	U	400	U	410	U
PHENOL	370	U	400	U	410	U	400	U	450	U	400	U	410	U
PYRENE	370	U	400	U	410	U	400	U	450	U	400	U	410	U

TABLE 4

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NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

PESTICIDE/PCB RESULTS FOR SURFACE SOIL SITE 6

UG/KG

DRAFT

SAMPLE NUMBER:	SS-06-01		SS-06-02		SS-06-03		SS-06-04		SS-06-05		SS-06-06		SS-06-07	
PESTICIDES														
4,4'-DDD	4.0	U	4.0	U	4.0	R	4.0	U	4.2	U	4.0	U	3.9	U
4,4'-DDE	4.0	U	4.0	U	4.1	U	4.0	U	4.2	U	4.0	U	3.9	U
4,4'-DDT	4.3	J	4.0	U	5.3	R	4.0	U	4.2	U	4.0	U	3.9	U
ALDRIN	2.0	U	2.1	U	2.1	U	2.1	U	2.2	U	2.0	U	2.0	U
ALPHA-BHC	2.0	U	2.1	U	2.1	U	2.1	U	2.2	U	2.0	U	2.0	U
ALPHA-CHLORDANE	2.0	U	2.1	U	8.2		2.1	U	2.2	U	2.0	U	2.0	U
AROCLOR-1016	40.0	U	40.0	U	41.0	U	40.0	U	42.0	U	40.0	U	39.0	U
AROCLOR-1221	81.0	U	81.0	U	82.0	U	81.0	U	86.0	U	80.0	U	79.0	U
AROCLOR-1232	40.0	U	40.0	U	41.0	U	40.0	U	42.0	U	40.0	U	39.0	U
AROCLOR-1242	40.0	U	40.0	U	41.0	U	40.0	U	42.0	U	40.0	U	39.0	U
AROCLOR-1248	40.0	U	40.0	U	41.0	U	40.0	U	42.0	U	40.0	U	39.0	U
AROCLOR-1254	40.0	U	40.0	U	490		40.0	U	42.0	U	40.0	U	39.0	U
AROCLOR-1260	40.0	U	40.0	U	41.0	U	40.0	U	42.0	U	40.0	U	39.0	U
BETA-BHC	2.0	U	2.1	U	2.1	U	2.1	U	2.2	U	2.0	U	2.0	U
DELTA-BHC	2.0	U	2.1	U	2.1	U	2.1	U	2.2	U	2.0	U	2.0	U
DIELDRIN	4.0	U	4.0	U	4.1	U	4.0	U	4.2	U	4.0	U	3.9	U
ENDOSULFAN I	2.0	U	2.1	U	2.1	U	2.1	U	2.2	U	2.0	U	2.0	U
ENDOSULFAN II	4.0	U	4.0	U	4.1	U	4.0	U	4.2	U	4.0	U	3 9	U
ENDOSULFAN SULFATE	4.0	U	4.0	U	4.1	U	4.0	U	4.2	U	4.0	U	3.9	U
ENDRIN	4.0	U	4.0	U	14.0	J	4.0	U	4.2	U	4.0	U	3.9	U
ENDRIN ALDEHYDE	4.0	U	4.0	U	4.1	U	4.0	U	4.2	U	4 0	U	3.9	U
ENDRIN KETONE	4.0	U	4.0	U	4.1	U	4.0	U	4.2	U	4.0	U	3.9	U
GAMMA-BHC (LINDANE)	2.0	U	2.1	U	2.1	U	2.1	U	2.2	U	2.0	U	2.0	U
GAMMA-CHLORDANE	2.0	U	2.1	U	2.1	U	2.1	U	2.2	U	2 0	U	2.0	U
HEPTACHLOR	2.0	U	2.1	U	2.1	U	2.1	U	2 2	U	2.0	U	2 0	U
HEPTACHLOR EPOXIDE	2.0	U	2.1	U	2 1	U	2.1	U	2.2	U	2.0	U	2.0	U
METHOXYCHLOR	20.0	U	21.0	U	21.0	U	21.0	U	22.0	U	20 0	U	20.0	U
TOXAPHENE	200	U	210	U	210	U	210	U	220	U	200	U	200	U

TABLE 4

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NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

PESTICIDE/PCB RESULTS FOR SURFACE SOIL SITE 6

UG/KG

DRAFT

SAMPLE NUMBER:	SS-06-08		SS-06-09		SS-06-10		SS-06-11		SS-06-12		SS-06-13		SS-06-14	
PESTICIDES														
4,4'-DDD	4.0	U	4.1	U	4.1	U	7 7	J	4.0	U	3.9	U	4.1	U
4,4'-DDE	4.0	U	4.1	U	4.1	U	3 8	U	4.0	U	3.9	U	4.1	U
4,4'-DDT	4.0	U	5.5	J	4.1	U	6.5		4.0	U	3.9	U	7.9	J
ALDRIN	2.0	U	2.1	U	2.1	U	2 0	U	2.0	U	2.0	U	2 1	U
ALPHA-BHC	2.0	U	2.1	U	2.1	U	2.0	U	2.0	U	2 0	U	2 1	U
ALPHA-CHLORDANE	2.0	U	2.1	U	2.1	U	2.0	U	2.0	U	2.0	U	2.1	U
AROCLOR-1016	40.0	U	41.0	U	41.0	U	38.0	U	40.0	U	39.0	U	41.0	U
AROCLOR-1221	81.0	U	83.0	U	84.0	U	78.0	U	81.0	U	79.0	U	84.0	U
AROCLOR-1232	40.0	U	41.0	U	41.0	U	38.0	U	40.0	U	39.0	U	41.0	U
AROCLOR-1242	40.0	U	41.0	U	41.0	U	38.0	U	40.0	U	39.0	U	41.0	U
AROCLOR-1248	40.0	U	41.0	U	41.0	U	38.0	U	40.0	U	39.0	U	41 0	U
AROCLOR-1254	40.0	U	41.0	U	41.0	U	38.0	U	40.0	U	39.0	U	41.0	U
AROCLOR-1260	40.0	U	41.0	U	41.0	U	38.0	U	40.0	U	39.0	U	41.0	U
BETA-BHC	2.0	U	2.1	U	2.1	U	2.0	U	2.0	U	2.0	U	2.1	U
DELTA-BHC	2.0	U	2.1	U	2.1	U	2.0	U	2.0	U	2.0	U	2.1	U
DIELDRIN	4.0	U	4.1	U	4.1	U	3.8	U	4.0	U	3.9	U	4.1	U
ENDOSULFAN I	2.0	U	2.1	U	2.1	U	2.0	U	2.0	U	2.0	U	2.1	U
ENDOSULFAN II	4.0	U	4.1	U	4.1	U	3.8	U	4.0	U	3 9	U	4.1	U
ENDOSULFAN SULFATE	4.0	U	4.1	U	4.1	U	3.8	U	4.0	U	3.9	U	4.1	U
ENDRIN	4.0	U	4.1	U	4.1	U	3.8	U	4.0	U	3.9	U	4.1	U
ENDRIN ALDEHYDE	4.0	U	4.1	U	4.1	U	3.8	U	4.0	U	3.9	U	4.1	U
ENDRIN KETONE	4.0	U	4.1	U	4.1	U	3.8	U	4.0	U	3 9	U	4 1	U
GAMMA-BHC (LINDANE)	2.0	U	2.1	U	2.1	U	2.0	U	2.0	U	2.0	U	2.1	U
GAMMA-CHLORDANE	2.0	U	2.1	U	2.1	U	2.0	U	2.0	U	2 0	U	2.1	U
HEPTACHLOR	2.0	U	2.1	U	2.1	U	2.0	U	2.0	U	2.0	U	2.1	U
HEPTACHLOR EPOXIDE	2.0	U	2.1	U	2.1	U	2.0	U	2.0	U	2.0	U	2.1	U
METHOXYCHLOR	20.0	U	21.0	U	21.0	U	20.0	U	20.0	U	20.0	U	21.0	U
TOXAPHENE	200	U	210	U	210	U	200	U	200	U	200	U	210	U

TABLE 4

06/13/96

NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

PESTICIDE/PCB RESULTS FOR SURFACE SOIL SITE 6

UG/KG

DRAFT

SAMPLE NUMBER:	SS-06-15		SS-06-16		SS-06-17		SS-06-18		SS-06-19		SS-06-20		SS-06-21	
PESTICIDES														
4,4'-DDD	3.7	U	4.0	U	4.1	U	4.0	U	4.5	U	4.0	U	4.1	U
4,4'-DDE	3.7	U	4.0	U	4.1	U	4.0	U	4.5	U	4.0	U	4.1	U
4,4'-DDT	3.7	U	4.0	U	4.1	U	4.0	U	4.5	U	4.0	U	4.1	U
ALDRIN	1.9	U	2.0	U	2.1	U	2.1	U	2.3	U	2.1	U	2.1	U
ALPHA-BHC	1.9	U	2.0	U	2.1	U	2.1	U	2.3	U	2.1	U	2.1	U
ALPHA-CHLORDANE	1.9	U	2.0	U	2.1	U	2.1	U	2.3	U	2 1	U	2 1	U
AROCLOR-1016	37.0	U	40.0	U	41.0	U	40.0	U	45.0	U	40.0	U	41.0	U
AROCLOR-1221	74.0	U	80.0	U	82.0	U	81.0	U	92.0	U	81.0	U	83.0	U
AROCLOR-1232	37.0	U	40.0	U	41.0	U	40.0	U	45.0	U	40.0	U	41.0	U
AROCLOR-1242	37.0	U	40.0	U	41.0	U	40.0	U	45.0	U	40.0	U	41.0	U
AROCLOR-1248	37.0	U	40.0	U	41.0	U	40.0	U	45.0	U	40.0	U	41.0	U
AROCLOR-1254	37.0	U	40.0	U	41.0	U	40.0	U	45 0	U	40.0	U	41.0	U
AROCLOR-1260	37.0	U	40.0	U	41.0	U	40.0	U	45.0	U	40.0	U	41.0	U
BETA-BHC	1.9	U	2.0	U	2.1	U	2.1	U	2.3	U	2 1	U	2.1	U
DELTA-BHC	1.9	U	2.0	U	2.1	U	2.1	U	2.3	U	2 1	U	2.1	U
DIELDRIN	3.7	U	4.0	U	4.1	U	4.0	U	4.5	U	4.0	U	4.1	U
ENDOSULFAN I	1.9	U	2.0	U	2.1	U	2.1	U	2.3	U	2.1	U	2.1	U
ENDOSULFAN II	3.7	U	4.0	U	4.1	U	4.0	U	4.5	U	4 0	U	4.1	U
ENDOSULFAN SULFATE	3.7	U	4.0	U	4.1	U	4.0	U	4.5	U	4.0	U	4.1	U
ENDRIN	3.7	U	4.0	U	4.1	U	4.0	U	4.5	U	4.0	U	4.1	U
ENDRIN ALDEHYDE	3.7	U	4.0	U	4.1	U	4.0	U	4.5	U	4.0	U	4.1	U
ENDRIN KETONE	3.7	U	4.0	U	4.1	U	4.0	U	4.5	U	4.0	U	4.1	U
GAMMA-BHC (LINDANE)	1.9	U	2.0	U	2.1	U	2.1	U	2.3	U	2.1	U	2.1	U
GAMMA-CHLORDANE	1.9	U	2.0	U	2.1	U	2.1	U	2.3	U	2.1	U	2.1	U
HEPTACHLOR	1.9	U	2.0	U	2.1	U	2.1	U	2.3	U	2 1	U	2.1	U
HEPTACHLOR EPOXIDE	1.9	U	2.0	U	2.1	U	2.1	U	2 3	U	2.1	U	2.1	U
METHOXYCHLOR	19.0	U	20.0	U	21.0	U	21.0	U	23.0	U	21.0	U	21.0	U
TOXAPHENE	190	U	200	U	210	U	210	U	230	U	210	U	210	U

TABLE 5

06/13/96

NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

INORGANIC RESULTS FOR SUBSURFACE SOIL SITE 6

MG/KG

DRAFT

SAMPLE NUMBER:	S6-SB03-09		S6-SB04-06		S6-SB09-02		S6-SB10-05		S6-SB12-02		S6-TP-COMP		S6-TP02-01	
INORGANICS														
ALUMINUM	13500		7040		18300		14800		14100		251000		41400	
ANTIMONY	10.2	UL	8.6	UL	9.5	UL	11.2	UL	9.7	UJ	20.0	J	19.3	B
ARSENIC	4.0	L	0.86		5.8		4.9		6.4		3.2		80.7	
BARIUM	39.2		13.5		49.7		58.7		107		427		922	
BERYLLIUM	2.3		0.53		0.63		0.92		1.1		0.94		0.68	
CADMIUM	0.45	UL	0.37	UL	0.41	UL	0.49	UL	2.5	B	38.3		78.2	
CALCIUM	828		340		1060		705		1630		1320		19000	
CHROMIUM	12.4		6.4	B	26.1		24.1		24 9		165		219	
COBALT	33.5		4.5		9.2		10.7		9.3		4.2	L	14.8	
COPPER	26.9		4.6	L	14.1		15.0		164		14300		1880	
IRON	29100	J	6300	J	24500	J	22700	J	23300		4130		29000	
LEAD	5.9		3.8		10.4		9.6		86.2		157		39300	
MAGNESIUM	800		649		2690		2830		2130		1630		4060	
MANGANESE	992		267		379		587		581	L	774	L	1020	
MERCURY	0.14	J	0.060	UJ	0.050	UJ	0.050	UJ	0.11	K	0.13	U	1.4	
NICKEL	13.8	L	4.6		13.3		13.5		24.8		70.7		345	
POTASSIUM	282		138		911		971		962		350		1550	
SELENIUM	0.89	U	0.75	U	0.83	U	1.0	U	0.84	U	1.4	K	5.0	
SILVER	1.1	UL	0.94	UL	1.0	UL	1.2	UL	1.8	L	39.7	J	170	
SODIUM	73.0	L	66.3		76.5		71.4		84.1	B	54.5	B	740	
THALLIUM	0.89	U	0.75	U	0.83	U	1.0	U	0.84	UL	1.2	UL	0.81	U
VANADIUM	26.8		8.0		40.7		34.6		73.0		24.5	K	25.9	
ZINC	19.6		11.4		33.4		34.6		190		4140		3800	

TABLE 5

06/13/96

NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

INORGANIC RESULTS FOR SUBSURFACE SOIL SITE 6

MG/KG

DRAFT

SAMPLE NUMBER:	S6-TP04-01		S6-TP07-01		S6-TP08-01		S6-TP09-01		S6-TP10-01		S6-TP10-02		S6-TP12-01	
INORGANICS														
ALUMINUM	14200		23400		3940		16400		2080		17900		18100	
ANTIMONY	8.7	U	7.7	U	164		7.6	UL	11.6	UL	9.7	UL	30.8	
ARSENIC	4.4		3.3		3.5		5.7	L	0.51	U	5.8		5.2	L
BARIUM	40.5		57.0		384		93.9		17.5		51.9		94.8	
BERYLLIUM	0.92		1.3		0.33	U	2.3		0.25	U	1 0		1.3	
CADMIUM	0.38	U	0.33	U	38.2		0.33	UL	0.51	UL	0.42	UL	7.2	
CALCIUM	976		934		116000		5610		690		1330		17600	
CHROMIUM	19.7		17.9		7140		31.1		6.2	B	26.0		1070	
COBALT	10.6		9.7		50.0	L	13.7		0.51	U	11.9		17.5	
COPPER	14.4		22.8		534		28.2		29.3		15.3		75.9	
IRON	19300		19500		230000		36800	J	4120	J	19500	J	59900	J
LEAD	24.2		11.8		104		44.5		6.8		10 8		30.1	
MAGNESIUM	2430		1830		3490		4590		356		1480		3610	
MANGANESE	420		239		849		539		52.5		466		644	
MERCURY	0.060	U	0.060	U	5.2		0.050	UL	0.20	L	0 060	L	0.49	L
NICKEL	11.8	K	13.8	K	108		16 4	L	8.4		11.7		44 5	
POTASSIUM	719		838		207		1690		130		777		1470	
SELENIUM	0.75	U	0.67	U	1.3	U	0.66	U	1.0	U	0.84	U	1.0	U
SILVER	0.94	U	0.84	U	330		0.83	UL	1.3	UL	1 1	UL	46.2	
SODIUM	68.1	B	57.2	B	83.3	B	94.8	L	29.9		48.5		75.3	L
THALLIUM	0.75	U	0.67	U	1.3	U	0 66	U	1.0	U	0.84	U	1.0	U
VANADIUM	28.1		24.5		0.67	UL	32.2		42.9		25.4		30.1	
ZINC	28.0		21.0		360		50.4		15.7		23.2		77 1	

TABLE 5

06/13/96

NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

INORGANIC RESULTS FOR SUBSURFACE SOIL SITE 6

MG/KG

DRAFT

SAMPLE NUMBER:	S6-TP12-02		S6-TP13-01		S6-TP14-01		S6-TP14-02		S6-TP14-03		S6-TP14-04		S6-TP15-01	
INORGANICS														
ALUMINUM	10600		17400		2570		14800		15500		14700		15500	
ANTIMONY	731		10.1	UL	14.8	UL	10.4	UL	9.4	L	9 0	UL	9.8	UL
ARSENIC	5.4		6.1		1.1		6.8		5.7		5 3		6.5	
BARIUM	410		58.0		6.0		50.4		82 6		67.7		161	
BERYLLIUM	0.71		0.74		0.32	U	0.65		0.86		0 60		1.3	
CADMIUM	5.4		0.44	UL	1.3	L	0.45	UL	1.1	L	0.39	UL	5.2	
CALCIUM	7550		633		165		1420		2380		2030		2450	
CHROMIUM	10100		28.5		9.1	B	36.9		124		140		32 5	
COBALT	12.1		8.6		0.64	U	7.2		7.3		7.3		11.0	
COPPER	634		11.0		53.8		10.8		28.0		24.4		364	
IRON	17400	J	23000	J	11700	J	23600	J	21500	J	22400	J	27200	J
LEAD	7230		14.2		6.2		13.5		32.5		20 1		140	
MAGNESIUM	2280		2230		230		2020		2300		2140		2390	
MANGANESE	333		375		25.4		375		410		262		930	
MERCURY	9.9	L	0.050	UL	0.090	UL	0.14	L	0.21	L	0.74	L	0.36	L
NICKEL	9.6		10.8		2.9	U	9.0		21.3		11.4		41.1	
POTASSIUM	745		654		84.5		689		806		631		1090	
SELENIUM	1.1	U	0.88	U	1.3	U	0.90	U	0.80	U	0.78	U	0.88	
SILVER	15.0		1.1	UL	1.6	UL	1.1	UL	1.0	UL	1.0	UL	8.8	
SODIUM	88.1		44.6		29.1		44.3		52.4		47.7		101	
THALLIUM	1.1	U	0.88	U	1.3	U	0.90	U	0.80	U	0 78	U	0.85	U
VANADIUM	0.55	U	36.6		3.5		34.2		31.9		31.7		48.1	
ZINC	1410		33.8		27.9		33.8		87.8		59.3		488	

TABLE 5

06/13/96

NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

INORGANIC RESULTS FOR SUBSURFACE SOIL SITE 6

MG/KG

DRAFT

SAMPLE NUMBER:	S6-TP17-01		S6-TP17-02		S6-TP18-01		S6-TP18-02		S6-TP19-01		S6-TP19-02		S6-TP21-01	
INORGANICS														
ALUMINUM	14200		17000		10800		16400		186000		16900		10300	
ANTIMONY	8.6	UJ	14.5	J	13.9	J	11.1	J	28.0		11 3	UJ	22.5	J
ARSENIC	5.4		6.0		2.6		7.4		1.1		7.7		4.9	
BARIUM	131		135		48.3		115		184		85.1		239	
BERYLLIUM	1.1		1.1		0.58		0.92		0.66		0.83	B	0.76	
CADMIUM	2.9		2.7	B	0.66	L	3.1		38.3		1.3	L	8.9	
CALCIUM	1860		1750		1230		1640		20400		1180	B	10600	
CHROMIUM	25.4		37.8		17.1		28.9		652		25.3		389	
COBALT	12.1		8.7		4.8		8.4	L	2.9	B	9.2		6 4	
COPPER	170		201		48.4		197		938		85.9		114	
IRON	19800		19800		21400		26600		7470		26400		14800	
LEAD	64.7		95.9		47.8		146		569		50.9		131	
MAGNESIUM	2740		2680		2980		2220		10300		2270		2530	
MANGANESE	840	L	589	L	131	L	440	L	509	L	586	L	497	L
MERCURY	0.22		0.19	K	0.050	U	0.25		0.090	K	0.11	K	5.4	
NICKEL	18.9		23.9		13.3	J	16.6		90.8		19.2		14.5	J
POTASSIUM	1410		1570		1560		1010		563		894		1110	
SELENIUM	0.75	U	0.85	U	0.86	U	0.83	K	1.4	U	1.0	U	1.0	U
SILVER	1.7	L	4.8	L	1.1	UL	4.8	J	1.8	J	1.2	UL	13.7	L
SODIUM	70.1	B	85.2	B	53.2	B	64.3	B	2200		45.7	B	137	
THALLIUM	0.75	UL	0.85	UL	0.86	UL	0.69	UL	1.4	UL	1 0	UL	1 0	UL
VANADIUM	44.2		42.6		31.5		38.2	K	1.6	B	37.7		24.3	
ZINC	289		283		83.8		298		586		122		371	

TABLE 5

06/13/96

NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

INORGANIC RESULTS FOR SUBSURFACE SOIL SITE 6

MG/KG

DRAFT

SAMPLE NUMBER:	S6-TP21-02		S6-TP22-01		S6-TP23-01		S6-TP24-01		S6-TP24-02		S6-TP26-01		S6-TP26-02	
INORGANICS														
ALUMINUM	12800		16500		24700		2980		15200		15000		4980	
ANTIMONY	13.1	J	9.9	J	37.7		175		114		14.1	UJ	15.4	UJ
ARSENIC	5.3		5.3		11.5		1.8		8.2		6.5		2.2	
BARIUM	239		51.6		715		343		776		539		108	
BERYLLIUM	0.70		0 81		0.92		0.46		0.61		1.0		0.33	U
CADMIUM	4.6		0.41	L	41.9		48.7		66.4		2.1	B	2.0	B
CALCIUM	7520		2030		15100		72600		25100		18400		18200	
CHROMIUM	133		25.6		183		6690		3200		78.3		14.7	
COBALT	6.9		7.5		16.0		50.4	L	92.5		10.7		3.4	
COPPER	53.7		15.9		2460		285		1080		36.7		21.0	
IRON	18300		12700		68900		246000		119000		11700		10000	
LEAD	133		11.0		1600		156		960		276		64 2	
MAGNESIUM	2440		2790		3650		2600		2980		6350		2450	
MANGANESE	399	L	220	L	950	L	749	L	1210	L	653	L	316	
MERCURY	3.3		0.050	U	8.8		1.4		2.3		0.10	U	0.10	U
NICKEL	14.1	J	13.6	J	98.6		31.8		164		17 0		7 6	J
POTASSIUM	1390		1100		1330		141		746		1260		456	
SELENIUM	0.94	U	0.81	U	1.3	K	1.1	U	1.6	K	1.2	U	1 3	U
SILVER	4.2	L	1.0	UL	117	L	330	L	157	L	1.5	UL	1.7	UL
SODIUM	221		58.0	B	511		89.6	B	279	L	144	B	208	
THALLIUM	0.94	UL	0.81	UL	1.0	UL	1.1	UL	1.1	UL	1.2	UL	1.3	U
VANADIUM	27.1		38.0		154		2.7	K	81.9		35.4		10.8	
ZINC	337		40.1		3650		867		5320		537		155	

TABLE 5

06/13/96

NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

INORGANIC RESULTS FOR SUBSURFACE SOIL SITE 6

MG/KG

DRAFT

SAMPLE NUMBER:	S6-TP26-03		SB-06-01		SB-06-02		SB-06-03				
INORGANICS											
ALUMINUM	24000		15000		12000		14100				
ANTIMONY	14.4	J	10.2	UL	9.9	UL	12.7	B			
ARSENIC	4.4		7.1	J	3.9	B	4.9	B			
BARIUM	54.9		46.1	B	62.8	B	57.4	B			
BERYLLIUM	1.5		1.0	B	1.2	B	1.1	B			
CADMIUM	0.34	UL	1.9	B	2.0	B	2.2	B			
CALCIUM	1750		3650	B	38500		649	B			
CHROMIUM	21.9		23.1	K	20.4	K	26.7	K			
COBALT	10.4		9.8	B	9.1	B	8.3	B			
COPPER	16.0		13.3	B	17.0	B	29.1	B			
CYANIDE			1.4	U	1.8	U	2.0	U			
IRON	19100		22200		20000		21600				
LEAD	12.9		19.0		15.8		14.7				
MAGNESIUM	2020		3630	B	23700		2100	B			
MANGANESE	295		338		504		332				
MERCURY	0.050	U	0.12	U	0.10	U	0.10	U			
NICKEL	15.7	J	11.0		10.9		11.4				
POTASSIUM	1580		895		988		979				
SELENIUM	0.68	U	1.0	UJ	1.0	UJ	1.0	UJ			
SILVER	0.86	UL	2.1	U	2.0	U	2.2	U			
SODIUM	52.8	B	649	B	552	B	579	B			
THALLIUM	0.68	U	0.42	UL	0.39	UJ	0.39	UL			
VANADIUM	28.0		31.8		29.1		30.4				
ZINC	23.8		34.7	B	48.1	B	38.3	B			

TABLE 6

06/13/96

NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

VOLATILE ORGANIC RESULTS FOR SUBSURFACE SOIL SITE 6

UG/KG

DRAFT

SAMPLE NUMBER:	S6-SB03-09		S6-SB04-06		S6-SB09-02		S6-SB10-05		S6-SB12-02		S6-TP02-01		S6-TP04-01	
VOLATILES														
1,1,1-TRICHLOROETHANE	14.0	U	11.0	U	12.0	U	12.0	U	12.0	U	19.0	U	11.0	U
1,1,2,2-TETRACHLOROETHANE	14.0	U	11.0	U	12.0	U	12.0	U	12.0	UJ	19.0	U	11.0	U
1,1,2-TRICHLOROETHANE	14.0	U	11.0	U	12.0	U	12.0	U	12.0	U	19.0	U	11.0	U
1,1-DICHLOROETHANE	14.0	U	11.0	U	12.0	U	12.0	U	12.0	U	19.0	U	11.0	U
1,1-DICHLOROETHENE	14.0	U	11.0	U	12.0	U	12.0	U	12.0	U	19.0	U	11.0	U
1,2-DICHLOROETHANE	14.0	U	11.0	U	12.0	U	12.0	U	12.0	U	19.0	U	11.0	U
1,2-DICHLOROETHENE (TOTAL)	14.0	U	11.0	U	12.0	U	12.0	U	12.0	U	19.0	U	11.0	U
1,2-DICHLOROPROPANE	14.0	U	11.0	U	12.0	U	12.0	U	12.0	U	19.0	U	11.0	U
2-BUTANONE	14.0	U	11.0	U	12.0	U	12.0	U	12.0	U	19.0	U	11.0	U
2-HEXANONE	14.0	U	11.0	U	12.0	U	12.0	U	12.0	UJ	19.0	U	11.0	U
4-METHYL-2-PENTANONE	14.0	U	11.0	U	12.0	U	12.0	U	12.0	UJ	19.0	U	11.0	U
ACETONE	5.0	B	2.0	B	2.0	B	2.0	B	4.0	B	19.0	U	3.0	B
BENZENE	14.0	U	11.0	U	12.0	U	12.0	U	12.0	U	19.0	U	11.0	U
BROMODICHLOROMETHANE	14.0	U	11.0	U	12.0	U	12.0	U	12.0	U	19.0	U	11.0	U
BROMOFORM	14.0	U	11.0	U	12.0	U	12.0	U	12.0	U	19.0	U	11.0	U
BROMOMETHANE	14.0	U	11.0	U	12.0	U	12.0	U	12.0	U	19.0	U	11.0	U
CARBON DISULFIDE	14.0	U	11.0	U	12.0	U	12.0	U	12.0	U	19.0	U	11.0	U
CARBON TETRACHLORIDE	14.0	U	11.0	U	12.0	U	12.0	U	12.0	U	19.0	U	11.0	U
CHLOROBENZENE	14.0	U	11.0	U	12.0	U	12.0	U	12.0	UJ	19.0	U	11.0	U
CHLOROETHANE	14.0	U	11.0	U	12.0	U	12.0	U	12.0	U	19.0	U	11.0	U
CHLOROFORM	14.0	U	11.0	U	12.0	U	12.0	U	12.0	U	19.0	U	11.0	U
CHLOROMETHANE	14.0	U	11.0	U	12.0	U	12.0	U	12.0	U	19.0	U	11.0	U
CIS-1,3-DICHLOROPROPENE	14.0	U	11.0	U	12.0	U	12.0	U	12.0	U	19.0	U	11.0	U
DIBROMOCHLOROMETHANE	14.0	U	11.0	U	12.0	U	12.0	U	12.0	U	19.0	U	11.0	U
ETHYLBENZENE	14.0	U	11.0	U	12.0	U	12.0	U	12.0	UJ	19.0	U	11.0	U
METHYLENE CHLORIDE	4.0	B	3.0	B	5.0	B	6.0	B	12.0	U	10.0	B	4.0	B
STYRENE	14.0	U	11.0	U	12.0	U	12.0	U	12.0	UJ	19.0	U	11.0	U
TETRACHLOROETHENE	14.0	U	11.0	U	12.0	U	12.0	U	12.0	UJ	19.0	U	11.0	U
TOLUENE	14.0	U	11.0	U	12.0	U	12.0	U	12.0	UJ	19.0	U	11.0	U
TRANS-1,3-DICHLOROPROPENE	14.0	U	11.0	U	12.0	U	12.0	U	12.0	U	19.0	U	11.0	U
TRICHLOROETHENE	14.0	U	11.0	U	12.0	U	12.0	U	12.0	U	19.0	U	11.0	U
VINYL CHLORIDE	14.0	U	11.0	U	12.0	U	12.0	U	12.0	U	19.0	U	11.0	U
XYLENE (TOTAL)	14.0	U	11.0	U	12.0	U	12.0	U	12.0	UJ	19.0	U	11.0	U

TABLE 6

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NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

VOLATILE ORGANIC RESULTS FOR SUBSURFACE SOIL SITE 6

UG/KG

DRAFT

SAMPLE NUMBER:	S6-TP07-01		S6-TP08-01		S6-TP09-01		S6-TP10-01		S6-TP10-02		S6-TP12-01		S6-TP12-02	
VOLATILES														
1,1,1-TRICHLOROETHANE	12.0	U	18.0	U	12.0	U	16000	U	12.0	U	14.0	U	4.0	J
1,1,2,2-TETRACHLOROETHANE	12.0	U	18.0	UJ	12.0	U	16000	U	12.0	U	14.0	U	16 0	UJ
1,1,2-TRICHLOROETHANE	12.0	U	18.0	U	12.0	U	16000	U	12.0	U	14.0	U	16.0	UJ
1,1-DICHLOROETHANE	12.0	U	18.0	U	12.0	U	16000	U	12.0	U	14.0	U	16.0	U
1,1-DICHLOROETHENE	12.0	U	18.0	U	12.0	U	16000	U	12.0	U	14 0	U	16.0	U
1,2-DICHLOROETHANE	12.0	U	18.0	U	12.0	U	16000	U	12.0	U	14.0	U	16.0	U
1,2-DICHLOROETHENE (TOTAL)	12.0	U	18.0	U	12.0	U	16000	U	12.0	U	14.0	U	16.0	U
1,2-DICHLOROPROPANE	12.0	U	18.0	U	12.0	U	16000	U	12.0	U	14.0	U	16.0	UJ
2-BUTANONE	12.0	U	18.0	U	12.0	U	16000	U	12.0	U	14 0	U	16 0	U
2-HEXANONE	12.0	U	18.0	UJ	12.0	U	16000	U	12.0	U	14.0	U	16.0	UJ
4-METHYL-2-PENTANONE	12.0	U	18.0	UJ	12.0	U	16000	U	12.0	U	14 0	U	16.0	UJ
ACETONE	12.0	U	18.0	U	2.0	B	10000	J	2.0	B	6.0	B	4.0	B
BENZENE	12.0	U	18.0	U	12.0	U	16000	U	12.0	U	14.0	U	16.0	UJ
BROMODICHLOROMETHANE	12.0	U	18.0	U	12.0	U	16000	U	12.0	U	14.0	U	16.0	UJ
BROMOFORM	12.0	U	18.0	U	12.0	U	16000	U	12.0	U	14.0	U	16.0	UJ
BROMOMETHANE	12.0	U	18.0	U	12.0	U	16000	U	12.0	U	14.0	U	16.0	U
CARBON DISULFIDE	12.0	U	18.0	U	12.0	U	16000	U	12.0	U	14.0	U	16.0	U
CARBON TETRACHLORIDE	12.0	U	18.0	U	12.0	U	16000	U	12.0	U	14.0	U	16 0	UJ
CHLOROBENZENE	12.0	U	18.0	UJ	12.0	U	16000	U	12.0	U	14.0	U	16.0	UJ
CHLOROETHANE	12.0	U	18.0	U	12.0	U	16000	U	12.0	U	14.0	U	16.0	U
CHLOROFORM	12.0	U	18.0	U	12.0	U	16000	U	12.0	U	14.0	U	4.0	B
CHLOROMETHANE	12.0	U	18.0	U	12.0	U	16000	U	12.0	U	14.0	U	16.0	U
CIS-1,3-DICHLOROPROPENE	12.0	U	18.0	U	12.0	U	16000	U	12.0	U	14.0	U	16.0	UJ
DIBROMOCHLOROMETHANE	12.0	U	18.0	U	12.0	U	16000	U	12.0	U	14.0	U	16.0	UJ
ETHYLBENZENE	12.0	U	18.0	UJ	12.0	U	140000		12.0	U	7.0	J	16.0	UJ
METHYLENE CHLORIDE	12.0	U	18.0	U	3 0	B	4700	B	3 0	B	3.0	B	6.0	B
STYRENE	12 0	U	18.0	UJ	12.0	U	16000	U	12.0	U	14 0	U	16.0	UJ
TETRACHLOROETHENE	12.0	U	18.0	UJ	12.0	U	16000	U	12.0	U	14.0	U	16.0	UJ
TOLUENE	12.0	U	18.0	UJ	12.0	U	50000		12.0	U	14.0	U	16.0	UJ
TRANS-1,3-DICHLOROPROPENE	12.0	U	18.0	U	12.0	U	16000	U	12.0	U	14.0	U	16.0	UJ
TRICHLOROETHENE	12.0	U	18.0	U	12.0	U	16000	U	12.0	U	14.0	U	16.0	UJ
VINYL CHLORIDE	12.0	U	18.0	U	12.0	U	16000	U	12.0	U	14.0	U	16.0	U
XYLENE (TOTAL)	12.0	U	18.0	UJ	12.0	U	180000		3.0	J	43.0		16.0	UJ

TABLE 6

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NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

VOLATILE ORGANIC RESULTS FOR SUBSURFACE SOIL SITE 6

UG/KG

DRAFT

SAMPLE NUMBER:	S6-TP13-01		S6-TP14-01		S6-TP14-02		S6-TP14-03		S6-TP14-04		S6-TP15-01		S6-TP17-01	
VOLATILES														
1,1,1-TRICHLOROETHANE	12.0	U	4200	U	12.0	U	13.0	U	11.0	U	12.0	UJ	13.0	U
1,1,2,2-TETRACHLOROETHANE	12.0	U	4200	U	12.0	U	13.0	U	11.0	U	12.0	UJ	13.0	U
1,1,2-TRICHLOROETHANE	12.0	U	4200	U	12.0	U	13.0	U	11.0	U	12.0	UJ	13.0	U
1,1-DICHLOROETHANE	12.0	U	4200	U	12.0	U	13.0	U	11.0	U	12.0	U	13.0	U
1,1-DICHLOROETHENE	12.0	U	4200	U	12.0	U	13.0	U	11.0	U	12.0	U	13.0	U
1,2-DICHLOROETHANE	12.0	U	4200	U	12.0	U	13.0	U	11.0	U	12.0	U	13.0	U
1,2-DICHLOROETHENE (TOTAL)	12.0	U	4200	U	12.0	U	13.0	U	11.0	U	12.0	U	13.0	U
1,2-DICHLOROPROPANE	12.0	U	4200	U	12.0	U	13.0	U	11.0	U	12.0	UJ	13.0	U
2-BUTANONE	12.0	U	4200	U	12.0	U	13.0	U	11.0	U	12.0	U	13.0	U
2-HEXANONE	12.0	U	4200	U	12.0	U	13.0	U	11.0	U	12.0	UJ	13.0	U
4-METHYL-2-PENTANONE	12.0	U	4200	U	12.0	U	13.0	U	11.0	U	12.0	UJ	13.0	U
ACETONE	3.0	B	2600	J	12.0	U	2.0	B	2.0	B	12.0	U	13.0	U
BENZENE	12.0	U	4200	U	12.0	U	13.0	U	11.0	U	12.0	UJ	13.0	U
BROMODICHLOROMETHANE	12.0	U	4200	U	12.0	U	13.0	U	11.0	U	12.0	UJ	13.0	U
BROMOFORM	12.0	U	4200	U	12.0	U	13.0	U	11.0	U	12.0	UJ	13.0	U
BROMOMETHANE	12.0	U	4200	U	12.0	U	13.0	U	11.0	U	12.0	U	13.0	U
CARBON DISULFIDE	12.0	U	4200	U	12.0	U	13.0	U	11.0	U	12.0	U	13.0	U
CARBON TETRACHLORIDE	12.0	U	4200	U	12.0	U	13.0	U	11.0	U	12.0	UJ	13.0	U
CHLOROBENZENE	12.0	U	4200	U	12.0	U	13.0	U	11.0	U	12.0	UJ	13.0	U
CHLOROETHANE	12.0	U	4200	U	12.0	U	13.0	U	11.0	U	12.0	U	13.0	U
CHLOROFORM	12.0	U	4200	U	12.0	U	13.0	U	11.0	U	12.0	U	13.0	U
CHLOROMETHANE	12.0	U	4200	U	12.0	U	13.0	U	11.0	U	12.0	U	13.0	U
CIS-1,3-DICHLOROPROPENE	12.0	U	4200	U	12.0	U	13.0	U	11.0	U	12.0	UJ	13.0	U
DIBROMOCHLOROMETHANE	12.0	U	4200	U	12.0	U	13.0	U	11.0	U	12.0	UJ	13.0	U
ETHYLBENZENE	12.0	U	2200	J	12.0	U	13.0	U	11.0	U	12.0	UJ	13.0	U
METHYLENE CHLORIDE	6.0	B	4200	U	1.0	B	3.0	B	3.0	B	5.0	B	13.0	U
STYRENE	12.0	U	4200	U	12.0	U	13.0	U	11.0	U	12.0	UJ	13.0	U
TETRACHLOROETHENE	12.0	U	4200	U	12.0	U	13.0	U	11.0	U	12.0	UJ	13.0	U
TOLUENE	12.0	U	690	J	12.0	U	13.0	U	11.0	U	12.0	UJ	13.0	U
TRANS-1,3-DICHLOROPROPENE	12.0	U	4200	U	12.0	U	13.0	U	11.0	U	12.0	UJ	13.0	U
TRICHLOROETHENE	12.0	U	4200	U	12.0	U	13.0	U	11.0	U	12.0	UJ	13.0	U
VINYL CHLORIDE	12.0	U	4200	U	12.0	U	13.0	U	11.0	U	12.0	U	13.0	U
XYLENE (TOTAL)	12.0	U	21000		12.0	U	13.0	U	11.0	U	12.0	UJ	13.0	U

TABLE 6

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NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

VOLATILE ORGANIC RESULTS FOR SUBSURFACE SOIL SITE 6

UG/KG

DRAFT

SAMPLE NUMBER:	S6-TP17-02		S6-TP18-01		S6-TP18-02		S6-TP19-01		S6-TP19-02		S6-TP21-01		S6-TP21-02	
VOLATILES														
1,1,1-TRICHLOROETHANE	13.0	U	62.0	U	12.0	U	20.0	U	12.0	U	27.0	U	29 0	U
1,1,2,2-TETRACHLOROETHANE	13.0	UJ	62.0	U	12.0	U	20.0	U	12.0	UJ	27.0	U	29 0	U
1,1,2-TRICHLOROETHANE	13.0	U	62.0	U	12.0	U	20.0	U	12.0	U	27.0	U	29 0	U
1,1-DICHLOROETHANE	13.0	U	62.0	U	12.0	U	20.0	U	12 0	U	27.0	U	29.0	U
1,1-DICHLOROETHENE	13.0	U	62 0	U	12.0	U	20.0	U	12.0	U	27.0	U	29 0	U
1,2-DICHLOROETHANE	13.0	U	62.0	U	12.0	U	20.0	U	12.0	U	27 0	U	29.0	U
1,2-DICHLOROETHENE (TOTAL)	13.0	U	62.0	U	12.0	U	20.0	U	12.0	U	27.0	U	29.0	U
1,2-DICHLOROPROPANE	13.0	U	62 0	U	12.0	U	20.0	U	12.0	U	27.0	U	29.0	U
2-BUTANONE	13.0	U	62.0	U	12.0	U	20.0	U	12.0	U	76.0	J	82 0	J
2-HEXANONE	13.0	UJ	62.0	U	12.0	U	20.0	U	12.0	UJ	27.0	U	29.0	U
4-METHYL-2-PENTANONE	13 0	UJ	62.0	U	12.0	U	20.0	U	12.0	UJ	27.0	U	29.0	U
ACETONE	3.0	B	14.0	B	3.0	B	12.0	B	12.0	U	390	J	370	J
BENZENE	13.0	U	62.0	U	12.0	U	20.0	U	12.0	U	27.0	U	29.0	U
BROMODICHLOROMETHANE	13.0	U	62.0	U	12.0	U	20.0	U	12.0	U	27.0	U	29.0	U
BROMOFORM	13 0	U	62.0	U	12.0	U	20.0	U	12.0	U	27.0	U	29.0	U
BROMOMETHANE	13.0	U	62.0	U	12.0	U	20.0	U	12.0	U	27.0	U	29.0	U
CARBON DISULFIDE	13.0	U	62.0	U	12.0	U	20.0	U	12.0	U	27.0	U	29.0	U
CARBON TETRACHLORIDE	13.0	U	62.0	U	12.0	U	20.0	U	12.0	U	27.0	U	29.0	U
CHLOROBENZENE	13.0	UJ	62.0	U	12.0	U	20.0	U	12 0	UJ	27 0	U	29.0	U
CHLOROETHANE	13.0	U	62.0	U	12.0	U	20 0	U	12.0	U	27.0	U	29.0	U
CHLOROFORM	13.0	U	62.0	U	12.0	U	20.0	U	12.0	U	27.0	U	29.0	U
CHLOROMETHANE	13.0	U	62.0	U	12.0	U	20.0	U	12.0	U	27.0	U	29.0	U
CIS-1,3-DICHLOROPROPENE	13.0	U	62.0	U	12.0	U	20.0	U	12.0	U	27.0	U	29.0	U
DIBROMOCHLOROMETHANE	13.0	U	62.0	U	12.0	U	20.0	U	12.0	U	27.0	U	29 0	U
ETHYLBENZENE	13.0	UJ	62.0	U	12.0	U	20.0	U	12.0	UJ	27.0	U	29.0	U
METHYLENE CHLORIDE	2.0	B	13.0	B	5 0	B	20.0	U	5.0	B	19.0	B	19.0	B
STYRENE	13.0	UJ	62.0	U	12.0	U	20.0	U	12.0	UJ	27.0	U	29.0	U
TETRACHLOROETHENE	13.0	UJ	62.0	U	12.0	U	20.0	U	12 0	UJ	27.0	U	29.0	U
TOLUENE	13.0	UJ	62.0	U	12.0	U	20.0	U	12.0	UJ	27.0	U	29.0	U
TRANS-1,3-DICHLOROPROPENE	13.0	U	62.0	U	12.0	U	20.0	U	12.0	U	27.0	U	29 0	U
TRICHLOROETHENE	13.0	U	62.0	U	12.0	U	20.0	U	12.0	U	27.0	U	29.0	U
VINYL CHLORIDE	13.0	U	62.0	U	12.0	U	20.0	U	12.0	U	27.0	U	29.0	U
XYLENE (TOTAL)	13.0	UJ	62.0	U	12.0	U	20.0	U	12.0	UJ	27.0	U	29.0	U

TABLE 6

06/13/96

NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

VOLATILE ORGANIC RESULTS FOR SUBSURFACE SOIL SITE 6

UG/KG

DRAFT

SAMPLE NUMBER:	S6-TP22-01		S6-TP23-01		S6-TP24-01		S6-TP24-02		S6-TP26-01		S6-TP26-02		S6-TP26-03	
VOLATILES														
1,1,1-TRICHLOROETHANE	12.0	U	70.0	U	190	UJ	75.0	U	16.0	U	20.0	U	13.0	U
1,1,2,2-TETRACHLOROETHANE	12.0	U	70.0	U	190	UJ	75.0	U	16.0	U	20.0	UJ	13 0	U
1,1,2-TRICHLOROETHANE	12.0	U	70.0	U	190	UJ	75.0	U	16.0	U	20.0	U	13.0	U
1,1-DICHLOROETHANE	12.0	U	70 0	U	190	UJ	75.0	U	16.0	U	20 0	U	13 0	U
1,1-DICHLOROETHENE	12.0	U	70.0	U	190	UJ	75.0	U	16.0	U	20.0	U	13 0	U
1,2-DICHLOROETHANE	12.0	U	70.0	U	190	UJ	75.0	U	16.0	U	20.0	U	13.0	U
1,2-DICHLOROETHENE (TOTAL)	12.0	U	120		200	J	92.0		16.0	U	20.0	U	13.0	U
1,2-DICHLOROPROPANE	12.0	U	70.0	U	190	UJ	75.0	U	16.0	U	20.0	U	13 0	U
2-BUTANONE	12.0	U	70.0	U	190	UJ	75.0	U	16 0	U	20.0	U	13.0	U
2-HEXANONE	12.0	U	70.0	U	190	UJ	75.0	U	16.0	U	20.0	UJ	13 0	U
4-METHYL-2-PENTANONE	12.0	U	70.0	U	190	UJ	75.0	U	16.0	U	20.0	UJ	13.0	U
ACETONE	4.0	B	14.0	B	27.0	B	75.0	U	4.0	B	12 0	B	13 0	U
BENZENE	12.0	U	70.0	U	190	UJ	75.0	U	16.0	U	20.0	U	13.0	U
BROMODICHLOROMETHANE	12.0	U	70.0	U	190	UJ	75.0	U	16.0	U	20.0	U	13.0	U
BROMOFORM	12.0	U	70.0	U	190	UJ	75.0	U	16.0	U	20.0	U	13.0	U
BROMOMETHANE	12.0	U	70.0	U	190	UJ	75.0	U	16.0	U	20.0	U	13.0	U
CARBON DISULFIDE	12.0	U	70.0	U	190	UJ	75.0	U	16.0	U	20.0	U	13.0	U
CARBON TETRACHLORIDE	12.0	U	70.0	U	190	UJ	75.0	U	16.0	U	20.0	U	13 0	U
CHLOROBENZENE	12.0	U	70.0	U	190	UJ	75.0	U	16.0	U	20.0	UJ	13.0	U
CHLOROETHANE	12.0	U	70.0	U	190	UJ	75.0	U	16.0	U	20 0	U	13.0	U
CHLOROFORM	12.0	U	70.0	U	190	UJ	75.0	U	16.0	U	20.0	U	13.0	U
CHLOROMETHANE	12.0	U	70.0	U	190	UJ	75.0	U	16.0	U	20.0	U	13.0	U
CIS-1,3-DICHLOROPROPENE	12.0	U	70.0	U	190	UJ	75 0	U	16.0	U	20.0	U	13.0	U
DIBROMOCHLOROMETHANE	12.0	U	70.0	U	190	UJ	75.0	U	16.0	U	20.0	U	13.0	U
ETHYLBENZENE	12.0	U	70.0	U	190	UJ	75.0	U	16.0	U	20.0	UJ	13.0	U
METHYLENE CHLORIDE	4.0	B	27.0	B	58.0	B	24.0	B	4.0	B	20.0	U	2.0	B
STYRENE	12.0	U	70.0	U	190	UJ	75.0	U	16.0	U	20.0	UJ	13.0	U
TETRACHLOROETHENE	12.0	U	100		450	J	280		5.0	J	3.0	J	13.0	U
TOLUENE	12.0	U	70.0	U	190	UJ	75.0	U	16.0	U	20.0	UJ	13.0	U
TRANS-1,3-DICHLOROPROPENE	12.0	U	70.0	U	190	UJ	75.0	U	16.0	U	20.0	U	13.0	U
TRICHLOROETHENE	12.0	U	690		2500	J	1000		16.0	U	20.0	U	13.0	U
VINYL CHLORIDE	12.0	U	70.0	U	190	UJ	75.0	U	16.0	U	20.0	U	13.0	U
XYLENE (TOTAL)	12.0	U	70.0	U	190	UJ	75.0	U	16.0	U	20.0	UJ	13.0	U

TABLE 6

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NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

VOLATILE ORGANIC RESULTS FOR SUBSURFACE SOIL SITE 6

UG/KG

DRAFT

SAMPLE NUMBER:	SB-06-01		SB-06-02		SB-06-03						
VOLATILES											
1,1,1-TRICHLOROETHANE	11.0	U	11.0	U	12.0	U					
1,1,2,2-TETRACHLOROETHANE	11.0	U	11.0	U	12.0	U					
1,1,2-TRICHLOROETHANE	11.0	U	11.0	U	12.0	U					
1,1-DICHLOROETHANE	11.0	U	11.0	U	12.0	U					
1,1-DICHLOROETHENE	11.0	U	11.0	U	12.0	U					
1,2-DICHLOROETHANE	11.0	U	11.0	U	12.0	U					
1,2-DICHLOROETHENE (TOTAL)	11.0	U	11.0	U	12.0	U					
1,2-DICHLOROPROPANE	11.0	U	11.0	U	12.0	U					
2-BUTANONE	11.0	U	11.0	U	12.0	U					
2-HEXANONE	11.0	U	11.0	U	12.0	U					
4-METHYL-2-PENTANONE	11.0	U	11.0	U	12.0	U					
ACETONE	11.0	U	11.0	U	12.0	U					
BENZENE	11.0	U	11.0	U	12.0	U					
BROMODICHLOROMETHANE	11.0	U	11.0	U	12.0	U					
BROMOFORM	11.0	U	11.0	U	12.0	U					
BROMOMETHANE	11.0	U	11.0	U	12.0	U					
CARBON DISULFIDE	11.0	U	2.0	J	12.0	U					
CARBON TETRACHLORIDE	11.0	U	11.0	U	12.0	U					
CHLOROBENZENE	11.0	U	11.0	U	12.0	U					
CHLOROETHANE	11.0	U	11.0	U	12.0	U					
CHLOROFORM	11.0	U	11.0	U	12.0	U					
CHLOROMETHANE	11.0	U	11.0	U	12.0	U					
CIS-1,3-DICHLOROPROPENE	11.0	U	11.0	U	12.0	U					
DIBROMOCHLOROMETHANE	11.0	U	11.0	U	12.0	U					
ETHYLBENZENE	11.0	U	11.0	U	12.0	U					
METHYLENE CHLORIDE	11.0	U	11.0	U	12.0	U					
STYRENE	11.0	U	11.0	U	12.0	U					
TETRACHLOROETHENE	10.0	B	6.0	B	12.0	U					
TOLUENE	11.0	U	11.0	U	12.0	U					
TRANS-1,3-DICHLOROPROPENE	11.0	U	11.0	U	12.0	U					
TRICHLOROETHENE	11.0	U	11.0	U	12.0	U					
VINYL CHLORIDE	11.0	U	11.0	U	12.0	U					
XYLENE (TOTAL)	11.0	U	11.0	U	12.0	U					

TABLE 7

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NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

SEMIVOLATILE ORGANIC RESULTS FOR SUBSURFACE SOIL SITE 6

UG/KG

DRAFT

SAMPLE NUMBER:	S6-SB09-02		S6-SB12-02		S6-TP10-01		S6-TP10-02		S6-TP13-01		S6-TP14-01		S6-TP14-02	
SEMIVOLATILES														
1,2,4-TRICHLOROBENZENE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
1,2-DICHLOROBENZENE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
1,3-DICHLOROBENZENE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
1,4-DICHLOROBENZENE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
2,2'-OXYBIS(1-CHLOROPROPANE)	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
2,4,5-TRICHLOROPHENOL	1000	UJ	1100	UJ	3000000	UJ	980	UJ	1000	UJ	41000	UJ	990	UJ
2,4,6-TRICHLOROPHENOL	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
2,4-DICHLOROPHENOL	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
2,4-DIMETHYLPHENOL	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
2,4-DINITROPHENOL	1000	UJ	1100	UJ	3000000	UJ	980	UJ	1000	UJ	41000	UJ	990	UJ
2,4-DINITROTOLUENE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
2,6-DINITROTOLUENE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
2-CHLORONAPHTHALENE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
2-CHLOROPHENOL	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
2-METHYLNAPHTHALENE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	6700	J	400	UJ
2-METHYLPHENOL	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
2-NITROANILINE	1000	UJ	1100	UJ	3000000	UJ	980	UJ	1000	UJ	41000	UJ	990	UJ
2-NITROPHENOL	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
3,3'-DICHLOROBENZIDINE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
3-NITROANILINE	1000	UJ	1100	UJ	3000000	UJ	980	UJ	1000	UJ	41000	UJ	990	UJ
4,6-DINITRO-2-METHYLPHENOL	1000	UJ	1100	UJ	3000000	UJ	980	UJ	1000	UJ	41000	UJ	990	UJ
4-BROMOPHENYL PHENYL ETHER	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
4-CHLORO-3-METHYLPHENOL	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
4-CHLOROANILINE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
4-CHLOROPHENYL PHENYL ETHER	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
4-METHYLPHENOL	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
4-NITROANILINE	1000	UJ	1100	UJ	3000000	UJ	980	UJ	1000	UJ	41000	UJ	990	UJ
4-NITROPHENOL	1000	UJ	1100	UJ	3000000	UJ	980	UJ	1000	UJ	41000	UJ	990	UJ
ACENAPHTHENE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
ACENAPHTHYLENE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
ANTHRACENE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
BENZ(A)ANTHRACENE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	61.0	J
BENZO(A)PYRENE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	68.0	J
BENZO(B)FLUORANTHENE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	89.0	J
BENZO(G,H,I)PERYLENE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	53.0	J

TABLE 7

06/13/96

NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

SEMIVOLATILE ORGANIC RESULTS FOR SUBSURFACE SOIL SITE 6

UG/KG

DRAFT

SAMPLE NUMBER:	S6-SB09-02		S6-SB12-02		S6-TP10-01		S6-TP10-02		S6-TP13-01		S6-TP14-01		S6-TP14-02	
SEMIVOLATILES														
BENZO(K)FLUORANTHENE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
BIS(2-CHLOROETHOXY)METHANE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
BIS(2-CHLOROETHYL)ETHER	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
BIS(2-ETHYLHEXYL)PHTHALATE	400	UJ	420	UJ	1200000	UJ	45.0	B	400	UJ	1900	J	180	B
BUTYLBENZYLPHTHALATE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	5100	J	400	UJ
CARBAZOLE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
CHRYSENE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	65.0	J
DI-N-BUTYLPHTHALATE	400	UJ	44.0	J	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
DI-N-OCTYLPHTHALATE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
DIBENZOFURAN	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
DIETHYLPHTHALATE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
DIMETHYLPHTHALATE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
FLUORANTHENE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	130	J
FLUORENE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
HEXACHLOROBENZENE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
HEXACHLOROBUTADIENE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
HEXACHLOROCYCLOPENTADIENE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
HEXACHLOROETHANE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
INDENO(1,2,3-CD)PYRENE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	46.0	J
ISOPHORONE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
N-NITROSO-DI-N-PROPYLAMINE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
N-NITROSODIPHENYLAMINE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
NAPHTHALENE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
NITROBENZENE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	400	UJ
PENTACHLOROPHENOL	1000	UJ	1100	UJ	3000000	UJ	980	UJ	1000	UJ	41000	UJ	990	UJ
PHENANTHRENE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	78.0	J
PHENOL	400	UJ	420	UJ	1200000	UJ	300	B	400	UJ	16000	UJ	330	B
PYRENE	400	UJ	420	UJ	1200000	UJ	390	UJ	400	UJ	16000	UJ	120	J

TABLE 7

NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

SEMIVOLATILE ORGANIC RESULTS FOR SUBSURFACE SOIL SITE 6

UG/KG

SAMPLE NUMBER:	S6-TP14-03		S6-TP14-04		S6-TP18-01		S6-TP18-02		S6-TP21-01		S6-TP21-02		SB-06-01	
SEMIVOLATILES														
1,2,4-TRICHLOROBENZENE	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
1,2-DICHLOROBENZENE	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
1,3-DICHLOROBENZENE	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
1,4-DICHLOROBENZENE	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
2,2'-OXYBIS(1-CHLOROPROPANE)	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
2,4,5-TRICHLOROPHENOL	1200	UJ	1000	UJ	30000	UJ	1000	UJ	12000	UJ	1000	UJ	920	U
2,4,6-TRICHLOROPHENOL	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
2,4-DICHLOROPHENOL	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
2,4-DIMETHYLPHENOL	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
2,4-DINITROPHENOL	1200	UJ	1000	UJ	30000	UJ	1000	UJ	12000	UJ	1000	UJ	920	U
2,4-DINITROTOLUENE	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
2,6-DINITROTOLUENE	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
2-CHLORONAPHTHALENE	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
2-CHLOROPHENOL	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
2-METHYLNAPHTHALENE	490	UJ	400	UJ	12000	UJ	50.0	J	4600	UJ	410	UJ	380	U
2-METHYLPHENOL	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
2-NITROANILINE	1200	UJ	1000	UJ	30000	UJ	1000	UJ	12000	UJ	1000	UJ	920	U
2-NITROPHENOL	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
3,3'-DICHLOROBENZIDINE	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
3-NITROANILINE	1200	UJ	1000	UJ	30000	UJ	1000	UJ	12000	UJ	1000	UJ	920	U
4,6-DINITRO-2-METHYLPHENOL	1200	UJ	1000	UJ	30000	UJ	1000	UJ	12000	UJ	1000	UJ	920	U
4-BROMOPHENYL PHENYL ETHER	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
4-CHLORO-3-METHYLPHENOL	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
4-CHLOROANILINE	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
4-CHLOROPHENYL PHENYL ETHER	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
4-METHYLPHENOL	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
4-NITROANILINE	1200	UJ	1000	UJ	30000	UJ	1000	UJ	12000	UJ	1000	UJ	920	U
4-NITROPHENOL	1200	UJ	1000	UJ	30000	UJ	1000	UJ	12000	UJ	1000	UJ	920	U
ACENAPHTHENE	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
ACENAPHTHYLENE	61.0	J	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
ANTHRACENE	490	UJ	400	UJ	12000	UJ	410	UJ	560	J	63.0	J	380	U
BENZ(A)ANTHRACENE	200	J	400	UJ	12000	UJ	410	UJ	2600	J	340	J	380	U
BENZO(A)PYRENE	390	J	400	UJ	12000	UJ	410	UJ	2400	J	370	J	380	U
BENZO(B)FLUORANTHENE	400	J	400	UJ	12000	UJ	410	UJ	3400	J	600	J	380	U
BENZO(G,H,I)PERYLENE	300	J	400	UJ	2000	J	410	UJ	1400	J	280	J	380	U

TABLE 7

NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

SEMIVOLATILE ORGANIC RESULTS FOR SUBSURFACE SOIL SITE 6

UG/KG

SAMPLE NUMBER:	S6-TP14-03		S6-TP14-04		S6-TP18-01		S6-TP18-02		S6-TP21-01		S6-TP21-02		SB-06-01	
SEMIVOLATILES														
BENZO(K)FLUORANTHENE	180	J	400	UJ	12000	UJ	410	UJ	1300	J	160	J	380	U
BIS(2-CHLOROETHOXY)METHANE	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
BIS(2-CHLOROETHYL)ETHER	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
BIS(2-ETHYLHEXYL)PHTHALATE	490	UJ	210	B	1800	J	67.0	J	4600	UJ	94.0	J	380	U
BUTYLBENZYLPHTHALATE	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
CARBAZOLE	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	74.0	J	380	U
CHRYSENE	240	J	400	UJ	3300	J	410	UJ	2200	J	430	J	380	U
DI-N-BUTYLPHTHALATE	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
DI-N-OCTYLPHTHALATE	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
DIBENZOFURAN	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
DIETHYLPHTHALATE	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
DIMETHYLPHTHALATE	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
FLUORANTHENE	150	J	44.0	J	12000	UJ	54.0	J	5800	J	770	J	380	U
FLUORENE	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
HEXACHLOROBENZENE	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
HEXACHLOROBUTADIENE	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
HEXACHLOROCYCLOPENTADIENE	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
HEXACHLOROETHANE	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
INDENO(1,2,3-CD)PYRENE	260	J	400	UJ	12000	UJ	410	UJ	1400	J	260	J	380	U
ISOPHORONE	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
N-NITROSO-DI-N-PROPYLAMINE	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
N-NITROSODIPHENYLAMINE	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
NAPHTHALENE	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	76.0	J	380	U
NITROBENZENE	490	UJ	400	UJ	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
PENTACHLOROPHENOL	1200	UJ	1000	UJ	30000	UJ	1000	UJ	12000	UJ	1000	UJ	920	U
PHENANTHRENE	50.0	J	400	UJ	12000	UJ	410	UJ	2800	J	430	J	380	U
PHENOL	490	UJ	260	B	12000	UJ	410	UJ	4600	UJ	410	UJ	380	U
PYRENE	240	J	400	UJ	3000	J	50.0	J	3900	J	680	J	380	U

TABLE 7

06/13/96

NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

SEMIVOLATILE ORGANIC RESULTS FOR SUBSURFACE SOIL SITE 6

UG/KG

DRAFT

SAMPLE NUMBER:	SB-06-02		SB-06-03						
SEMIVOLATILES									
1,2,4-TRICHLOROBENZENE	370	U	370	U					
1,2-DICHLOROBENZENE	370	U	370	U					
1,3-DICHLOROBENZENE	370	U	370	U					
1,4-DICHLOROBENZENE	370	U	370	U					
2,2'-OXYBIS(1-CHLOROPROPANE)	370	U	370	U					
2,4,5-TRICHLOROPHENOL	900	U	890	U					
2,4,6-TRICHLOROPHENOL	370	U	370	U					
2,4-DICHLOROPHENOL	370	U	370	U					
2,4-DIMETHYLPHENOL	370	U	370	U					
2,4-DINITROPHENOL	900	U	890	U					
2,4-DINITROTOLUENE	370	U	370	U					
2,6-DINITROTOLUENE	370	U	370	U					
2-CHLORONAPHTHALENE	370	U	370	U					
2-CHLOROPHENOL	370	U	370	U					
2-METHYLNAPHTHALENE	370	U	370	U					
2-METHYLPHENOL	370	U	370	U					
2-NITROANILINE	900	U	890	U					
2-NITROPHENOL	370	U	370	U					
3,3'-DICHLOROBENZIDINE	370	U	370	U					
3-NITROANILINE	900	U	890	U					
4,6-DINITRO-2-METHYLPHENOL	900	U	890	U					
4-BROMOPHENYL PHENYL ETHER	370	U	370	U					
4-CHLORO-3-METHYLPHENOL	370	U	370	U					
4-CHLOROANILINE	370	U	370	U					
4-CHLOROPHENYL PHENYL ETHER	370	U	370	U					
4-METHYLPHENOL	370	U	370	U					
4-NITROANILINE	900	U	890	U					
4-NITROPHENOL	900	U	890	U					
ACENAPHTHENE	370	U	370	U					
ACENAPHTHYLENE	370	U	370	U					
ANTHRACENE	370	U	370	U					
BENZ(A)ANTHRACENE	48.0	J	370	U					
BENZO(A)PYRENE	75.0	J	370	U					
BENZO(B)FLUORANTHENE	82.0	J	370	U					
BENZO(G,H,I)PERYLENE	370	U	370	U					

TABLE 7

06/13/96

NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

SEMIVOLATILE ORGANIC RESULTS FOR SUBSURFACE SOIL SITE 6

UG/KG

DRAFT

SAMPLE NUMBER:	SB-06-02		SB-06-03						
SEMIVOLATILES									
BENZO(K)FLUORANTHENE	370	U	370	U					
BIS(2-CHLOROETHOXY)METHANE	370	U	370	U					
BIS(2-CHLOROETHYL)ETHER	370	U	370	U					
BIS(2-ETHYLHEXYL)PHTHALATE	370	U	370	U					
BUTYLBENZYLPHTHALATE	370	U	370	U					
CARBAZOLE	370	U	370	U					
CHRYSENE	59.0	J	370	U					
DI-N-BUTYLPHTHALATE	370	U	370	U					
DI-N-OCTYLPHTHALATE	370	U	370	U					
DIBENZOFURAN	370	U	370	U					
DIETHYLPHTHALATE	370	U	370	U					
DIMETHYLPHTHALATE	370	U	370	U					
FLUORANTHENE	57.0	J	370	U					
FLUORENE	370	U	370	U					
HEXACHLOROBENZENE	370	U	370	U					
HEXACHLOROBUTADIENE	370	U	370	U					
HEXACHLOROCYCLOPENTADIENE	370	U	370	U					
HEXACHLOROETHANE	370	U	370	U					
INDENO(1,2,3-CD)PYRENE	370	U	370	U					
ISOPHORONE	370	U	370	U					
N-NITROSO-DI-N-PROPYLAMINE	370	U	370	U					
N-NITROSODIPHENYLAMINE	370	U	370	U					
NAPHTHALENE	370	U	370	U					
NITROBENZENE	370	U	370	U					
PENTACHLOROPHENOL	900	U	890	U					
PHENANTHRENE	370	U	370	U					
PHENOL	370	U	370	U					
PYRENE	73.0	J	370	U					

TABLE 8

06/13/96

NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

PESTICIDE/PCB RESULTS FOR SUBSURFACE SOIL SITE 6

UG/KG

DRAFT

SAMPLE NUMBER:	S6-SB09-02		S6-SB12-02		S6-TP02-01		S6-TP10-01		S6-TP10-02		S6-TP12-01		S6-TP13-01	
PESTICIDES														
4,4'-DDD	4.0	UJ	4.2	UJ	6.3	UJ	120	UJ	3.9	UJ	4.5	UJ	3.9	UJ
4,4'-DDE	4.0	UJ	4.2	UJ	6.3	UJ	120	UJ	3.9	UJ	4.5	UJ	3.9	UJ
4,4'-DDT	4.0	UJ	4.2	UJ	6.3	UJ	120	UJ	3.9	UJ	5 9	J	3.9	UJ
ALDRIN	2.1	UJ	2.2	UJ	3.2	UJ	61.0	UJ	2.0	UJ	2.3	UJ	2.0	UJ
ALPHA-BHC	2.1	UJ	2.2	UJ	3.2	UJ	61.0	UJ	2.0	UJ	2.3	UJ	2.0	UJ
ALPHA-CHLORDANE	2.1	UJ	2.2	UJ	8.4	J	61.0	UJ	2.0	UJ	5.9	J	2.0	UJ
AROCLOR-1016	40.0	UJ	42.0	UJ	63.0	UJ	1200	UJ	39.0	UJ	45.0	UJ	39.0	UJ
AROCLOR-1221	81.0	UJ	84.0	UJ	130	UJ	2400	UJ	80.0	UJ	91.0	UJ	80.0	UJ
AROCLOR-1232	40.0	UJ	42.0	UJ	63.0	UJ	1200	UJ	39.0	UJ	45.0	UJ	39.0	UJ
AROCLOR-1242	40.0	UJ	42.0	UJ	63.0	UJ	1200	UJ	39.0	UJ	45.0	UJ	39.0	UJ
AROCLOR-1248	40 0	UJ	42.0	UJ	63.0	UJ	1200	UJ	39.0	UJ	45.0	UJ	39.0	UJ
AROCLOR-1254	40.0	UJ	470	J	61.0	J	350	J	7.2	J	60 0	J	39.0	UJ
AROCLOR-1260	40.0	UJ	42.0	UJ	63.0	UJ	1200	UJ	39.0	UJ	45.0	UJ	39.0	UJ
BETA-BHC	2.1	UJ	2.2	UJ	3.2	UJ	61.0	UJ	2 0	UJ	2 3	UJ	2.0	UJ
DELTA-BHC	2.1	UJ	2.2	UJ	3.2	UJ	61.0	UJ	2 0	UJ	2.3	UJ	2.0	UJ
DIELDRIN	4.0	UJ	4.8	R	6.1	J	120	UJ	3.9	UJ	4.8	J	3.9	UJ
ENDOSULFAN I	2.1	UJ	2.2	UJ	3.2	UJ	61.0	UJ	2.0	UJ	2.3	UJ	2.0	UJ
ENDOSULFAN II	4.0	UJ	4.2	UJ	6.3	UJ	120	UJ	3.9	UJ	4.5	UJ	3.9	UJ
ENDOSULFAN SULFATE	4.0	UJ	4.2	UJ	6.3	UJ	120	UJ	3.9	UJ	4 5	UJ	3.9	UJ
ENDRIN	4.0	UJ	27.0	R	6.3	UJ	120	UJ	3.9	UJ	4.5	UJ	3.9	UJ
ENDRIN ALDEHYDE	4.0	UJ	4.2	UJ	6.3	UJ	120	UJ	3.9	UJ	4.5	UJ	3.9	UJ
ENDRIN KETONE	4.0	UJ	4.2	UJ	6.3	UJ	120	UJ	3.9	UJ	4.5	UJ	3.9	UJ
GAMMA-BHC (LINDANE)	2.1	UJ	2.2	UJ	3.2	UJ	61.0	UJ	2.0	UJ	2.3	UJ	2.0	UJ
GAMMA-CHLORDANE	2.1	UJ	2.2	UJ	9.2	J	61.0	UJ	2.0	UJ	7.9	J	2.0	UJ
HEPTACHLOR	2.1	UJ	2.2	UJ	3.2	UJ	61.0	UJ	2.0	UJ	2.3	UJ	2.0	UJ
HEPTACHLOR EPOXIDE	2.1	UJ	2.2	UJ	3.2	UJ	61.0	UJ	2.0	UJ	2.3	UJ	2.0	UJ
METHOXYCHLOR	21.0	UJ	22.0	UJ	32.0	UJ	610	UJ	20.0	UJ	23 0	UJ	20 0	UJ
TOXAPHENE	210	UJ	220	UJ	320	UJ	6100	UJ	200	UJ	230	UJ	200	UJ

TABLE 8

06/13/96

NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

PESTICIDE/PCB RESULTS FOR SUBSURFACE SOIL SITE 6

UG/KG

DRAFT

SAMPLE NUMBER:	S6-TP14-01		S6-TP14-02		S6-TP14-03		S6-TP14-04		S6-TP18-01		S6-TP18-02		S6-TP21-01	
PESTICIDES														
4,4'-DDD	180	UJ	3.9	UJ	4.9	UJ	4.0	UJ	120	UJ	4.1	UJ	520	J
4,4'-DDE	180	UJ	3.9	UJ	4.9	UJ	5.5	J	120	UJ	4.1	UJ	93.0	J
4,4'-DDT	180	UJ	9.4	J	4.9	UJ	11 0	J	120	UJ	4.8	J	160	J
ALDRIN	91.0	UJ	2.0	UJ	2.5	UJ	2.0	UJ	62.0	UJ	2.1	UJ	2.4	UJ
ALPHA-BHC	91.0	UJ	2.0	UJ	2.5	UJ	2.0	UJ	62.0	UJ	2.1	UJ	2.4	UJ
ALPHA-CHLORDANE	91.0	UJ	2.0	UJ	2.5	UJ	2.0	UJ	62.0	UJ	2.1	UJ	2.4	UJ
AROCLOR-1016	1800	UJ	39.0	UJ	49.0	UJ	40.0	UJ	1200	UJ	41 0	UJ	46.0	UJ
AROCLOR-1221	3600	UJ	79.0	UJ	100	UJ	81.0	UJ	2400	UJ	82.0	UJ	93.0	UJ
AROCLOR-1232	1800	UJ	39.0	UJ	49.0	UJ	40.0	UJ	1200	UJ	41.0	UJ	46.0	UJ
AROCLOR-1242	1800	UJ	39.0	UJ	49.0	UJ	40.0	UJ	1200	UJ	21.0	J	46.0	UJ
AROCLOR-1248	1800	UJ	39.0	UJ	49.0	UJ	40.0	UJ	1200	UJ	41.0	UJ	46.0	UJ
AROCLOR-1254	1800	UJ	21.0	J	18.0	J	34.0	J	1200	UJ	63.0	J	1300	J
AROCLOR-1260	1800	UJ	39.0	UJ	49.0	UJ	40.0	UJ	1200	UJ	41.0	UJ	46.0	UJ
BETA-BHC	91.0	UJ	2.0	UJ	2.5	UJ	2.0	UJ	62.0	UJ	2.1	UJ	2 4	UJ
DELTA-BHC	91.0	UJ	2.0	UJ	2.5	UJ	2.0	UJ	62.0	UJ	2.1	UJ	2.4	UJ
DIELDRIN	180	UJ	3.9	UJ	4.9	UJ	4.0	UJ	120	UJ	4.1	UJ	15.0	R
ENDOSULFAN I	91.0	UJ	2.0	UJ	2.5	UJ	2.0	UJ	62.0	UJ	2.1	UJ	2.8	J
ENDOSULFAN II	180	UJ	3.9	UJ	4.9	UJ	4.0	UJ	120	UJ	4.1	UJ	4.6	UJ
ENDOSULFAN SULFATE	180	UJ	3.9	UJ	4 9	UJ	4.0	UJ	120	UJ	4.1	UJ	4.6	UJ
ENDRIN	180	UJ	3.9	UJ	4.9	UJ	4.0	UJ	120	UJ	4.1	UJ	32.0	R
ENDRIN ALDEHYDE	180	UJ	3.9	UJ	4.9	UJ	4.0	UJ	120	UJ	4.1	UJ	4.6	UJ
ENDRIN KETONE	180	UJ	3.9	UJ	4.9	UJ	4.0	UJ	120	UJ	4.1	UJ	4.6	UJ
GAMMA-BHC (LINDANE)	91.0	UJ	2.0	UJ	2.5	UJ	2.0	UJ	62.0	UJ	2.1	UJ	2.4	UJ
GAMMA-CHLORDANE	91.0	UJ	2.0	UJ	2.5	UJ	2.0	UJ	62.0	UJ	2.1	UJ	5.4	J
HEPTACHLOR	91.0	UJ	2.0	UJ	2.5	UJ	2.0	UJ	62.0	UJ	2.1	UJ	2.4	UJ
HEPTACHLOR EPOXIDE	91.0	UJ	2.0	UJ	2.5	UJ	2.0	UJ	62.0	UJ	2.1	UJ	2.4	UJ
METHOXYCHLOR	910	UJ	18.0	J	25.0	UJ	20.0	UJ	620	UJ	21 0	UJ	24.0	UJ
TOXAPHENE	9100	UJ	200	UJ	250	UJ	200	UJ	6200	UJ	210	UJ	240	UJ

TABLE 8

06/13/96

NAWC WARMINSTER, WARMINSTER, PENNSYLVANIA

PESTICIDE/PCB RESULTS FOR SUBSURFACE SOIL SITE 6

UG/KG

DRAFT

SAMPLE NUMBER:	S6-TP21-02		S6-TP23-01		S6-TP24-02		SB-06-01		SB-06-02		SB-06-03		
PESTICIDES													
4,4'-DDD	540	J	23.0	J	4.7	U	3.8	U	3.7	U	3.7	U	
4,4'-DDE	110	J	4.6	U	4.7	U	3.8	U	3.7	U	3.7	U	
4,4'-DDT	29.0	J	74.0		39.0	J	3.8	U	3 7	U	3 7	U	
ALDRIN	2.1	UJ	2.4	U	2.4	U	1.9	U	1.9	U	1.9	U	
ALPHA-BHC	2.1	UJ	2.4	U	2.4	U	1.9	U	1.9	U	1.9	U	
ALPHA-CHLORDANE	2.1	UJ	170	J	2.4	U	1.9	U	1 9	U	1.9	U	
AROCLOR-1016	41.0	UJ	46.0	U	47.0	U	38.0	U	37.0	U	37.0	U	
AROCLOR-1221	82.0	UJ	92.0	U	94.0	U	76.0	U	75.0	U	74.0	U	
AROCLOR-1232	41.0	UJ	46.0	U	47.0	U	38.0	U	37.0	U	37.0	U	
AROCLOR-1242	41.0	UJ	46.0	U	47.0	U	38.0	U	37.0	U	37.0	U	
AROCLOR-1248	41.0	UJ	46.0	U	47.0	U	38.0	U	37.0	U	37.0	U	
AROCLOR-1254	1100	J	360		47.0	U	38.0	U	37.0	U	37.0	U	
AROCLOR-1260	41.0	UJ	46.0	U	5000	J	38.0	U	37.0	U	37 0	U	
BETA-BHC	2.1	UJ	2.4	U	2.4	U	1.9	U	1.9	U	1.9	U	
DELTA-BHC	2.1	UJ	2.4	U	2.4	U	1.9	U	1.9	U	1.9	U	
DIELDRIN	6.2	R	4.6	U	4.7	U	3.8	U	3.7	U	3.7	U	
ENDOSULFAN I	1.6	J	2 4	U	2.4	U	1.9	U	1 9	U	1.9	U	
ENDOSULFAN II	4.1	UJ	4.6	U	17.0	J	3.8	U	3.7	U	3.7	U	
ENDOSULFAN SULFATE	4.1	UJ	4.6	U	4.7	U	3.8	U	3.7	U	3.7	U	
ENDRIN	30.0	R	5.1	R	21.0	J	3.8	U	3.7	U	3.7	U	
ENDRIN ALDEHYDE	4.1	UJ	4.6	U	4.7	U	3.8	U	3.7	U	3.7	U	
ENDRIN KETONE	4.1	UJ	8.2	J	4.7	U	3.8	U	3.7	U	3.7	U	
GAMMA-BHC (LINDANE)	2.1	UJ	2.4	U	2 4	U	1.9	U	1.9	U	1.9	U	
GAMMA-CHLORDANE	4.2	J	210		32.0	J	1.9	U	1.9	U	1.9	U	
HEPTACHLOR	2.1	UJ	11.0		2.4	U	1.9	U	1.9	U	1.9	U	
HEPTACHLOR EPOXIDE	2.1	UJ	2.4	U	2.4	U	1 9	U	1.9	U	1.9	U	
METHOXYCHLOR	21 0	UJ	24.0	U	24.0	U	19.0	U	19.0	U	19.0	U	
TOXAPHENE	210	UJ	240	U	240	U	190	U	190	U	190	U	

TABLE X-X
COMPARISON OF TCLP COMPOUNDS, IGNITABILITY, AND REACTIVITY TO RCRA STANDARDS - SITE 06
WARMINSTER, PENNSYLVANIA
(ug/L)

CHEMICAL*	LOCATION			RCRA STANDARD	EXCEED STANDARD
	S6-TP02-01	S6-TP10-01	S6-TP10-03**		
Inorganics TCLP					
Arsenic	8.1	2 U	2 U	5000	NO
Barium	1620 L	384 L	525	100000	NO
Cadmium	600	2.2	2 U	1000	NO
Chromium	16.4 K	7.4 K	18.4 K	5000	NO
Lead	**40100**	45.2 B	86.9	5000	**YES**
Organics TCLP					
Benzene	9 J	97		500	NO
2-Butanone	10 U	64		200000	NO
Ignitablilty and Reactivity					
Reactive Cyanide	0.7 U	0.6 U	0.7 U		
Reactive Sulfide	1.7 U	3.2	1.7 U		
Flashpoint	> 200 degrees F	> 200 degrees F	> 200 degrees F		

* Only chemicals with positive detections are shown

** Duplicate of S6-TP10-01

ATTACHMENT D

Residual Contaminant Screening
Naval Surface Warfare Center - Site 6

Warminster, Pennsylvania

Analytical data (except for lead data, which has been considered separately) from the Naval Air Warfare Center, Warminster, Pennsylvania were compared to adjusted USEPA Region III Risk-Based Concentrations (RBC) for ingestion of soil (May 1996) to determine whether chemicals detected on site would be expected to pose significant risks to recreational users. The concentrations for chemicals detected in surface soil are found in Table 4-1 of the main report and subsurface soil chemical and concentrations appear in Table 4-2. For all comparisons, the calculated representative concentrations were used.

Region III RBCs are calculated concentrations that are associated with Hazard Quotients (noncarcinogenic risks) of 1.0 and Incremental Cancer Risk of 1E-6 for a limited set of exposure scenarios. The RBCs are calculated by the following equations:

$$RBC_{rec} = \frac{TR \times AT_c \times CF}{EF \times IFS_{adj} \times SF_0}$$

$$RBC_{rec} = \frac{THQ \times RfD_o \times Bw_c \times At_n \times CF}{EF \times Ed_c \times IRS_c}$$

Where:

RBC_{rec} is the risk-based concentration based on recreation land use (mg/kg)
TR is the target cancer risk (dimensionless)
THQ is the target Hazard Quotient (dimensionless)
AT_c is the averaging time for carcinogenic effects (days)
AT_n is the averaging time for noncarcinogenic effects (days)
BW_c is the child receptor body weight (kg)
CF is a conversion factor (mg/kg)
EF is the exposure frequency (days/year)
IFS_{adj} is the age-adjusted soil ingestion rate (mg yr/kg day)
IFS_c is the child soil ingestion rate (mg/day)

SFo is the oral cancer slope factor (mg/kg/day)-1

RfD_o is the oral reference dose (mg/kg/day)

The most appropriate scenario available was that of soil ingestion by resident receptors. To make the evaluation more specific to the recreational user, exposure assumptions used to calculate the residential RBCs were modified. The exposure frequency (EF) was determined based on the seasonal assumption, the weekly frequency, and the daily exposure time. It was assumed that soil ingestion occurs during a sixteen hour waking period. Hence a factor of 3/16 is used to prorate the exposure duration, as follows:

$$EF = 8 \frac{\text{months}}{\text{year}} \times 4 \frac{\text{weeks}}{\text{month}} \times 4 \frac{\text{days}}{\text{week}} \times \frac{\text{3 hours/day}}{\text{16 hours/day}} = 24 \frac{\text{days}}{\text{year}}$$

The average receptor body weights (BM) over the exposure periods were obtained via discussion with EPA Region III personnel. The average body weight for the 1 to 6 year old is 16.6 kg and the average body weight for the 6 to 17 year old is 45.2 kg. For the purposes of this assessment it is assume that the exposure duration (ED) = 17 - 1 = 16 years.

In accordance with EPA Region III policy (as outlined in the Risk-Based Concentration Table dated May 10, 1996) the age adjusted soil ingestion factor was determined as follows:

$$IFS_{adj} = \frac{Ed_c \times IRS_c}{BW_c} + \frac{(ED_{tot} - Ed_c) \times IRS_a}{BW_a}$$

IFS_{adj} = the age-adjusted soil ingestion factor (mg yr/mg day)

ED_c = the child exposure duration years (years)

ED_{tot} = the total exposure duration (years)

IRS_c = the child soil ingestion rate (mg/day)

IRS_c = the adolescent soil ingestion rate (mg/day)

BW_c = the child body weight (kg)

Bw_a = the adolescent body weight (kg)

Using the previously specified input parameters (see Attachment A), the age-adjusted soil ingestion rate was determined as follows:

$$IFS_{adj} \frac{\text{5 years x 200 mg/day}}{\text{16.6 kg}} + \frac{\text{(16 years - 5 years) x 100 mg/day}}{\text{45.2 kg}} = 84.6 \frac{\text{mg yr}}{\text{kg day}}$$

TABLE D-1

COMPARISON OF SCREENING CRITERIA TO SITE-RELATED CONCENTRATIONS IN SITE 6 SUBSURFACE SOIL AFTER LIMITED REMOVAL ACTION

NAWC WARMINSTER, PENNSYLVANIA

SUBSTANCE	SITE-RELATED FREQUENCY OF DETECTION	SITE-RELATED RANGE OF POSITIVE DETECTION*	SITE-RELATED REPRESENTATIVE CONCENTRATION	PADEP Criteria Ingestion Residential (1)	EPA Criteria Ingestion Residential RBC (2)	Calculated Ingestion Recreational RBC	RETAINED FOR RESIDUAL RISKS
ANTIMONY	7 / 24	9 4 - 164	25	30	31	453	YES
BARIUM	21 / 24	13 5 - 922	199	6000	5500	80300	NO
CHROMIUM	20 / 20	17 9 - 7140	1019	1000	78000	1138800	NO
COPPER	21 / 24	4 6 - 14300	1768	700	3100	45260	YES
LEAD	22 / 22	3 8 - 39300	4902	200	400 (3)	5840	NO
MANGANESE	22 / 22	220 - 1020	615	400	1800	28280	YES
MERCURY	10 / 22	0.06 - 5 2	1	20	23	336	NO
NICKEL	24 / 24	4.6 - 345	60	200	1600	23260	NO
ZINC	21 / 24	11.4 - 4140	810	1000	23000	NL	NO
4,4'-DDE	1 / 11	5.5	3	10000	1900	NL	NO
4,4'-DDT	2 / 11	4 8 - 10 2	4	10000	1900	NL	NO
ALPHA-CHLORDANE	1 / 11	8 4	2 92	300	490	NL	NO
AROCLOR-1242	1 / 11	21	21	5000	83	1635	YES
AROCLOR-1254	6 / 11	7 2 - 470	141.09	5000	83	1635	YES
DIELDRIN	1 / 10	6 1	3 16	300	40	788	NO
GAMMA-CHLORDANE	1 / 11	9.2	3 12	3000	490	NL	NO
METHOXYCHLOR	1 / 11	18	13	300000	390000	NL	NO
2-METHYLNAPHTHALENE	1 / 10	50	50	1000000	NL	NL	NO
ACENAPHTHYLENE	1 / 10	61	61	NL	NL	NL	NA
BENZO(A)ANTHRACENE	3 / 10	48 - 200	200	6000	880	17336	YES
BENZO(A)PYRENE	3 / 10	68 - 390	289	600	88	1734	YES
BENZO(B)FLUORANTHENE	3 / 10	82 - 400	245.44	6000	880	17336	YES
BENZO(G,H,I)PERYLENE	2 / 10	53 - 300	274 63	NL	NL	NL	NA
BENZO(K)FLUORANTHENE	1 / 10	180	180	60000	8800	NL	NO
BIS(2-ETHYLHEXYL)PHTHALATE	1 / 10	67	67	300000	46000	NL	NO
CHRYSENE	3 / 10	59 - 240	240	600000	88000	1733600	NO
DI-N-BUTYL PHTHALATE	1 / 10	44	44	8000000	NL	NL	NO
FLUORANTHENE	4 / 10	54 - 150	150	3000000	3100000	NL	NO
INDENO(1,2,3-CD)PYRENE	2 / 10	46 - 260	260	6000	880	17336	YES
PYRENE	4 / 10	50 - 240	240	2000000	2300000	NL	NO
CARBON DISULFIDE	1 / 23	2	2	7000000	7800000	NL	NO
TOTAL XYLENES	1 / 23	3	3	100000000	160000000	NL	NO

FOR ALL VALUES SHOWN ON THIS TABLE, INORGANICS ARE REPORTED IN MG/KG, ORGANICS ARE REPORTED IN UG/KG

* = QUALIFIERS FOR DATA ARE PRESENTED IN DATA PRESENTATION TABLES

1 Pennsylvania Land Recycling and Environmental Remediation Standards Act - Act 2, 1995 Statewide Human Health Standards. Rev 1, April 26, 1996

2 U. S. EPA, Region III Risk-based Concentration Tables January - June 1996

3 U S EPA, Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action, 1994

From the calculations shown in Attachment A, it can be seen that the Recreational RBC for carcinogens are calculated by dividing 12.6 by the cancer slopefactor (SF). Noncarcinogenic RBCs for recreational users are calculated by multiplying the reference dose (RD) times 1.26E + 06. The carcinogenic risk calculations is shown in the following example:

For Aroclor 1254: The adjusted RBC for cancer risk = 12.6 divided by 7,70E + 00 (Mg/kg/day)-1 = 1636 mg/kg.

These RBCs were then used for all comparisons with on-site concentrations.

Initially, representative concentrations of analytes were visually compared to the adjusted RBCs to eliminate those which were well below (by more than two orders of magnitude) the screening values. These were assumed to represent minimal risk compared to analytes with concentrations closer to the screening levels. For the remaining compounds, actual risks were calculated separately, as appropriate, for noncarcinogens and carcinogens. Risk were calculated as follows:

Risk (Noncarcinogenic) = (1.0/Adjusted RBC)(Chemical Concentration)
Risk (Carcinogenic) = (1E-6/Adjusted RBC)(Chemical Concentration)

For Aroclor 1254, the carcinogenic risk = (1E-6/1636 ug/kg)(84.23 ug/kg) = 5.15E-8.
Results of the risk calculations for the selected analytes were as follows:

Surface Soil

Aroclor 1254:	Carcinogenic Risk = 5.15E-8
Benzo(a)anthracene:	Carcinogenic Risk = 2.43E-9
Benzo(a)pyrene	Carcinogenic Risk = 2.61E-8
Benzo(b)fluoranthene	Carcinogenic Risk = 3.53E-9
Benzo(g,h,i)perylene	Carcinogenic Risk = 2.78E-8
Indeno(1,2,3-cd)pyrene	Carcinogenic Risk = 2.84E-9

Total Carcinogenic Risk = 1.14E-7

Subsurface Soil

Antimony	Noncarcinogenic Risk = 0.0520
Copper	Noncarcinogenic Risk = 0.0354
Manganese	Noncarcinogenic Risk = 0.0212

Total Noncarcinogenic Risk = 0.109

Aroclor 1242:	Carcinogenic Risk = 1.28E-8
Aroclor 1254:	Carcinogenic Risk = 8.63E-8
Benzo(a)anthracene:	Carcinogenic Risk = 1.16E-8
Benzo(a)pyrene	Carcinogenic Risk = 1.56E-7
Benzo(b)fluoranthene	Carcinogenic Risk = 1.42E-8
Benzo(g,h,i)perylene	Carcinogenic Risk = 1.59E-7
Indeno(1,2,3-cd)pyrene	Carcinogenic Risk = 1.51E-8

Total Carcinogenic Risk = 4.55E-7

Based on these calculations, the total risk for noncarcinogens or carcinogens is well below the acceptable risk targets of the USEPA. Even when the surface and subsurface soil risks are combined, the total risk for cancer is 5.69E-7, below the critical level of 1E-6.

It is concluded that the chemicals present at the concentrations determined analytically will not present a significant hazard for the anticipated recreational uses at Site 6 of the Naval Surface Warfare Center, Warminster, Pennsylvania.

ATTACHMENT A

DEVELOPMENT OF RISK-BASED TARGET CONCENTRATIONS - SITE 6 REMOVAL ACTION RECREATION LAND USE SCENARIO

OBJECTIVE:

The objective is to develop risk-based target concentrations for soil removal at the Naval Air Warfare Center Warminster, Pennsylvania based on a recreation land use (community park) scenario. Determine the residual risks associated with the target concentrations assuming residential land use. Non guidance currently exists for recreational land use. Professional judgement and personal experience are used to identify appropriate input parameters.

ASSUMPTIONS:

- Soil ingestion constitutes the primary exposure pathway.
- The EPA Region III risk-based concentration eqiupment for soil ingestion is appropriate.
- Recreational activities involving soil contact occur 8 months of the year (seasonal conditions).
- The community park will be visited by receptors 4 days per week.
- Exposure occurs from the ages of 1 to 17. Children/youths are the most sensitive receptors.
- Average body weights for the ages of 1 to 5 and 6 to 17 can be used in the intake equation.
- The intake rate (soil ingestion rate) is 200 mg/day for the 1 to 5 year old receptor.
- The exposure frequency may be prorated based on the exposure period (hours per day.

SAMPLE CALCULATIONS:

As per EPA Region III guidance (with minor mofications to account for recreational land use) as outlined in the Risk-Based Cocentration Tables dated May 10, 1006, the equations used to determine the carcinogenic and noncarcinogenic risk-based concentrations for soil ingenstion are as follows:

$$RBC_{rec} = \frac{TR \times AT_c \times CF}{EF \times IFS_{adj} \times SF_0}$$

$$RBC_{rec} = \frac{THQ \times RfD_o \times Bw_c \times At_n \times CF}{EF \times Ed_c \times IRS_c}$$

Where:

IFS_{adj} = the age-adjusted soil ingestion factor (mg yr/mg day)
ED_c = the child exposure duration years (years)
ED_{tot} = the total exposure duration (years)
IRS_c = the child soil ingestion rate (mg/day)
IRS_a = the adolescent soil ingestion rate (mg/day)
BW_c = the child body weight (kg)
Bw_a = the adolescent body weight (kg)

Using the previously specified input parameters, the age-adjusted soil ingestion rate was determined as follows:

$$IFS_{adj} \quad \frac{5 \text{ years} \times 200 \text{ mg/day}}{16.6 \text{ kg}} + \frac{(16 \text{ years} - 5 \text{ years}) \times 100 \text{ mg/day}}{45.2 \text{ kg}} = 84.6 \frac{\text{mg yr}}{\text{kg day}}$$

The averaging time (AT) for carcinogenic effects is set as 70 years (25,550 days) by default and the averaging time for noncarcinogenic effects is set as the child exposure duration (5 years x 365 days/year = 1,825 days)

The input parameters for determination of the recreational risk-based concentrations may be summarized as follows:

Parameter	Noncarcinogens	Carcinogens
Target Risk	NA	1E-06
Target Hazard Quotient	1.0	NA
Age-adjusted Soil Ingestion	NA	84.6
Child Soil Ingestion Rate (mg/day)	200	NA
Exposure Frequency (days/yr)	24	24
Exposure Duration (year)	5	16
Child Body Weight (kg)	16.6	16.6
Averaging Time (days)	1,825	25,550

Conversion factors (dose-response parameters to risk-base concentrations) may be determined for noncarcinogens and carcinogenic effects, respectively, as follows:

$$RBC_c = \frac{1E-6 \times 25{,}550 \text{ days} \times 10^6 \; \frac{\text{mg}}{\text{kg}}}{24 \text{ days} \times 84.6 \; \frac{\text{mg yr}}{\text{kg day}} \; SF_o \; \frac{\text{kg day}}{\text{mg}}} = \frac{12.6}{SF_o} \frac{\text{mg}}{\text{kg}}$$

Where:

RBC_{rec} is the risk-based concentration based on recreation land use (mg/kg)

TR is the target cancer risk (dimensionless)

THQ is the target Hazard Quotient (dimensionless)

AT_c is the averaging time for carcinogenic effects (days)

AT_n is the averaging time for noncarcinogenic effects (days)

BW_c is the child receptor body weight (kg)

CF is a conversion factor (mg/kg)

EF is the exposure frequency (days/year)

IFS_{adj} is the age-adjusted soil ingestion rate (mg yr/kg day)

IFS_c is the child soil ingestion rate (mg/day)

SFo is the oral cancer slope factor (mg/kg/day)-1

RfD_o is the oral reference dose (mg/kg/day)

The exposure frequency (EF) may be determined based on the seasonal asusmption, the weekly frequency, and the daily exposure time. It is assumend that soil ingestion occurs during a 16 hour waking period. Hence a factor of 3/16 is used to prorate the exposure duration, as follows:

$$EF = 8 \frac{\text{months}}{\text{year}} \times 4 \frac{\text{weeks}}{\text{month}} \times 4 \frac{\text{days}}{\text{week}} \times \frac{3 \text{ hours/day}}{16 \text{ hours/day}} = 24 \frac{\text{days}}{\text{year}}$$

The average receptor body weights (BM) over the exposure periods were obtained via discussion with EPA Region III personnel. The average body weight for 1 to 6 year old is 16.6 kg and the average body weight for 6 to 17 year old is 45.2 kg. For the purposes of this assessment it is assume that the exposure duration (ED) = 17 - 1 = 16 years.

In accordance with EPA Region III policy (as outlined in the Risk-Based Concentration Table dated May 10, 1996) the age adjusted soil ingestion factor was determined as follows:

$$IFS_{adj} = \frac{Ed_c \times IRS_c}{BW_c} + \frac{(ED_{tot} - Ed_c) \times IRS_a}{BW_a}$$

$$RBC_{nc} = \frac{1.0 \times RfD_o \ \frac{mg}{kg\ days} \times 16.6\ kg \times 1{,}825\ days \times 10^6 \ \frac{mg}{kg}}{24\ year \times 5\ years \times 200 \ \frac{days}{day} \ \frac{day}{mg}} = 1.26E + 06 \times RfD_o \ \frac{mg}{kg}$$