Appendix K.6

Addendum to the Report of the Phase II RCRA Facility Investigation (RFI) Conducted on the Union Carbide Corporation Woodbine, Georgia Facility

Apex Environmental, Inc.

June 1997

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Apex environmental, inc.

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ADDENDUM
to the
Report of the Phase II
RCRA Facility Investigation (RFI)

Conducted on the

Union Carbide Corporation
Woodbine, Georgia
Facility

Apex Job No.: 097.005

June 12, 1997

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1.0 INTRODUCTION

Apex Environmental, Inc. (Apex) has prepared this addendum to the Phase II Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) in response to recommendations in Apex's Phase II RFI report dated September 30, 1996, and comments by the Georgia Environmental Protection Division (GAEPD) on the Phase II RFI report dated January 10, 1997. On February 13, 1996, Apex issued an Addendum to the original Work Plan dated September 15, 1995, which was approved by GAEPD on September 21, 1995. The Addendum to the Work Plan was approved by GAEPD in a letter dated February 12, 1997.

2.0 OBJECTIVES

In comments on the Phase II RFI report, the GAEPD recommended that the ground water monitoring wells be resampled for metals analyses using a "quiescent" method as outlined in GAEPD's *Hazardous Waste Management Program: Ground Water Testing, Appendix IX - Georgia Modified Standard Method,* revised February 1991. The quiescent method requires that ground water monitoring wells be allowed to stabilize for a period of not more than 24 hours between purging and sampling before collecting ground water samples for metals analyses (this method is used for metals only). The waiting interval allows sediments suspended in the water by purging to settle out. The concern being that the presence of suspended sediments may lead to false positive analytical results in unfiltered ground water samples.

At solid waste management unit (SWMU) 03, Apex observed additional surface areas containing ordnance related items during field work for the Phase II RFI. These areas were outside the work zones to be cleared of ordnance for the geophysical surveys and test pitting conducted as a portion of the Phase II RFI. In the Phase II RFI report, Apex recommended completing a surface sweep in these additional areas at SWMU 03 and deactivating any ordnance related items found.

At SWMU 04, Apex completed a series of shallow soil borings as part of the Phase II RFI in an overflow ditch on the south and east sides of the Acetone Evaporation Pond. Apex collected a shallow and deep sample from each boring location. Analysis of volatile organic compounds (VOCs) indicated that acetone is present in several of the shallow (two to three feet below ground surface) and deep (five feet below ground surface) soil samples. Apex recommended in the Phase II RFI report that additional soil borings be completed to assess the lateral extent of soil contamination and the possible impact of the acetone on ground water quality.

At SWMU 06, Apex completed a series of test pits for the Phase II RFI in areas identified by the geophysical survey as possessing anomalous signatures. Analysis of soil and waste materials from the test pits showed VOC concentrations above the method detection limits (MDLs) including test pits 1 through 4 in the Borrow Pit Area and test pits 6 and 7 in the Trench II area. Apex recommended in the Phase II RFI that additional soil borings be completed in these areas to assess the extent of soil contamination and determine if ground water has been impacted.

3.0 ADDITIONAL INVESTIGATION

This section summarizes Apex's recommendations from the Phase II RFI and the GAEPD concerns expressed in its comments to the Phase II RFI as they relate to the additional work conducted for the Phase II RFI Addendum. The summary also discusses the methodology and results of the additional work Apex performed for the Phase II RFI Addendum. Apex's responses to the GAEPD's comments on the background statistical analysis and the revised data tables are included as Appendix A and Appendix B respectively.

3.1 SWMU 03 - Surface Ordnance Removal

On February 18, 1997, Apex and EOD mobilized to the Woodbine, Georgia, facility to clear surface ordnance items identified on the fire break road at SWMU 03. EOD swept the area from fire break road to the paved Rocket Test Pad road. EOD also swept the area from the dirt road eastward approximately 75 feet. EOD did not find ordnance related items between 50 and 75 feet east of fire break and road and, therefore, did not sweep further eastward. EOD also reswept the SWMU 03 Burn Area and an area northwest of the Rocket Test Pad (see Figure 1 for ordnance locations) in order to ensure complete clearance of previously swept areas.

EOD used Schoenstedt metal detectors to locate ordnance and ordnance related objects. In addition, EOD used visual observations to assess the site where concrete and metallic non-ordnance objects interfered with the Schoenstedt operation. The fire break road was swept first and all 40 millimeters (mm) grenades were flagged with survey stakes. EOD then cleared both sides of the fire break road, SWMU 03 Burn Area, and the Rocket Test Pad.

A total of forty-six 40 mm grenades were located on and near the dirt road. An additional two rounds were found in the SWMU 03 Burn Area, and one round was found near the Rocket Test Pad. EOD deactivated the 40 mm grenades in place using individual shaped charges. EOD also located approximately twenty-four XM15 CS cartridges near the Rocket Test Pad and approximately twenty-six 40 mm CS grenades in the vicinity of the fire break road. The CS cartridges and grenades were stored in a 55-gallon drum on site in the bunker at the Rocket Test Pad.

EPA may ask why did you stop there — how do you know only area

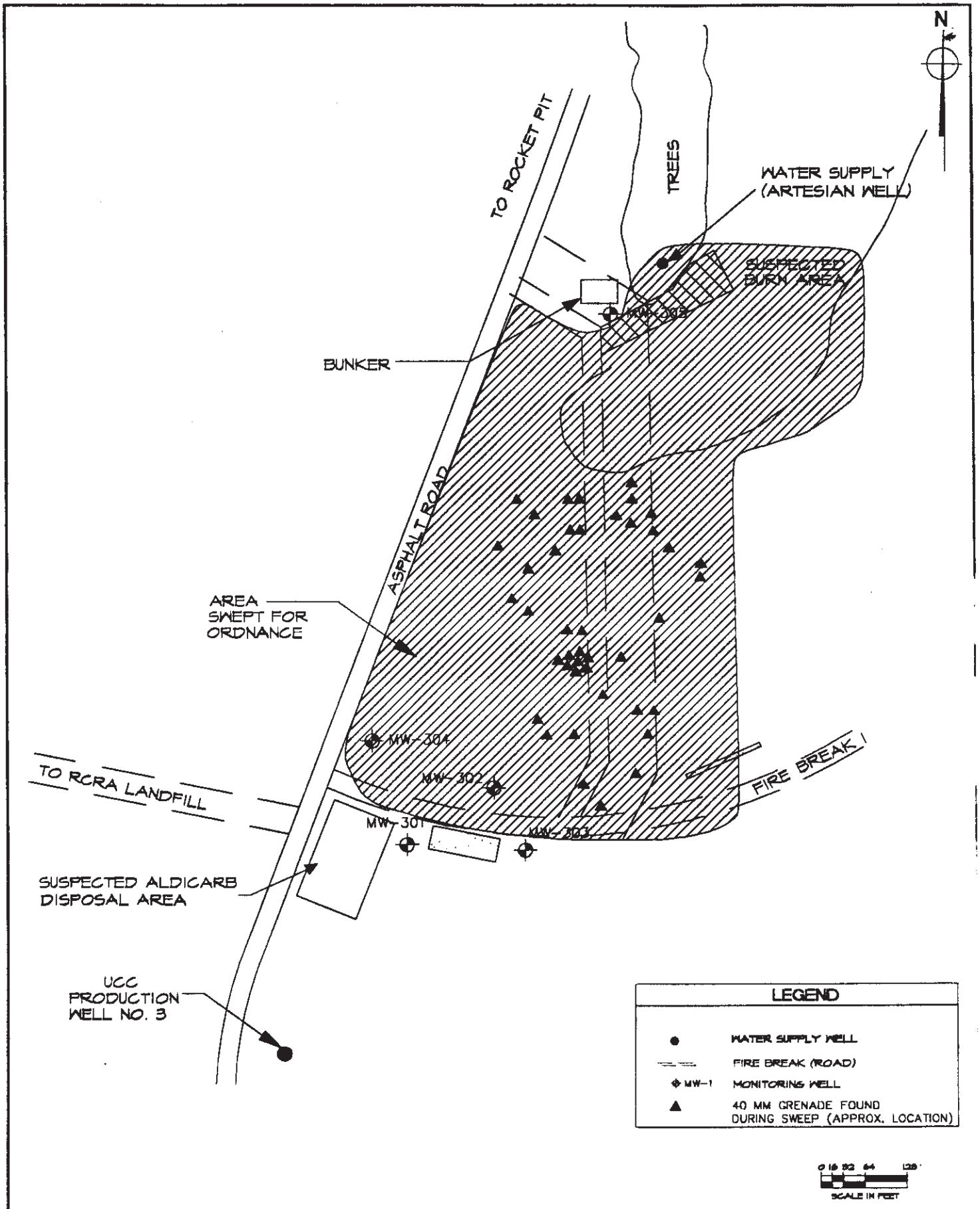

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FIGURE 1
SWMU 3
UNEXPLODED ORDNANCE LOCATION

WOODBINE, GEORGIA

Project Title:
PHASE II RFI ADENDUM
THIOKOL CORPORATION
WOODBINE, GA

Date:	Drawn By:	Project Number:
6-11-97	CDC	097.005
CAD File:	Scale:	Client:
UNION-A	AS SHOWN	THIOKOL CORP.

3.2 SWMU 04

Apex identified acetone in soil beneath the overflow ditch on the east and south sides of the Acetone Evaporation Pond during the Phase II RFI. In order to further delineate the acetone, Apex proposed to complete a minimum of six soil probes hydraulically downgradient from the areas previously documented to contain acetone. Each probe was completed using the methodology detailed in Section 4.5 of the Phase II RFI Work Plan dated September 15, 1995. Hand tools were used to collect the soil samples. Sample locations are shown in Figure 2. All soil samples were collected in accordance with the methodology outlined in Apex's Work Plan dated February 12, 1997. Soil boring logs are presented in Appendix C.

A Microtip photoionization detector (PID) was used to screen the soil samples. Prior to field activities, the PID was calibrated with a span gas of 400 parts per million (ppm) toluene in air. After screening the soil samples from each boring, the operation of the PID was checked against the span gas to ensure that the PID was functioning properly and calibrated properly. Apex also collected two ground water samples for VOC analysis using geoprobe equipment. Ground water samples were collected by first placing a slotted probe into the soil below the ground water table. Disposable polyethylene tubing with a foot valve was then used to retrieve a sufficient quantity of water. Ground water samples were collected in 40 milliliter (ml) glass vials with Teflon septums.

3.2.1 Soil Results

A total of eight probes were completed on the east and south sides of the Evaporation Pond, approximately 20 to 30 feet hydraulically downgradient from the overflow ditch. Figure 2 shows the probe locations. Soil samples were containerized and field screened as noted above from seven of the eight boring locations (B-1 through B-6 and B-8) in order to assess the extent of acetone. Only ground water was collected from the eighth location (B-7) because the boring was located between borings and because field screening indicated that soil in this area was contaminated with VOCs.

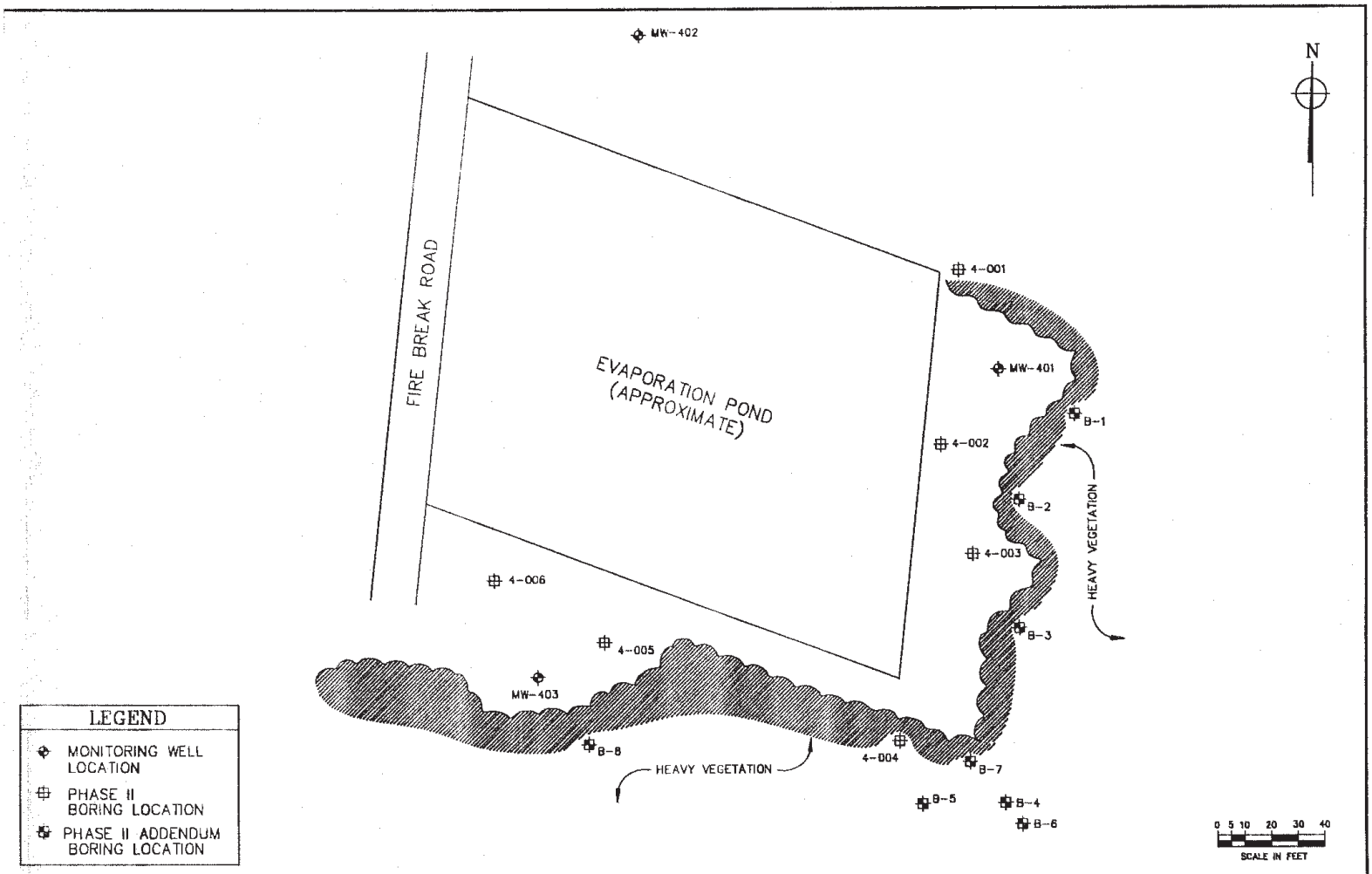

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FIGURE 2
SWMU 4 SOIL BORING LOCATIONS
WOODBINE , GEORGIA

Date: 6-11-97	Project Title: PHASE II RFI ADENDUM THIOKOL CORPORATION WOODBINE, GEORGIA		
Drawn By: CDC			
Project Number: 097.005	CAD File: MLSITE	Scale: AS SHOWN	Client: THIOKOL CORP.

Soil samples were submitted from the 2 to 4 foot sample depths from boring B-1 through B-6 and B-8 for laboratory analysis of VOCs . Headspace screening of the soil samples did not detect any VOC concentrations above the instrument detection level (0.1 ppm) except for a detection of 10.6 ppm in boring B-4 from 0 to 2 feet below ground surface (bgs). Analysis of the soil samples did not detect VOCs above the MDLs except in the sample (#9245) collected from location B-2. Only acetone was detected from B-2 at a concentration of 200 micrograms per kilogram (µg/kg), which is near the PID instrument detection level. Analytical results of all soil samples are summarized in Table 1. Copies of the laboratory data sheets are presented in Appendix D.

3.2.2 Ground Water Results

Apex collected ground water samples from two soil borings, B-6 and B-7, using geoprobe equipment. Since headspace analysis did not detect VOC concentrations above the PID instrument detection level except as noted above, Apex based ground water sample locations on Phase II RFI analytical results, locations of the existing monitoring wells, and the previously calculated ground water flow direction. The southeast corner of the Evaporation Pond showed the highest soil VOC concentrations in the Phase II RFI, was in a downgradient location, and was located approximately equidistant from the nearest monitoring wells (MW-401 and MW-403). Therefore, Apex collected ground water samples from two locations downgradient from the southeast corner of the Evaporation Pond in order to assess whether acetone has migrated with ground water away from the potential source area.

Analysis of the ground water samples detected acetone in both locations. Ground water analytical results are summarized in Table 2. Copies of the laboratory data sheets are presented in Appendix D. The location furthest from the evaporation pond (B-6) contained the highest acetone concentration at 590 micrograms per liter (µg/L), while the closer location (B-7) contained a lower concentration at 66 µg/L. There is no maximum contaminant level (MCL) established for acetone to compare these concentrations against. A single trip blank was submitted with the ground water samples and analyzed for VOCs. No VOCs were detected in the trip blank. The laboratory data sheet for the trip blank along with all laboratory quality control/quality assurance (QA/QC) is included in Appendix D.

Table 1

SWMU 04 - Phase II Addendum
Soil Analytical Results - VOCs

Thiokol - Woodbine Facility

Compound	9244	9245	9246	9247	9248	9249
	B-1	B-2	B-3	B-4	B-5	B-6
Acetone	<72	200	<62	<62	<63	<62

All results are reported in µg/kg dry weight.
< - Compound not detected above method detection limit shown.

Table 2

SWMU 04 - Phase II Addendum
Ground Water Analytical Results - VOCs

Thiokol - Woodbine Facility

Compound	9250	9251	9223
	B-6	B-7	MW-401
Acetone	590	66	<50

All results are reported in µg/L.
< - compound not detected above method detection limit shown.

3.3 SWMU 06

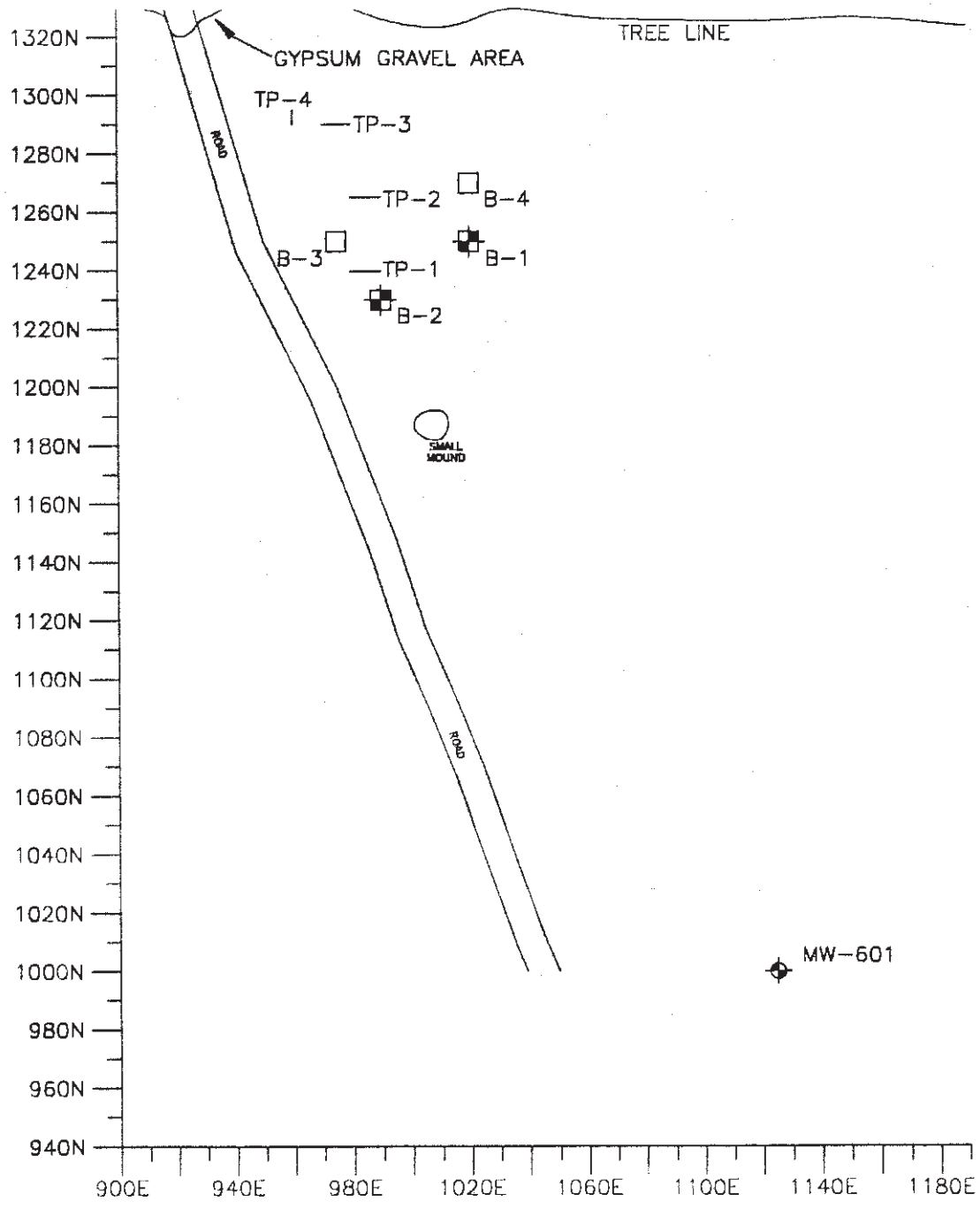
As part of this Addendum, Apex proposed to complete a minimum of six soil probes in the vicinity of the Borrow Pit and east side of Trench II. Each probe was completed using the methodology detailed in Section 4.5 of the Phase II RFI Work Plan dated September 15, 1995. Apex completed the investigation in two phases. A series of soil borings was completed during the first phase to assess the extent of VOCs. Soil samples were collected from each location and field screened using headspace analysis to assess whether VOCs were present and determine the extent of VOCs (if present). The second phase entailed revisiting selected locations for the collection of soil and ground water samples for laboratory analysis. Apex used the headspace data to return to the most appropriate locations to collect soil and ground water samples. Soil boring logs are presented in Appendix C.

A Microtip PID was used to screen the soil samples. Prior to field activities, the PID was calibrated to a span gas of 400 ppm toluene in air. After screening the soil samples from each boring, the operation of the PID was checked against the span gas to ensure that the PID was functioning properly and calibrated properly. Apex also collected two ground water samples for VOC analysis using geoprobe equipment. Ground water samples were collected by first placing a slotted probe into the soil below the ground water table. Disposable polyethylene tubing with a foot valve was then used to retrieve a sufficient quantity of water. Ground water samples were collected in 40 ml glass vials with Teflon septums.

3.3.1 Soil Results

A total of 15 soil borings was completed at SWMU 06. Four borings were completed in the Borrow Pit Area, and ten borings were completed near the east end of Trench II (eight for soil and two for ground water). Figure 3 shows the boring locations in the Borrow Pit Area and Figure 4 shows the boring locations at Trench II.

Samples were first collected for headspace analysis to determine the best placement of probes to collect samples for laboratory analysis. Sample locations for laboratory analysis were chosen to either delineate the extent of contamination or confirm that contamination had not impacted an area as indicated by the headspace analyses.



LEGEND

- MONITORING WELL
- TP-# TEST PITS
- GEOPHYSICAL SURVEY GRID COORDINATES
- B-# SOIL PROBE LOCATION FOR FIELD SCREENING ONLY
- B-# SOIL PROBE LOCATION FOR SAMPLE ANALYSIS

N

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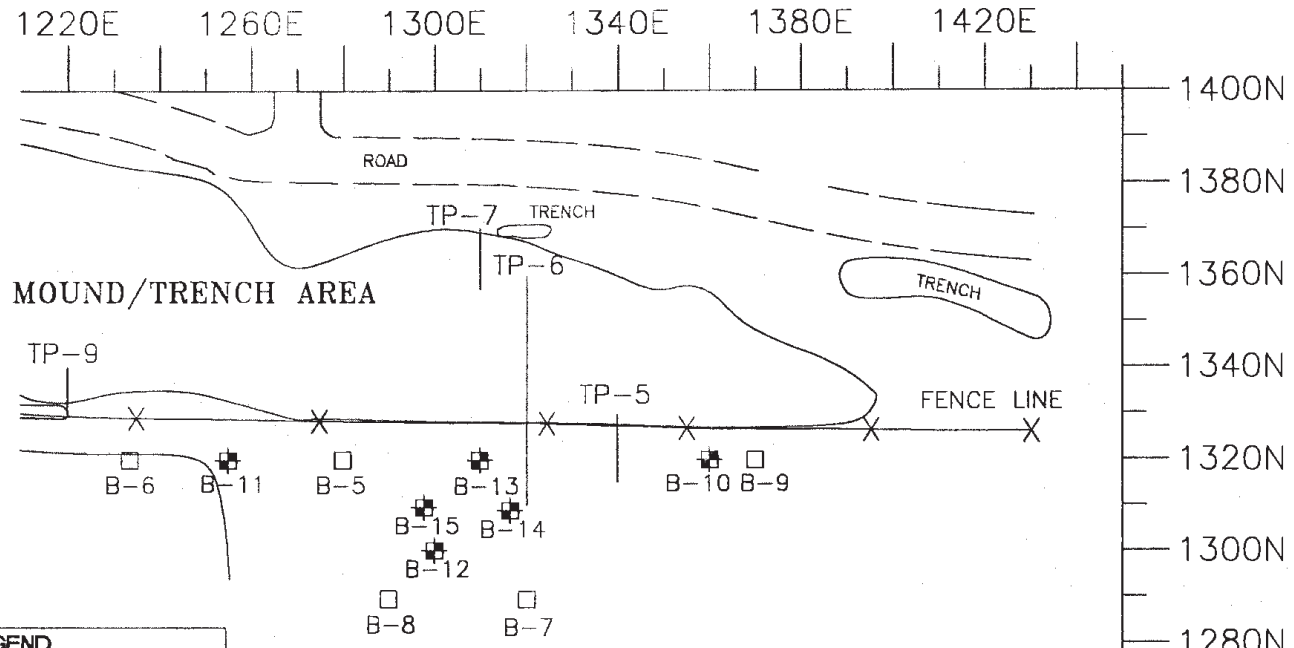
FIGURE 3
SWMU 06
BORROW PIT
BORING LOCATIONS
WOODBINE GEORGIA

Project Title:
PHASE II RFI ADENDUM
THIOKOL CORPORATION
WOODBINE, GEORGIA

Date:	Drawn By:	Project Number:
8-11-97	CDC	097.005
CAD File:	Scale:	Client:
SWMU6C	N.T.S.	THIOKOL CORP



LEGEND

- MONITORING WELL
- FENCE
- TEST PIT
- GEOPHYSICAL SURVEY GRID COORDINATES
- SOIL PROBE LOCATION FOR FIELD SCREENING ONLY
- SOIL PROBE LOCATION FOR SAMPLE ANALYSIS

N

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FIGURE 4
SWMU 06
TRENCH II BORING LOCATIONS
WOODBINE, GEORGIA

Date: 8-11-97	Project Title: PHASE II RFI ADENDUM THIOKOL CORPORATION WOODBINE,GA		
Drawn By: CDC			
Project Number: 097.005	CAD File: SWMU6B	Scale: N.T.S.	Client: THIOKOL CORP

In the Borrow Pit Area, VOCs were not detected above the PID instrument detection levels. Therefore, two sample locations were selected downgradient of the areas where VOCs were detected in the soil during the Phase II RFI. These sample locations were within two feet of the locations where headspace readings were collected during this effort. Laboratory analysis did not detect any VOCs above the MDLs (Table 3).

Trench II headspace readings did indicate that VOCs may be present in the soil collected at B-5 (Figure 4). Borings were completed around B-5 to define the extent of the possible contamination. Headspace readings from the additional probes did not detect VOCs above the PID instrument detection level. Sample locations for ground water sampling and laboratory analysis were then chosen to delineate the extent of possible VOC contamination. Locations were biased to collect samples from the downgradient side of the possible contamination.

A total of four soil samples was submitted for laboratory analysis of VOCs. Analytical results are summarized in Table 3. Copies of laboratory data sheets are presented in Appendix D. Samples submitted from B-11 and B-13 contained acetone at 100 µg/kg and 85 µg/kg, respectively. These concentrations are near the PID instrument detection level, explaining why no PID readings above background were detected. No other VOCs were detected above the MDLs. Laboratory analysis of samples from B-10 and B-12 downgradient from these locations did not detect any VOCs above the MDLs.

3.3.2 Ground Water Results

Apex collected ground water samples from two soil borings, B-14 and B-15, using geoprobe equipment (Figure 4). Apex based ground water sample locations on Phase II RFI analytical results, ground water flow direction, and headspace readings. Ground water sample locations were selected near and downgradient of B-5 on the east side of Trench II where headspace analysis indicated the possible presence of VOCs. The analysis of the ground water samples detected acetone in the ground water in B-14 at 110 µg/L. No other VOCs were detected above the MDLs. No VOCs were detected above the MDLs in the ground water at B-15. Ground water analytical results for VOCs are summarized in Table 4. A single trip

Table 3

SWMU 06 - Phase II Addendum
Soil Analytical Results - VOCs

Thiokol - Woodbine Facility

	Borrow Pit		Trench II			
	9236	9237	9238	9239	9240	9241
Compound	B-1	B-2	B-10	B-11	B-12	B-13
Acetone	<63	<62	<62	100	<65	85

All results are reported in µg/kg dry weight.
< - compound not detected above method detection limit shown.

Table 4

SWMU 06 - Phase II Addendum
Ground Water Analytical Results - VOCs

Thiokol - Woodbine Facility

	Trench II	
	9242	9243
Compound	**B-14**	**B-15**
Acetone	<50	110

All results are reported in µg/L.
< - compound not detected above method detection limit shown.

blank was submitted with the ground water samples and analyzed for VOCs. No VOCs were detected in the trip blank. The laboratory data sheet for the trip blank, along with all laboratory QA/QC, is included in Appendix D.

Apex also attempted to collect a ground water sample from the Borrow Pit Area. Apex encountered an organic, cemented soil horizon at approximately 5.5 feet below the ground surface and could not penetrate the horizon with hand tools. The same soil horizon (hardpan layer) was encountered during test pitting for the Phase II RFI. The geoprobe rods were left in the boring overnight to attempt to allow ground water to infiltrate the boring. Unfortunately, no ground water was present the following day; therefore, no ground water sample was collected from the Borrow Pit Area.

3.4 Ground Water Sampling

As requested by GAEPD in a letter dated January 10, 1996, Apex resampled all ground water monitoring wells at the site for analysis of metals. The GAEPD requested that "quiescent" sampling of the monitoring wells be conducted as outlined in GAEPD's *Hazardous Waste Management Program: Ground Water Testing, Appendix IX,"* revised February 1991. Quiescent sampling is conducted by purging the wells and then sampling the wells at a later time. Sediments disturbed by purging are allowed to settle out of the water before sampling. The quiescent method of sampling ground water for metals is intended to provide a water sample more representative of the actual concentrations present in the water. The presence of sediment in turbid water is speculated to result in elevated metals concentrations due to metals bound to the colloidal (fine grained soil) material which are released from the colloids by the acid digestion process which the laboratory uses to prepare the samples for analysis.

Apex purged the wells on February 25, 1997, using disposable Teflon bailers dedicated to each well. Apex also measured pH, conductivity, and temperature water quality parameters initially and after each well volume. Purging was considered complete if the water quality parameters did not vary by more than ten percent from the previous reading and at least three well volumes had been purged. After purging, the wells were closed and locked.

On February 26 (after approximately 24 hours), the wells were reopened and the samples collected. Unused, dedicated, disposable bailers were used to collect the samples. The samples were collected by slowly and gently filling and removing the bailer in each

monitoring well to minimize disturbing the sediments. Only one full bailer was required to collect sufficient sample volume from each well. Samples for analysis of metals were collected in one 500 ml and one 250 ml plastic bottles, and stored on ice immediately after collection. The bottles were prepreserved by the laboratory with nitric acid to a pH of less than 2. After collection of all ground water samples from all SWMUs, the samples were transported directly to Savannah Laboratories in Savannah, Georgia, under strict chain of custody. Copies of all laboratory data sheets and chain of custody forms are included in Appendix D.

3.4.1 SWMU 03 Results

Apex purged all five wells at SWMU 03 on February 25, 1997, and sampled the wells for metals on February 26, 1997. A minimum of three well volumes was purged from each well. Suspended sediments were not visible in the water at the time of sample collection. Analytical results are summarized in Table 5 and compared to previous metal analytical results from the Phase I and II RFI. Analytical results indicate all metals except barium are below the MDLs. Barium was detected below the established MCL. Analysis of ground water samples collected during Phase I and Phase II of the RFI detected cadmium, chromium, and lead above the respective MCLs. The ubiquitous occurrence of barium in ground water above the MDL but below the MCL may be the result of natural concentrations of barium in ground water at this site. Additionally, barium occurs in monitoring wells located upgradient and downgradient of each SWMU, indicating that the barium is naturally occurring and not a result of waste disposal at the site. Analysis of ground water by the quiescent method detected lower concentrations of metals more representative of the actual ground water quality beneath this SWMU.

3.4.2 SWMU 04 Results

Apex purged all four wells at SWMU 04 on February 25, 1997, and sampled the wells for metals on February 26, 1997. MW-401 was also resampled for VOCs due to the detection of 1,1,2-trichloroethane above its MCL during the Phase II RFI. Apex collected the VOC sample on the same day as purging after allowing the well

Table 5

SWMU 03 - Phase II RFI Addendum
Ground Water Analytical Results - Metals

Thiokol - Woodbine Facility

Compound/ Element	MCL	Sample Number and Location				
		9217	9218	9219	9220	9221
		MW-301	MW-302	MW-303	MW-304	MW-305
Arsenic	0.05	<0.010	<0.010	<0.010	<0.010	<0.010
Barium	2	<0.010	0.012	0.017	<0.010	<0.010
Cadmium	0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chromium	0.1	<0.010	<0.010	<0.010	<0.010	<0.010
Lead	0.015	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Mercury	0.002	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020

All Results are reported in mg/L.
< - Compound was not detected above the method detection limit shown.

to recharge. A minimum of three well volumes was purged from each well. Suspended sediments remained in MW-404 at the time of sampling, while suspended sediments were not visible in the water from the other wells at the time of sample collection. Analytical results are summarized in Table 6 and compared to previous metal analytical results from the Phase I and II RFI. Analytical results indicate all metals except barium are below the MDLs. Barium was detected below the established MCL. Analysis of ground water samples collected during Phase II of the RFI detected arsenic, barium, cadmium, chromium, and lead above the respective MCLs (no metals exceeded the MCLs during Phase I of the RFI). The ubiquitous occurrence of barium in ground water above the MDL but below the MCL may be the result of natural concentrations of barium in ground water at this site. Additionally, barium occurs in monitoring wells located upgradient and downgradient of each SWMU, indicating that the barium is naturally occurring and not a result of waste disposal at the site. Analysis of ground water by the quiescent method detected lower concentrations of metals more representative of the actual ground water quality beneath this SWMU.

3.4.3 SWMU 05 Results

Apex purged the single well at SWMU 05 on February 25, 1997, and sampled the well for metals on February 26, 1997. A minimum of three well volumes was purged from the well. Suspended sediments were not visible in the water at the time of sample collection. Analytical results are summarized in Table 7 and compared to previous analytical results from the Phase I and II RFI. Analytical results indicate all metals except barium are below the MDLs. Barium was detected below the established MCL. Analysis of ground water samples collected during Phase I and Phase II of the RFI did not detect metals above any of the respective MCLs. The ubiquitous occurrence of barium in ground water above the MDL but below the MCL may be the result of natural concentrations of barium in ground water at this site. Additionally, barium occurs in monitoring wells located upgradient and downgradient of each SWMU, indicating that the barium is naturally occurring and not a result of waste disposal at the site. Analysis of ground water by the quiescent method detected lower concentrations of metals more representative of the actual ground water quality beneath this SWMU.

Table 6

SWMU 04 - Phase II RFI Addendum
Ground Water Analytical Results - Metals

Thiokol - Woodbine Facility

Compound/ Element	MCL	Sample Number and Location			
		9222	9224	9225	9226
		MW-401	MW-402	MW-403	MW-404
Arsenic	0.05	<0.010	<0.010	<0.010	<0.010
Barium	2	0.037	0.039	0.022	0.030
Cadmium	0.005	<0.0050	<0.0050	<0.0050	<0.0050
Chromium	0.1	<0.010	<0.010	<0.010	<0.010
Lead	0.015	<0.0050	<0.0050	<0.0050	<0.0050
Mercury	0.002	<0.00020	<0.00020	<0.00020	<0.00020

All Results are reported in mg/L.
< - Compound was not detected above the method detection limit shown.

Table 7

SWMU 05 - Phase II RFI Addendum
Ground Water Analytical Results - Metals

Thiokol - Woodbine Facility

Compound/ Element	MCL	9227
		MW-501
Arsenic	0.05	<0.010
Barium	2	0.035
Cadmium	0.005	<0.0050
Chromium	0.010	<0.010
Lead	0.015	<0.0050
Mercury	0.002	<0.00020

All Results are reported in mg/L.
< - Compound was not detected above the method detection limit shown.

3.4.4 SWMU 06 Results

Apex purged all four wells at SWMU 06 on February 25, 1997, and sampled the wells for metals on February 26, 1997. A minimum of three well volumes was purged from each well. Suspended sediments were not visible in the water at the time of sample collection. Analytical results are summarized in Table 8 and compared to previous metals analytical results from the Phase I and II RFI. Analytical results indicate all metals except barium are below the MDLs. Barium was detected below the established MCL. Analysis of ground water samples collected during Phase II of the RFI detected arsenic and lead above the respective MCLs (no metals were detected above the MCLs during Phase I of the RFI). The ubiquitous occurrence of barium in ground water above the MDL but below the MCL may be the result of natural concentrations of barium in ground water at this site. Additionally, barium occurs in monitoring wells located upgradient and downgradient of each SWMU, indicating that the barium is naturally occurring and not a result of waste disposal at the site. Analysis of ground water by the quiescent method detected lower concentrations of metals more representative of the actual ground water quality beneath this SWMU.

3.4.5 SWMU 07 Results

Apex purged all four wells at SWMU 07 on February 25, 1997, and sampled the wells for metals on February 26, 1997. A minimum of three well volumes was purged from each well. Suspended sediments were not visible in the water at the time of sample collection. Analytical results are summarized in Table 9 and compared to previous metals analytical results from the Phase I and II RFI. Analytical results indicate all metals except barium are below the MDLs. Barium was detected below the established MCL. Analysis of ground water samples collected during Phase I and Phase II of the RFI detected arsenic, cadmium, chromium, lead, and mercury above the respective MCLs. The ubiquitous occurrence of barium in ground water above the MDL but below the MCL may be the result of natural concentrations of barium in ground water at this site. Additionally, barium occurs in monitoring wells located upgradient and downgradient of each SWMU, indicating that the barium is naturally occurring and not a result of waste disposal at the site. Analysis of ground water by the quiescent method detected lower concentrations of metals more representative of the actual ground water quality beneath this SWMU.

Table 8

SWMU 06 - Phase II RFI Addendum
Ground Water Analytical Results - Metals

Thiokol - Woodbine Facility

Compound/ Element	MCL	9228	9229	9230	9231
		MW-601	MW-602	MW-603	MW-604
Arsenic	0.05	<0.010	<0.010	<0.010	<0.010
Barium	2	0.019	0.017	0.059	0.018
Cadmium	0.01	<0.0050	<0.0050	<0.0050	<0.0050
Chromium	0.1	<0.010	<0.010	<0.010	<0.010
Lead	0.015	<0.0050	<0.0050	<0.0050	<0.0050
Mercury	0	<0.00020	<0.00020	<0.00020	<0.00020

All Results are reported in mg/L.
< - Compound was not detected above the method detection limit shown.

Table 9

SWMU 07 - Phase II RFI Addendum
Ground Water Analytical Results - Metals

Thiokol - Woodbine Facility

Compound/ Element	MCL	9232	9233	9234	9235
		MW-701	MW-702	MW-703	MW-704
Arsenic	0.05	<0.010	<0.010	<0.010	<0.010
Barium	2	<0.010	<0.010	0.018	<0.010
Cadmium	0.01	<0.0050	<0.0050	<0.0050	<0.0050
Chromium	0.1	<0.010	<0.010	<0.010	<0.010
Lead	0.015	<0.0050	<0.0050	<0.0050	<0.0050
Mercury	0	<0.00020	<0.00020	<0.00020	<0.00020

All Results are reported in mg/L.
< - Compound was not detected above the method detection limit shown.

4.0 CONCLUSIONS

Analysis of ground water samples collected from the existing monitoring wells at the site using the quiescent method indicate that metals are not present in ground water above their respective MCLs. In addition, resampling of MW-401 for VOCs indicates that the ground water beneath this site does not exceed the MCL for 1,1,1-TCA as reported in the Phase II RFI. This recent data, coupled with data generated during the Phase I and Phase II of the RFI for the site, suggest that ground water beneath SWMUs 02, 03, 05, and 06 has not been impacted by former activities associated with these SWMUs. These results are consistent with Apex's conclusions in the Phase II RFI report dated September 30, 1996. Therefore, Apex recommends that no further action be required for SWMUs 02, 03, 05, and 06 (see below for a further discussion of the recent results at SWMU 06). The recent analytical data also indicate that ground water beneath SWMU 07 has not been impacted by metals. The lower metals results from all SWMUs relative to the previous (non-quiescent) ground water sampling are likely more representative of actual ground water quality at the facility.

Data collected at SWMU 04 in Apex's previous investigation, coupled with the data from the recent investigation, suggests that soil beneath the overflow ditch and ground water immediately downgradient from the Acetone Evaporation Pond contains acetone. No MCL, health advisory limit (HAL), or other action limits exist for acetone in soil or ground water. The U.S. Environmental Protection Agency (EPA) Office of Solid Waste and Emergency Response (OSWER) has developed a guidance which presents soil screening levels (SSL). These SSLs are risk based concentrations derived by comparing exposure information with toxicity data. SSLs have been prepared for acetone in soil for human exposure via ingestion, inhalation, and migration to ground water. The SSL for acetone for ground water impact is 8,000 ug/kg. In addition, EPA Region III has developed risk based concentrations (RBCs) for a variety of contaminants in tap water, air, fish, and soil. The RBC for acetone in tap water is 3,700 µg/L. Neither the SSL or RBC is intended to be used as a regulatory action limit, however, they are used by EPA toxicologists to screen sites for consideration of future action. These risk based numbers suggest that the concentrations of acetone detected in soil and ground water at SWMU 04 (maximum in soil of 1,100 µg/kg and maximum in ground water of 590 µg/L) do not pose a risk to human health.

Apex's recent investigation indicates that VOC contamination at SWMU 06 in the Borrow Pit Area and the Trench II Area is limited. Soil samples collected during test pitting for the Phase II RFI detected VOCs in soil and waste material (the highest concentrations were present in the waste material). Analysis of soil and ground water collected during the current investigation indicates that acetone is present in the vicinity of Trench II but that the VOC contamination is limited to the area

immediately surrounding the original detections. Soil and ground water downgradient from both the Trench II and Borrow Pit Areas does not contain VOCs, indicating that the documented VOCs have not migrated away from the source area. The concentrations of acetone in soil and ground water at SWMU 06 are less than the concentrations at SWMU 04 (with the exception of waste samples analyzed in the Phase II RFI) and, as with SWMU 04, are viewed as a risk to human health.

Apex's current investigation did not include additional work at SWMU 07 beyond resampling the ground water monitoring wells. Data generated during the Phase II RFI indicated that substantial quantities of ordnance, ordnance related scrap metal, drums, and CS gas remain in the soil at the site. Apex recommended in the Phase II RFI report that a corrective action plan be developed for SWMU 07.

Appendix A

Response to GAEPD Comments on Statistical Analysis

BACKGROUND STATISTICAL ANALYSES

Question 1. Please present the graphical evaluations that were used for determining the data distributions. The report indicates the data were assessed to determine if a "normal of lognormal" distribution existed. Once the distribution was known, how was this information used? Were distributions other than normal or lognormal encountered? Were the data able to be normalized? Please discuss these issues in the report and present the evaluations.

Answer: Graphical evaluations that were used for determining data distributions are attached at the end of this Appendix. The overall data for determination of background concentrations did approximate a normal distribution. Due to the limited number of samples at each of the respective SWMUs, normalcy for the data from each individual SWMU was not addressed although the sample population as a whole did approximate a normal distribution. No normalization of data was required for this assessment.

Question 2. Table 4 presents the results of the background metals statistical analysis. In this table an upper mean and lower mean were calculated per SWMU and on a total SWMU basis. Please state the reason why the lower mean was calculated? No where throughout the report were these values used? It appears the upper mean is equal to the mean plus one standard deviation and the lower mean is equal to the mean minus one standard deviation. These statistical evaluations differ from what was discussed in the text. The text reports the upper tolerance level as being defined as the 95 percent level of confidence that at least 95 percent of the data fall below this value. This would yield the following equation for a normal distribution:

$$X = \mu + zo;$$

where X = upper tolerance level, μ = sample mean, 0 = standard deviation, and z = normal deviate, which is 1.64 at the 95th percentile. The report also states that the higher of the individual SWMU background value and the total SWMU background value would be used to establish the background concentration at each SWMU. This would be done in order to maximize the use of the collected background information while reducing the potential of setting too low of a background concentration at any one SWMU. This approach was not implemented in the report. Changes need to be made throughout the report to correct these discrepancies.

Answer: The lower mean was calculated as a part of the statistical software package. Since Apex was attempting to determine if a respective metal concentration exceeded the normal distribution of the background sample concentrations, the lower mean is not really relevant and has been removed from the tables.

Question 3. Please present all background sampling data in tabular format.

Answer: Background sample data are presented in tabular form. All data tables from the Phase II Report as well as the new table of background data are included in Appendix B.

GENERAL COMMENTS

Question 1. Please update the MCL for lead to 0.015 mg/l and Aldicarb to 0.007 mg/l. Naphthalene does not have an MCL.

Answer: The MCLs listed have been updated in the report. Please refer to the modified tables attached as Appendix B to this report.

Question 2. What procedures were used in the collection of ground water samples for metals analysis? Were samples collected immediately after well recovery, or was the quiescent sampling procedure employed to minimize sediment introduction into the ground water sample? Union Carbide has had problems at the closed RCRA landfill with sediment in ground water samples. To minimize the introduction of sediment into the ground water sample, Union Carbide has switched to the quiescent sampling procedure.

Answer: Ground water samples collected for metals analysis were collected immediately after well purging and did contain significant sediment. This comment has been addressed through the re-sampling of the wells in accordance with GAEPD's "Quiescent Sampling" procedures. Please refer to the text of this addendum for a comparison of the results from the more recent sampling event.

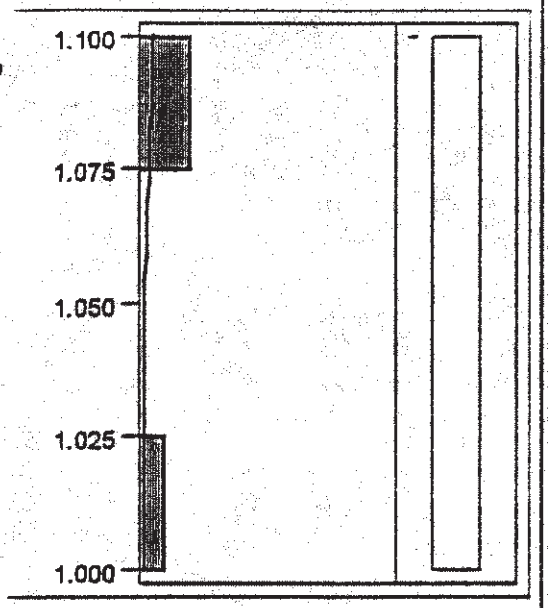
Question 3. Enclosed is a copy of the EPD's Guidance for Selecting Media Remediation Levels at RCRA Solid Waste Management Units. This guidance was finalized November 4, 1996 and may be used in lieu of remediating to background concentration and MCLs. EPD is differing its comments on which SWMUs require further investigation/corrective action until a response is made on the aforementioned comments.

Answer: No response is required to this comment.

SWMU 02

Site Specific Statistics

s



Kernel Std

0.032479

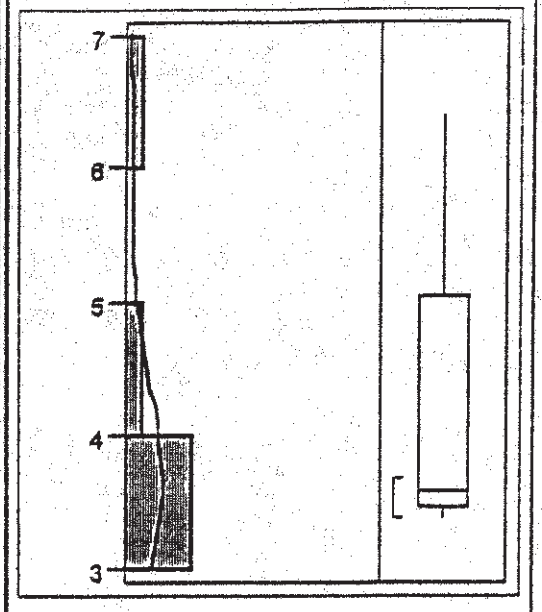
Quantiles

maximum	100.0%	1.1000
	99.5%	1.1000
	97.5%	1.1000
	90.0%	1.1000
quartile	75.0%	1.1000
median	50.0%	1.1000
quartile	25.0%	1.0000
	10.0%	1.0000
	2.5%	1.0000
	0.5%	1.0000
minimum	0.0%	1.0000

Moments

Mean	1.066667
Std Dev	0.051640
Std Err Mean	0.021082
upper 95% Mean	1.120859
lower 95% Mean	1.012475
N	6.000000
Sum Wgts	6.000000

ba



Kernel Std

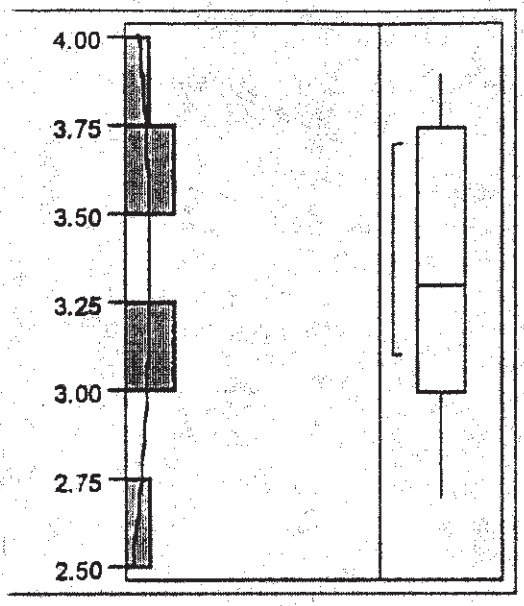
0.737145

Quantiles

maximum	100.0%	6.4000
	99.5%	6.4000
	97.5%	6.4000
	90.0%	6.4000
quartile	75.0%	5.0500
median	50.0%	3.6000
quartile	25.0%	3.4750
	10.0%	3.4000
	2.5%	3.4000
	0.5%	3.4000
minimum	0.0%	3.4000

Moments

Mean	4.183333
Std Dev	1.172035
Std Err Mean	0.478481
upper 95% Mean	5.413291
lower 95% Mean	2.953376
N	6.000000
Sum Wgts	6.000000



Kernel Std

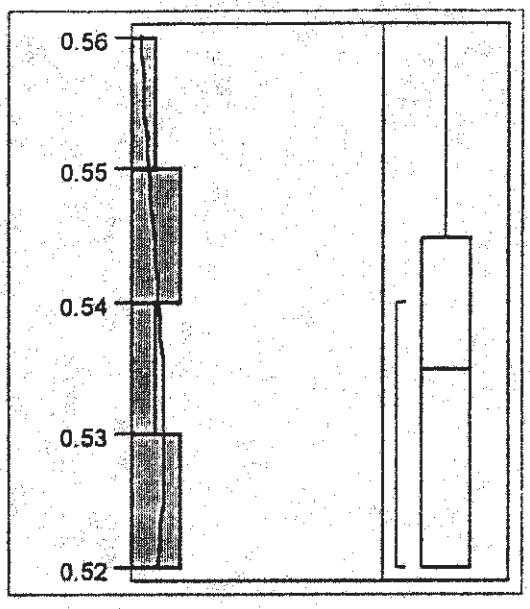
0.280333

Quantiles

maximum	100.0%	3.9000
	99.5%	3.9000
	97.5%	3.9000
	90.0%	3.9000
quartile	75.0%	3.7500
median	50.0%	3.3000
quartile	25.0%	3.0000
	10.0%	2.7000
	2.5%	2.7000
	0.5%	2.7000
minimum	0.0%	2.7000

Moments

Mean	3.333333
Std Dev	0.445720
Std Err Mean	0.181965
upper 95% Mean	3.801081
lower 95% Mean	2.865585
N	6.000000
Sum Wgts	6.000000



Kernel Std

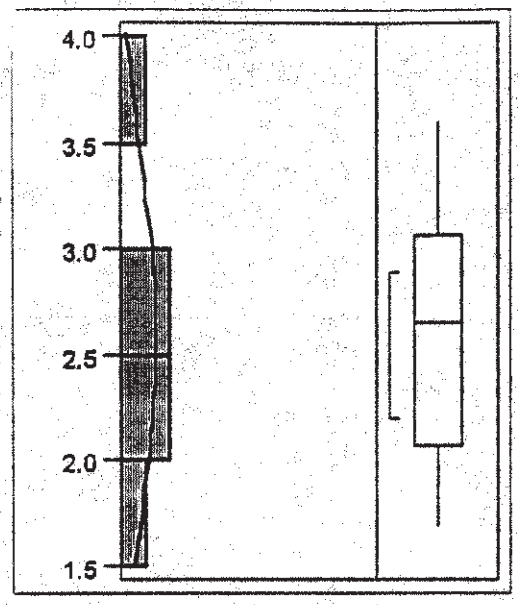
0.009538

Quantiles

maximum	100.0%	0.56000
	99.5%	0.56000
	97.5%	0.56000
	90.0%	0.56000
quartile	75.0%	0.54500
median	50.0%	0.53500
quartile	25.0%	0.52000
	10.0%	0.52000
	2.5%	0.52000
	0.5%	0.52000
minimum	0.0%	0.52000

Moments

Mean	0.535000
Std Dev	0.015166
Std Err Mean	0.006191
upper 95% Mean	0.550915
lower 95% Mean	0.519085
N	6.000000
Sum Wgts	6.000000



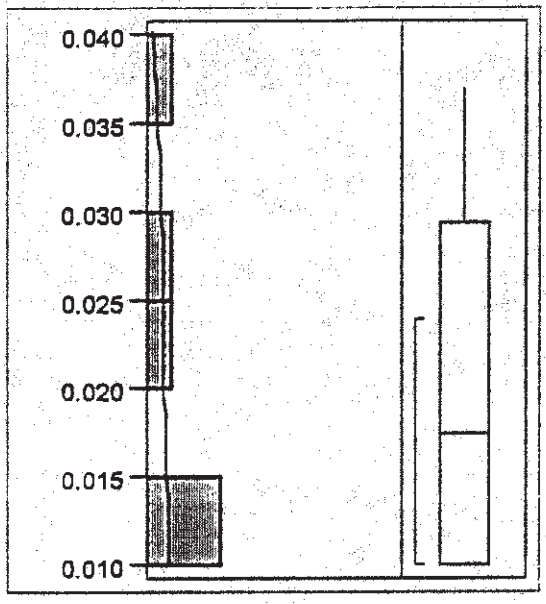
Kernel Std
0.416087

Quantiles

maximum	100.0%	3.6000
	99.5%	3.6000
	97.5%	3.6000
	90.0%	3.6000
quartile	75.0%	3.0750
median	50.0%	2.6500
quartile	25.0%	2.0750
	10.0%	1.7000
	2.5%	1.7000
	0.5%	1.7000
minimum	0.0%	1.7000

Moments

Mean	2.616667
Std Dev	0.661564
Std Err Mean	0.270082
upper 95% Mean	3.310925
lower 95% Mean	1.922408
N	6.000000
Sum Wgts	6.000000



Kernel Std
0.007087

Quantiles

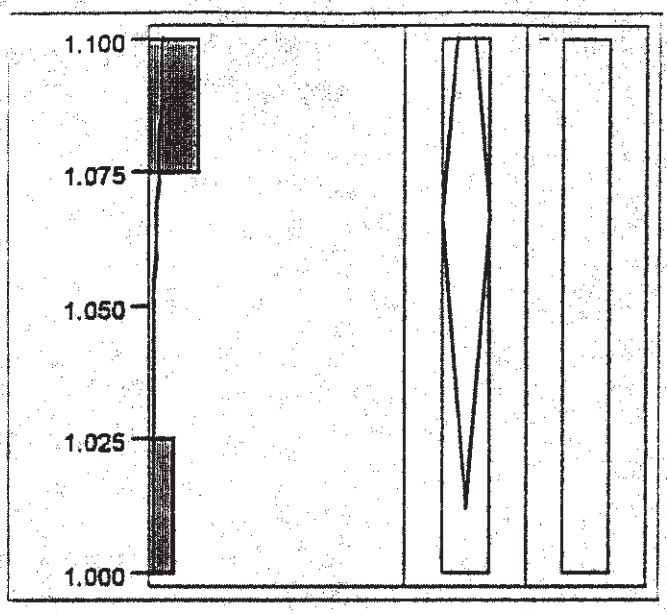
maximum	100.0%	0.03700
	99.5%	0.03700
	97.5%	0.03700
	90.0%	0.03700
quartile	75.0%	0.02950
median	50.0%	0.01750
quartile	25.0%	0.01000
	10.0%	0.01000
	2.5%	0.01000
	0.5%	0.01000
minimum	0.0%	0.01000

Moments

Mean	0.019833
Std Dev	0.011268
Std Err Mean	0.004600
upper 95% Mean	0.031658
lower 95% Mean	0.008009
N	6.000000
Sum Wgts	6.000000

SWMU 03

Site Specific Statistics



Kernel Std

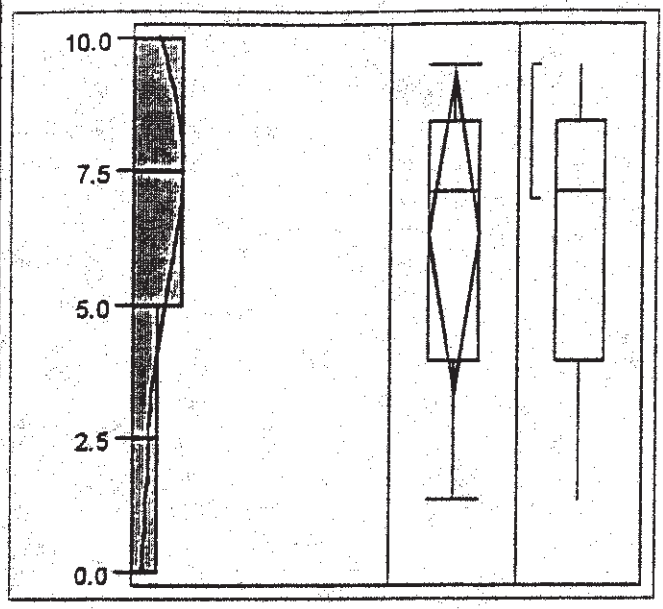
0.032479

Quantiles

maximum	100.0%	1.1000
	99.5%	1.1000
	97.5%	1.1000
	90.0%	1.1000
quartile	75.0%	1.1000
median	50.0%	1.1000
quartile	25.0%	1.0000
	10.0%	1.0000
	2.5%	1.0000
	0.5%	1.0000
minimum	0.0%	1.0000

Moments

Mean	1.066667
Std Dev	0.051640
Std Err Mean	0.021082
upper 95% Mean	1.120859
lower 95% Mean	1.012475
N	6.000000
Sum Wgts	6.000000



Kernel Std

1.805739

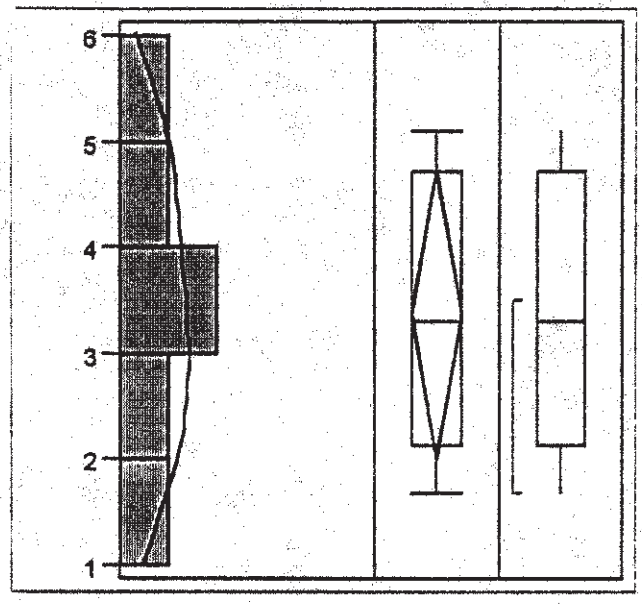
Quantiles

maximum	100.0%	9.5000
	99.5%	9.5000
	97.5%	9.5000
	90.0%	9.5000
quartile	75.0%	8.4500
median	50.0%	7.1500
quartile	25.0%	3.9500
	10.0%	1.4000
	2.5%	1.4000
	0.5%	1.4000
minimum	0.0%	1.4000

Moments

Mean	6.350000
Std Dev	2.871063
Std Err Mean	1.172106
upper 95% Mean	9.362952
lower 95% Mean	3.337048
N	6.000000
Sum Wgts	6.000000

Cr



Kernel Std
0.821409

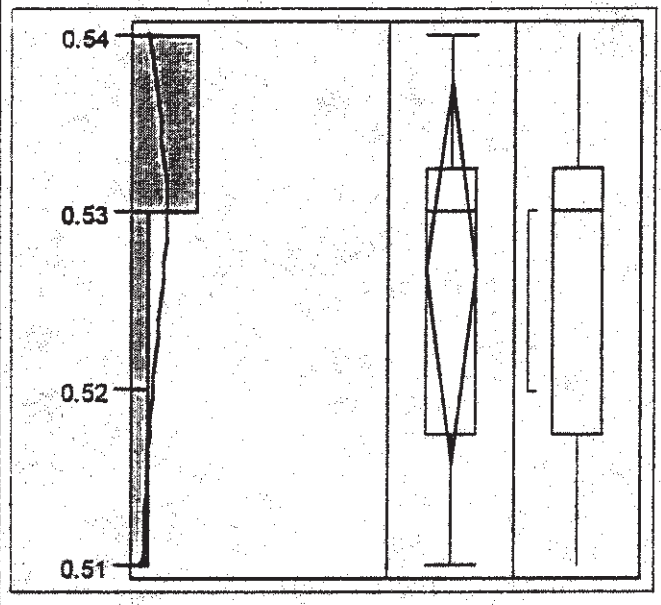
Quantiles

maximum	100.0%	5.1000
	99.5%	5.1000
	97.5%	5.1000
	90.0%	5.1000
quartile	75.0%	4.7250
median	50.0%	3.3000
quartile	25.0%	2.1500
	10.0%	1.7000
	2.5%	1.7000
	0.5%	1.7000
minimum	0.0%	1.7000

Moments

Mean	3.383333
Std Dev	1.306012
Std Err Mean	0.533177
upper 95% Mean	4.753889
lower 95% Mean	2.012778
N	6.000000
Sum Wgts	6.000000

Ca



Kernel Std
0.006496

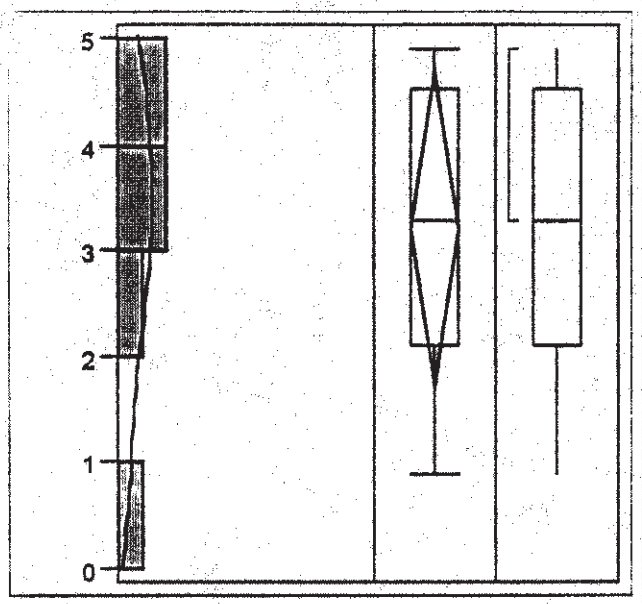
Quantiles

maximum	100.0%	0.54000
	99.5%	0.54000
	97.5%	0.54000
	90.0%	0.54000
quartile	75.0%	0.53250
median	50.0%	0.53000
quartile	25.0%	0.51750
	10.0%	0.51000
	2.5%	0.51000
	0.5%	0.51000
minimum	0.0%	0.51000

Moments

Mean	0.526667
Std Dev	0.010328
Std Err Mean	0.004216
upper 95% Mean	0.537505
lower 95% Mean	0.515828
N	6.000000
Sum Wgts	6.000000

Pb



Kernel Std
0.8972

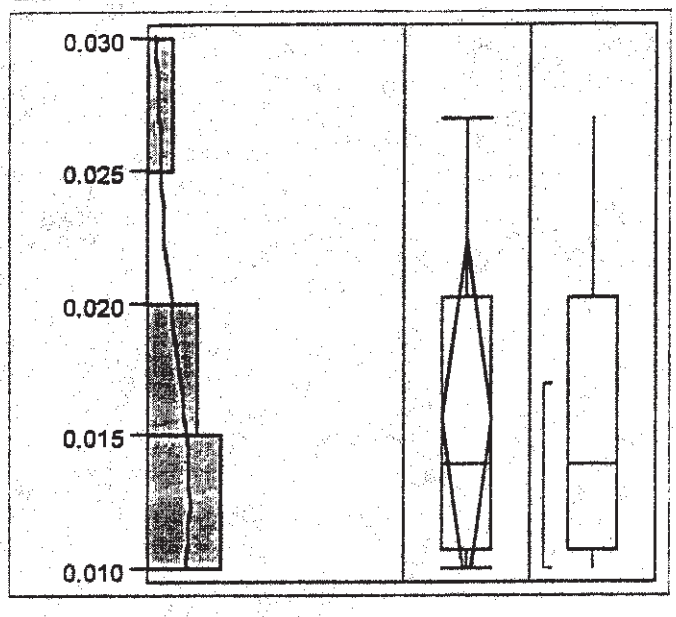
Quantiles

maximum	100.0%	4.9000
	99.5%	4.9000
	97.5%	4.9000
	90.0%	4.9000
quartile	75.0%	4.5250
median	50.0%	3.3000
quartile	25.0%	2.0975
	10.0%	0.8900
	2.5%	0.8900
	0.5%	0.8900
minimum	0.0%	0.8900

Moments

Mean	3.215000
Std Dev	1.426517
Std Err Mean	0.582373
upper 95% Mean	4.712016
lower 95% Mean	1.717984
N	6.000000
Sum Wgts	6.000000

Hg



Kernel Std
0.004089

Quantiles

maximum	100.0%	0.02700
	99.5%	0.02700
	97.5%	0.02700
	90.0%	0.02700
quartile	75.0%	0.02025
median	50.0%	0.01400
quartile	25.0%	0.01075
	10.0%	0.01000
	2.5%	0.01000
	0.5%	0.01000
minimum	0.0%	0.01000

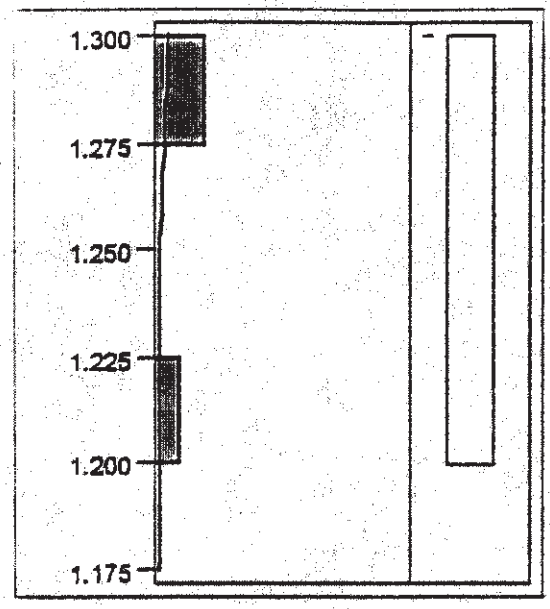
Moments

Mean	0.015667
Std Dev	0.006501
Std Err Mean	0.002654
upper 95% Mean	0.022489
lower 95% Mean	0.008844
N	6.000000
Sum Wgts	6.000000

SWMU 04

Site Specific Statistics

As



Kernel Std

0.032479

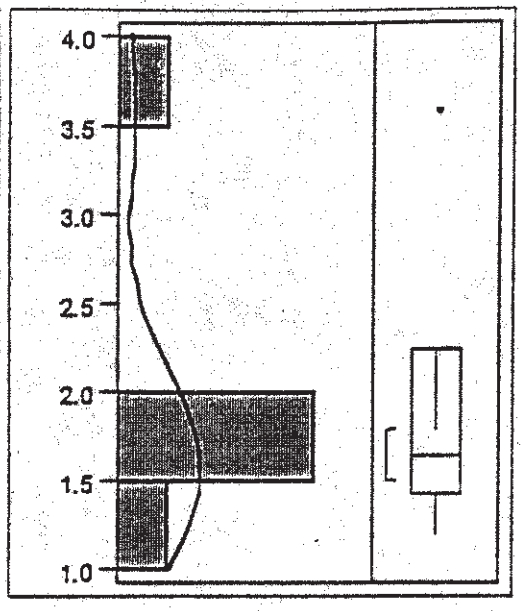
Quantiles

maximum	100.0%	1.3000
	99.5%	1.3000
	97.5%	1.3000
	90.0%	1.3000
quartile	75.0%	1.3000
median	50.0%	1.3000
quartile	25.0%	1.2000
	10.0%	1.2000
	2.5%	1.2000
	0.5%	1.2000
minimum	0.0%	1.2000

Moments

Mean	1.266667
Std Dev	0.051640
Std Err Mean	0.021082
upper 95% Mean	1.320859
lower 95% Mean	1.212475
N	6.000000
Sum Wgts	6.000000

Ba



Kernel Std

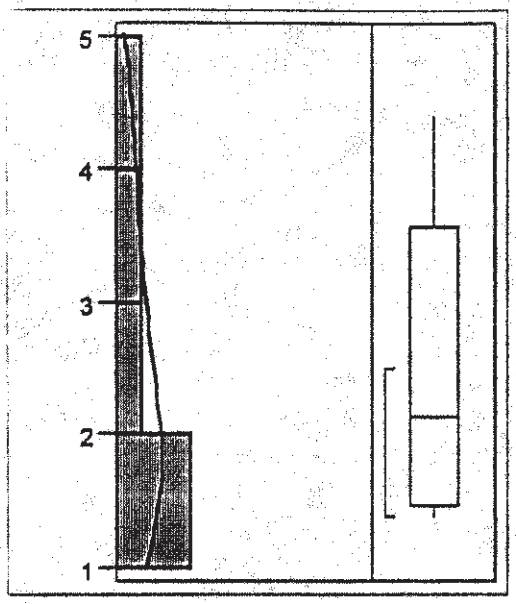
0.539574

Quantiles

maximum	100.0%	3.6000
	99.5%	3.6000
	97.5%	3.6000
	90.0%	3.6000
quartile	75.0%	2.2500
median	50.0%	1.6500
quartile	25.0%	1.4250
	10.0%	1.2000
	2.5%	1.2000
	0.5%	1.2000
minimum	0.0%	1.2000

Moments

Mean	1.900000
Std Dev	0.857904
Std Err Mean	0.350238
upper 95% Mean	2.800302
lower 95% Mean	0.999698
N	6.000000
Sum Wgts	6.000000



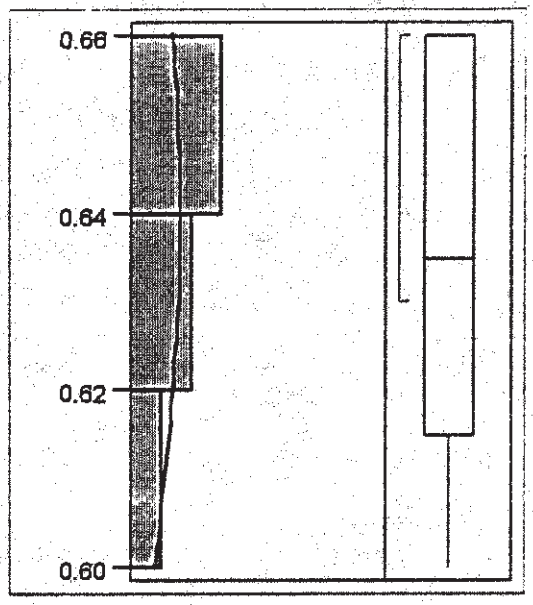
Kernel Std
0.741426

Quantiles

maximum	100.0%	4.4000
	99.5%	4.4000
	97.5%	4.4000
	90.0%	4.4000
quartile	75.0%	3.5750
median	50.0%	2.1500
quartile	25.0%	1.4750
	10.0%	1.4000
	2.5%	1.4000
	0.5%	1.4000
minimum	0.0%	1.4000

Moments

Mean	2.483333
Std Dev	1.178841
Std Err Mean	0.481260
upper 95% Mean	3.720433
lower 95% Mean	1.246233
N	6.000000
Sum Wgts	6.000000



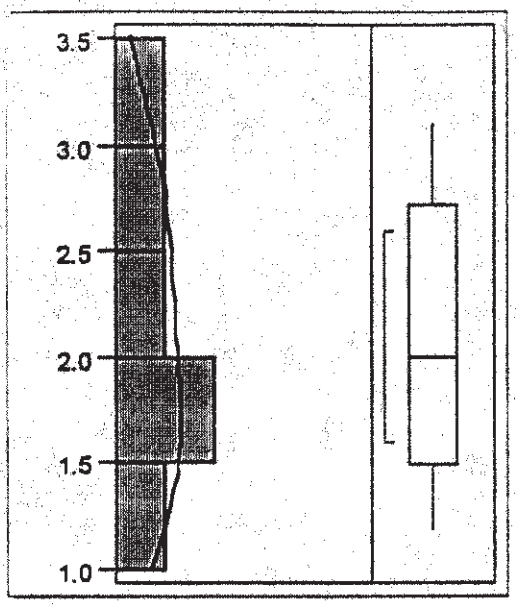
Kernel Std
0.01475

Quantiles

maximum	100.0%	0.66000
	99.5%	0.66000
	97.5%	0.66000
	90.0%	0.66000
quartile	75.0%	0.66000
median	50.0%	0.63500
quartile	25.0%	0.61500
	10.0%	0.60000
	2.5%	0.60000
	0.5%	0.60000
minimum	0.0%	0.60000

Moments

Mean	0.635000
Std Dev	0.023452
Std Err Mean	0.009574
upper 95% Mean	0.659611
lower 95% Mean	0.610389
N	6.000000
Sum Wgts	6.000000



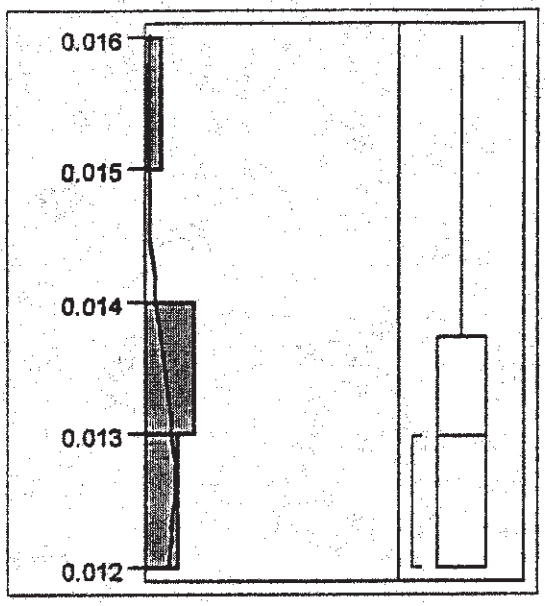
Kernel Std
0.445471

Quantiles

maximum	100.0%	3.1000
	99.5%	3.1000
	97.5%	3.1000
	90.0%	3.1000
quartile	75.0%	2.7250
median	50.0%	2.0000
quartile	25.0%	1.5000
	10.0%	1.2000
	2.5%	1.2000
	0.5%	1.2000
minimum	0.0%	1.2000

Moments

Mean	2.083333
Std Dev	0.708284
Std Err Mean	0.289156
upper 95% Mean	2.826621
lower 95% Mean	1.340045
N	6.000000
Sum Wgts	6.000000



Kernel Std
0.000926

Quantiles

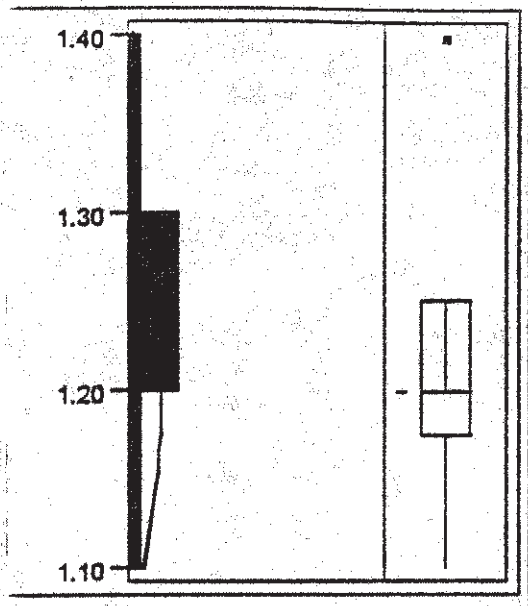
maximum	100.0%	0.01600
	99.5%	0.01600
	97.5%	0.01600
	90.0%	0.01600
quartile	75.0%	0.01375
median	50.0%	0.01300
quartile	25.0%	0.01200
	10.0%	0.01200
	2.5%	0.01200
	0.5%	0.01200
minimum	0.0%	0.01200

Moments

Mean	0.013167
Std Dev	0.001472
Std Err Mean	0.000601
upper 95% Mean	0.014711
lower 95% Mean	0.011622
N	6.000000
Sum Wgts	6.000000

SWMU 05

Site Specific Statistics



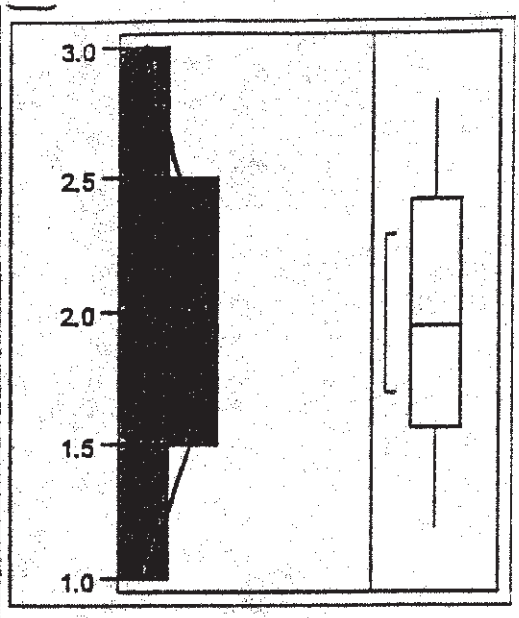
Kernel Std
0.061837

Quantiles

maximum	100.0%	1.4000
	99.5%	1.4000
	97.5%	1.4000
	90.0%	1.4000
quartile	75.0%	1.2500
median	50.0%	1.2000
quartile	25.0%	1.1750
	10.0%	1.1000
	2.5%	1.1000
	0.5%	1.1000
minimum	0.0%	1.1000

Moments

Mean	1.216667
Std Dev	0.098319
Std Err Mean	0.040139
upper 95% Mean	1.319845
lower 95% Mean	1.113488
N	6.000000
Sum Wgts	6.000000



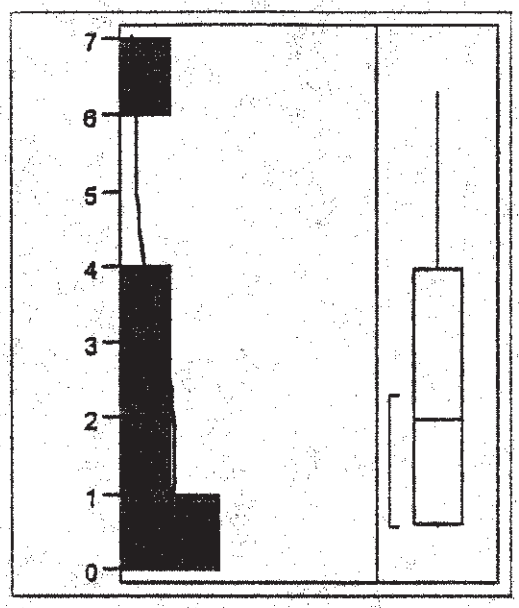
Kernel Std
0.345443

Quantiles

maximum	100.0%	2.8000
	99.5%	2.8000
	97.5%	2.8000
	90.0%	2.8000
quartile	75.0%	2.4250
median	50.0%	1.9500
quartile	25.0%	1.5750
	10.0%	1.2000
	2.5%	1.2000
	0.5%	1.2000
minimum	0.0%	1.2000

Moments

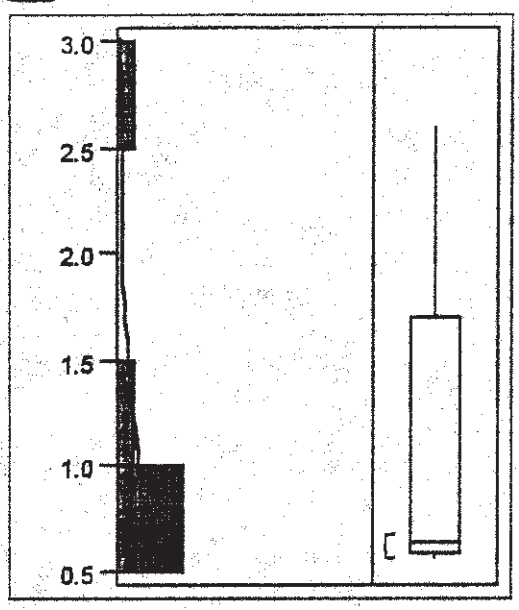
Mean	1.983333
Std Dev	0.549242
Std Err Mean	0.224227
upper 95% Mean	2.559719
lower 95% Mean	1.406948
N	6.000000
Sum Wgts	6.000000



Kernel Std
1.343523

Quantiles		
maximum	100.0%	6.3000
	99.5%	6.3000
	97.5%	6.3000
	90.0%	6.3000
quartile	75.0%	3.9750
median	50.0%	2.0000
quartile	25.0%	0.6100
	10.0%	0.5800
	2.5%	0.5800
	0.5%	0.5800
minimum	0.0%	0.5800

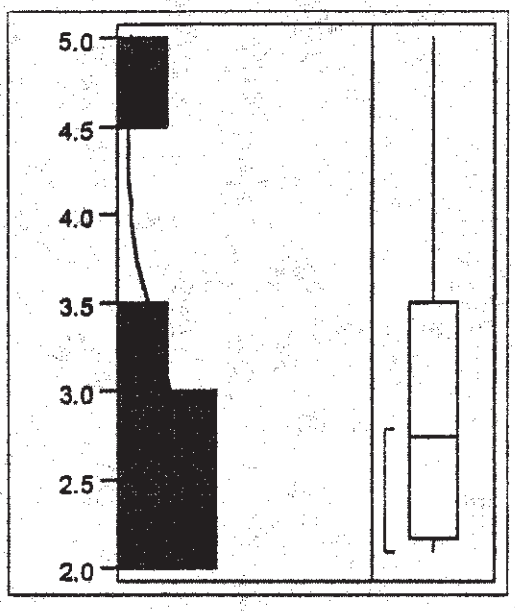
Moments	
Mean	2.450000
Std Dev	2.138155
Std Err Mean	0.872082
upper 95% Mean	4.691725
lower 95% Mean	0.208275
N	6.000000
Sum Wgts	6.000000



Kernel Std
0.508271

Quantiles		
maximum	100.0%	2.6000
	99.5%	2.6000
	97.5%	2.6000
	90.0%	2.6000
quartile	75.0%	1.7000
median	50.0%	0.6500
quartile	25.0%	0.6000
	10.0%	0.5700
	2.5%	0.5700
	0.5%	0.5700
minimum	0.0%	0.5700

Moments	
Mean	1.080000
Std Dev	0.808134
Std Err Mean	0.329919
upper 95% Mean	1.928072
lower 95% Mean	0.231928
N	6.000000
Sum Wgts	6.000000



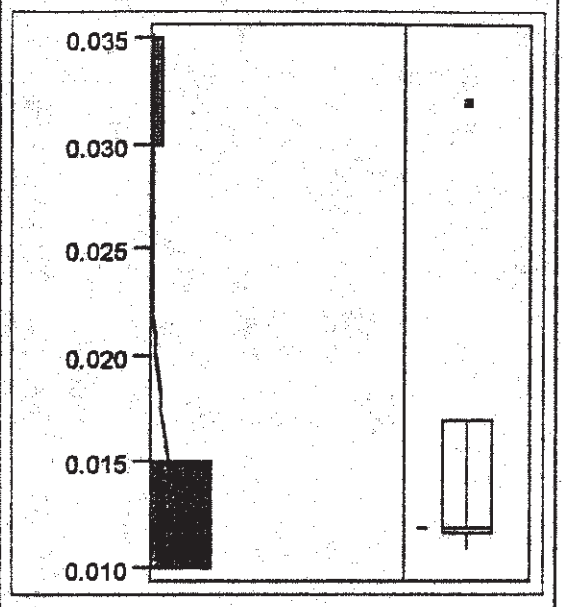
Kernel Std
0.664026

Quantiles

maximum	100.0%	5.0000
	99.5%	5.0000
	97.5%	5.0000
	90.0%	5.0000
quartile	75.0%	3.5000
median	50.0%	2.7500
quartile	25.0%	2.1750
	10.0%	2.1000
	2.5%	2.1000
	0.5%	2.1000
minimum	0.0%	2.1000

Moments

Mean	2.966667
Std Dev	1.055778
Std Err Mean	0.431019
upper 95% Mean	4.074621
lower 95% Mean	1.858712
N	6.000000
Sum Wgts	6.000000



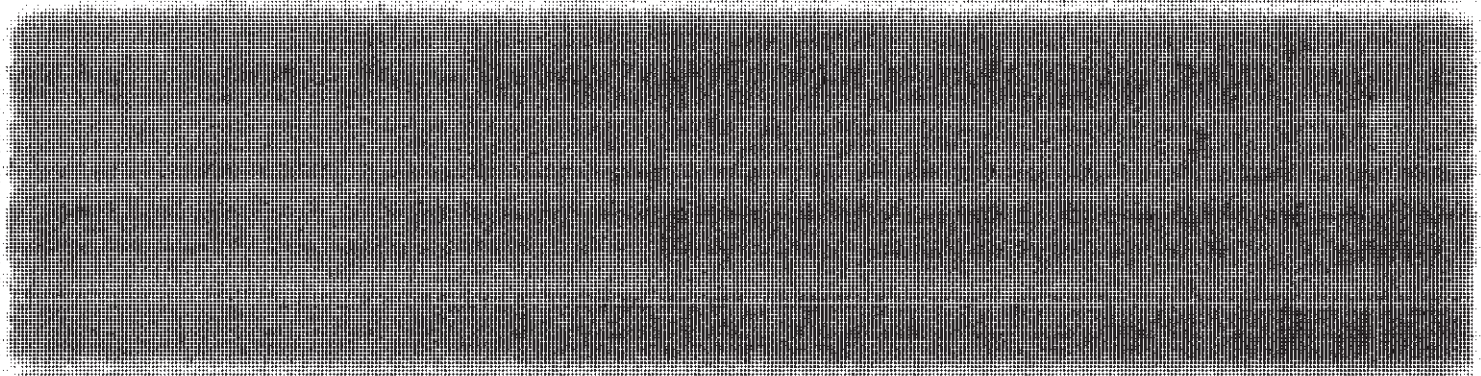
Kernel Std
0.005193

Quantiles

maximum	100.0%	0.03200
	99.5%	0.03200
	97.5%	0.03200
	90.0%	0.03200
quartile	75.0%	0.01700
median	50.0%	0.01200
quartile	25.0%	0.01175
	10.0%	0.01100
	2.5%	0.01100
	0.5%	0.01100
minimum	0.0%	0.01100

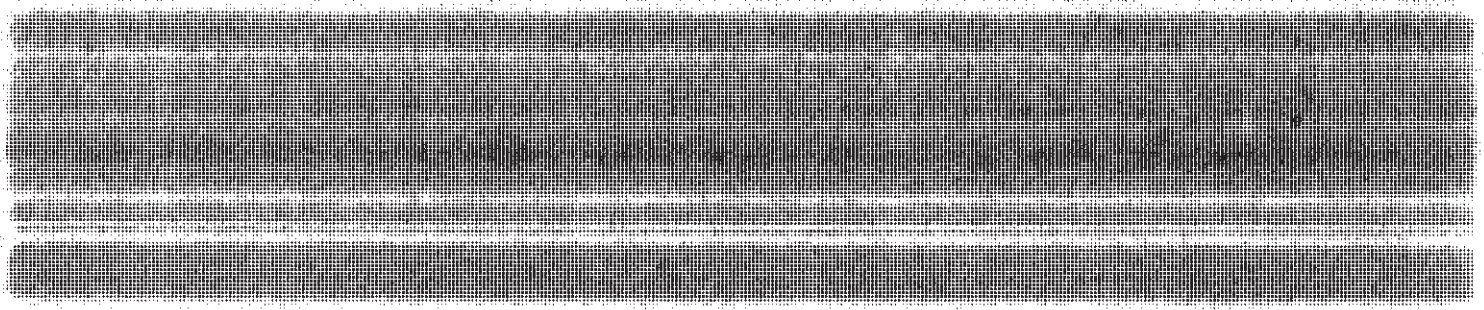
Moments

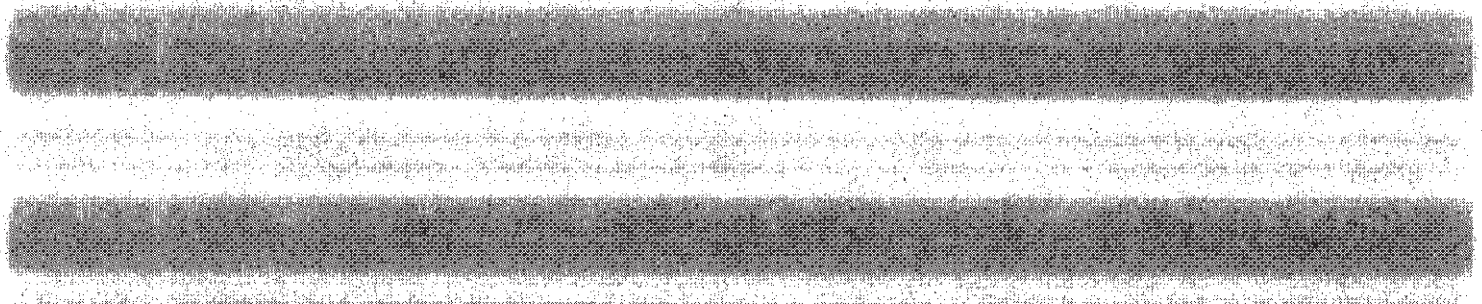
Mean	0.015167
Std Dev	0.008256
Std Err Mean	0.003371
upper 95% Mean	0.023831
lower 95% Mean	0.006502
N	6.000000
Sum Wgts	6.000000

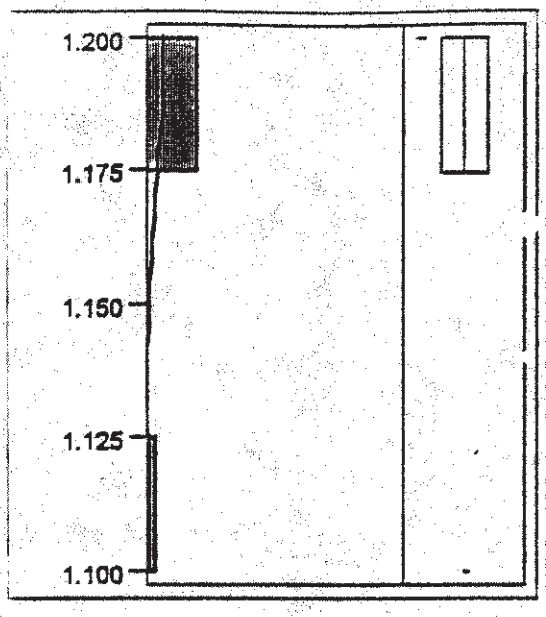


PWMU 08

Site Specific Statistics







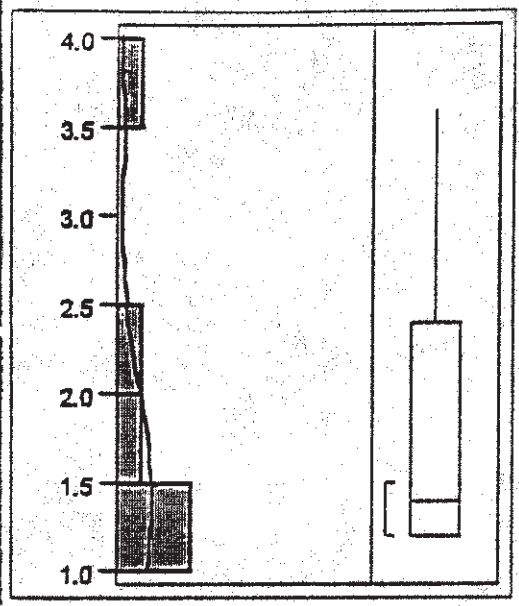
Kernel Std
0.025677

Quantiles

maximum	100.0%	1.2000
	99.5%	1.2000
	97.5%	1.2000
	90.0%	1.2000
quartile	75.0%	1.2000
median	50.0%	1.2000
quartile	25.0%	1.1750
	10.0%	1.1000
	2.5%	1.1000
	0.5%	1.1000
minimum	0.0%	1.1000

Moments

Mean	1.183333
Std Dev	0.040825
Std Err Mean	0.016667
upper 95% Mean	1.226176
lower 95% Mean	1.140491
N	6.000000
Sum Wgts	6.000000



Kernel Std
0.585966

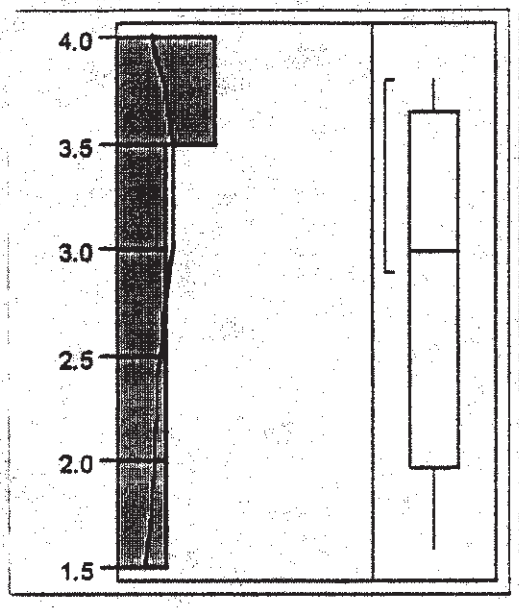
Quantiles

maximum	100.0%	3.6000
	99.5%	3.6000
	97.5%	3.6000
	90.0%	3.6000
quartile	75.0%	2.4000
median	50.0%	1.4000
quartile	25.0%	1.2000
	10.0%	1.2000
	2.5%	1.2000
	0.5%	1.2000
minimum	0.0%	1.2000

Moments

Mean	1.800000
Std Dev	0.931665
Std Err Mean	0.380351
upper 95% Mean	2.777708
lower 95% Mean	0.822292
N	6.000000
Sum Wgts	6.000000

Cr



Kernel Std
0.537738

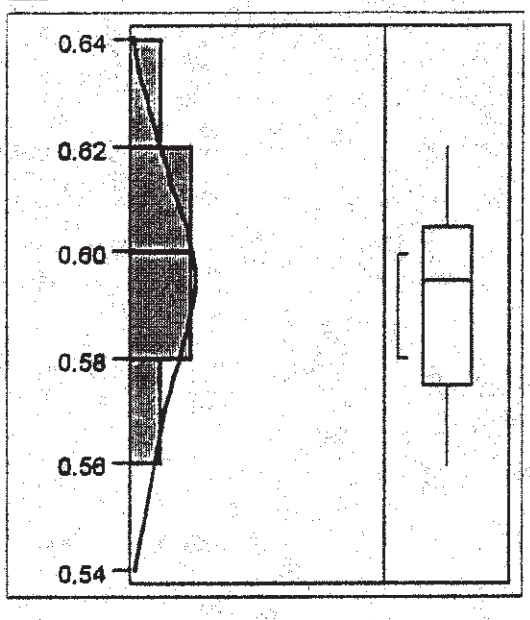
Quantiles

maximum	100.0%	3.8000
	99.5%	3.8000
	97.5%	3.8000
	90.0%	3.8000
quartile	75.0%	3.6500
median	50.0%	3.0000
quartile	25.0%	1.9750
	10.0%	1.6000
	2.5%	1.6000
	0.5%	1.6000
minimum	0.0%	1.6000

Moments

Mean	2.850000
Std Dev	0.854985
Std Err Mean	0.349046
upper 95% Mean	3.747239
lower 95% Mean	1.952761
N	6.000000
Sum Wgts	6.000000

Ca



Kernel Std
0.012838

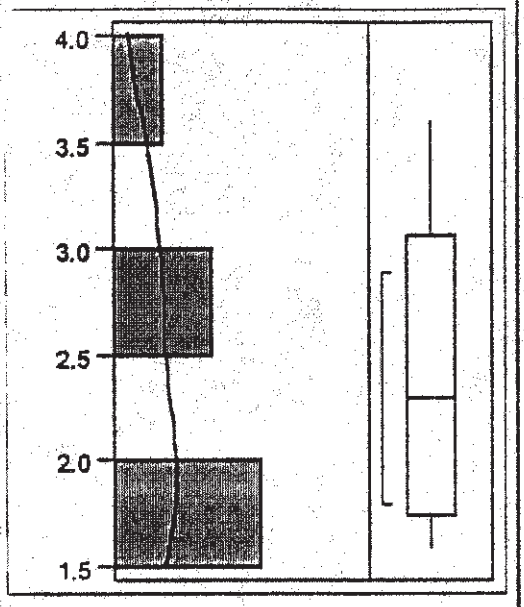
Quantiles

maximum	100.0%	0.62000
	99.5%	0.62000
	97.5%	0.62000
	90.0%	0.62000
quartile	75.0%	0.60500
median	50.0%	0.59500
quartile	25.0%	0.57500
	10.0%	0.56000
	2.5%	0.56000
	0.5%	0.56000
minimum	0.0%	0.56000

Moments

Mean	0.591667
Std Dev	0.020412
Std Err Mean	0.008333
upper 95% Mean	0.613088
lower 95% Mean	0.570245
N	6.000000
Sum Wgts	6.000000

Pb

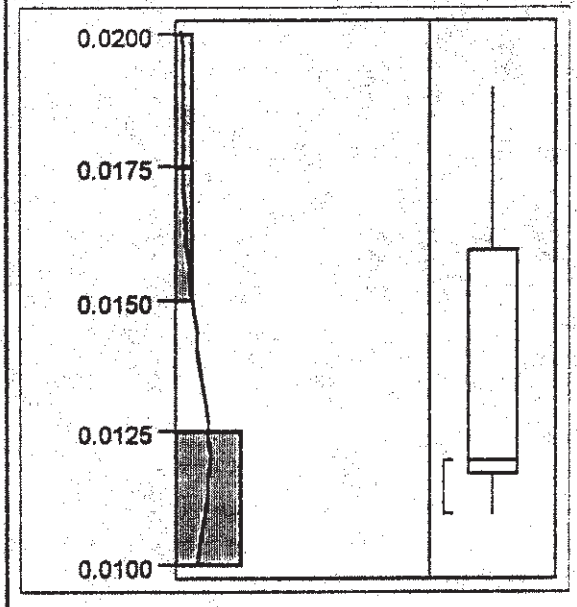


Kernel Std
0.489473

Quantiles		
maximum	100.0%	3.6000
	99.5%	3.6000
	97.5%	3.6000
	90.0%	3.6000
quartile	75.0%	3.0750
median	50.0%	2.3000
quartile	25.0%	1.7500
	10.0%	1.6000
	2.5%	1.6000
	0.5%	1.6000
minimum	0.0%	1.6000

Moments	
Mean	2.416667
Std Dev	0.778246
Std Err Mean	0.317718
upper 95% Mean	3.233374
lower 95% Mean	1.599960
N	6.000000
Sum Wgts	6.000000

Hg



Kernel Std
0.001897

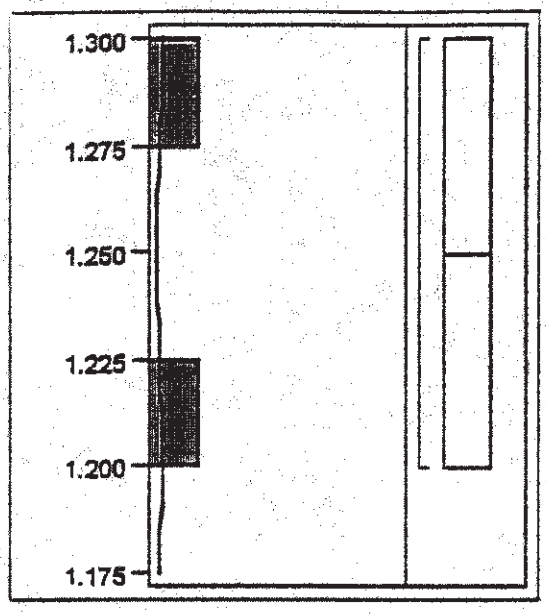
Quantiles		
maximum	100.0%	0.01900
	99.5%	0.01900
	97.5%	0.01900
	90.0%	0.01900
quartile	75.0%	0.01600
median	50.0%	0.01200
quartile	25.0%	0.01175
	10.0%	0.01100
	2.5%	0.01100
	0.5%	0.01100
minimum	0.0%	0.01100

Moments	
Mean	0.013500
Std Dev	0.003017
Std Err Mean	0.001232
upper 95% Mean	0.016666
lower 95% Mean	0.010334
N	6.000000
Sum Wgts	6.000000

SWMU 07

Site Specific Statistics

As



Kernel Std

0.034449

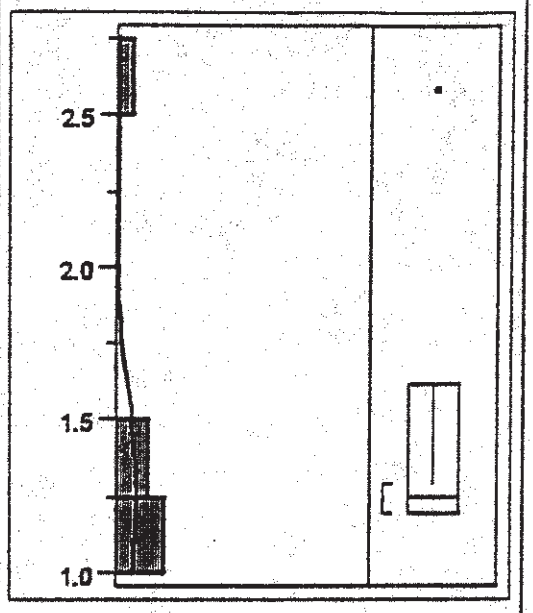
Quantiles

maximum	100.0%	1.3000
	99.5%	1.3000
	97.5%	1.3000
	90.0%	1.3000
quartile	75.0%	1.3000
median	50.0%	1.2500
quartile	25.0%	1.2000
	10.0%	1.2000
	2.5%	1.2000
	0.5%	1.2000
minimum	0.0%	1.2000

Moments

Mean	1.250000
Std Dev	0.054772
Std Err Mean	0.022361
upper 95% Mean	1.307479
lower 95% Mean	1.192521
N	6.000000
Sum Wgts	6.000000

Ba



Kernel Std

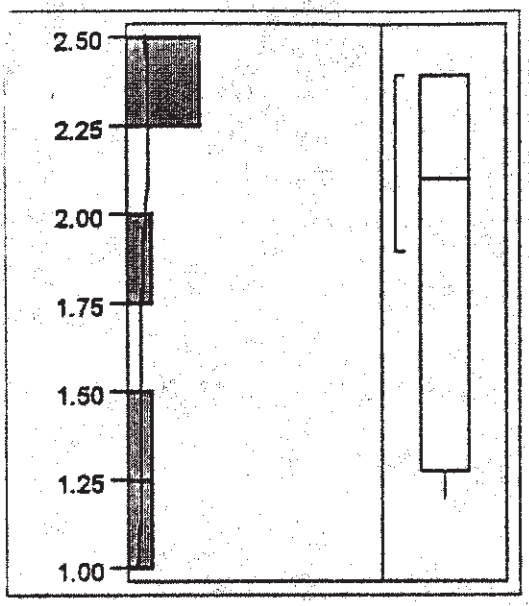
0.350558

Quantiles

maximum	100.0%	2.6000
	99.5%	2.6000
	97.5%	2.6000
	90.0%	2.6000
quartile	75.0%	1.6250
median	50.0%	1.2500
quartile	25.0%	1.2000
	10.0%	1.2000
	2.5%	1.2000
	0.5%	1.2000
minimum	0.0%	1.2000

Moments

Mean	1.466667
Std Dev	0.557375
Std Err Mean	0.227547
upper 95% Mean	2.051587
lower 95% Mean	0.881746
N	6.000000
Sum Wgts	6.000000



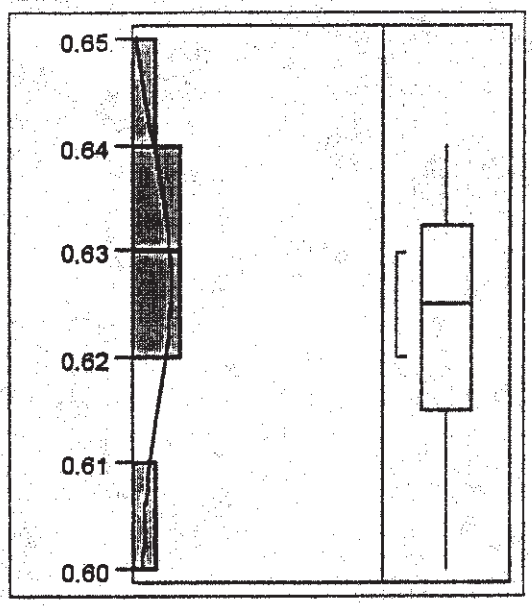
Kernel Std
0.345443

Quantiles

maximum	100.0%	2.4000
	99.5%	2.4000
	97.5%	2.4000
	90.0%	2.4000
quartile	75.0%	2.4000
median	50.0%	2.1000
quartile	25.0%	1.2750
	10.0%	1.2000
	2.5%	1.2000
	0.5%	1.2000
minimum	0.0%	1.2000

Moments

Mean	1.916667
Std Dev	0.549242
Std Err Mean	0.224227
upper 95% Mean	2.493052
lower 95% Mean	1.340281
N	6.000000
Sum Wgts	6.000000



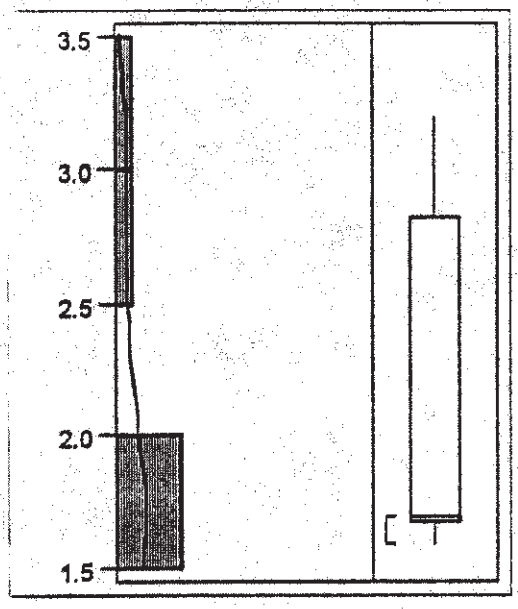
Kernel Std
0.008593

Quantiles

maximum	100.0%	0.64000
	99.5%	0.64000
	97.5%	0.64000
	90.0%	0.64000
quartile	75.0%	0.63250
median	50.0%	0.62500
quartile	25.0%	0.61500
	10.0%	0.60000
	2.5%	0.60000
	0.5%	0.60000
minimum	0.0%	0.60000

Moments

Mean	0.623333
Std Dev	0.013663
Std Err Mean	0.005578
upper 95% Mean	0.637671
lower 95% Mean	0.608996
N	6.000000
Sum Wgts	6.000000



Kernel Std

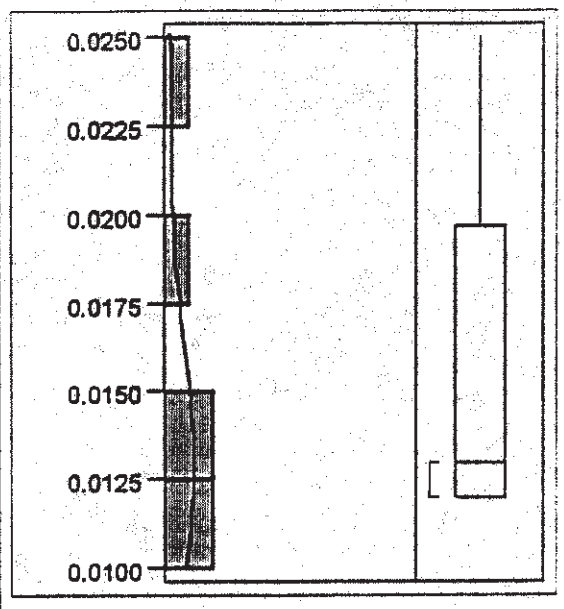
0.426571

Quantiles

maximum	100.0%	3.2000
	99.5%	3.2000
	97.5%	3.2000
	90.0%	3.2000
quartile	75.0%	2.8250
median	50.0%	1.7000
quartile	25.0%	1.6750
	10.0%	1.6000
	2.5%	1.6000
	0.5%	1.6000
minimum	0.0%	1.6000

Moments

Mean	2.100000
Std Dev	0.678233
Std Err Mean	0.276887
upper 95% Mean	2.811752
lower 95% Mean	1.388248
N	6.000000
Sum Wgts	6.000000



Kernel Std

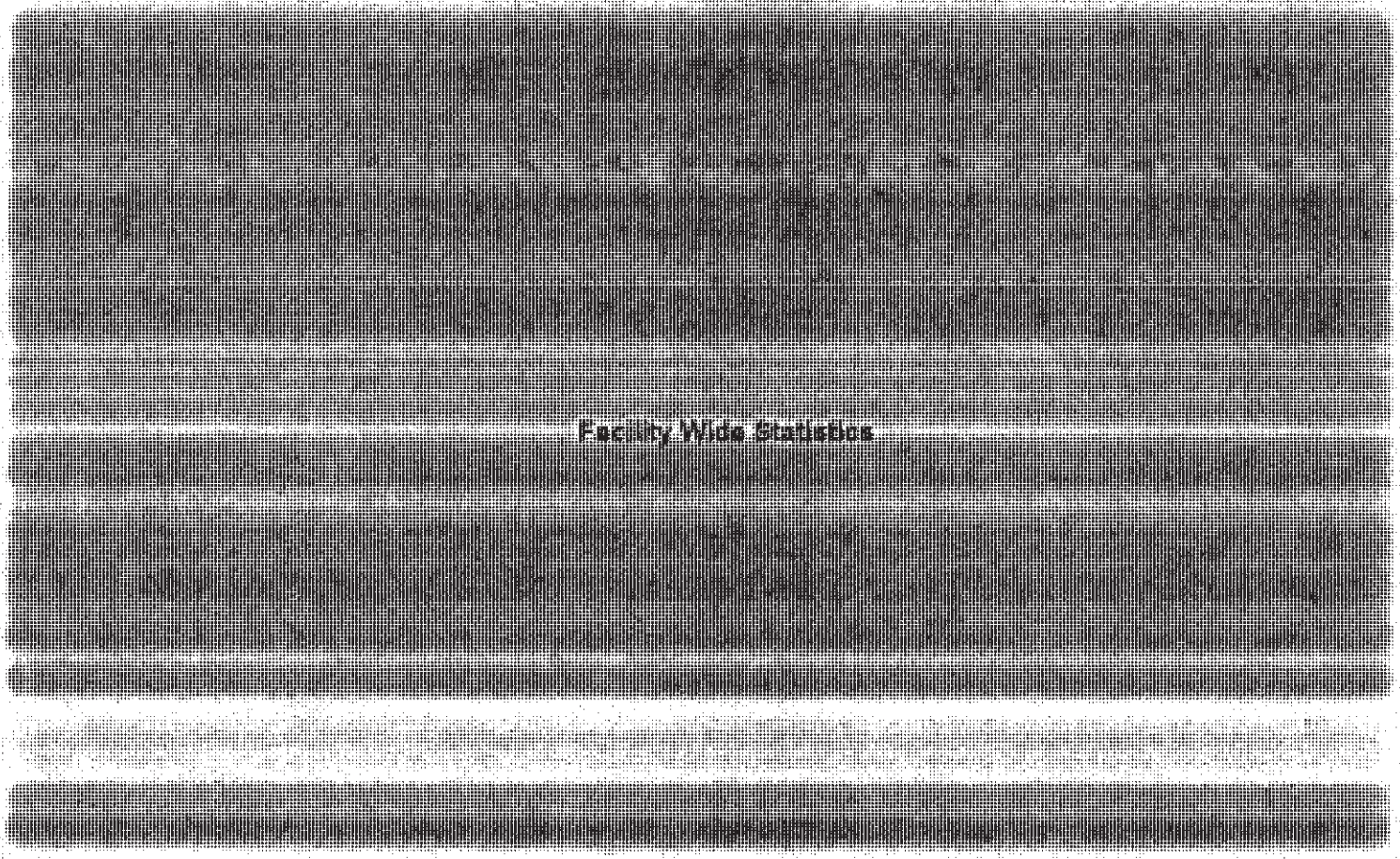
0.00325

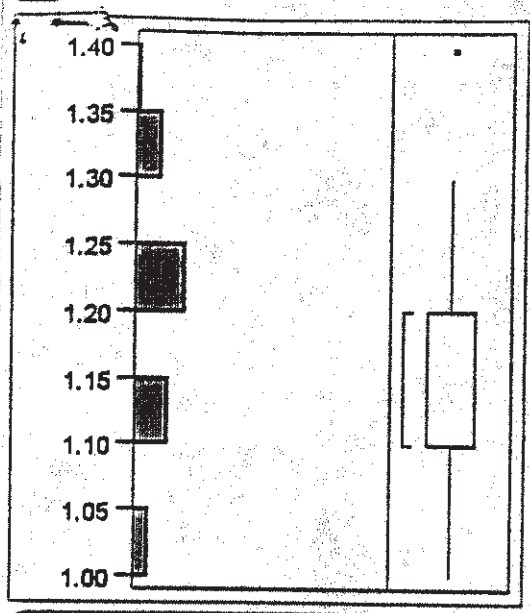
Quantiles

maximum	100.0%	0.02500
	99.5%	0.02500
	97.5%	0.02500
	90.0%	0.02500
quartile	75.0%	0.01975
median	50.0%	0.01300
quartile	25.0%	0.01200
	10.0%	0.01200
	2.5%	0.01200
	0.5%	0.01200
minimum	0.0%	0.01200

Moments

Mean	0.015500
Std Dev	0.005167
Std Err Mean	0.002110
upper 95% Mean	0.020923
lower 95% Mean	0.010077
N	6.000000
Sum Wgts	6.000000


Facility Wide Statistics

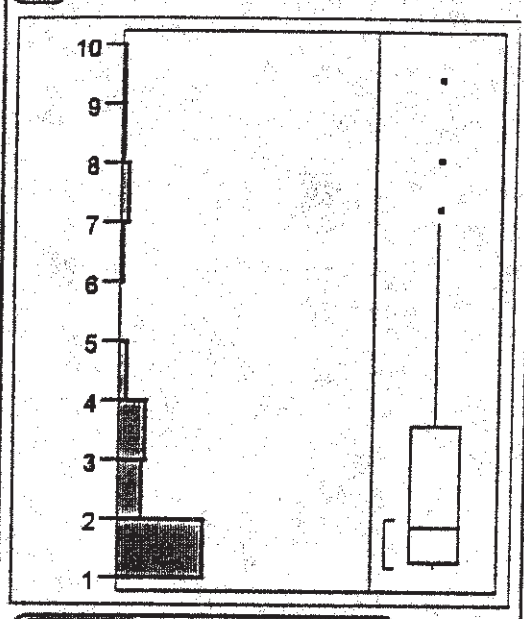


Quantiles

maximum	100.0%	1.4000
	99.5%	1.4000
	97.5%	1.4000
	90.0%	1.3000
quartile	75.0%	1.2000
median	50.0%	1.2000
quartile	25.0%	1.1000
	10.0%	1.0000
	2.5%	1.0000
	0.5%	1.0000
minimum	0.0%	1.0000

Moments

Mean	1.17500
Std Dev	0.09964
Std Err Mean	0.01661
upper 95% Mean	1.20871
lower 95% Mean	1.14129
N	36.00000
Sum Wgts	36.00000

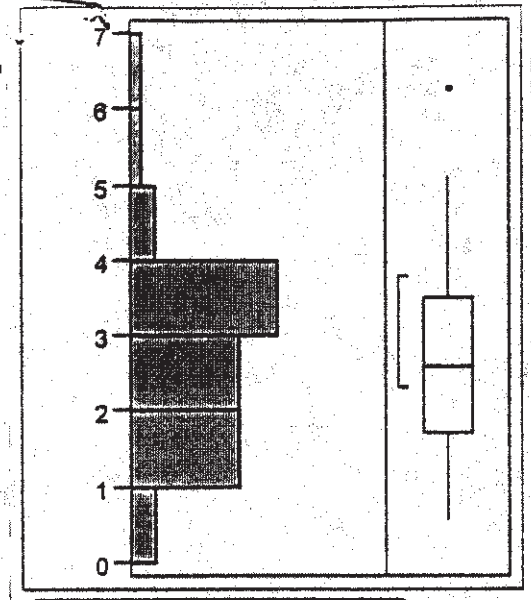


Quantiles

maximum	100.0%	9.5000
	99.5%	9.5000
	97.5%	9.5000
	90.0%	7.0900
quartile	75.0%	3.6000
median	50.0%	1.9000
quartile	25.0%	1.3000
	10.0%	1.2000
	2.5%	1.2000
	0.5%	1.2000
minimum	0.0%	1.2000

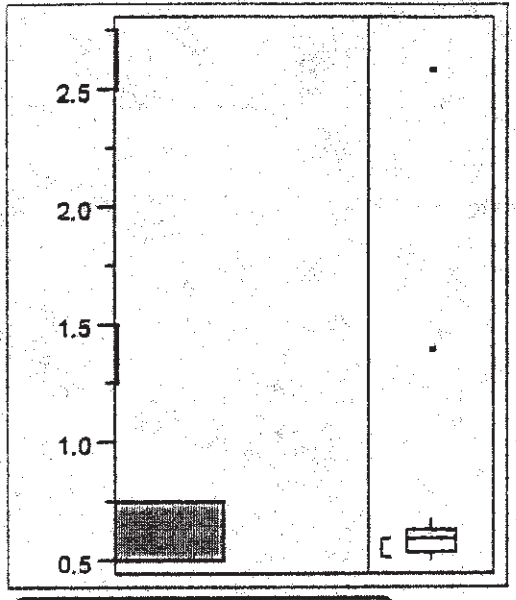
Moments

Mean	2.94722
Std Dev	2.21043
Std Err Mean	0.36840
upper 95% Mean	3.69512
lower 95% Mean	2.19933
N	36.00000
Sum Wgts	36.00000



Quantiles		
maximum	100.0%	6.3000
	99.5%	6.3000
	97.5%	6.3000
	90.0%	4.4600
quartile	75.0%	3.5000
median	50.0%	2.6000
quartile	25.0%	1.7250
	10.0%	1.2700
	2.5%	0.5800
	0.5%	0.5800
minimum	0.0%	0.5800

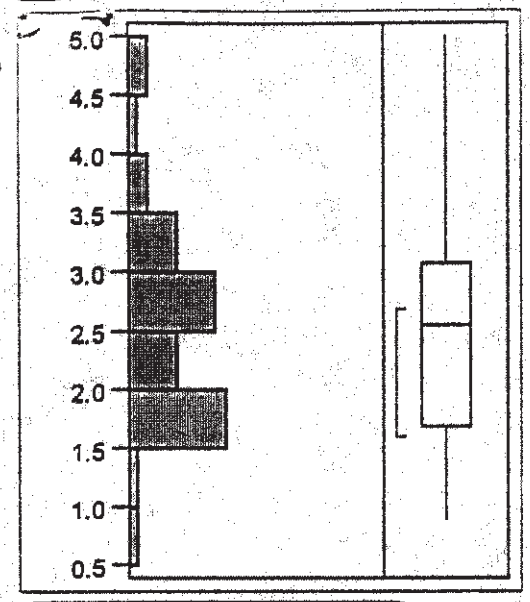
Moments	
Mean	2.73611
Std Dev	1.24308
Std Err Mean	0.20718
upper 95% Mean	3.15671
lower 95% Mean	2.31552
N	36.00000
Sum Wgts	36.00000



Quantiles		
maximum	100.0%	2.6000
	99.5%	2.6000
	97.5%	2.6000
	90.0%	0.6660
quartile	75.0%	0.6300
median	50.0%	0.6000
quartile	25.0%	0.5400
	10.0%	0.5200
	2.5%	0.5100
	0.5%	0.5100
minimum	0.0%	0.5100

Moments	
Mean	0.66528
Std Dev	0.36137
Std Err Mean	0.06023
upper 95% Mean	0.78755
lower 95% Mean	0.54301
N	36.00000
Sum Wgts	36.00000

Pb



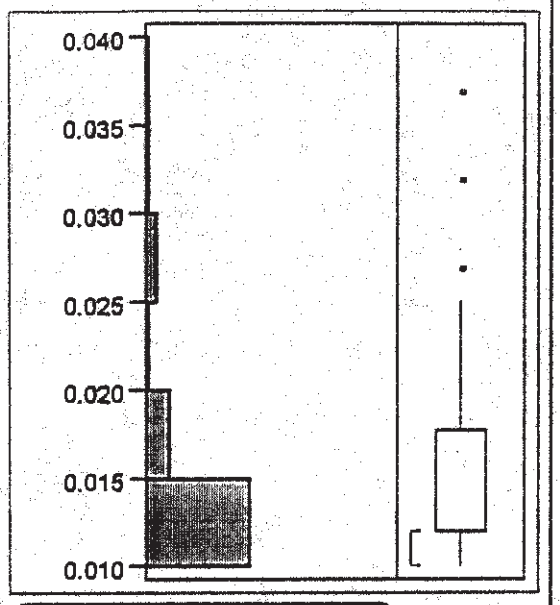
Quantiles

maximum	100.0%	5.0000
	99.5%	5.0000
	97.5%	5.0000
	90.0%	3.8400
quartile	75.0%	3.0750
median	50.0%	2.5500
quartile	25.0%	1.7000
	10.0%	1.6000
	2.5%	0.8900
	0.5%	0.8900
minimum	0.0%	0.8900

Moments

Mean	2.56639
Std Dev	0.95788
Std Err Mean	0.15965
upper 95% Mean	2.89049
lower 95% Mean	2.24229
N	36.00000
Sum Wgts	36.00000

Hg



Quantiles

maximum	100.0%	0.03700
	99.5%	0.03700
	97.5%	0.03700
	90.0%	0.02700
quartile	75.0%	0.01775
median	50.0%	0.01200
quartile	25.0%	0.01200
	10.0%	0.01070
	2.5%	0.01000
	0.5%	0.01000
minimum	0.0%	0.01000

Moments

Mean	0.01547
Std Dev	0.00665
Std Err Mean	0.00111
upper 95% Mean	0.01772
lower 95% Mean	0.01322
N	36.00000
Sum Wgts	36.00000

Appendix B

Phase II RFI Revised Tables

Table 1

Summary - RFI Phase I and II

Thiokol - Woodbine Facility

SWMU	RFI Phase	Ground Water Investigation	Ground Water Analytes	Soil Investigation	Soil Analytes	Geophysical Survey	Ordnance
2	Phase I	none	none	4 - shallow sample locations 4 - samples	VOC, BNA, metals, CS compounds	none	none
	Phase II	None	None	6 - background soil samples	Metals	none	none
3 - CS Burial/ Trench/Surface Disposal	Phase I	3 - monitoring wells 3 - samples	VOCs, BNA, metals, CS compounds	5 - test pits (CS Burial) 1 - sample 3 - test pits (Trench) 2 - samples 6 - shallow sample locations 6 - samples	VOC, BNA, metals, aldicarb, CS compounds	none	Surface Sweep
	Phase II	3 - samples	VOC, BNA, metals, aldicarb, CS compounds	6 - background soil samples	metals	none	none
3 - Burn Area	Phase II	1 - monitoring well 1- sample	VOC, BNA, metals, aldicarb, CS compounds	4 - test pits 6 - samples 6 - soil borings 1 - soil sample 6 -background soil samples	VOCs, BNA, metals, aldicarb, CS compounds	GPR, magnetometer	40 mm grenades (CS and HE)
3 - Aldicarb disposal Area	Phase II	1- monitoring well 1-sample	VOC, BNA, metals, aldicarb, CS Compounds	5-test pits 10 - samples 3-soil borings 6-background soil samples	VOCs, BNA, metals, aldicarb, CS Compounds	GPR, EM31, magnetometer	Surface sweep

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Table 1 (cont'd)

SWMU	RFI Phase	Ground Water Investigation	Ground Water Analytes	Soil Investigation	Soil Analytes	Geophysical Survey	Ordnance
4 - Borrow Pit/ Evaporation Pond	Phase I	4 - monitoring wells 4- samples	VOC, BNA, metals, aldicarb	5 - shallow sample locations (evaporation pond) 5 - samples 7 - test pits (Borrow Pit) 2 - samples	VOC. BNA, metals, aldicarb, pH	none	none
4 - Evaporation Pond	Phase II	4 - samples	VOCs, BNA, metals, aldicarb	6 - hand auger locations 12 - samples 6 - background soil samples	VOC, BNA, metals, aldicarb	none	none
5	Phase I	1 - monitoring well 1 - sample	VOC, BNA, metals, aldicarb	5 - shallow sample locations 5 - samples 1 - waste material sample	VOC. BNA, metals, aldicarb	none	none
	Phase II	1-sample	VOC, BNA, metals, aldicarb	6 - background soil samples	metals	none	none
6 - Surface Disposal	Phase I	1 - monitoring well (MW -603) 1 - sample	VOC, BNA, metals, aldicarb, CS Compounds	3 - shallow sample locations 3 - samples	VOC. BNA, metals, aldicarb, CS Compounds	none	none
	Phase II	1 - sample	VOC, BNA, metals, aldicarb, CS Compounds	6 - background soil samples	VOC. BNA, metals, aldicarb, CS Compounds	none	none
6 - Trench I	Phase I	1 - monitoring well (MW -602) 1 - sample	VOC, BNA, metals, aldicarb, CS Compounds	7 - test pits	none	none	none
	Phase II	1 - sample	VOC, BNA, metals, aldicarb, CS Compounds	3 - soil borings 6 - samples 6 - background soil samples	VOC. BNA, metals, aldicarb, CS compounds	none	none

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Table 1 (cont'd)

SWMU	RFI Phase	Ground Water Investigation	Ground Water Analytes	Soil Investigation	Soil Analytes	Geophysical Survey	Ordnance
6 - Trench II	Phase I	1 - monitoring well (MW-604) 1 - samples	VOCs, BNA, metals, aldicarb, CS compounds	6 - test pits 4 - samples (1 duplicate)	VOC, BNA, metals, aldicarb, CS Compounds	none	none
	Phase II	1 - sample	VOCs, BNA, metals, aldicarb, CS Compounds	6 - test pits 3 - samples 6 - background soil samples	VOC, BNA, metals, aldicarb, CS Compounds	GPR, EM31	none
6 - Borrow Pit	Phase I	1 - monitoring well (MW-601) 1 - samples	VOCs, BNA, metals, aldicarb, CS Compounds	5 - test pits 2 - samples	VOC, BNA, metals, aldicarb, CS Compounds	none	none
	Phase II	1 - sample	VOCs, BNA, metals, aldicarb, CS Compounds	4 - test pits 5 - samples 6 - background soil samples	VOC, BNA, metals, aldicarb, CS Compounds	GPR, EM31	none
SWMU 7	Phase I	4 - monitoring wells 4 - samples	VOC, BNA, metals, aldicarb, CS Compounds	none	none	none	none
	Phase II	4 -samples	VOC, BNA, metals, aldicarb, CS compounds	31 - exploratory test pits 18 - test pits 18 - samples 6-background soil samples	VOCs, BNA, metals, aldicarb, CS compounds	Magnetometer	408 drums of ordnance related items .

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Table 2

Ground Water Elevations
Phase I and II RFI

Thiokol - Woodbine Facility

Well No.	Top of Casing (feet)	Ground Water Elevation - 10/92 (feet)	Ground Water Elevation - 12/92 (feet)	Ground Water Elevation - 11/95 (feet)	Ground Water Elevation - 03/96 (feet)	Ground Water Elevation - 02/97 (feet)
MW-301	26.89	16.83	15.77	18.80	16.75	16.08
MW-302	28.20	16.14	15.15	18.11	16.04	15.38
MW-303	27.60	16.6	15.6	18.52	16.55	15.92
MW-304	25.85	NI[1]	NI	NI	15.38	14.69
MW-305	24.41	NI	NI	NI	9.95	9.49
MW-401	21.20	18.08	18.11	17.94	NG[2]	17.90
MW-402	23.92	18.54	18.41	18.25	NG	18.14
MW-403	23.01	18.94	18.45	18.37	NG	18.07
MW-404	23.33	19.30	18.79	18.70	NG	18.46
MW-501	22.43	18.86	18.38	18.46	NG	17.64
MW-601	21.76	17.13	15.79	16.13	NG	14.72
MW-602	22.47	18.85	17.65	17.99	NG	16.48
MW-603	23.23	18.70	17.92	18.21	NG	16.99
MW-604	21.37	18.00	17.14	17.48	16.04	16.22
MW-701	19.32	15.22	14.59	14.81	NG	13.36
MW-702	19.78	15.44	14.68	14.95	NG	13.41
MW-703	19.35	14.89	13.99	14.87	NG	12.83
MW-704	17.64	14.85	14.08	14.84	NG	12.93

[1]NI = well not installed as of this date.
[2]NG = not gauged during this sampling event.

Table 3

Sample Containers, Quantities, and Preservatives
Phase II RFI

Thiokol - Woodbine Facility

Matrix	Sample Containers and Quantities				
	VOCs	BNAs	Aldicarb	CS Compounds	Metals
Soil	125 ml amber glass (1)	250 ml clear glass (1)	100 ml clear glass (1)	100 ml clear glass (1)	250 ml plastic (1)
Aqueous	40 ml glass vial (3)	1 liter amber glass (3)	125 ml amber glass (1)	1 liter amber glass (1)	500 ml plastic (1) 250 ml plastic (1) mercury

Matrix	Preservatives				
	VOCs	BNAs	Aldicarb	CS Compounds	Metals
Soil	Ice	Ice	Ice	Ice	Ice
Aqueous	Hydrochloric acid	Ice	Ice	Ice	Nitric Acid

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Table 4

Background Metals Statistical Analysis

Thiokol - Woodbine Facility

			SWMU SPECIFIC											
	All SWMUs		SWMU-2		SWMU-3		SWMU-4		SWMU-5		SWMU-6		SWMU-7	
	upper mean	lower mean	upper mean	lower mean	upper mean	lower mean	upper mean	lower mean	upper mean	lower mean	upper mean	lower mean	upper mean	lower mean
As	1.2	1.1	1.2[a]	1.0	1.2[a]	1.0	1.3	1.2	1.3	1.1	1.2	1.1	1.3	1.2
Ba	3.7	2.2	5.4	3.0	9.4	3.3	3.7[a]	1.0	3.7[a]	1.4	3.7[a]	0.8	3.7[a]	0.9
Cr	3.2	2.3	3.8	2.9	4.8	2.0	3.7	1.3	4.7	0.2	3.8	2.0	3.2[a]	1.3
Cd	0.79	0.54	0.79[a]	0.52	0.79[a]	0.52	0.79[a]	0.61	1.92	0.23	0.79[a]	0.57	0.79[a]	0.61
Pb	2.9	2.2	3.3	1.9	4.7	1.7	2.8[a]	1.3	4.1	1.9	3.2	1.6	2.8	1.4
Hg	0.020	0.010	0.030	0.010	0.020	0.010	0.020	0.010	0.020	0.010	0.020	0.010	0.020	0.010

All results reported in mg/kg.
[a]SWMU specific BUMC replaced by facility wide BUMC wher the facility wide concentration is higher.

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Table 5
Background Results
Metals Analysis

Phase II RFI
Thiokol Corporation
Woodbine, Georgia

Sample No.	SWMU	Sample Depth (feet)	Arsenic Result (mg/kg)	Barium Result (mg/kg)	Chromium Result (mg/kg)	Cadmium Result (mg/kg)	Lead Result (mg/kg)	Mercury Result (mg/kg)
9000	03	2	<1.1	8.1	1.7	<0.53	3.3	0.018
9001	03	4	<1.0	9.5	3.5	<0.51	2.5	<0.010
9002	03	2	<1.1	7.0	4.6	<0.54	4.4	0.027
9003	03	4	<1.1	7.3	5.1	<0.53	4.9	<0.011
9004	03	2	<1.0	4.8	3.1	<0.52	3.3	0.017
9005	03	4	<1.1	1.4	2.3	<0.53	0.89	<0.011
9006	02	2	<1.1	3.7	3.5	<0.54	2.9	0.037
9007	02	4	<1.1	4.6	3.9	<0.53	2.9	<0.011
9008	02	2	<1.1	3.5	2.7	<0.54	2.4	0.027
9009	02	4	<1.0	3.5	3.1	<0.52	2.2	<0.010
9010	02	2	<1.1	3.4	3.1	<0.56	1.7	0.024
9011	02	4	<1.0	6.4	3.7	<0.52	3.6	<0.010
9012	04	2	<1.3	1.7	1.4	<0.66	2.6	<0.013
9013	04	4	<1.3	1.8	2.5	<0.66	1.7	<0.013

Table 5 (cont'd)

Sample No.	SWMU	Sample Depth (feet)	Arsenic Result (mg/kg)	Barium Result (mg/kg)	Chromium Result (mg/kg)	Cadmium Result (mg/kg)	Lead Result (mg/kg)	Mercury Result (mg/kg)
9014	04	2	<1.2	<1.2	1.5	<0.60	2.3	<0.012
9015	04	4	<1.3	1.5	4.4	<0.63	1.2	<0.013
9016	04	2	<1.2	3.6	1.8	<0.62	3.1	<0.012
9017	04	4	<1.3	1.6	3.3	<0.64	1.6	0.016
9018	05	2	<1.4	2.1	6.3	<0.68	5.0	0.032
9019	05	4	<1.2	2.3	3.2	<0.61	2.2	<0.012
9020	05	2	<1.1	2.8	1.7	<0.57	2.7	<0.011
9021	05	4	<1.2	1.7	2.3	<0.62	2.1	<0.012
9024	05	2	<1.2	<1.2	1.6	<0.58	2.7	0.015
9025	05	4	<1.2	1.5	3.6	<0.62	1.9	<0.012
9026	06	2	<1.2	1.3	3.8	<0.59	3.6	0.019
9027	06	4	<1.2	1.2	3.1	<0.60	1.8	<0.012
9028	06	2	<1.1	3.6	2.1	<0.56	2.9	<0.011
9029	06	4	<1.2	2.0	2.9	<0.60	1.6	<0.012
9030	06	2	<1.2	<1.2	<1.2	<0.60	1.7	<0.012
9031	06	4	<1.3	1.3	1.9	<0.63	1.6	<0.013
9032	07	2	<1.3	<1.3	<1.3	<0.63	1.7	<0.013

Table 5 (cont'd)

Sample No.	SWMU	Sample Depth (feet)	Arsenic Result (mg/kg)	Barium Result (mg/kg)	Chromium Result (mg/kg)	Cadmium Result (mg/kg)	Lead Result (mg/kg)	Mercury Result (mg/kg)
9033	07	4	<1.3	2.6	2.3	<0.64	3.2	0.018
9034	07	2	<1.2	<1.2	2.4	<0.62	2.7	0.025
9035	07	4	<1.2	<1.2	2.4	<0.62	1.7	<0.012
9081	07	2	<1.2	1.2	<0.58	1.4	3.0	0.012
9082	07	4	<1.2	1.8	<0.62	2.6	2.8	<0.012

mg/kg = milligram per kilogram.

Table 6

SWMU 02 - Phase I RFI
Soil Sample Analytical Results

Thiokol - Woodbine Facility

Compound/Element	Background	Sample Location			
	upper mean	SS-201	SS-202	SS-203	SS-204
Barium	5.4	7.5	6.9	7.8	7.7
Chromium	3.8	2.7	3.5	3.5	3.2
Lead	3.3	3.2	3.1	4.8	3.5
Mercury	0.030	0.027	0.020	0.030	0.013

All results reported in mg/kg.
Shaded results show concentrations equal to or greater than the respective BUMC.

Table 7

SWMU 03 - Surface Disposal - Phase I RFI
Soil Sample Analytical Results

Thiokol - Woodbine Facility

Element/Compound	Background	Location					
	upper mean	SS-301	SS-302	SS-303	SS-304	SS-305	SS-306
Barium	9.4	7.6	11.0	9.1	7.4	6.4	9.2
Chromium	4.8	3.8	4.9	2.4	1.9	3.0	3.4
Lead	4.7	8.9	8.2	6.1	4.3	2.9	4.8
Mercury	0.020	0.051	0.021	0.025	0.029	0.022	0.026

All results reported in mg/kg.
Shaded results show concentrations equal to or greater than the respective BUMC.

Table 8

SWMU 03 - Phase I and II RFI
Ground Water Analytical Results

Thiokol - Woodbine Facility

Compound/Element	MCL	Phase I RFI Analytical Results			Phase II RFI Analytical Results				
		Sampled in October 1992			Sampled on November 17, 1995			Sampled on March 12, 1996	
		MW-301	MW-302	MW-303	MW-301	MW-302	MW-303	MW-304	MW-305
Arsenic	0.050	ND[1]	ND	ND	0.010	0.031	0.017	ND	ND
Barium	2.0	ND	0.019	0.020	0.53	0.41	0.29	0.25	0.22
Cadmium	0.0050	ND	ND	ND	ND	0.009	ND	ND	ND
Chromium	0.10	ND	ND	ND	0.23	0.22	0.15	0.12	0.088
Lead	0.015	ND	ND	ND	0.031	0.057	0.030	0.034	0.021
Mercury	0.0020	ND	ND	ND	0.00058	0.00056	0.00036	0.00034	0.00042

[1]ND = Not detected above MDL.
All results reported in mg/L.
Shaded results are concentrations equal to or greater than the MCL for that compound.

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Table 9

SWMU 03 - Burn Area - Phase II RFI
Soil Sample Analytical Results

Thiokol - Woodbine Facility

Compound/ Element	Background upper mean	9113 Test pit 1 (2 feet)	9114 Test pit 1 (6 feet)	9115 Test pit 2 (2 feet)	9116 Test pit 2 (6 feet)	9117 Test pit 4 (2 feet)	9118 Test pit 4 (6 feet)	9099 3-004 (4-5 feet)
Barium	9.4	8.2	7.1	6.8	10	9.6	6.9	7.9
Chromium	4.8	2.7	7.6	2.0	3.4	3.3	4.1	4.1
Lead	4.7	3.5	4.7	2.7	3.8	3.5	5.0	3.4
Mercury	0.020	0.029	0.042	0.011	0.017	0.014	ND[1]	0.013

[1]ND = not detected above method detection limit (MDL).
All results reported in mg/kg.
Shaded results are concentrations equal to or greater than the respective BUMC.

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Table 10

SWMU 03 - Aldicarb Disposal Area - Phase II RFI
Soil Sample Analytical Results

Thiokol - Woodbine Facility

Compound/ Element	Background upper mean	9107 Test pit 3 (4 feet)	9108 Test pit 3 (9 feet)	9109 Test pit 4 (4 feet)	9110 Test pit 4 (8 feet)	9111 Test pit 5 (4 feet)	9112 Test pit 5 (8 feet)
Barium	9.4	6.1	5.2	7.3	7.0	6.2	4.6
Chromium	4.8	2.8	7.7	3.0	6.3	2.6	5.6
Lead	4.7	4.3	2.9	3.8	4.8	3.7	7.6
Mercury	0.020	0.031	0.018	ND[1]	ND	0.033	ND

[1]ND = not detected above MDL.
All results reported in mg/kg.
Shaded results show concentrations equal to or greater than the respective BUMC.

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Table 11

SWMU 04 - Phase I RFI
Soil Sample Analytical Results

Thiokol - Woodbine Facility

Compound/ Element	Background upper mean	SS-401 Evap. Pond	SS-402 Evap. Pond	SS-403 Evap. Pond	SS-404 Evap. Pond	SS-405 Evap. Pond
Barium	3.7	4.5	14.0	12.0	7.7	4.0
Chromium	3.7	ND[1]	1.3	4.2	4.2	ND
Lead	2.9	3.4	4.5	2.1	2.4	2.7
Mercury	0.020	0.037	0.04	0.016	ND	0.025
Acetone	NA[2]	0.034	0.13	0.13	0.091	ND
Tetrachloroethene	NA	ND	0.014	ND	ND	0.018
Toluene	NA	0.032	0.076	0.021	ND	0.066
1,1,1-trichloroethane	NA	ND	ND	ND	ND	0.0075
Xylenes, total	NA	0.0084	0.0093	ND	ND	ND

[1]ND = Not detected above MDL.
[2]NA = Not applicable; statistics not generated for VOCs.
All results reported in mg/kg.
Shaded results show concentrations equal to or greater than the respective BUMC.

Table 12

SWMU 04 - Phase II RFI
Soil Sample Analytical Results

Thiokol - Woodbine Facility

Compound/ Element	Background upper mean	9036 4-001S[1]	9037 4-001D[2]	9038 4-002S	9039 4-002D	9040 4-003S	9041 4-003D	9042 4-004S	9043 4-004D	9044 4-005S[1]	9045 4-005D[2]	9046 4-006S	9047 4-006D
Barium	3.7	2.7	6.5	4.3	8.7	2.6	16	1.5	8.0	8.4	17	1.4	4.6
Chromium	3.7	3.9	4.8	3.6	6.5	2.5	6.0	2.5	9.9	ND[3]	3.1	1.8	8.3
Lead	2.9	2.7	1.9	3.5	3.6	3.3	10	2.6	3.6	3.6	1.1	2.5	3.2
Mercury	0.020	0.019	0.024	0.015	0.022	0.017	0.057	ND[4]	ND	0.027	0.026	ND[3]	0.020
Acetone	NA[3]	0.61	0.35	0.80	0.12	0.72	0.71	ND	1.1	ND	0.27	0.76	ND
Toluene	NA	ND	ND	0.034	ND	ND	ND	0.57	ND	ND	ND	ND	ND
bis(2-ethyl-hexyl) phthalate	NA	0.670	ND	ND	ND	ND	0.49	0.45	ND	ND	ND	ND	ND

[1]S = Shallow sample.
[2]D = Deep sample.
[3]NA = Not applicable; statistics not generated for VOCs.
[4]ND = Not detected above MDL.
All results reported in mg/kg.
Shaded results show concentrations equal to or greater than the respective BUMC.

Table 13

SWMU 04 - Phase I and II RFI
Ground Water Analytical Results

Thiokol - Woodbine Facility

Compound/Element	MCL	Phase I RFI Analytical Results				Phase II RFI Analytical Results			
		MW-401	MW-402	MW-403	MW-404	MW-401	MW-402	MW-403	MW-404
Arsenic	0.050	ND[1]	0.011	0.011	0.017	0.15	0.16	0.020	0.040
Barium	2.0	0.097	0.12	0.036	0.038	1.7	2.3	0.24	0.36
Cadmium	0.0050	ND	ND	ND	ND	0.015	0.009	ND	ND
Chromium	0.10	ND	0.017	ND	ND	0.32	0.11	0.058	0.077
Lead	0.015	0.005	0.0058	ND	ND	0.10	0.16	0.018	0.020
Mercury	0.0020	ND	ND	ND	ND	0.0013	0.0012	0.00024	0.00048
1,1,2-trichlorethane	0.0050	ND	ND	ND	ND	0.005	ND	ND	ND
cis-1,2-dichloroethene	0.070	0.028	ND	ND	ND	ND	ND	ND	ND

[1]ND = Not detected above MDL.
All results reported in mg/L.
Shaded results show concentrations equal to or greater than the respective MCL.

R486:thiok02(097.005);njm

Table 14

SWMU 05 - Phase I RFI
Soil Sample Analytical Results

Thiokol - Woodbine Facility

Compound/Element	Background upper mean	SS-501 Soil	SS-502 Soil	SS-503 Soil	SS-504 Soil	SS-505 Soil	SO-501 Waste
Barium	3.7	2.7	2.1	2.7	4.1	2.5	3.6
Chromium	4.7	3.4	2.3	2.7	2.5	3.0	ND
Lead	4.1	2.5	2.8	3.3	3.9	2.6	ND
Mercury	0.024	0.028	0.016	0.015	0.013	0.022	ND

[1]ND = Not detected above MDL.
All results reported in mg/kg.
Shaded results show concentrations equal to or greater than the respective BUMC.

R486:thiok02(097.005);njm

Table 15

SWMU 05 - Phase I and II RFI
Ground Water Analytical Results

Thiokol - Woodbine Facility

Compound/Element	MCL	Phase I RFI Analytical Results	Phase II RFI Analytical Results
		MW-501	MW-501
Arsenic	0.050	0.026	0.011
Barium	2.0	0.092	0.20
Chromium	0.10	ND	0.029
Lead	0.015	ND	0.010
Naphthalene	NA[2]	0.018	ND

[1]ND = Not detected above MDL.
[2]NA = Not applicable/no MCL.
All results reported in mg/L.
Shaded results show concentrations equal to or greater than the respective MCL.

Table 16

SWMU 06 - Phase I RFI
Soil Sample Analytical Results Summary

Thiokol - Woodbine Facility

Compound/Element	Background upper mean	SS-601 Scrap	SS-602 Scrap	SS-603 Scrap	SO-607A Borrow Pit	SO-607B Borrow Pit	SO-624A Trench II	SO-624B Trench II	SO-624C Trench II	SO-625 Trench II
Barium	3.7	2.3	1.9	7.4	1.6	1.7	ND[1]	ND	3.1	8.9
Chromium	3.8	2.1	1.9	3.6	4.5	2.0	ND	ND	4.2	ND
Lead	3.2	1.3	2.6	3.5	3.4	1.2	ND	ND	1.9	ND
Mercury	0.020	0.023	0.015	0.018	0.014	ND	ND	ND	0.015	0.013
Aldicarb	NA[2]	ND	ND	ND	ND	ND	ND	ND	0.22	ND
Benzoic acid	NA	ND	ND	ND	ND	ND	41.0	73.0	5.3	ND
p-isopropyltoluene	NA	ND	ND	ND	ND	ND	0.021	ND	ND	ND
p-cresol	NA	ND	ND	ND	ND	ND	17.0	17.0	4.2	ND
Naphthalene	NA	ND	ND	ND	0.014	ND	ND	ND	ND	0.0095
Toluene	NA	0.02	ND	ND	ND	ND	0.11	ND	ND	ND
1,2,4-trimethylbenzene	NA	ND	ND	ND	0.0094	ND	ND	ND	ND	ND

[1]ND = Not detected above MDL.
[2]NA = Not applicable; statistics not generated for VOCs.
All results reported in mg/kg.
Shaded results show concentrations equal to or greater than the respective BUMC.

R486:thiok02(097.005);njm

Table 17

SWMU 06 - Trench 1 - Phase II RFI
Soil Samples Analytical Results

Thiokol Woodbine Facility

Compound/ Element	Background upper mean	9048 6-001S[1] Waste	9100 6-001D[2]	9050 6-002S Waste	9101 6-002D	9052 6-003S Waste	9102 6-003D
Barium	3.7	1.7	7.3	ND[3]	5.4	11	7.3
Chromium	3.8	3.5	3.0	1.9	18	1.6	4.4
Lead	3.2	3.1	1.0	1.1	2.0	1.2	1.3
Mercury	0.020	0.015	ND	ND	ND	ND	ND
Acetone	NA[4]	0.085	ND	0.032	ND	0.55	ND
Aldicarb	NA	ND	ND	ND	0.038	ND	ND

[1]S = Shallow Sample.
[2]D = Deep Sample.
[3]ND = Not detected above MDL.
[4]NA = Not applicable; statistics not generated for VOCs.
All results reported in mg/kg.
Shaded results show concentrations equal to or greater than the respective BUMC.

Table 18

SWMU 06 - Trench 2 - Phase II RFI
Soil Sample Analytical Results Summary

Thiokol - Woodbine Facility

Compound/ Element	Background upper mean	9136 Test Pit 6 Waste	9137 Test Pit 7 Waste	9138 Test Pit 10
Barium	3.7	ND[1]	ND	2.9
Chromium	3.8	5.0	ND	ND
Lead	3.2	4.1	ND	1.0
Acetone	NA[2]	0.83	460	ND
m&p-cresol	NA	ND	12	ND
2,4-dimethylphenol	NA	ND	1.3	ND

[1]ND = Not detected above MDL.
[2]NA = Not applicable; statistics not generated for VOCs.
All results reported in mg/kg.
Shaded results show concentrations above the respective BUMC.

Table 19

SWMU 06 - Borrow Pit - Phase II RFI
Soil Sample Analytical Results

Thiokol - Woodbine Facility

Compound/ Element	Background	9131	9132	9133	9134	9135
	upper mean	Test Pit 1 Waste	Test Pit 2 Waste	Test Pit 2 Waste	Test Pit 2 Waste	Test Pit 3 Soil
Barium	3.7	13	ND[1]	ND	15	4.1
Chromium	3.8	3.7	ND	7.5	4.5	7.9
Lead	3.2	4.0	0.64	59	44	5.7
Mercury	0.017	0.73	ND	ND	0.023	0.012
Acetone	NA[2]	0.059	0.58	ND	0.034J[3]	ND
Carbon disulfide	NA	ND	ND	ND	0.30	ND
Benzene	NA	ND	0.078	ND	ND	ND
Toluene	NA	ND	0.44	ND	ND	ND
Ethylbenzene	NA	ND	0.15	ND	ND	ND
Xylenes, total	NA	ND	0.82	ND	ND	ND

[1]ND = Not detected above MDL.
[2]NA = Not applicable; statistics not generated for VOCs.All results reported in mg/kg.
[3]J = Estimated value below detection limit.

R486:thiok02(097.005);njm

Table 20
SWMU 06 - Phase I and II RFI
Ground Water Analytical Results Summary

Thiokol - Woodbine Facility

Compound/ Element	MCL	Phase I RFI Analytical Results				Phase II RFI Analytical Results			
		MW-601	MW-602	MW-603	MW-604	MW-601	MW-602	MW-603	MW-604
Arsenic	0.050	0.016	0.016	0.016	0.032	0.015	0.086	0.017	ND
Barium	2.0	0.05	0.088	0.1	0.12	0.21	0.27	0.30	0.091
Chromium	0.10	ND	0.015	ND	0.016	0.041	0.059	0.048	0.017
Lead	0.015	ND	ND	ND	0.0061	0.011	0.020	0.014	0.0060
Mercury	0.002	ND	ND	ND	ND	ND	0.00020	ND	ND
Aldicarb	0.007	ND	ND	ND	ND	ND	0.00050	ND	ND

[1]ND = Not detected above MDL.
All results reported in mg/L.
Shaded results show concentrations equal to or greater than the respective MCL.

R486:thiok02(097.005);njm

Table 21

SWMU 07 - Phase II RFI
Soil Sample Analytical Results Summary

Thiokol - Woodbine Facility

Compound/ Element	Background	9159 9173	9160 9174	9161 9175	9162 9176	9163 9177	9164 9178	9165 9179	9166 9180	9167 1981	9168 9182	9169 9183	9170 9184	9171 9185	9172 9186	9189 9194	9190 9195	9191 9196	9192 9197	9193 9198
	upper mean	Test Pit 32 Waste	Test Pit 33 Waste	Test Pit 34	Test Pit 35	Test Pit 36 Waste	Test Pit 37	Test Pit 38	Test Pit 39	Test Pit 40 Waste	Test Pit 41 Waste	Test Pit 42 Waste	Test Pit 43 Waste	Test Pit 43 Waste	Test Pit 44	Test Pit 45	Test Pit 46	Test Pit 47	Test Pit 48	Test Pit 49
Arsenic	1.3	4.3	1.9	ND[1]	ND	ND	ND	ND	ND	ND	ND	1.3	5.5	3.2	ND	ND	ND	ND	ND	ND
Barium	3.7	14	74	1.7	ND	ND	2.5	ND	2.2	ND	59	130	5.6	28	1.4	1.5	7.6	95	ND	2.1
Chromium	3.2	11	15	2.2	1.2	2.1	5.2	1.8	2.4	1.7	10	15	7.3	12	3.4	ND	ND	ND	ND	650
Cadmium	0.79	4.0	2.7	1.8	ND	ND	ND	ND	ND	ND	16	1.5	ND	ND	ND	ND	ND	ND	ND	0.60
Lead	2.9	49	79	9.2	3.7	3.9	15	2.2	6.5	2.6	15	49	5.7	25	3.1	2.3	9.3	1.7	1.0	2.0
Mercury	0.020	0.27	1.5	0.024	0.020	0.015	0.058	ND	ND	ND	ND	0.016	0.72	0.040	0.028	ND	ND	ND	ND	ND
o-Chlorobenz-aldehyde	NA[2]	ND	660	610	ND	ND	ND	ND	150,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Chloro-benzylidene malononitrile	NA	ND	16,000	ND	ND	ND	180,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Malononitrile	NA	ND	ND	ND	ND	ND	ND	ND	ND	35	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

R486:thiok02(097.005);njm

Table 21 (cont'd)

Compound/ Element	Background upper mean	9159 9173 Test Pit 32 Waste	9160 9174 Test Pit 33 Waste	9161 9175 Test Pit 34	9162 9176 Test Pit 35	9163 9177 Test Pit 36 Waste	9164 9178 Test Pit 37	9165 9179 Test Pit 38	9166 9180 Test Pit 39	9167 1981 Test Pit 40 Waste	9168 9182 Test Pit 41 Waste	9169 9183 Test Pit 42 Waste	9170 9184 Test Pit 43 Waste	9171 9185 Test Pit 43 Waste	9172 9186 Test Pit 44	9189 9194 Test Pit 45	9190 9195 Test Pit 46	9191 9196 Test Pit 47	9192 9197 Test Pit 48	9193 9198 Test Pit 49
Methyl Ethyl Ketone	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	39	ND	ND	ND	ND	ND	ND	ND
Benzene	NA	ND	ND	ND	ND	ND	ND	ND	0.83	ND	ND	ND	6.8	ND	ND	ND	ND	ND	ND	ND
Acetone	NA	0.29	1.4	0.20	ND	ND	0.22	ND	ND	ND	ND	ND	94	ND	0.14	ND	ND	ND	ND	ND
Ethylbenzene	NA	ND	0.056	ND	ND	0.020	ND	ND	0.043	ND	0.12	0.011	ND	130	0.016	ND	ND	ND	ND	ND
Toluene	NA	ND	ND	ND	ND	ND	0.0070	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes, total	NA	ND	0.25	ND	ND	0.027	0.017	ND	0.076	3.1	0.18	0.062	24	810	0.062	ND	ND	ND	ND	ND
4-methyl 2-pentanone	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	30.0	ND	ND	ND	ND	ND	ND	ND
Pyrene	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.2	ND	ND	ND	ND	ND	ND
2,4-dimethylphenol	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.0	ND	ND	ND	ND	ND	ND
m- and p-cresol	NA	ND	ND	ND	ND	ND	ND	ND	ND	2.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzoic acid	NA	ND	ND	ND	ND	ND	ND	ND	ND	3.6	ND	ND	ND	ND	21	ND	ND	ND	ND	ND

[1]ND = Not detected above MDL.
[2]NA = Not applicable; statistics not generated for VOCs.
All results reported in mg/kg.
Shaded results show concentrations equal to or greater than the respective BUMC.

Table 22

SWMU 07 - Phase I and II RFI
Ground Water Analytical Results

Thiokol - Woodbine Facility

Compound/Element	MCL	Phase I RFI Analytical Results				Phase II RFI Analytical Results			
		MW-701	MW-702	MW-703	MW-704	MW-701	MW-702	MW-703	MW-704
Arsenic	0.050	ND	ND	ND	0.012	0.011	0.11	0.011	ND
Barium	2.0	0.019	0.019	0.058	0.41	0.11	0.71	0.15	0.071
Cadmium	0.0050	ND	ND	ND	ND	ND	0.0069	ND	ND
Chromium	0.10	ND	ND	0.022	0.16	0.12	0.25	0.052	0.046
Lead	0.015	ND	ND	0.0098	0.04	0.029	0.075	0.023	0.0060
Mercury	0.0020	ND	ND	ND	0.00025	0.00052	0.00065	0.00024	ND
Benzene	0.0050	ND	ND	ND	0.017	ND	ND	ND	ND
2,4-dimethylphenol	NE[2]	ND	ND	ND	0.014	ND	ND	ND	ND
Ethylbenzene	0.70	ND	ND	ND	0.021	ND	ND	ND	ND
Xylenes, total	10	ND	ND	ND	0.165	ND	ND	ND	0.040
Bis(2-ethylhexyl) phthalate	0.0060	ND	ND	ND	ND	0.030	ND	ND	ND

[1]ND = Not detected above MDL.
[2]NE = MCL not established for this compound.
All results reported in mg/L.
Shaded results show concentrations equal to or greater than the respective MCL.

Appendix C

Soil Boring Logs

Apex environmental,inc.™
15850 CRABBS BRANCH WAY
SUITE 200
ROCKVILLE, MARYLAND 20855
TELEPHONE: (301) 417-0200

Project: Thiokol - Woodbine facility
Job No.: 097.005
Location: Acetone Evaporation Pond - East
Date: 2/26/97
SWMU: 4

Boring ID: B1

DEPTH (ft.)	SAMPLE INTERVAL	SAMPLE ID	PROBE ADVANCE	SAMPLE REC, (in.)	HEADSPACE (ppm)	WATER TABLE	LITHOLOGY	SAMPLE DESCRIPTION	REMARKS
1		S-1	easy	24/24	0.0			SAND - light gray to dark brown, trace silt, poorly graded, moist. Wet at 2 feet.	
2		S-2	easy	24/24	0.0	▼			Sample 9244 collected for VOC analysis.
3									
4								End of Probe @ 4 feet BGS.	
5									

COMMENTS: Soil samples collected with 24" geoprobe soil sampler. Headspace analysis collected with MSA Photon with 10.6 eV bulb. Instrument calibrated to 400 ppm toluene in air.

Geologist: M Landsman

Start Date: 2/26/97
Complete Date: 2/26/97

Apex environmental,inc.™
15850 CRABBS BRANCH WAY
SUITE 200
ROCKVILLE, MARYLAND 20855
TELEPHONE: (301) 417-0200

Project: Thiokol – Woodbine facility
Job No.: 097.005
Location: Acetone Evaporation Pond – East
Date: 2/26/97
SWMU: 4

Boring ID: B2

DEPTH (ft.)	SAMPLE INTERVAL	SAMPLE ID	PROBE ADVANCE	SAMPLE REC, (in.)	HEADSPACE (ppm)	WATER TABLE	LITHOLOGY	SAMPLE DESCRIPTION	REMARKS
1		S-1	easy	24/24	0.0			SAND – light gray to dark brown, trace silt, poorly graded, moist. Wet at 2 feet.	
2		S-2	easy	24/24	0.0	▼			Sample 9245 collected for VOC analysis.
3									
4								End of Probe @ 4 feet BGS.	
5									

COMMENTS: Soil samples collected with 24" geoprobe soil sampler. Headspace analysis collected with MSA Photon with 10.6 eV bulb. Instrument calibrated to 400 ppm toluene in air.

Geologist: M Landsman

Start Date: 2/26/97
Complete Date: 2/26/97

Apex environmental,inc.™
15850 CRABBS BRANCH WAY
SUITE 200
ROCKVILLE, MARYLAND 20855
TELEPHONE: (301) 417-0200

Project: Thiokol – Woodbine facility
Job No.: 097.005
Location: Acetone Evaporation Pond – East
Date: 2/26/97
SWMU: 4

Boring ID: B3

DEPTH (ft.)	SAMPLE INTERVAL	SAMPLE ID	PROBE ADVANCE	SAMPLE REC. (in.)	HEADSPACE (ppm)	WATER TABLE	LITHOLOGY	SAMPLE DESCRIPTION	REMARKS
1		S-1	easy	24/24	0.0			SAND – light gray to dark brown, trace silt, poorly graded, moist. Wet at 2 feet.	
2		S-2	easy	24/24	0.0	▼			Sample 9246 collected for VOC analysis.
3									
4								End of Probe @ 4 feet BGS.	
5									

COMMENTS: Soil samples collected with 24" geoprobe soil sampler. Headspace analysis collected with MSA Photon with 10.6 eV bulb. Instrument calibrated to 400 ppm toluene in air.

Geologist: M Landsman

Start Date: 2/26/97
Complete Date: 2/26/97

Apex environmental,inc.
15850 CRABBS BRANCH WAY
SUITE 200
ROCKVILLE, MARYLAND 20855
TELEPHONE: (301) 417-0200

Project: Thiokol - Woodbine facility
Job No.: 097.005
Location: Acetone Evaporation Pond - East
Date: 2/26/97
SWMU: 4

Boring ID: B4

DEPTH (ft.)	SAMPLE INTERVAL	SAMPLE ID	PROBE ADVANCE	SAMPLE REC, (in.)	HEADSPACE (ppm)	WATER TABLE	LITHOLOGY	SAMPLE DESCRIPTION	REMARKS
1		S-1	easy	24/24	10.6			SAND - light gray to dark brown, trace silt, poorly graded, moist. Wet at 2 feet.	
2		S-2	easy	24/24	0.0	▼			Sample 9247 collected for VOC analysis.
3									
4								End of Probe @ 4 feet BGS.	
5									

COMMENTS: Soil samples collected with 24" geoprobe soil sampler. Headspace analysis collected with MSA Photon with 10.6 eV bulb. Instrument calibrated to 400 ppm toluene in air.

Geologist: M Landsman

Start Date: 2/26/97
Complete Date: 2/26/97
page 1 of 1

Apex environmental,inc.
15850 CRABBS BRANCH WAY
SUITE 200
ROCKVILLE, MARYLAND 20855
TELEPHONE: (301) 417-0200

Project: Thiokol - Woodbine facility
Job No.: 097.005
Location: Acetone Evaporation Pond - East
Date: 2/26/97
SWMU: 4

Boring ID: B5

DEPTH (ft.)	SAMPLE INTERVAL	SAMPLE ID	PROBE ADVANCE	SAMPLE REC. (in.)	HEADSPACE (ppm)	WATER TABLE	LITHOLOGY	SAMPLE DESCRIPTION	REMARKS
1		S-1	easy	24/24	0.0			SAND - light gray to dark brown, trace silt, poorly graded, moist. Wet at 2 feet.	
2		S-2	easy	24/24	0.0	▼			Sample 9248 collected for VOC analysis.
3									
4								End of Probe @ 4 feet BGS.	
5									

COMMENTS: Soil samples collected with 24" geoprobe soil sampler. Headspace analysis collected with MSA Photon with 10.6 eV bulb. Instrument calibrated to 400 ppm toluene in air.

Geologist: M Landsman

Start Date: 2/26/97
Complete Date: 2/26/97

Apex environmental,inc.™
15850 CRABBS BRANCH WAY
SUITE 200
ROCKVILLE, MARYLAND 20855
TELEPHONE: (301) 417-0200

Project: Thiokol – Woodbine facility
Job No.: 097.005
Location: Acetone Evaporation Pond – East
Date: 2/26/97
SWMU: 4

Boring ID: B6

DEPTH (ft.)	SAMPLE INTERVAL	SAMPLE ID	PROBE ADVANCE	SAMPLE REC, (in.)	HEADSPACE (ppm)	WATER TABLE	LITHOLOGY	SAMPLE DESCRIPTION	REMARKS
1		S-1	easy	24/24	0.0			SAND – light gray to dark brown, trace silt, poorly graded, moist. Wet at 2 feet.	
2		S-2	easy	24/24	0.0	▼			Sample 9249 collected for VOC analysis.
3									Collected sample 9250 for VOC analysis of groundwater.
4								End of Probe @ 4 feet BGS.	
5									

COMMENTS: Soil samples collected with 24" geoprobe soil sampler. Headspace analysis collected with MSA Photon with 10.6 eV bulb. Instrument calibrated to 400 ppm toluene in air.

Geologist: M Landsman

Start Date: 2/26/97
Complete Date: 2/26/97
page 1 of 1

Apex environmental,inc.™
15850 CRABBS BRANCH WAY
SUITE 200
ROCKVILLE, MARYLAND 20855
TELEPHONE: (301) 417-0200

Project: Thiokol - Woodbine facility
Job No.: 097.005
Location: Acetone Evaporation Pond - East
Date: 2/26/97
SWMU: 4

Boring ID: B8

DEPTH (ft.)	SAMPLE INTERVAL	SAMPLE ID	PROBE ADVANCE	SAMPLE REC. (in.)	HEADSPACE (ppm)	WATER TABLE	LITHOLOGY	SAMPLE DESCRIPTION	REMARKS
1		S-1	easy	24/24	0.0			SAND - light gray to dark brown, trace silt, poorly graded, moist. Wet at 2 feet.	
2		S-2	easy	24/24	0.0	▼			Sample not submitted from this boring.
3									
4								End of Probe @ 4 feet BGS.	
5									

COMMENTS: Soil samples collected with 24" geoprobe soil sampler. Headspace analysis collected with MSA Photon with 10.6 eV bulb. Instrument calibrated to 400 ppm toluene in air.

Geologist: M Landsman

Start Date: 2/26/97
Complete Date: 2/26/97

Apex environmental,inc.™
15850 CRABBS BRANCH WAY
SUITE 200
ROCKVILLE, MARYLAND 20855
TELEPHONE: (301) 417-0200

Project: Thiokol - Woodbine facility
Job No.: 097.005
Location: Borrow Pit -1250N 1020E
Date: 2/26/97
SWMU: 8

Boring ID: B1

DEPTH (ft.)	SAMPLE INTERVAL	SAMPLE ID	PROBE ADVANCE	SAMPLE REC, (in.)	HEADSPACE (ppm)	WATER TABLE	LITHOLOGY	SAMPLE DESCRIPTION	REMARKS
1		S-1	easy	24/24	0.0			SAND - pale brown and brown silty fine SAND, poorly graded, moist.	
2		S-2	easy	24/24	0.0				
3									
4		S-3	moderate	24/24	0.0				Sample 9236 collected for VOC analysis.
5									
6								SAND - black silty fine SAND, poorly graded, moist, organic cemented.	
								End of Probe @ 6 feet BGS.	
7									

COMMENTS: Soil samples collected with 24" geoprobe soil sampler. Headspace analysis collected with MSA Photon with 10.6 eV bulb. Instrument calibrated to 400 ppm toluene in air.

Geologist: M Landsman

Start Date: 2/24/97
Complete Date: 2/24/97

Apex environmental, inc.™
15850 CRABBS BRANCH WAY
SUITE 200
ROCKVILLE, MARYLAND 20855
TELEPHONE: (301) 417-0200

Project: Thiokol - Woodbine facility
Job No.: 097.005
Location: Borrow Pit -1230N 990E
Date: 2/26/97
SWMU: 6

Boring ID: B2

DEPTH (ft.)	SAMPLE INTERVAL	SAMPLE ID	PROBE ADVANCE	SAMPLE REC. (in.)	HEADSPACE (ppm)	WATER TABLE	LITHOLOGY	SAMPLE DESCRIPTION	REMARKS
1		S-1	easy	24/24	0.0			SAND - pale brown and brown silty fine SAND, poorly graded, moist.	
2		S-2	easy	24/24	0.0				
3									
4		S-3	moderate	24/24	0.0				Sample 9237 collected for VOC analysis.
5									
6								SAND - black silty fine SAND, poorly graded, moist, organic cemented.	
								End of Probe @ 6 feet BGS.	
7									

COMMENTS: Soil samples collected with 24" geoprobe soil sampler. Headspace analysis collected with MSA Photon with 10.6 eV bulb. Instrument calibrated to 400 ppm toluene in air.

Geologist: M Landsman

Start Date: 2/24/97
Complete Date: 2/24/97

Apex environmental,inc.™
15850 CRABBS BRANCH WAY
SUITE 200
ROCKVILLE, MARYLAND 20855
TELEPHONE: (301) 417-0200

Project: Thiokol - Woodbine facility
Job No.: 097.005
Location: Borrow Pit -1250N 975E
Date: 2/26/97
SWMU: 6

Boring ID: B3

DEPTH (ft.)	SAMPLE INTERVAL	SAMPLE ID	PROBE ADVANCE	SAMPLE REC. (in.)	HEADSPACE (ppm)	WATER TABLE	LITHOLOGY	SAMPLE DESCRIPTION	REMARKS
1		S-1	easy	24/24	0.0			SAND - pale brown and brown silty fine SAND, poorly graded, moist.	No sample collected from this boring.
2		S-2	easy	24/24	0.0				
3									
4		S-3	moderate	24/24	0.0				
5									
6								SAND - black silty fine SAND, poorly graded, moist, organic cemented.	
								End of Probe @ 6 feet BGS.	
7									

COMMENTS: Soil samples collected with 24" geoprobe soil sampler. Headspace analysis collected with MSA Photon with 10.6 eV bulb. Instrument calibrated to 400 ppm toluene in air.

Geologist: M Landsman

Start Date: 2/24/97
Complete Date: 2/24/97

Apex environmental,inc.™
15850 CRABBS BRANCH WAY
SUITE 200
ROCKVILLE, MARYLAND 20855
TELEPHONE: (301) 417-0200

Project: Thiokol – Woodbine facility
Job No.: 097.005
Location: Borrow Pit –1270N 1020E
Date: 2/26/97
SWMU: 6

Boring ID: B4

DEPTH (ft.)	SAMPLE INTERVAL	SAMPLE ID	PROBE ADVANCE	SAMPLE REC, (in.)	HEADSPACE (ppm)	WATER TABLE	LITHOLOGY	SAMPLE DESCRIPTION	REMARKS
1		S-1	easy	24/24	0.0			SAND – pale brown and brown silty fine SAND, poorly graded, moist.	
2		S-2	easy	24/24	0.0				
3									
4		S-3	moderate	24/24	0.0				No sample collected from this boring.
5									
6								SAND – black silty fine SAND, poorly graded, moist, organic cemented.	
								End of Probe @ 6 feet BGS.	
7									

COMMENTS: Soil samples collected with 24" geoprobe soil sampler. Headspace analysis collected with MSA Photon with 10.6 eV bulb. Instrument calibrated to 400 ppm toluene in air.

Geologist: M Landsman

Start Date: 2/24/97
Complete Date: 2/24/97

Apex environmental,inc.
15850 CRABBS BRANCH WAY
SUITE 200
ROCKVILLE, MARYLAND 20855
TELEPHONE: (301) 417-0200

Project: Thiokol - Woodbine facility
Job No.: 097.005
Location: Trench II - 1320N 1280E
Date: 2/26/97
SWMU: 6

Boring ID: B5

DEPTH (ft.)	SAMPLE INTERVAL	SAMPLE ID	PROBE ADVANCE	SAMPLE REC, (in.)	HEADSPACE (ppm)	WATER TABLE	LITHOLOGY	SAMPLE DESCRIPTION	REMARKS
1		S-1	easy	24/24	0.0			SAND - brown to yellowish brown silty fine SAND, poorly graded, moist.	
2		S-2	easy	24/24	0.0			SAND - gray silty fine SAND, poorly graded, moist.	
3									
4		S-3	moderate	24/24	74.5				No sample collected from this boring.
5						▼		SAND - dark brown and yellowish brown, silty fine SAND, poorly graded, moist to wet.	
6								SAND - black silty fine SAND, poorly graded, moist, organic cemented.	
								End of Probe @ 6 feet BGS.	
7									

COMMENTS: Soil samples collected with 24" geoprobe soil sampler. Headspace analysis collected with MSA Photon with 10.6 eV bulb. Instrument calibrated to 400 ppm toluene in air.

Geologist: M Landsman

Start Date: 2/24/97
Complete Date: 2/24/97

Apex environmental, inc.™
15850 CRABBS BRANCH WAY
SUITE 200
ROCKVILLE, MARYLAND 20855
TELEPHONE: (301) 417-0200

Project: Thiokol - Woodbine facility
Job No.: 097.005
Location: Trench II - 1320N 1240E
Date: 2/26/97
SWMU: 6

Boring ID: B6

DEPTH (ft.)	SAMPLE INTERVAL	SAMPLE ID	PROBE ADVANCE	SAMPLE REC, (in.)	HEADSPACE (ppm)	WATER TABLE	LITHOLOGY	SAMPLE DESCRIPTION	REMARKS
1		S-1	easy	24/24	5.3			SAND - brown to yellowish brown silty fine SAND, poorly graded, moist.	
2		S-2	easy	24/24	0.0			SAND - gray silty fine SAND, poorly graded, moist.	
3									
4		S-3	moderate	24/24	0.0				No sample collected from this boring.
5						▼		SAND - dark brown and yellowish brown, silty fine SAND, poorly graded, moist to wet.	
6								SAND - black silty fine SAND, poorly graded, moist, organic cemented.	
								End of Probe @ 6 feet BGS.	
7									

COMMENTS: Soil samples collected with 24" geoprobe soil sampler. Headspace analysis collected with MSA Photon with 10.6 eV bulb. Instrument calibrated to 400 ppm toluene in air.

Geologist: M Landsman

Start Date: 2/24/97
Complete Date: 2/24/97

Apex environmental,inc.™
15850 CRABBS BRANCH WAY
SUITE 200
ROCKVILLE, MARYLAND 20855
TELEPHONE: (301) 417-0200

Project: Thiokol – Woodbine facility
Job No.: 097.005
Location: Trench II – 1290N 1320E
Date: 2/26/97
SWMU: 6

Boring ID: B7

DEPTH (ft.)	SAMPLE INTERVAL	SAMPLE ID	PROBE ADVANCE	SAMPLE REC. (in.)	HEADSPACE (ppm)	WATER TABLE	LITHOLOGY	SAMPLE DESCRIPTION	REMARKS
1		S-1	easy	24/24	0.0			SAND – brown to yellowish brown silty fine SAND, poorly graded, moist.	
2		S-2	easy	24/24	0.0			SAND – gray silty fine SAND, poorly graded, moist.	
3									
4		S-3	moderate	24/24	0.0				No sample collected from this boring.
5						▼		SAND – dark brown and yellowish brown, silty fine SAND, poorly graded, moist to wet.	
6								SAND – black silty fine SAND, poorly graded, moist, organic cemented.	
								End of Probe @ 6 feet BGS.	
7									

COMMENTS: Soil samples collected with 24" geoprobe soil sampler. Headspace analysis collected with MSA Photon with 10.6 eV bulb. Instrument calibrated to 400 ppm toluene in air.

Geologist: M Landsman

Start Date: 2/24/97
Complete Date: 2/24/97

Apex environmental,inc.
15850 CRABBS BRANCH WAY
SUITE 200
ROCKVILLE, MARYLAND 20855
TELEPHONE: (301) 417-0200

Project: Thiokol - Woodbine facility
Job No.: 097.005
Location: Trench II - 1290N 1290E
Date: 2/26/97
SWMU: 6

Boring ID: B8

DEPTH (ft.)	SAMPLE INTERVAL	SAMPLE ID	PROBE ADVANCE	SAMPLE REC, (in.)	HEADSPACE (ppm)	WATER TABLE	LITHOLOGY	SAMPLE DESCRIPTION	REMARKS
0-1		S-1	easy	24/24	0.0			SAND - brown to yellowish brown silty fine SAND, poorly graded, moist.	
1-2									
2-3		S-2	easy	24/24	0.0			SAND - gray silty fine SAND, poorly graded, moist.	
3-4									
4-5		S-3	moderate	24/24	0.0	▼		SAND - dark brown and yellowish brown, silty fine SAND, poorly graded, moist to wet.	No sample collected from this boring.
5-6									
6-7								SAND - black silty fine SAND, poorly graded, moist, organic cemented.	
								End of Probe @ 6 feet BGS.	

COMMENTS: Soil samples collected with 24" geoprobe soil sampler. Headspace analysis collected with MSA Photon with 10.6 eV bulb. Instrument calibrated to 400 ppm toluene in air.

Geologist: M Landsman

Start Date: 2/24/97
Complete Date: 2/24/97

Apex environmental,inc.
15850 CRABBS BRANCH WAY
SUITE 200
ROCKVILLE, MARYLAND 20855
TELEPHONE: (301) 417-0200

Project: Thiokol - Woodbine facility
Job No.: 097.005
Location: Trench II - 1320N 1370E
Date: 2/26/97
SWMU: 6

Boring ID: B9

DEPTH (ft.)	SAMPLE INTERVAL	SAMPLE ID	PROBE ADVANCE	SAMPLE REC. (in.)	HEADSPACE (ppm)	WATER TABLE	LITHOLOGY	SAMPLE DESCRIPTION	REMARKS
1		S-1	easy	24/24	0.0			SAND - brown to yellowish brown silty fine SAND, poorly graded, moist.	
2		S-2	easy	24/24	0.0			SAND - gray silty fine SAND, poorly graded, moist.	
3									
4		S-3	moderate	24/24	0.0			SAND - dark brown and yellowish brown, silty fine SAND, poorly graded, moist to wet.	No sample collected from this boring.
5						▼			
6								SAND - black silty fine SAND, poorly graded, moist, organic cemented.	
								End of Probe @ 6 feet BGS.	
7									

COMMENTS: Soil samples collected with 24" geoprobe soil sampler. Headspace analysis collected with MSA Photon with 10.6 eV bulb. Instrument calibrated to 400 ppm toluene in air.

Geologist: M Landsman

Start Date: 2/24/97
Complete Date: 2/24/97

Apex environmental,inc.
15850 CRABBS BRANCH WAY
SUITE 200
ROCKVILLE, MARYLAND 20855
TELEPHONE: (301) 417-0200

Project: Thiokol - Woodbine facility
Job No.: 097.005
Location: Trench II - 1320N 1360E
Date: 2/26/97
SWMU: 6

Boring ID: B10

DEPTH (ft.)	SAMPLE INTERVAL	SAMPLE ID	PROBE ADVANCE	SAMPLE REC, (in.)	HEADSPACE (ppm)	WATER TABLE	LITHOLOGY	SAMPLE DESCRIPTION	REMARKS
1								SAND - brown to yellowish brown silty fine SAND, poorly graded, moist.	
2								SAND - gray silty fine SAND, poorly graded, moist.	
3									
4		S-1	moderate	24/24	0.0				Sample 9238 collected for VOC analysis.
5						▼		SAND - dark brown and yellowish brown, silty fine SAND, poorly graded, moist to wet.	
6								SAND - black silty fine SAND, poorly graded, moist, organic cemented.	
7								End of Probe @ 6 feet BGS.	

COMMENTS: Soil samples collected with 24" geoprobe soil sampler. Headspace analysis collected with MSA Photon with 10.6 eV bulb. Instrument calibrated to 400 ppm toluene in air.

Geologist: M Landsman

Start Date: 2/24/97
Complete Date: 2/24/97

Apex environmental,inc.
15850 CRABBS BRANCH WAY
SUITE 200
ROCKVILLE, MARYLAND 20855
TELEPHONE: (301) 417-0200

Project: Thiokol - Woodbine facility
Job No.: 097.005
Location: Trench II - 1320N 1255E
Date: 2/26/97
SWMU: 6

Boring ID: B11

DEPTH (ft.)	SAMPLE INTERVAL	SAMPLE ID	PROBE ADVANCE	SAMPLE REC. (in.)	HEADSPACE (ppm)	WATER TABLE	LITHOLOGY	SAMPLE DESCRIPTION	REMARKS
1								SAND - brown to yellowish brown silty fine SAND, poorly graded, moist.	
2									
3								SAND - gray silty fine SAND, poorly graded, moist.	
4		S-1	moderate	24/24	0.0				Sample 9239 collected for VOC analysis.
5						▼		SAND - dark brown and yellowish brown, silty fine SAND, poorly graded, moist to wet.	
6								SAND - black silty fine SAND, poorly graded, moist, organic cemented.	
7								End of Probe @ 6 feet BGS.	

COMMENTS: Soil samples collected with 24" geoprobe soil sampler. Headspace analysis collected with MSA Photon with 10.6 eV bulb. Instrument calibrated to 400 ppm toluene in air.

Geologist: M Landsman

Start Date: 2/24/97
Complete Date: 2/24/97

Apex environmental,inc.™
15850 CRABBS BRANCH WAY
SUITE 200
ROCKVILLE, MARYLAND 20855
TELEPHONE: (301) 417-0200

Project: Thiokol - Woodbine facility
Job No.: 097.005
Location: Trench II - 1300N 1300E
Date: 2/26/97
SWMU: 6

Boring ID: B12

DEPTH (ft.)	SAMPLE INTERVAL	SAMPLE ID	PROBE ADVANCE	SAMPLE REC, (in.)	HEADSPACE (ppm)	WATER TABLE	LITHOLOGY	SAMPLE DESCRIPTION	REMARKS
1								SAND - brown to yellowish brown silty fine SAND, poorly graded, moist.	
2									
3								SAND - gray silty fine SAND, poorly graded, moist.	
4		S-1	moderate	24/24	0.0				Sample 9240 collected for VOC analysis.
5						▼		SAND - dark brown and yellowish brown, silty fine SAND, poorly graded, moist to wet.	
6								SAND - black silty fine SAND, poorly graded, moist, organic cemented.	
								End of Probe @ 6 feet BGS.	
7									

COMMENTS: Soil samples collected with 24" geoprobe soil sampler. Headspace analysis collected with MSA Photon with 10.6 eV bulb. Instrument calibrated to 400 ppm toluene in air.

Geologist: M Landsman

Start Date: 2/24/97
Complete Date: 2/24/97

Apex environmental, inc.
15850 CRABBS BRANCH WAY
SUITE 200
ROCKVILLE, MARYLAND 20855
TELEPHONE: (301) 417-0200

Project: Thiokol – Woodbine facility
Job No.: 097.005
Location: Trench II – 1320N 1310E
Date: 2/26/97
SWMU: 8

Boring ID: B13

DEPTH (ft.)	SAMPLE INTERVAL	SAMPLE ID	PROBE ADVANCE	SAMPLE REC. (in.)	HEADSPACE (ppm)	WATER TABLE	LITHOLOGY	SAMPLE DESCRIPTION	REMARKS
1								SAND – brown to yellowish brown silty fine SAND, poorly graded, moist.	
2								SAND – gray silty fine SAND, poorly graded, moist.	
3									
4		S-1	moderate	24/24	0.0				Sample 9241 collected for VOC analysis.
5						▼		SAND – dark brown and yellowish brown, silty fine SAND, poorly graded, moist to wet.	
6								SAND – black silty fine SAND, poorly graded, moist, organic cemented.	
								End of Probe @ 6 feet BGS.	
7									

COMMENTS: Soil samples collected with 24" geoprobe soil sampler. Headspace analysis collected with MSA Photon with 10.6 eV bulb. Instrument calibrated to 400 ppm toluene in air.

Geologist: M Landsman

Start Date: 2/24/97
Complete Date: 2/24/97

Appendix D

Laboratory Data Sheets

Ser ber 49112

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue, Savannah, GA 31404 — Phone: (912) 354-7858 — Fax: (912) 352-0165
2346 Industrial Plaza Drive, Tallahassee, FL 32301 — Phone: (904) 878-3994 — Fax: (904) 878-9504
414 SW 12th Avenue, Deerfield Beach, FL 33442 — Phone: (954) 421-7400 — Fax: (954) 421-2584
900 Lakeside Drive, Mobile, AL 36693 — Phone: (334) 666-6633 — Fax: (334) 666-6696
6712 Benjamin Road, Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 — Fax: (813) 885-7049
200 Alpha Drive, Suite 110, Destrehan, LA 70047 — Phone: (504) 764-1100 — Fax: (504) 725-1163

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
THIOKOL-WOODBINE		097.005

PROJECT LOC. (State)	SAMPLER(s) NAME	PHONE / FAX
GA	MIKE HANDSMAN	301-417-0200 / 301-975-0169

CLIENT NAME	CLIENT PROJECT MANAGER
APEX ENV	MARK CORBIN

CLIENT ADDRESS (CITY, STATE, ZIP): 8850 GAITHERS BUSINESS WAY SUITE 100 Rockville MD 20877

PAGE 3 OF 3

REQUIRED ANALYSES: VOCs, VOCs

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc.)

NUMBER OF CONTAINERS SUBMITTED: HCl / ICE / FIELD SERVATIVE

STANDARD REPORT DELIVERY ☐

EXPEDITED REPORT DELIVERY (surcharge) ☐

Date Due: _____

SAMPLE DATE	SAMPLE TIME	SL NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (oil, solvent, etc.)	HCl	ICE	REMARKS
2/26/97	1715		9243					2	—	
	0945		9244					—	1	
	0955		9245					—	1	
	1030		9246					—	1	
	1010		9247					—	1	
	1050		9248					—	1	
	1110		9249					—	1	
	1110		9250					2	—	
	1220		9251					2	—	
2/11/97	1330		9252					3	—	

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
[illegible] AIR			[signature]	2/27/97	1300			
RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
[signature] AIR	2/4/97	1330						

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	SL LOG NO.	LABORATORY REMARKS
[signature]	2/07/97	1:00	☑ YES ☐ NO	[redacted]	97140	[redacted]

ORIGINAL

Se... nber 9[illegible]5

SL **SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.**

5102 LaRoche Avenue, Savannah, GA 31404 — Phone: (912) 354-7858 — Fax: (912) 352-0165
2846 Industrial Plaza Drive, Tallahassee, FL 32301 — Phone: (904) 878-3994 — Fax: (904) 878-9504
414 SW 12th Avenue, Deerfield Beach, FL 33442 — Phone: (954) 421-7400 — Fax: (954) 421-2584
900 Lakeside Drive, Mobile, AL 36693 — Phone: (334) 666-6633 — Fax: (334) 666-6696
6712 Benjamin Road, Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 — Fax: (813) 885-7049
100 Alpha Drive, Suite 110, Destrehan, LA 70047 — Phone: (504) 764-1100 — Fax: (504) 725-1163

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

PROJECT REFERENCE	PROJECT NO	P.O. NUMBER
THIOKOL WOODBINE		097.005

PROJECT LOC. (State)	SAMPLER(s) NAME	PHONE	FAX
GA	MIKE HANDSMAN	301-417-0200	301-975 0169

CLIENT NAME	CLIENT PROJECT MANAGER
APEX ENVIRONMENTAL	MARK CORBIN

CLIENT ADDRESS (CITY, STATE, ZIP): 15850 CRABBS BRANCH WAY SUITE 200 ROCKVILLE MD 20855

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc)

REQUIRED ANALYSES: Metals / VOCs / VOCs

PAGE 2 OF 3

STANDARD REPORT DELIVERY ☒

EXPEDITED REPORT DELIVERY (surcharge) ☐

Date Due: _____

SAMPLE DATE	SAMPLE TIME	SL NO.	SAMPLE IDENTIFICATION	AQUEOUS	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID	NUMBER OF CONTAINERS SUBMITTED: HNO3	ICE / HCl	FOR PRESERVATIVE	REMARKS
2/26/97	1556		9230					2	—	—	
	1610		9231					2	—	—	
	1640		9232					2	—	—	
	1635		9233					2	—	—	
	1646		9234					2	—	—	
	1651		9235					2	—	—	
2/24/97	1630		9236					—	1	—	
	1650		9237					—	1	—	
	1430		9238					—	1	—	
	1455		9239					—	1	—	
	1515		9240					—	1	—	
	1535		9241					—	1	—	
2/25/97	1000		9242					—	—	2	

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
M. Handsman FAII	2.14.97	1:30	[signature]	2/27/97	1300			
RECEIVED BY: (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**
[signature] FAII	2/14/97	1330						

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	SL LOG NO.	LABORATORY REMARKS
M. D. Campbell	2/28/97	1:00	☒ YES ☐ NO		57-7130	

ORIGINAL

Ser ber 9573

SL *SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.*

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

- [X] 5102 LaRoche Avenue, Savannah, GA 31404 Phone: (912) 354-7858 Fax: (912) 352-0165
- [ ] 2846 Industrial Plaza Drive, Tallahassee, FL 32301 Phone: (904) 878-3994 Fax: (904) 878-9504
- [ ] 414 SW 12th Avenue, Deerfield Beach, FL 33442 Phone: (954) 421-7400 Fax: (954) 421-2584
- [ ] 900 Lakeside Drive, Mobile, AL 36693 Phone: (334) 666-6633 Fax: (334) 666-6696
- [ ] 6712 Benjamin Road, Suite 100, Tampa, FL 33634 Phone: (813) 885-7427 Fax: (813) 885-7049
- [ ] 100 Alpha Drive, Suite 110, Destrehan, LA 70047 Phone: (504) 764-1100 Fax: (504) 725-1163

PROJECT REFERENCE: Thioka Woodbine
PROJECT NO.:
P.O. NUMBER: 097.005
PROJECT LOC. (State): GA
SAMPLER(s) NAME: Mike Laudsman
PHONE: 301-417-0200
FAX: 301-975-0169
CLIENT NAME: Apex Env.
CLIENT PROJECT MANAGER: Mark Corbin
CLIENT ADDRESS (CITY, STATE, ZIP): 15850 Crabbs Branch Way Suite 200 Rockville MD 20855

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc)

REQUIRED ANALYSES: Metals; VOCs

PRESERVATIVE: HNO_3; HCl

PAGE 1 OF 3

[X] STANDARD REPORT DELIVERY
[ ] EXPEDITED REPORT DELIVERY (surcharge)
Date Due: ______

SAMPLE DATE	SAMPLE TIME	SL NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	Metals	VOCs	REMARKS
2/26/97	1455		9217	✓	2	—	Acetone MIBK
↓	1500		9218	✓	2	—	Contaminant in
	1505		9219	✓	2	—	VOC samples
	~~1520~~ 1515		9220	✓	2	—	
	1520		9221	✓	2	—	
↓	1530		9222	✓	2	—	
2/25/97	1342		9223	✓	—	3	
2/26/97	1535		9224	✓	2	—	
↓	1540		9225	✓	2	—	
	1545		9226	✓	2	—	
	1551		9227	✓	2	—	
	1625		9228	✓	2	—	
↓	1603		9229	✓	2	—	

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
[signature]	2.14.97	1:30	[signature]	2/27/97	1300			
RECEIVED BY: (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**
[signature]	2/14/97	1330						

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	SL LOG NO.	LABORATORY REMARKS
A. Campbell	2/27/97	1:00	[X] YES [ ] NO		ST71140	Per Mark Corbin analyze metals - As, Ba, Cd, Cr, Pb, Hg and VOCs. 2-28-97 CW(RK)

ORIGINAL

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S7-71140
Received: 27 FEB 97
Reported: 10 MAR 97

Mr. Mark Corbin
Apex Environmental, Inc.
15850 Crabbs Branch Way #300
Rockville, MD 20855

Client PO. No.: 097.005

Project: THIKOL/WOODBINE
Sampled By: Client
Code: 163670310

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
71140-19	9223	05-25-97/1342
71140-20	9242	02-25-97/1000
71140-21	9243	02-26-97/1715
71140-22	9250	02-26-97/1110
71140-23	9251	02-26-97/1220

PARAMETER	71140-19	71140-20	71140-21	71140-22	71140-23
Volatiles by GC/MS (8260)					
Chloromethane, ug/l	<10	<10	<10	<10	<10
Bromomethane, ug/l	<10	<10	<10	<10	<10
Vinyl chloride, ug/l	<10	<10	<10	<10	<10
Chloroethane, ug/l	<10	<10	<10	<10	<10
Methylene chloride (Dichloromethane), ug/l	<5.0	<5.0	<5.0	<5.0	<5.0
Acetone, ug/l	<50	<50	110	590	66
Carbon disulfide, ug/l	<5.0	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethene, ug/l	<5.0	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethane, ug/l	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,2-Dichloroethylene, ug/l	<5.0	<5.0	<5.0	<5.0	<5.0
Chloroform, ug/l	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloroethane, ug/l	<5.0	<5.0	<5.0	<5.0	<5.0
2-Butanone (MEK), ug/l	<25	<25	<25	<25	<25
1,1,1-Trichloroethane, ug/l	<5.0	<5.0	<5.0	<5.0	<5.0
Carbon tetrachloride, ug/l	<5.0	<5.0	<5.0	<5.0	<5.0
Vinyl Acetate, ug/l	<10	<10	<10	<10	<10
Bromodichloromethane, ug/l	<5.0	<5.0	<5.0	<5.0	<5.0

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S7-71140
Received: 27 FEB 97
Reported: 10 MAR 97

Mr. Mark Corbin
Apex Environmental, Inc.
15850 Crabbs Branch Way #300
Rockville, MD 20855

Client PO. No.: 097.005

Project: THIKOL/WOODBINE
Sampled By: Client
Code: 163670310

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
71140-19	9223	05-25-97/1342
71140-20	9242	02-25-97/1000
71140-21	9243	02-26-97/1715
71140-22	9250	02-26-97/1110
71140-23	9251	02-26-97/1220

PARAMETER	71140-19	71140-20	71140-21	71140-22	71140-23
1,1,2,2-Tetrachloroethane, ug/l	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloropropane, ug/l	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,3-Dichloropropene, ug/l	<5.0	<5.0	<5.0	<5.0	<5.0
Trichloroethene, ug/l	<5.0	<5.0	<5.0	<5.0	<5.0
Dibromochloromethane, ug/l	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2-Trichloroethane, ug/l	<5.0	<5.0	<5.0	<5.0	<5.0
Benzene, ug/l	<5.0	<5.0	<5.0	<5.0	<5.0
cis-1,3-Dichloropropene, ug/l	<5.0	<5.0	<5.0	<5.0	<5.0
2-Chloroethylvinyl ether, ug/l	<50	<50	<50	<50	<50
Bromoform, ug/l	<5.0	<5.0	<5.0	<5.0	<5.0
2-Hexanone, ug/l	<25	<25	<25	<25	<25
4-Methyl-2-pentanone (MIBK), ug/l	<25	<25	<25	<25	<25
Tetrachloroethene, ug/l	<5.0	<5.0	<5.0	<5.0	<5.0
Toluene, ug/l	<5.0	<5.0	<5.0	<5.0	<5.0
Chlorobenzene, ug/l	<5.0	<5.0	<5.0	<5.0	<5.0
Ethylbenzene, ug/l	<5.0	<5.0	<5.0	<5.0	<5.0
Styrene, ug/l	<5.0	<5.0	<5.0	<5.0	<5.0
Xylenes, ug/l	<5.0	<5.0	<5.0	<5.0	<5.0
Surrogate - Toluene-d8	94 %	94 %	94 %	92 %	94 %

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71140-20	9242	02-25-97/1000
71140-21	9243	02-26-97/1715
71140-22	9250	02-26-97/1110
71140-23	9251	02-26-97/1220

PARAMETER	71140-19	71140-20	71140-21	71140-22	71140-23
Surrogate - 4-Bromofluorobenzene	120 %	126 %	122 %	108 %	120 %
Surrogate - Dibromofluoromethane	134 %	132 %	128 %	138 %	130 %
Date Analyzed	03.03.97	03.03.97	03.03.97	03.04.97	03.04.97
Dilution factor	1.0	1.0	1.0	1.0	1.0
Batch ID	0303B	0303B	0303B	0303B	0303B
Clock ID	1H0303	1H0303	1H0303	1H0304	1H0303
Method Number	8260	8260	8260	8260	8260

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
71140-1	9217	02-26-97/1456
71140-2	9218	02-26-97/1500
71140-3	9219	02-26-97/1506
71140-4	9220	02-26-97/1515
71140-5	9221	02-26-97/1520

PARAMETER	71140-1	71140-2	71140-3	71140-4	71140-5
Arsenic (6010)					
Arsenic (6010), mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Preparation Date	02.28.97	02.28.97	02.28.97	02.28.97	02.28.97
Date Analyzed	03.04.97	03.04.97	03.04.97	03.04.97	03.04.97
Dilution factor	1.0	1.0	1.0	1.0	1.0
Batch ID	0228L	0228L	0228L	0228L	0228L
Barium (6010)					
Barium (6010), mg/l	<0.010	0.012	0.017	<0.010	<0.010
Preparation Date	02.28.97	02.28.97	02.28.97	02.28.97	02.28.97
Date Analyzed	03.04.97	03.04.97	03.04.97	03.04.97	03.04.97
Dilution factor	1.0	1.0	1.0	1.0	1.0
Batch ID	0228L	0228L	0228L	0228L	0228L
Cadmium (6010)					
Cadmium (6010), mg/l	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Preparation Date	02.28.97	02.28.97	02.28.97	02.28.97	02.28.97
Date Analyzed	03.04.97	03.04.97	03.04.97	03.04.97	03.04.97
Dilution factor	1.0	1.0	1.0	1.0	1.0
Batch ID	0228L	0228L	0228L	0228L	0228L

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LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
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71140-2	9218	02-26-97/1500
71140-3	9219	02-26-97/1506
71140-4	9220	02-26-97/1515
71140-5	9221	02-26-97/1520

PARAMETER	71140-1	71140-2	71140-3	71140-4	71140-5
Chromium (6010)					
Chromium (6010), mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Preparation Date	02.28.97	02.28.97	02.28.97	02.28.97	02.28.97
Date Analyzed	03.04.97	03.04.97	03.04.97	03.04.97	03.04.97
Dilution factor	1.0	1.0	1.0	1.0	1.0
Batch ID	0228L	0228L	0228L	0228L	0228L
Lead (6010)					
Lead (6010), mg/l	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Preparation Date	02.28.97	02.28.97	02.28.97	02.28.97	02.28.97
Date Analyzed	03.04.97	03.04.97	03.04.97	03.04.97	03.04.97
Dilution factor	1.0	1.0	1.0	1.0	1.0
Batch ID	0228L	0228L	0228L	0228L	0228L
Mercury (7470)					
Mercury (7470), mg/l	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Preparation Date	02.28.97	02.28.97	02.28.97	02.28.97	02.28.97
Date Analyzed	03.03.97	03.03.97	03.03.97	03.03.97	03.03.97
Dilution factor	1.0	1.0	1.0	1.0	1.0
Batch ID	0228T	0228T	0228T	0228T	0228T

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
71140-6	9222	02-26-97/1530
71140-7	9224	02-26-97/1535
71140-8	9225	02-26-97/1540
71140-9	9226	02-26-97/1545
71140-10	9227	02-26-97/1551

PARAMETER	71140-6	71140-7	71140-8	71140-9	71140-10
Arsenic (6010)					
Arsenic (6010), mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Preparation Date	02.28.97	02.28.97	02.28.97	02.28.97	02.28.97
Date Analyzed	03.04.97	03.04.97	03.04.97	03.04.97	03.04.97
Dilution factor	1.0	1.0	1.0	1.0	1.0
Batch ID	0228L	0228L	0228L	0228L	0228L
Barium (6010)					
Barium (6010), mg/l	0.037	0.039	0.022	0.030	0.035
Preparation Date	02.28.97	02.28.97	02.28.97	02.28.97	02.28.97
Date Analyzed	03.04.97	03.04.97	03.04.97	03.04.97	03.04.97
Dilution factor	1.0	1.0	1.0	1.0	1.0
Batch ID	0228L	0228L	0228L	0228L	0228L
Cadmium (6010)					
Cadmium (6010), mg/l	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Preparation Date	02.28.97	02.28.97	02.28.97	02.28.97	02.28.97
Date Analyzed	03.04.97	03.04.97	03.04.97	03.04.97	03.04.97
Dilution factor	1.0	1.0	1.0	1.0	1.0
Batch ID	0228L	0228L	0228L	0228L	0228L

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71140-7	9224	02-26-97/1535
71140-8	9225	02-26-97/1540
71140-9	9226	02-26-97/1545
71140-10	9227	02-26-97/1551

PARAMETER	71140-6	71140-7	71140-8	71140-9	71140-10
Chromium (6010)					
Chromium (6010), mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Preparation Date	02.28.97	02.28.97	02.28.97	02.28.97	02.28.97
Date Analyzed	03.04.97	03.04.97	03.04.97	03.04.97	03.04.97
Dilution factor	1.0	1.0	1.0	1.0	1.0
Batch ID	0228L	0228L	0228L	0228L	0228L
Lead (6010)					
Lead (6010), mg/l	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Preparation Date	02.28.97	02.28.97	02.28.97	02.28.97	02.28.97
Date Analyzed	03.04.97	03.04.97	03.04.97	03.04.97	03.04.97
Dilution factor	1.0	1.0	1.0	1.0	1.0
Batch ID	0228L	0228L	0228L	0228L	0228L
Mercury (7470)					
Mercury (7470), mg/l	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Preparation Date	02.28.97	02.28.97	02.28.97	02.28.97	02.28.97
Date Analyzed	03.03.97	03.03.97	03.03.97	03.03.97	03.03.97
Dilution factor	1.0	1.0	1.0	1.0	1.0
Batch ID	0228T	0228T	0228T	0228T	0228T

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LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
71140-11	9228	02-26-97/1625
71140-12	9229	02-26-97/1603
71140-13	9230	02-26-97/1556
71140-14	9231	02-26-97/1610
71140-15	9232	02-26-97/1640

PARAMETER	71140-11	71140-12	71140-13	71140-14	71140-15
Arsenic (6010)					
Arsenic (6010), mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Preparation Date	02.28.97	02.28.97	02.28.97	02.28.97	02.28.97
Date Analyzed	03.04.97	03.04.97	03.04.97	03.04.97	03.04.97
Dilution factor	1.0	1.0	1.0	1.0	1.0
Batch ID	0228L	0228L	0228L	0228L	0228L
Barium (6010)					
Barium (6010), mg/l	0.019	0.017	0.059	0.018	<0.010
Preparation Date	02.28.97	02.28.97	02.28.97	02.28.97	02.28.97
Date Analyzed	03.04.97	03.04.97	03.04.97	03.04.97	03.04.97
Dilution factor	1.0	1.0	1.0	1.0	1.0
Batch ID	0228L	0228L	0228L	0228L	0228L
Cadmium (6010)					
Cadmium (6010), mg/l	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Preparation Date	02.28.97	02.28.97	02.28.97	02.28.97	02.28.97
Date Analyzed	03.04.97	03.04.97	03.04.97	03.04.97	03.04.97
Dilution factor	1.0	1.0	1.0	1.0	1.0
Batch ID	0228L	0228L	0228L	0228L	0228L

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71140-12	9229	02-26-97/1603
71140-13	9230	02-26-97/1556
71140-14	9231	02-26-97/1610
71140-15	9232	02-26-97/1640

PARAMETER	71140-11	71140-12	71140-13	71140-14	71140-15
Chromium (6010)					
Chromium (6010), mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Preparation Date	02.28.97	02.28.97	02.28.97	02.28.97	02.28.97
Date Analyzed	03.04.97	03.04.97	03.04.97	03.04.97	03.04.97
Dilution factor	1.0	1.0	1.0	1.0	1.0
Batch ID	0228L	0228L	0228L	0228L	0228L
Lead (6010)					
Lead (6010), mg/l	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Preparation Date	02.28.97	02.28.97	02.28.97	02.28.97	02.28.97
Date Analyzed	03.04.97	03.04.97	03.04.97	03.04.97	03.04.97
Dilution factor	1.0	1.0	1.0	1.0	1.0
Batch ID	0228L	0228L	0228L	0228L	0228L
Mercury (7470)					
Mercury (7470), mg/l	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Preparation Date	02.28.97	02.28.97	02.28.97	02.28.97	02.28.97
Date Analyzed	03.03.97	03.03.97	03.03.97	03.03.97	03.03.97
Dilution factor	1.0	1.0	1.0	1.0	1.0
Batch ID	0228T	0228T	0228T	0228T	0228T

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LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
71140-16	9233	02-26-97/1635
71140-17	9234	02-26-97/1646
71140-18	9235	02-26-97/1651

PARAMETER	71140-16	71140-17	71140-18
Arsenic (6010)			
Arsenic (6010), mg/l	<0.010	<0.010	<0.010
Preparation Date	02.28.97	02.28.97	02.28.97
Date Analyzed	03.04.97	03.04.97	03.04.97
Dilution factor	1.0	1.0	1.0
Batch ID	0228L	0228L	0228L
Barium (6010)			
Barium (6010), mg/l	<0.010	0.018	<0.010
Preparation Date	02.28.97	02.28.97	02.28.97
Date Analyzed	03.04.97	03.04.97	03.04.97
Dilution factor	1.0	1.0	1.0
Batch ID	0228L	0228L	0228L
Cadmium (6010)			
Cadmium (6010), mg/l	<0.0050	<0.0050	<0.0050
Preparation Date	02.28.97	02.28.97	02.28.97
Date Analyzed	03.04.97	03.04.97	03.04.97
Dilution factor	1.0	1.0	1.0
Batch ID	0228L	0228L	0228L

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71140-16	9233	02-26-97/1635
71140-17	9234	02-26-97/1646
71140-18	9235	02-26-97/1651

PARAMETER	71140-16	71140-17	71140-18
Chromium (6010)			
Chromium (6010), mg/l	<0.010	<0.010	<0.010
Preparation Date	02.28.97	02.28.97	02.28.97
Date Analyzed	03.04.97	03.04.97	03.04.97
Dilution factor	1.0	1.0	1.0
Batch ID	0228L	0228L	0228L
Lead (6010)			
Lead (6010), mg/l	<0.0050	<0.0050	<0.0050
Preparation Date	02.28.97	02.28.97	02.28.97
Date Analyzed	03.04.97	03.04.97	03.04.97
Dilution factor	1.0	1.0	1.0
Batch ID	0228L	0228L	0228L
Mercury (7470)			
Mercury (7470), mg/l	<0.00020	<0.00020	<0.00020
Preparation Date	02.28.97	02.28.97	02.28.97
Date Analyzed	03.03.97	03.03.97	03.03.97
Dilution factor	1.0	1.0	1.0
Batch ID	0228T	0228T	0228T

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Sampled By: Client
Code: 163670310

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
71140-25	9236	02-24-97/1630
71140-26	9237	02-24-97/1650
71140-27	9238	02-24-97/1430
71140-28	9239	02-24-97/1455
71140-29	9240	02-24-97/1515

PARAMETER	71140-25	71140-26	71140-27	71140-28	71140-29
Volatiles by GC/MS (8260)					
Chloromethane, ug/kg dw	<13	<12	<12	<13	<13
Bromomethane, ug/kg dw	<13	<12	<12	<13	<13
Vinyl chloride, ug/kg dw	<13	<12	<12	<13	<13
Chloroethane, ug/kg dw	<13	<12	<12	<13	<13
Methylene chloride (Dichloromethane), ug/kg dw	<6.3	<6.2	<6.2	<6.3	<6.5
Acetone, ug/kg dw	<63	<62	<62	100	<65
Carbon disulfide, ug/kg dw	<6.3	<6.2	<6.2	<6.3	<6.5
1,1-Dichloroethene, ug/kg dw	<6.3	<6.2	<6.2	<6.3	<6.5
1,1-Dichloroethane, ug/kg dw	<6.3	<6.2	<6.2	<6.3	<6.5
trans-1,2-Dichloroethylene, ug/kg dw	<6.3	<6.2	<6.2	<6.3	<6.5
Chloroform, ug/kg dw	<6.3	<6.2	<6.2	<6.3	<6.5
1,2-Dichloroethane, ug/kg dw	<6.3	<6.2	<6.2	<6.3	<6.5
2-Butanone (MEK), ug/kg dw	<32	<31	<31	<32	<32
1,1,1-Trichloroethane, ug/kg dw	<6.3	<6.2	<6.2	<6.3	<6.5
Carbon tetrachloride, ug/kg dw	<6.3	<6.2	<6.2	<6.3	<6.5
Vinyl Acetate, ug/kg dw	<13	<12	<12	<13	<13

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5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S7-71140
Received: 27 FEB 97
Reported: 10 MAR 97

Mr. Mark Corbin
Apex Environmental, Inc.
15850 Crabbs Branch Way #300
Rockville, MD 20855

Client PO. No.: 097.005

Project: THIKOL/WOODBINE
Sampled By: Client
Code: 163670310

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
71140-25	9236	02-24-97/1630
71140-26	9237	02-24-97/1650
71140-27	9238	02-24-97/1430
71140-28	9239	02-24-97/1455
71140-29	9240	02-24-97/1515

PARAMETER	71140-25	71140-26	71140-27	71140-28	71140-29
Bromodichloromethane, ug/kg dw	<6.3	<6.2	<6.2	<6.3	<6.5
1,1,2,2-Tetrachloroethane, ug/kg dw	<6.3	<6.2	<6.2	<6.3	<6.5
1,2-Dichloropropane, ug/kg dw	<6.3	<6.2	<6.2	<6.3	<6.5
trans-1,3-Dichloropropene, ug/kg dw	<6.3	<6.2	<6.2	<6.3	<6.5
Trichloroethene, ug/kg dw	<6.3	<6.2	<6.2	<6.3	<6.5
Dibromochloromethane, ug/kg dw	<6.3	<6.2	<6.2	<6.3	<6.5
1,1,2-Trichloroethane, ug/kg dw	<6.3	<6.2	<6.2	<6.3	<6.5
Benzene, ug/kg dw	<6.3	<6.2	<6.2	<6.3	<6.5
cis-1,3-Dichloropropene, ug/kg dw	<6.3	<6.2	<6.2	<6.3	<6.5
2-Chloroethylvinyl ether, ug/kg dw	<63	<62	<62	<63	<65
Bromoform, ug/kg dw	<6.3	<6.2	<6.2	<6.3	<6.5
2-Hexanone, ug/kg dw	<32	<31	<31	<32	<32
4-Methyl-2-pentanone (MIBK), ug/kg dw	<32	<31	<31	<32	<32
Tetrachloroethene, ug/kg dw	<6.3	<6.2	<6.2	<6.3	<6.5
Toluene, ug/kg dw	<6.3	<6.2	<6.2	<6.3	<6.5
Chlorobenzene, ug/kg dw	<6.3	<6.2	<6.2	<6.3	<6.5

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
71140-25	9236	02-24-97/1630
71140-26	9237	02-24-97/1650
71140-27	9238	02-24-97/1430
71140-28	9239	02-24-97/1455
71140-29	9240	02-24-97/1515

PARAMETER	71140-25	71140-26	71140-27	71140-28	71140-29
Ethylbenzene, ug/kg dw	<6.3	<6.2	<6.2	<6.3	<6.5
Styrene, ug/kg dw	<6.3	<6.2	<6.2	<6.3	<6.5
Xylenes, ug/kg dw	<6.3	<6.2	<6.2	<6.3	<6.5
Surrogate - Toluene-d8	95 %	92 %	97 %	95 %	95 %
Surrogate - 4-Bromofluorobenzene	95 %	97 %	98 %	102 %	100 %
Surrogate - Dibromofluoromethane	114 %	111 %	116 %	116 %	115 %
Date Analyzed	03.03.97	03.03.97	03.03.97	03.03.97	03.03.97
Dilution factor	1.0	1.0	1.0	1.0	1.0
Batch ID	0303A	0303A	0303A	0303A	0303A
Clock ID	1L0303	1L0303	1L0303	1L0303	1L0303
Method Number	8260	8260	8260	8260	8260
Percent Solids (160.3), %	79	81	80	79	77

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Sampled By: Client
Code: 163670310

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
71140-30	9241	02-24-97/1535
71140-31	9244	02-26-97/0945
71140-32	9245	02-26-97/0955
71140-33	9246	02-26-97/1030
71140-34	9247	02-26-97/1010

PARAMETER	71140-30	71140-31	71140-32	71140-33	71140-34
Volatiles by GC/MS (8260)					
Chloromethane, ug/kg dw	<14	<14	<12	<12	<12
Bromomethane, ug/kg dw	<14	<14	<12	<12	<12
Vinyl chloride, ug/kg dw	<14	<14	<12	<12	<12
Chloroethane, ug/kg dw	<14	<14	<12	<12	<12
Methylene chloride (Dichloromethane), ug/kg dw	<6.8	<7.2	<6.2	<6.2	<6.2
Acetone, ug/kg dw	85	<72	200	<62	<62
Carbon disulfide, ug/kg dw	<6.8	<7.2	<6.2	<6.2	<6.2
1,1-Dichloroethene, ug/kg dw	<6.8	<7.2	<6.2	<6.2	<6.2
1,1-Dichloroethane, ug/kg dw	<6.8	<7.2	<6.2	<6.2	<6.2
trans-1,2-Dichloroethylene, ug/kg dw	<6.8	<7.2	<6.2	<6.2	<6.2
Chloroform, ug/kg dw	<6.8	<7.2	<6.2	<6.2	<6.2
1,2-Dichloroethane, ug/kg dw	<6.8	<7.2	<6.2	<6.2	<6.2
2-Butanone (MEK), ug/kg dw	<34	<36	<31	<31	<31
1,1,1-Trichloroethane, ug/kg dw	<6.8	<7.2	<6.2	<6.2	<6.2
Carbon tetrachloride, ug/kg dw	<6.8	<7.2	<6.2	<6.2	<6.2
Vinyl Acetate, ug/kg dw	<14	<14	<12	<12	<12

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
71140-30	9241	02-24-97/1535
71140-31	9244	02-26-97/0945
71140-32	9245	02-26-97/0955
71140-33	9246	02-26-97/1030
71140-34	9247	02-26-97/1010

PARAMETER	71140-30	71140-31	71140-32	71140-33	71140-34
Bromodichloromethane, ug/kg dw	<6.8	<7.2	<6.2	<6.2	<6.2
1,1,2,2-Tetrachloroethane, ug/kg dw	<6.8	<7.2	<6.2	<6.2	<6.2
1,2-Dichloropropane, ug/kg dw	<6.8	<7.2	<6.2	<6.2	<6.2
trans-1,3-Dichloropropene, ug/kg dw	<6.8	<7.2	<6.2	<6.2	<6.2
Trichloroethene, ug/kg dw	<6.8	<7.2	<6.2	<6.2	<6.2
Dibromochloromethane, ug/kg dw	<6.8	<7.2	<6.2	<6.2	<6.2
1,1,2-Trichloroethane, ug/kg dw	<6.8	<7.2	<6.2	<6.2	<6.2
Benzene, ug/kg dw	<6.8	<7.2	<6.2	<6.2	<6.2
cis-1,3-Dichloropropene, ug/kg dw	<6.8	<7.2	<6.2	<6.2	<6.2
2-Chloroethylvinyl ether, ug/kg dw	<68	<72	<62	<62	<62
Bromoform, ug/kg dw	<6.8	<7.2	<6.2	<6.2	<6.2
2-Hexanone, ug/kg dw	<34	<36	<31	<31	<31
4-Methyl-2-pentanone (MIBK), ug/kg dw	<34	<36	<31	<31	<31
Tetrachloroethene, ug/kg dw	<6.8	<7.2	<6.2	<6.2	<6.2
Toluene, ug/kg dw	<6.8	<7.2	<6.2	<6.2	<6.2
Chlorobenzene, ug/kg dw	<6.8	<7.2	<6.2	<6.2	<6.2

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
71140-30	9241	02-24-97/1535
71140-31	9244	02-26-97/0945
71140-32	9245	02-26-97/0955
71140-33	9246	02-26-97/1030
71140-34	9247	02-26-97/1010

PARAMETER	71140-30	71140-31	71140-32	71140-33	71140-34
Ethylbenzene, ug/kg dw	<6.8	<7.2	<6.2	<6.2	<6.2
Styrene, ug/kg dw	<6.8	<7.2	<6.2	<6.2	<6.2
Xylenes, ug/kg dw	<6.8	<7.2	<6.2	<6.2	<6.2
Surrogate - Toluene-d8	96 %	96 %	95 %	100 %	95 %
Surrogate - 4-Bromofluorobenzene	101 %	97 %	100 %	98 %	103 %
Surrogate - Dibromofluoromethane	115 %	114 %	114 %	108 %	113 %
Date Analyzed	03.03.97	03.03.97	03.03.97	03.03.97	03.03.97
Dilution factor	1.0	1.0	1.0	1.0	1.0
Batch ID	0303A	0303A	0303A	0303A	0303A
Clock ID	1L0303	1L0303	1L0303	1L0303	1L0303
Method Number	8260	8260	8260	8260	8260
Percent Solids (160.3), %	73	69	81	80	81

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
71140-35	9248	02-26-97/1050
71140-36	9249	02-26-97/1110

PARAMETER	71140-35	71140-36
Volatiles by GC/MS (8260)		
Chloromethane, ug/kg dw	<13	<12
Bromomethane, ug/kg dw	<13	<12
Vinyl chloride, ug/kg dw	<13	<12
Chloroethane, ug/kg dw	<13	<12
Methylene chloride (Dichloromethane), ug/kg dw	<6.3	<6.2
Acetone, ug/kg dw	<63	<62
Carbon disulfide, ug/kg dw	<6.3	<6.2
1,1-Dichloroethene, ug/kg dw	<6.3	<6.2
1,1-Dichloroethane, ug/kg dw	<6.3	<6.2
trans-1,2-Dichloroethylene, ug/kg dw	<6.3	<6.2
Chloroform, ug/kg dw	<6.3	<6.2
1,2-Dichloroethane, ug/kg dw	<6.3	<6.2
2-Butanone (MEK), ug/kg dw	<32	<31
1,1,1-Trichloroethane, ug/kg dw	<6.3	<6.2
Carbon tetrachloride, ug/kg dw	<6.3	<6.2
Vinyl Acetate, ug/kg dw	<13	<12
Bromodichloromethane, ug/kg dw	<6.3	<6.2
1,1,2,2-Tetrachloroethane, ug/kg dw	<6.3	<6.2
1,2-Dichloropropane, ug/kg dw	<6.3	<6.2
trans-1,3-Dichloropropene, ug/kg dw	<6.3	<6.2
Trichloroethene, ug/kg dw	<6.3	<6.2

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
71140-35	9248	02-26-97/1050
71140-36	9249	02-26-97/1110

PARAMETER	71140-35	71140-36
Dibromochloromethane, ug/kg dw	<6.3	<6.2
1,1,2-Trichloroethane, ug/kg dw	<6.3	<6.2
Benzene, ug/kg dw	<6.3	<6.2
cis-1,3-Dichloropropene, ug/kg dw	<6.3	<6.2
2-Chloroethylvinyl ether, ug/kg dw	<63	<62
Bromoform, ug/kg dw	<6.3	<6.2
2-Hexanone, ug/kg dw	<32	<31
4-Methyl-2-pentanone (MIBK), ug/kg dw	<32	<31
Tetrachloroethene, ug/kg dw	<6.3	<6.2
Toluene, ug/kg dw	<6.3	<6.2
Chlorobenzene, ug/kg dw	<6.3	<6.2
Ethylbenzene, ug/kg dw	<6.3	<6.2
Styrene, ug/kg dw	<6.3	<6.2
Xylenes, ug/kg dw	<6.3	<6.2
Surrogate - Toluene-d8	95 %	97 %
Surrogate - 4-Bromofluorobenzene	111 %	98 %
Surrogate - Dibromofluoromethane	114 %	119 %
Date Analyzed	03.03.97	03.03.97
Dilution factor	1.0	1.0
Batch ID	0303A	0303A
Clock ID	1L0303	1L0303
Method Number	8260	8260
Percent Solids (160.3), %	79	80

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
71140-24	9252	02-26-97/1330

PARAMETER	71140-24
Volatiles by GC/MS (8260)	
Chloromethane, ug/l	<10
Bromomethane, ug/l	<10
Vinyl chloride, ug/l	<10
Chloroethane, ug/l	<10
Methylene chloride (Dichloromethane), ug/l	<5.0
Acetone, ug/l	<50
Carbon disulfide, ug/l	<5.0
1,1-Dichloroethene, ug/l	<5.0
1,1-Dichloroethane, ug/l	<5.0
trans-1,2-Dichloroethylene, ug/l	<5.0
Chloroform, ug/l	<5.0
1,2-Dichloroethane, ug/l	<5.0
2-Butanone (MEK), ug/l	<25
1,1,1-Trichloroethane, ug/l	<5.0
Carbon tetrachloride, ug/l	<5.0
Vinyl Acetate, ug/l	<10
Bromodichloromethane, ug/l	<5.0
1,1,2,2-Tetrachloroethane, ug/l	<5.0
1,2-Dichloropropane, ug/l	<5.0
trans-1,3-Dichloropropene, ug/l	<5.0
Trichloroethene, ug/l	<5.0
Dibromochloromethane, ug/l	<5.0

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
71140-24	9252	02-26-97/1330

PARAMETER	71140-24				
1,1,2-Trichloroethane, ug/l	<5.0				
Benzene, ug/l	<5.0				
cis-1,3-Dichloropropene, ug/l	<5.0				
2-Chloroethylvinyl ether, ug/l	<50				
Bromoform, ug/l	<5.0				
2-Hexanone, ug/l	<25				
4-Methyl-2-pentanone (MIBK), ug/l	<25				
Tetrachloroethene, ug/l	<5.0				
Toluene, ug/l	<5.0				
Chlorobenzene, ug/l	<5.0				
Ethylbenzene, ug/l	<5.0				
Styrene, ug/l	<5.0				
Xylenes, ug/l	<5.0				
Surrogate - Toluene-d8	102 %				
Surrogate - 4-Bromofluorobenzene	104 %				
Surrogate - Dibromofluoromethane	140 %				
Date Analyzed	03.03.97				
Dilution factor	1.0				
Batch ID	0303B				
Clock ID	1H0303				
Method Number	8260				

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
71140-37	Method Blank
71140-38	Lab Control Standard % Recovery

PARAMETER	71140-37	71140-38
Arsenic (6010)		
Arsenic (6010), mg/l	<0.010	89 %
Preparation Date	02.28.97	---
Date Analyzed	03.04.97	---
Dilution factor	1.0	---
Batch ID	0228L	---
Barium (6010)		
Barium (6010), mg/l	<0.010	103 %
Preparation Date	02.28.97	---
Date Analyzed	03.04.97	---
Dilution factor	1.0	---
Batch ID	0228L	---
Cadmium (6010)		
Cadmium (6010), mg/l	<0.0050	93 %
Preparation Date	02.28.97	---
Date Analyzed	03.04.97	---
Dilution factor	1.0	---
Batch ID	0228L	---
Chromium (6010)		
Chromium (6010), mg/l	<0.010	99 %
Preparation Date	02.28.97	---
Date Analyzed	03.04.97	---
Dilution factor	1.0	---
Batch ID	0228L	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
71140-37	Method Blank
71140-38	Lab Control Standard % Recovery

PARAMETER	71140-37	71140-38
Lead (6010)		
Lead (6010), mg/l	<0.0050	94 %
Preparation Date	02.28.97	---
Date Analyzed	03.04.97	---
Dilution factor	1.0	---
Batch ID	0228L	---
Mercury (7470)		
Mercury (7470), mg/l	<0.00020	90 %
Preparation Date	02.28.97	---
Date Analyzed	03.03.97	---
Dilution factor	1.0	---
Batch ID	0228T	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
71140-37	Method Blank
71140-38	Lab Control Standard % Recovery

PARAMETER	71140-37	71140-38
Volatiles by GC/MS (8260)		
Chloromethane, ug/l	<10	---
Bromomethane, ug/l	<10	---
Vinyl chloride, ug/l	<10	---
Chloroethane, ug/l	<10	---
Methylene chloride (Dichloromethane), ug/l	<5.0	---
Acetone, ug/l	<50	---
Carbon disulfide, ug/l	<5.0	---
1,1-Dichloroethene, ug/l	<5.0	72 %
1,1-Dichloroethane, ug/l	<5.0	---
trans-1,2-Dichloroethylene, ug/l	<5.0	---
Chloroform, ug/l	<5.0	---
1,2-Dichloroethane, ug/l	<5.0	---
2-Butanone (MEK), ug/l	<25	---
1,1,1-Trichloroethane, ug/l	<5.0	---
Carbon tetrachloride, ug/l	<5.0	---
Vinyl Acetate, ug/l	<10	---
Bromodichloromethane, ug/l	<5.0	---
1,1,2,2-Tetrachloroethane, ug/l	<5.0	---
1,2-Dichloropropane, ug/l	<5.0	---
trans-1,3-Dichloropropene, ug/l	<5.0	---
Trichloroethene, ug/l	<5.0	96 %

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S7-71140
Received: 27 FEB 97
Reported: 10 MAR 97

Mr. Mark Corbin
Apex Environmental, Inc.
15850 Crabbs Branch Way #300
Rockville, MD 20855

Client PO. No.: 097.005

Project: THIKOL/WOODBINE
Sampled By: Client
Code: 163670310

REPORT OF RESULTS

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

71140-37 Method Blank
71140-38 Lab Control Standard % Recovery

PARAMETER	71140-37	71140-38
Dibromochloromethane, ug/l	<5.0	---
1,1,2-Trichloroethane, ug/l	<5.0	---
Benzene, ug/l	<5.0	90 %
cis-1,3-Dichloropropene, ug/l	<5.0	---
2-Chloroethylvinyl ether, ug/l	<50	---
Bromoform, ug/l	<5.0	---
2-Hexanone, ug/l	<25	---
4-Methyl-2-pentanone (MIBK), ug/l	<25	---
Tetrachloroethene, ug/l	<5.0	---
Toluene, ug/l	<5.0	96 %
Chlorobenzene, ug/l	<5.0	102 %
Ethylbenzene, ug/l	<5.0	---
Styrene, ug/l	<5.0	---
Xylenes, ug/l	<5.0	---
Surrogate - Toluene-d8	102 %	94 %
Surrogate - 4-Bromofluorobenzene	116 %	88 %
Surrogate - Dibromofluoromethane	140 %	136 %
Date Analyzed	03.03.97	03.03.97
Dilution factor	1.0	1.0
Batch ID	0303B	0303B
Clock ID	1H0303	1H0303
Method Number	8260	8260

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Client PO. No.: 097.005

Project: THIKOL/WOODBINE
Sampled By: Client
Code: 163670310

REPORT OF RESULTS

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID

71140-39 Method Blank
71140-40 Lab Control Standard % Recovery

PARAMETER	71140-39	71140-40
Volatiles by GC/MS (8260)		
Chloromethane, ug/kg dw	<10	---
Bromomethane, ug/kg dw	<10	---
Vinyl chloride, ug/kg dw	<10	---
Chloroethane, ug/kg dw	<10	---
Methylene chloride (Dichloromethane), ug/kg dw	<5.0	---
Acetone, ug/kg dw	<50	---
Carbon disulfide, ug/kg dw	<5.0	---
1,1-Dichloroethene, ug/kg dw	<5.0	90 %
1,1-Dichloroethane, ug/kg dw	<5.0	---
trans-1,2-Dichloroethylene, ug/kg dw	<5.0	---
Chloroform, ug/kg dw	<5.0	---
1,2-Dichloroethane, ug/kg dw	<5.0	---
2-Butanone (MEK), ug/kg dw	<25	---
1,1,1-Trichloroethane, ug/kg dw	<5.0	---
Carbon tetrachloride, ug/kg dw	<5.0	---
Vinyl Acetate, ug/kg dw	<10	---
Bromodichloromethane, ug/kg dw	<5.0	---
1,1,2,2-Tetrachloroethane, ug/kg dw	<5.0	---
1,2-Dichloropropane, ug/kg dw	<5.0	---
trans-1,3-Dichloropropene, ug/kg dw	<5.0	---
Trichloroethene, ug/kg dw	<5.0	86 %

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Client PO. No.: 097.005

Project: THIKOL/WOODBINE
Sampled By: Client
Code: 163670310

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID
71140-39	Method Blank
71140-40	Lab Control Standard % Recovery

PARAMETER	71140-39	71140-40
Dibromochloromethane, ug/kg dw	<5.0	---
1,1,2-Trichloroethane, ug/kg dw	<5.0	---
Benzene, ug/kg dw	<5.0	96 %
cis-1,3-Dichloropropene, ug/kg dw	<5.0	---
2-Chloroethylvinyl ether, ug/kg dw	<50	---
Bromoform, ug/kg dw	<5.0	---
2-Hexanone, ug/kg dw	<25	---
4-Methyl-2-pentanone (MIBK), ug/kg dw	<25	---
Tetrachloroethene, ug/kg dw	<5.0	---
Toluene, ug/kg dw	<5.0	96 %
Chlorobenzene, ug/kg dw	<5.0	100 %
Ethylbenzene, ug/kg dw	<5.0	---
Styrene, ug/kg dw	<5.0	---
Xylenes, ug/kg dw	<5.0	---
Surrogate - Toluene-d8	94 %	94 %
Surrogate - 4-Bromofluorobenzene	94 %	88 %
Surrogate - Dibromofluoromethane	108 %	104 %
Date Analyzed	03.03.97	03.03.97
Dilution factor	1.0	1.0
Batch ID	0303A	0303A
Clock ID	1L0303	1L0303
Method Number	8260	8260

Methods: EPA SW-846

Linda A. Wolfe, Project Manager

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