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FINAL GROUNDWATER SAMPLING AND ANALYSIS REPORT LANDFILL 2 FORT STORY, VA

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MALCOLM PIRNIE

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FINAL

GROUNDWATER SAMPLING AND ANALYSIS REPORT

LANDFILL NO. 2
FORT STORY, VIRGINIA

Installation Restoration Program
Fort Story, Virginia

U.S. Army Corps of Engineers
Baltimore District

and

U. S. Army Transportation Center
Fort Eustis, Virginia

August 2003

0285-900-300

MALCOLM PIRNIE

MALCOLM PIRNIE, INC.
INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS & CONSULTANTS

August 8, 2003

Ms. Joanna Bateman
Remedial Project Manager
U.S. Army Transportation Center
Building 1407, ATZF-PWE
Fort Eustis, Virginia 23604-5332

Re: Final Groundwater Sampling and Analysis Report
Landfill No. 2, Fort Story, Virginia
Contract DACA31-94-D-0017

Dear Ms. Bateman:

This letter is being submitted to supplement the data included the Preliminary Draft Letter Report, dated April 1998, for the Groundwater Sampling and Analysis at Landfill No. 2. This letter report along with the attached data including the letter report referenced above are considered the **Final Groundwater Sampling and Analysis Report** for Landfill No. 2.

The conclusions of the Preliminary Draft Letter Report (**Appendix A**) were that total cadmium in monitoring well MW106 and total and dissolved cadmium in MW109 were of concern based on the results of three sampling events (1990, 1995, and 1997) at the site. The cadmium concentrations for these previous sampling events exceeded the EPA Maximum Contaminant Level (MCL) for drinking water of 5 micrograms per liter (µg/L). Details on the assessment of all groundwater monitoring results for the 1990, 1995, and 1997 sampling events are provided in **Appendix A**.

Based on the conclusions of the previously mentioned report, an additional round of total cadmium sampling was conducted in May 1999 to further assess the extent of cadmium contamination within these two wells. On May 5, 1999, MW106 and MW109 were sampled using a disposable teflon bailer and analyzed for total cadmium. A copy of the Daily Notes, Groundwater Sampling Forms, analytical results, and Chain-of-Custody (COC) Record are provided in **Appendix B** for this sampling event. Total cadmium results were 7.2 µg/L for MW106 and non-detect (<5 µg/L) for MW109. Because the cadmium result for MW106 was still greater than the EPA MCL of 5 µg/L, additional assessment/sampling was warranted.

701 TOWN CENTER DRIVE SUITE 600 NEWPORT NEWS, VA 23606-4296 757-873-8700 fax 757-873-8723 http://www.pirnie.com

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Although additional sampling was warranted at the site in the form of monitoring of MW106 the need for a revised sampling method was assessed due to the highly turbid sample that was collected from this well in May 1999. To obtain a more representative sample of the groundwater (rather than groundwater with high sediment loading), a dedicated QED well pump was installed in MW106in August 1999 for the follow-up monitoring event. It was also decided to analyze the groundwater for both total and dissolved cadmium samples to assess how much impact sediment was having on the cadmium results.

On March 23, 2000, using the dedicated QED well pump, a groundwater sample was collected from MW106 and analyzed for total and dissolved cadmium. A copy of the Daily Notes (QED well pump installation only), analytical results, and COC form is presented in **Appendix C** for this sampling event. The cadmium concentrations were 2.8 µg/L for total fraction and non-detect (less than 0.50 µg/L) for the dissolved fraction, which both were less than the EPA MCL of 5 µg/L. Because cadmium results are less than the EPA MCL in MW106 and all other wells on-site as documented by previous sampling events, ***no further action (including monitoring) at the site is warranted***.

It has been a pleasure to provide this document to Fort Eustis. We look forward to further discussions relative to this project.

Very truly yours,

MALCOLM PIRNIE, INC.

Anthony K. Pace
Project Manager

akp
0285-783-100

Enclosures

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Appendix A
Preliminary Draft Letter Report

GROUNDWATER SAMPLING AND ANALYSIS REPORT
Landfill No. 2
Fort Story, Virginia

MOVING TO PROTECT OUR WORLD
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PRELIMINARY DRAFT LETTER REPORT FOR

GROUNDWATER SAMPLING AND ANALYSIS
LANDFILL No. 2

FORT STORY, VIRGINIA

PREPARED FOR:

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

APRIL 1998

MALCOLM PIRNIE, INC.
11832 Rock Landing Drive, Suite 400
Newport News, Virginia 23606

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1.0 INTRODUCTION

1.1 Site Location and Description

Fort Story is located in southeastern Virginia within the city of Virginia Beach, Virginia. Fort Story occupies an area of approximately 1,450 acres and is situated on Cape Henry which divides the waters of the Chesapeake Bay to the north and the Atlantic Ocean to the east.

The Virginia Department of Environmental Quality (DEQ), Division of Water, Tidewater Region, regulates wells in the region. Information obtained by Montgomery-Watson during performance of the preliminary assessment/site investigation (PA/SI) indicated that groundwater use is discouraged because of poor quality and withdrawal restrictions. High dissolved iron and manganese and total dissolved solids characterize the groundwater in the deeper aquifers.

1.2 Landfill No. 2 - Site Description and History

Site 2 - Landfill No. 2 is located within the wetland area along the southern margin of Fort Story, adjacent to the southern flank of a central sand ridge area near the junction of Coast Artillery Road and U.S. Route 60. Figure 1 shows the location of Fort Story and Figure 2 shows the installation map.

According to the *Update of the Initial Installation Assessment of Ft. Story, Final Report* prepared by Environmental Science and Engineering in 1988 (ESE, 1988), the landfill was in operation from 1956 to 1962. It was reported in the *Final Confirmatory Studies Report* by Montgomery Watson (Montgomery Watson, 1995), 1995 that during the 1960s, a group of wooden buildings were reported to have been demolished and buried at this site, but no documentation was available to confirm this action. Reportedly, surface debris or evidence of buried debris was not evident during field observations for the PA/SI in 1990. Based on geographical and electromagnetic surveying conducted during the 1990 PA/SI the landfill was estimated to cover 3 acres. Five monitoring wells were installed at the site as shown on Figure 3. The wells are approximately 10 feet deep. These wells were sampled to assess whether the landfill may have released contaminants to the environment.

During the PA/SI in 1990, dissolved cadmium was detected in groundwater collected from MW109 at a concentration of 87 ug/l. Although MW109 is cross-gradient to the landfill, it is downgradient of a marshy area suspected to have been impacted by the landfill. Additionally, elevated concentrations of copper were detected in soil samples collected from the boring of monitoring well MW107, located downgradient of the landfill.

In 1995, another sampling event was conducted. Five groundwater samples, two surface water samples, and five sediment samples were collected during this effort. Samples were analyzed for volatile organic compounds (VOCs), base-neutral acid extractable compounds (BNAs), pesticides and polychlorinated biphenyls (PCBs), total fuel hydrocarbons, and total metals. Concentrations of total lead in samples at MW107 (16 ug/l) and MW108 (18 ug/l) exceeded Federal MCLs (EPA, 1996), while zinc was detected in three wells at concentrations exceeding Virginia Groundwater Protection Limits (VGPLs) (Virginia, 1992a). However, in all groundwater samples that exceeded regulatory levels for total metals, the dissolved metals were below regulatory levels. The surface

water samples collected were below the Virginia Water Quality Standards (VWQS) (Virginia, 1992b) for freshwater aquatic life except for zinc which was detected in both surface water samples at concentrations greater than the VWQS for the protection of freshwater aquatic life.

Water level measurements collected in January 1995 at the five monitoring wells at Landfill No. 2 (MW105 through MW109) indicate that the hydraulic gradient at the site changes less than 0.1 foot across the site. Groundwater was interpreted to flow in a southerly direction towards the wetland area.

1.3 Purpose and Scope

The results of the confirmatory studies performed at Landfill No. 2 at Fort Story, Virginia, and reported November 1995 indicated inconsistent analytical results between the 1990 and 1995 groundwater sampling events. Therefore it has been agreed that one additional groundwater and surface water sampling event will be performed to determine whether contaminant levels detected in 1990 and 1995 have changed over time and to corroborate which of the previous sampling results more closely reflect conditions.

2.0 FIELD ACTIVITIES

The *Final Work Plan Groundwater Sampling and Analysis Landfill No. 2, Fort Eustis, Virginia, August 1997,* (Malcolm Pirnie, 1997) hereafter referred to as the SAP, was implemented on September 10-11, 1997. Per the SAP, the five existing monitoring wells were purged, sampled, and analyzed for Target Compound List (TCL) VOCs, Target Analyte List (TAL) metals (total and dissolved), hardness, ammonia, chloride, nitrate-N, orthophosphate-P, sulfate, total dissolved solids (TDS), and phosphorus. Two surface water samples were also collected and analyzed for the same parameters. While the Draft Work Plan specified the analysis of Priority Pollutant metals, comments from the USACE required analysis of TAL metals. The sampling locations are shown in Figure 3.

2.1 Groundwater Elevation Gauging

Per the SAP, prior to sampling activities, depth to water and total depth of the well from top-of-casing were measured using a Solinst Model 101 electric water level indicator and recorded on the Groundwater Sampling Logs, which are provided in Appendix A. The measurements were used to calculate the purge volumes and for groundwater flow direction.

2.2 Groundwater Sampling

Upon opening each well, a MiniRAE Field Portable Photoionization Detector (PID) was used to screen for VOC vapors and a GasTech GT 201 was used to screen for explosive gases. A Horiba U-10 was used to measure temperature, pH, conductivity, and dissolved oxygen (DO) at 10, 30, 50, 80, and 100 percent of the purge volume. Field measurements were recorded on Groundwater Sampling Logs, which are provided in Appendix A. A duplicate sample was collected at MW108 and identified as MW110. Following the same techniques used in 1995, four of the wells were to be purged with a pump while MW106 was to be purged with a bailer. All wells were then sampled with dedicated Teflon bailers with a Teflon-coated stainless steel leader.

The SAP was followed during purging at least three well volumes and sampling the five wells. In addition, the SAP methods were followed during sampling the two surface locations with the following exceptions:

- Rather than using a centrifugal pump, an impeller pump was used. This different type of pump does not effect the comparability of the results both pumps functioned the same by being placed above ground and pulling water through tubing. The impeller used a spinning vane compared to the circular vane in the centrifugal pump. Also, pumping was only used to purge the wells and they were all sampled with bailers. The purging rates were as follows:
  - MW107 0.26 gpm
  - MW108 1.2 gpm
  - MW109 1.0 gpm

- The foot valve would not fit in the 2-inch diameter wells, therefore, no foot valve was used and only the tubing was placed in the well.

- The depth to water at MW105 was greater than the lift capacity of the pump. Therefore, rather than purging this well with the pump as planned, it was hand bailed with a Teflon bailer in similar fashion to MW106, discussed above. Bailing rather than pumping is not believed to have had an effect on the comparability of the analytical data. Slow introduction and removal of the bailer will minimize any disturbance to the groundwater and loss of volatiles will be no greater than careful purging with a pump.

- The trip blank for VOCs collected on September 11 was not analyzed by the laboratory. This data gap is not critical as no VOCs were detected above the reporting limits in samples collected that same day, although one analyte (benzene) was qualified as estimated (J).

- Rather than store the purged investigation-derived waste (IDW) groundwater in a polyethylene tank, the IDW was placed in two labeled, steel 55-gallon drums in a fenced area. Per verbal approval from the Corps of Engineers, a composite sample was collected for analysis from both drums.

- Some of the samples collected from MW105 and MW106 on September 11 were delayed in shipment and were not received by the laboratory until September 15. The shipper did not deliver the samples the next day as marked on the airbill. This caused the analysis of nitrate and ortho-phosphate to be analyzed beyond the holding time of 48 hours. Therefore, these results for these two wells were qualified as estimated (J).

2.3 Analytical Methods

The analytical methods used are summarized below:

Parameter	Analytical Method (from SW-846)
TCL VOC	8260
TAL Metals - Total	6010-T/7470 (mercury)
TAL Metals - Dissolved	6010-T/7470 (mercury)
Hardness	130.2
Ammonia	350.1
Chloride	325.2
Nitrate-N	353.2
Orthophosphate-P	365.1
Sulfate	375.4
TDS	160.1
Phosphorus	365.4

The composite sample of the investigation-derived waste purge water was analyzed for full Toxicity Characteristic Leaching Procedure (TCLP), SW-846 Methods, 1311, 8260, 8270, 8080, 8151, 6010, and 7470.

3.0 INVESTIGATION RESULTS

The analytical results of the 1997 investigation are summarized in Table 2. The analytical data sheets are provided in Appendix B. These results are first compared to the Federal and state standards and guidelines, which are summarized in Table 3. (These standards and guidelines were also used as a basis for comparison of the 1995 investigation.) The 1997 results are then compared to the results of the 1995 and 1990 investigations for groundwater and surface water, which are summarized in Tables 4 and 5, respectively. A summary of the metals that exceed regulatory standards or guidelines from the 1990, 1995, and 1997 sampling events is provided in Table 6 (which do not include the duplicate samples). Note that the surface water samples identified as SW3001 and SW3002 in 1995 correspond to the location of samples SW3006 and SW3007 in 1997, respectively.

The following Federal and state standards and guidelines were used for comparison of the groundwater and surface water results:

- Groundwater results are compared to Federal Maximum Contaminant Levels (MCLs) and Secondary MCLs (EPA, 1996), VGPLs (Virginia, 1992a, VR 680-21-03), and EPA Region III risk-based concentrations (RBCs) (EPA, 1995). The RBCs for water are derived based on risk from exposure from tap water and are typically more conservative than MCLs.

- Surface water results are compared to Virginia State Water Control Board Regulations Water Quality Standards (Virginia, 1992b, VR 680-21-00) for public water supplies for public health and for protection of freshwater aquatic life. The standard for freshwater aquatic life for metals was calculated assuming the minimum hardness of 25 mg/l.

3.1 Groundwater Gradient

The results of the groundwater level measurements are summarized in Table 1 along with the previous measurements. As noted on Table 1, the top-of-casing elevations on four of the well monuments were different than the top-of-casing elevations used in the *Final Confirmatory Studies Report* by Montgomery Watson (Montgomery Watson, 1995).

As shown in Figure 3, the hydraulic gradient at the site changed 0.4 foot across the site when measured on September 10-11, 1997. Groundwater flows in a southerly direction towards the wetland area. Compared to the measurements in January 1995, this is the same southerly direction but the gradient is greater than the previous value of 0.1 foot.

3.2 Groundwater Contamination Assessment

<u>VOCs</u>

There were no non-qualified VOC detections except for acetone at 92 ug/l in MW107. Benzene was detected in MW105 at 0.20J ug/l, below both the MCL of 5 ug/l and RBC of 0.36 ug/l. In MW108, acetone was detected at 17J ug/l and carbon disulfide was detected at 0.21J ug/l.

Metals Exceeding MCLs

Metals that exceed the MCL from each sampling event are summarized on Figure 5. The only metal that was detected above the MCL in 1997 was cadmium. Total cadmium exceeded the MCL of 5 ug/l and VGPL of 0.4 ug/l in MW106 at 6.6 ug/l and MW109 at 15.2 ug/l, and dissolved cadmium exceeded the MCL and VGPL only in MW109 at 5.9 ug/l. Total cadmium also exceeded the VGPL in MW107 at 2.0 ug/l and MW108 at 2.6 ug/l. Dissolved cadmium also exceeded the VGPL in MW106 at 4.7 ug/l and MW108 at 0.63J ug/l.

Other Metals Exceeding Guidelines

- Total and dissolved aluminum exceeded the minimum Secondary MCL of 50 ug/l in all five wells. Total aluminum ranged from 824 ug/l in MW105 to 4,390 ug/l in MW109, and dissolved aluminum ranged from 123J ug/l in MW105 to 3,340 ug/l in MW109.

- Total arsenic exceeded the RBC of 0.038 ug/l in MW105 at 12.9 ug/l, MW107 at 17.2 ug/l, MW109 at 18.1 ug/l. Dissolved arsenic exceeded the RBC of 0.038 ug/l in all five wells at a range of 2.6J ug/l in MW106 to 12.5 ug/l in MW109.

- Total beryllium exceeded the RBC of 0.016 ug/l in MW106 at 0.22J ug/l and MW109 at 0.24J ug/l.

- Total iron exceeded the Secondary MCL and VGPL of 300 ug/l in all five wells at a range of 1,780 ug/l in MW106 to 29,100 ug/l in MW108. Dissolved iron exceeded the Secondary MCL and VGPL in all five wells at a range of 1,180 ug/l in MW105 to 28,900 ug/l in MW108.

- Total manganese exceeded the Secondary MCL and VGPL of 50 ug/l in four wells, MW106 at 105 ug/l, MW107 at 659 ug/l, MW108 at 529 ug/l, and MW109 at 245 ug/l. Dissolved manganese exceeded the Secondary MCL and VGPL in all five wells at a range of 51.4 ug/l in MW105 to 613 ug/l in MW107. The total and dissolved manganese also exceeded the RBC of 180 ug/l in MW107, MW108, and MW109.

- Total mercury exceeded the VGPL of 0.05 ug/l in four wells, MW105 at 0.08J ug/l, MW107 at 0.28 ug/l, MW108 at 0.06J ug/l, and MW109 at 0.09J ug/l. Dissolved mercury exceeded the VGPL in the same four wells, MW105 at 0.09J ug/l, MW107 at 0.06J ug/l, MW108 at 0.06J ug/l, and MW109 at 0.09J ug/l.

- Total zinc exceeded the VGPL of 50 ug/l in three wells, MW107 at 376 ug/l, MW108 at 51.1 ug/l, and MW109 at 165 ug/l. Dissolved zinc exceeded the VGPL in MW107 at 66.7 ug/l and MW109 at 111 ug/l.

Water Quality

Hardness exceeded the VGPL of 120 mg/l in all five wells at a range of 140 mg/l in MW106 to 730 mg/l in MW108. Chloride exceeded the VGPL of 50 mg/l only in MW105 at 58 mg/l.

No other water quality parameters exceeded standards or guidelines. Other water quality parameters were detected in the following ranges:

- Nitrate-N was detected at a range of 0.1J mg/l in MW105 to 0.15J mg/l in MW106 (and 3.3 mg/l in the duplicate of MW108).
- Orthophosphate-P was detected at a range of 0.13J in MW105 to 0.33 mg/l in MW107.
- Sulfate was detected at a range of 7.8 mg/l in MW108 to 36 mg/l in MW105.
- Total phosphorus was detected at a range of 0.12 mg/l in MW106 to 0.51 mg/l in MW107.
- pH ranged from 4.28 in MW107 to 4.64 in MW106, which is lower than expected for groundwater. The meter used to measure pH was calibrated both days using the autocalibration fluid.

3.3 Surface Water Contamination Assessment

VOCs

There were no non-qualified detections of VOCs in the two surface water samples. 2-Butanone was detected in SW3006 at 3.8J ug/l.

Metals Exceeding Standards

Total iron, total lead, and total and dissolved manganese exceeded the VWQS for public health. Total copper, total and dissolved lead, total manganese, total and dissolved mercury, and total and dissolved zinc exceeded the VWQS for protection of aquatic life.

- Total copper exceeded the VWQS for freshwater aquatic life of 3.6 ug/l in SW3006 at 15.8 ug/l.

- Total iron exceeded the VWQS for public health of 300 ug/l in SW3006 at 15,000 ug/l and SW3007 at 48,900 ug/l and dissolved iron exceeded the VWQS for public health in SW3006 at 4,960 ug/l and SW3007 at 34,800 ug/l.

- Total lead exceeded the VWQS for freshwater aquatic life of 0.54 ug/l in SW3006 at 21.5 ug/l and SW3007 at 2.2J ug/l. Dissolved lead exceeded the same standard in SW3006 at 3.1 ug/l and SW3007 at 2.1J ug/l. Total lead also exceeded the VWQS for public health of 15 ug/l in SW3006 at 21.5 ug/l.

- Total manganese exceeded the VWQS for public health of 50 ug/l in SW3006 at 203 ug/l and SW3007 at 697 ug/l. Dissolved manganese exceeded the same standard in SW3006 at 143 ug/l and SW3007 at 644 ug/l.

- Total mercury exceeded the VWQS for freshwater aquatic life of 0.012 ug/l in SW3006 at 0.10J ug/l and SW3007 at 0.06J ug/l. Dissolved mercury exceeded the same standard in SW3006 at 0.06J ug/l.

- Total zinc exceeded the VWQS for freshwater aquatic life of 41 ug/l in SW3006 at 103 ug/l and dissolved zinc exceeded the same standard in SW3006 at 54.3 ug/l.

Water Quality

No water quality parameters exceeded standards. The water quality parameters were detected in the following ranges:

- Hardness was detected in SW3006 at 720 mg/l and in SW3007 at 1,000 mg/l.
- Ammonia-N was detected in SW3006 at 0.23 mg/l and in SW3007 at 1.4 mg/l.
- Nitrate-N was detected in SW3007 at 23 mg/l and in SW3006 at 24 mg/l.
- Orthophosphate-P was detected in SW3006 at 0.14 mg/l and in SW3007 at 0.28 mg/l.
- Sulfate was detected only in SW3007 at 22 mg/l.
- Total phosphorus was detected in SW3006 at 0.36 mg/l and in SW3007 at 0.37 mg/l.
- pH ranged from 4.39 in SW3006 to 4.45 in SW3007, which is lower than expected for surface water.

3.4 Investigation-Derived Waste

There were no detections of VOCs, semivolatiles, pesticides, herbicides, or metals. Analytical data sheets are provided in Appendix B. Thus, the IDW water can be managed as a non-hazardous waste.

3.5 Comparison of Groundwater Contamination to Previous Investigations

VOCs

The sole non-qualified VOC detection of acetone at 92 ug/l in 1997 confirms the results of the 1995 and 1990 investigations that there are few VOCs in the groundwater and those VOCs present are detected at low concentrations.

Metals Exceeding MCLs

Metals that exceed the MCL from each sampling event are summarized on Figure 4. While cadmium was not detected in 1995, in 1990 total cadmium was detected above the MCL of 5 ug/l in MW106 at 170 ug/l and MW109 at 140 ug/l, and dissolved cadmium was detected above the MCL only in MW109 at 87 ug/l. The 1997 investigation showed the same results for cadmium as in 1990, that is, while detected at lower concentrations, total cadmium exceeded the MCL in MW106 at 6.6 ug/l and MW109 at 15.2 ug/l and dissolved cadmium exceeded the MCL only in MW109 at 5.9 ug/l. In 1997, total cadmium was also detected in MW107 at 2.0 ug/l and in MW108 at 2.6 ug/l and dissolved cadmium was also detected in MW106 at 4.7 ug/l and in MW108 at 0.63J ug/l, all below the MCL.

The 1990 investigation detected total lead above the MCL of 15 ug/l in MW106 through MW109 at a range of 20 ug/l in MW108 to 60 ug/l in MW109 but there were no detections of dissolved lead above the MCL. The 1995 investigation also detected total lead above the MCL in MW107 at 16 ug/l and MW108 at 18 ug/l and equal to the MCL in MW109 at 15 ug/l, but did not detect any dissolved lead. The 1997 investigation detected total lead in all five wells at a range of 2.4J ug/ in MW105 to 11 ug/l in MW107 and dissolved lead was detected in four wells at a range of 1.7J ug/l in MW105 to 6.7 ug/l in MW109, all below the MCL.

Other Metals Exceeding Guidelines

- Total arsenic was detected in two wells in 1990 at the same concentration of 30 ug/l, in three wells in 1995 at a range of 16-27 ug/l, and in three wells in 1997 at a range of 12.9-18.1 ug/l. Dissolved arsenic was detected in two wells in 1990 at a range of 8-11 ug/l, in two wells in 1995 at a range of 22-27 ug/l, and in all five wells in 1997 at a range of 2.6J-12.5 ug/l. All these arsenic detections exceeded the RBC of 0.038 ug/l.

- In 1995, total beryllium was detected equal to the RBC of 4 ug/l in MW107 and MW108. In 1997, total beryllium was detected at lower concentrations in MW106 at 0.22J ug/l and MW109 at 0.24J ug/l.

- Total and dissolved iron were detected above the Secondary MCL and VGPL of 300 ug/l in all five wells in both 1995 and 1997. In 1995, the total iron ranged from 1,500 ug/l in MW106 to 31,000 ug/l in both MW107 and MW108, and in 1997 the total iron ranged from 1,780 ug/l in MW106 to 29,100 ug/l in MW108. In 1995, the dissolved iron ranged from 700 ug/l in MW106 to 28,000 ug/l in MW108, and in 1997 the dissolved iron ranged from 1,180 ug/l in MW105 to 28,900 ug/l in MW108. In both 1995 and 1997, the range of detections of iron were about the same and the maximum concentrations of iron were detected in MW108.

- In 1995 and 1997, total manganese was detected above the Secondary MCL and VGPL of 50 ug/l in the same four wells, MW106 to MW109. In 1995, total manganese ranged from 40 ug/l in MW105 to 560 ug/l in MW107. In 1997, total manganese ranged from 37.1 ug/l in MW105 to 659 ug/l in MW107. In 1995, dissolved manganese was detected above the Secondary MCL and VGPL of 50 ug/l in the three wells, MW107 to MW109, whereas in 1997, dissolved manganese was detected above the Secondary MCL and VGPL in all five wells. In 1995, dissolved manganese ranged from 25 ug/l in MW105 to 560 ug/l in MW107. In 1997, dissolved manganese ranged from 51.4 ug/l in MW105 to 613 ug/l in MW107. In both 1995 and 1997, both the total and dissolved manganese were detected above the RBC of 180 ug/l in the same three wells, MW107 to MW109. In both 1995 and 1997, the ranges of total and dissolved manganese were about the same in the same wells, with the minimum concentrations detected in MW105 and the maximum concentrations detected in MW107.

- In 1990, total mercury was only detected in one well, MW109 at 0.2 ug/l, which exceeded the VGPL of 0.05 ug/l. Mercury was not detected in 1995. In 1997, total mercury was detected above the VGPL in four wells at a range of 0.06J ug/l in MW108 to 0.28 ug/l in

MW107. In 1997, dissolved mercury was detected above the VGPL in the same four wells at a range of 0.06J ug/l in MW107 and MW108 to 0.09 ug/l in MW105 and MW109.

- Total zinc was detected above the VGPL of 50 ug/l in four wells, MW106 to MW109, in 1990, and in the same three wells, MW107 to MW109, in 1995 and 1997. Dissolved zinc was detected above the VGPL in three wells, MW105, MW108, and MW109, in 1990, and in two wells, MW107 and MW109 in 1997. Total zinc was detected at a range of 97 ug/l in MW108 to 160 ug/l in MW107 in 1990, at a range of 38 ug/l in MW106 to 460 ug/l in MW108 in 1995, and at a range of 6.4J ug/l in MW105 to 376 ug/l in MW107 in 1997. Dissolved zinc was detected at a range of 29 ug/l in MW107 to 66 ug/l in MW106, MW108, and MW109 in 1990; at a range of 21 ug/l in MW109 to 49 ug/l in MW107 in 1995; and at a range of 11.1J ug/l in MW105 to 111 ug/l in MW109 in 1997.

Water Quality

While no water quality parameters were detected above standards or guidelines in 1990 or 1995, hardness and chloride were detected above the VGPLs in 1997. In 1990, chloride was detected at a range of 13.7 mg/l in MW105 to 31.9 mg/l in MW108; in 1995, chloride was detected at 14 mg/l in MW105 and 20 mg/l in MW109; and in 1997, chloride was detected at a range of 4.8 mg/l in MW106 to 58 mg/l in MW105, which exceeded the VGPL of 50 ug/l. The chloride concentration increased in MW105 in each sampling event.

- While nitrate was not detected in 1990, it was detected in three wells in 1997 at a range of 0.1J mg/l in MW105 to 0.11 mg/l in MW108.

- While orthophosphate-P was only detected in MW109 at 0.096 mg/l in 1995, it was detected in four wells in 1997 at a range of 0.13J mg/l in MW105 to 0.33 mg/l in MW107.

- In 1995, total phosphorous was detected at a range of 0.130 mg/l in MW105 to 0.820 mg/l in MW109; and in 1997, total phosphorous was detected at about the same concentrations at a range of 0.12 mg/l in MW106 to 0.51 mg/l in MW107.

- In 1990, sulfate was detected at a range of 3.2 mg/l in MW107 to 15.0 mg/l in MW105; in 1995, sulfate was detected at 8.9 mg/l in MW109 and 13.0 mg/l in MW105; and in 1997, sulfate was detected at a range of 7.8 mg/l in MW108 to 36 mg/l in MW105. The sulfate concentration was highest in MW105 in each sampling event.

- In 1990, the pH ranged from 6.1 in MW106, MW108, and MW109 to 6.7 in MW105; and was lower in 1997 at a range of 4.28 in MW107 to 4.64 in MW106. The pH values measured in 1997 are lower than expected.

3.6 Comparison of Surface Water Contamination to Previous Investigations

VOCs

The sole VOC detection of 2-butanone at 3.8J in 1997 confirms the results of the 1995 and 1990 investigations that there are few VOCs in the surface waters and those VOCs present are detected at low concentrations.

Metals Exceeding Standards

- While total and dissolved copper were not detected in 1995, in 1997 total copper was detected above the VWQS for aquatic life of 3.6 ug/l in SW3006 at 15.8 ug/l. Dissolved copper was detected in SW3006 at 2.0J ug/l, below the VWQS for aquatic life.

- In 1995, total lead was detected above the VWQS for aquatic life of 0.54 ug/l, but below the VWQS for public health of 15 ug/l, in SW3001 at 8.7 ug/l and in SW3002 at 6.1 ug/l. Dissolved lead was not detected in 1995. In 1997, total lead was detected above the VWQS for public health in SW3006 at 21.5 ug/l, and above the VWQS for aquatic life in both SW3006 and SW3007 at 2.2J ug/l. In 1997, dissolved lead was detected above the VWQS for aquatic life in both SW3006 at 3.1J ug/l and SW3007 at 2.1J ug/l.

- Total and dissolved manganese were detected at about the same concentrations above the VWQS for public health of 50 ug/l in both samples in 1995 and 1997. Total manganese was detected at 170 ug/l in SW3001 and at 550 ug/l in SW3002 in 1995. Total manganese was detected at 203 ug/l in SW3006 and 697 ug/l in SW3007 in 1997. Dissolved manganese was detected at 150 ug/l in SW3001 and at 480 ug/l in SW3002 in 1995. Dissolved manganese was detected at 143 ug/l in SW3006 and 644 ug/l in SW3007 in 1997.

- While mercury was not detected in 1995, in 1997 total mercury was detected above the VWQS for aquatic life of 0.012 ug/l, but below the VWQS for public health of 0.144 ug/l, in SW3006 at 0.10J ug/l and in SW3007 at 0.06J ug/l. In 1997, dissolved mercury was detected above the VWQS for aquatic life SW3006 at 0.06J ug/l.

- Total zinc was detected above the VWQS for aquatic life of 41 ug/l, but below the VWQS for public health of 5,000 ug/l, in SW3001 at 49 ug/l in 1995 and in SW3006 at 103 ug/l in 1997. Dissolved zinc was detected above the VWQS for aquatic life in SW3002 at 130 ug/l in 1995, but below the VWQS at 21.5 ug/l in SW3007 in 1997. Dissolved zinc was detected below the VWQS for aquatic life in SW3001 at 39 ug/l (although at 60 ug/l in the duplicate, 3001D) in 1995, but above the VWQS at 103 ug/l in SW3007 in 1997.

Water Quality

No water quality parameters were detected above the VWQS in any of the three events.

- Ammonia-N was detected at higher concentrations in 1997 compared to 1995. Ammonia-N ranged from 0.130 mg/l in SW3001 to 0.210 mg/l in SW3002 in 1995, and it ranged from 0.23 mg/l in SW3006 to 1.4 mg/l in SW3007 in 1997.

- Chloride was detected at slightly lower concentrations in 1997 compared to 1995. Chloride ranged from 32 mg/l in SW3001 to 50 mg/l in SW3002 in 1995, and it ranged from 24 mg/l in SW3006 to 23 mg/l in SW3007 in 1997.

- Nitrate-N was detected at slightly higher concentrations in 1997 compared to 1995. Nitrate-N ranged from non-detect in SW3001 (although 0.130 mg/l in the duplicate SW3001D) to 0.170 mg/l in SW3002 in 1995, and it ranged from 0.29 mg/l in SW3006 to 0.47 mg/l in SW3007 in 1997.

- While ortho-phosphate-P was not detected in 1995, it was detected at 0.14 mg/l in SW3006 and 0.28 mg/l in SW3007 in 1997.

- Sulfate was not detected in 1995 except in the duplicate SW3001D at 7.2 mg/l, and it was only detected in SW3007 at 22 mg/l in 1997.

- Total phosphorous was detected at slightly lower concentrations in 1997 compared to 1995. Total phosphorous ranged from 0.450 mg/l in SW3001 to 0.490 mg/l in SW3002 in 1995, and it ranged from 0.36 mg/l in SW3006 to 0.37 mg/l in SW3007 in 1997.

4.0 CONCLUSIONS

The following analytes are still of concern based on the results of the three sampling events:

- MW106 Cadmium (total)
- MW109 Cadmium (total and dissolved)

Lead (total) is no longer a concern at MW106, MW107, and MW108 as it has decreased to below the MCL.

Groundwater

As was the case in 1990 and 1995, no VOCs were detected above regulatory levels in 1997. While cadmium was not detected in 1995, total cadmium was detected above the MCL in MW106 and MW109 and dissolved cadmium was detected above the MCL in MW109 in both 1990 and 1997. All three detections of cadmium were lower in 1997 than in 1990.

Total lead decreased from each sampling event. Total lead was detected above the MCL of 15 ug/l in four wells in 1990, above the MCL in two wells and equal to the MCL in one well in 1995, and below the MCL in all wells in 1997. Dissolved lead was below the MCL in all three sampling events.

Other metals that were detected above the Secondary MCL, VGPL, or RBC in 1997 are aluminum, arsenic, beryllium, iron, manganese, mercury, and zinc. Total aluminum was detected above the Secondary MCL in all five wells in 1997 and 1995. Total arsenic was detected above the RBC in three wells in both 1997 and 1995 and in two wells in 1990. Dissolved arsenic was detected above the RBC in all five wells in 1997 and in two wells in 1995 and 1990.

Total and dissolved iron and manganese exceeded the Secondary MCL and VGPL in all wells in 1997, except for total manganese in one well. In both 1995 and 1997, the range of detections of iron were about the same and the maximum concentrations of iron were detected in MW108. In both 1995 and 1997, the range of total and dissolved manganese concentrations were about the same in the same wells, with the maximum concentrations detected in MW107.

Total and dissolved mercury were detected above the VGPL in the same three wells in 1997. Total mercury was detected in more wells and at higher concentrations in 1997 compared to 1990. Total zinc was detected above the VGPL of 50 ug/l in four wells, MW106 to MW109, in 1990, and in the same three wells, MW107 to MW109, in 1995 and 1997.

While no water quality parameters were detected above standards or guidelines in 1990 or 1995, hardness and chloride were detected above the VGPLs in 1997. Since groundwater at the site is not used as a source of drinking water, the metals that exceed the MCL, Secondary MCL, VGPL, or RBC values do not pose a significant threat to human health at the site.

Surface Water

As was the case in 1990 and 1995, no VOCs were detected above regulatory levels in 1997. The only metals that were detected above the VWQS for public health in 1995 and 1997 were total and dissolved iron and total and dissolved manganese. Total lead was also detected above the VWQS for public health in 1997 but was detected below the VWQS in 1990 and 1995. Surface water at the site is not used as a source of public drinking water.

Other metals that were detected above the VWQS for aquatic life in 1997 are total copper, total and dissolved lead, total and dissolved mercury, and total and dissolved zinc. The only metals detected above the VWQS for aquatic life in 1995 were total lead, and total and dissolved zinc.

No water quality parameters were detected above the VWQS in any of the three events. Surface water at the site is not used as a source of aquatic life as it is a wetland area.

5.0 REFERENCES

EPA, 1995. RBC - Risk based Concentrations from EPA Region III for tap water, June 1995.

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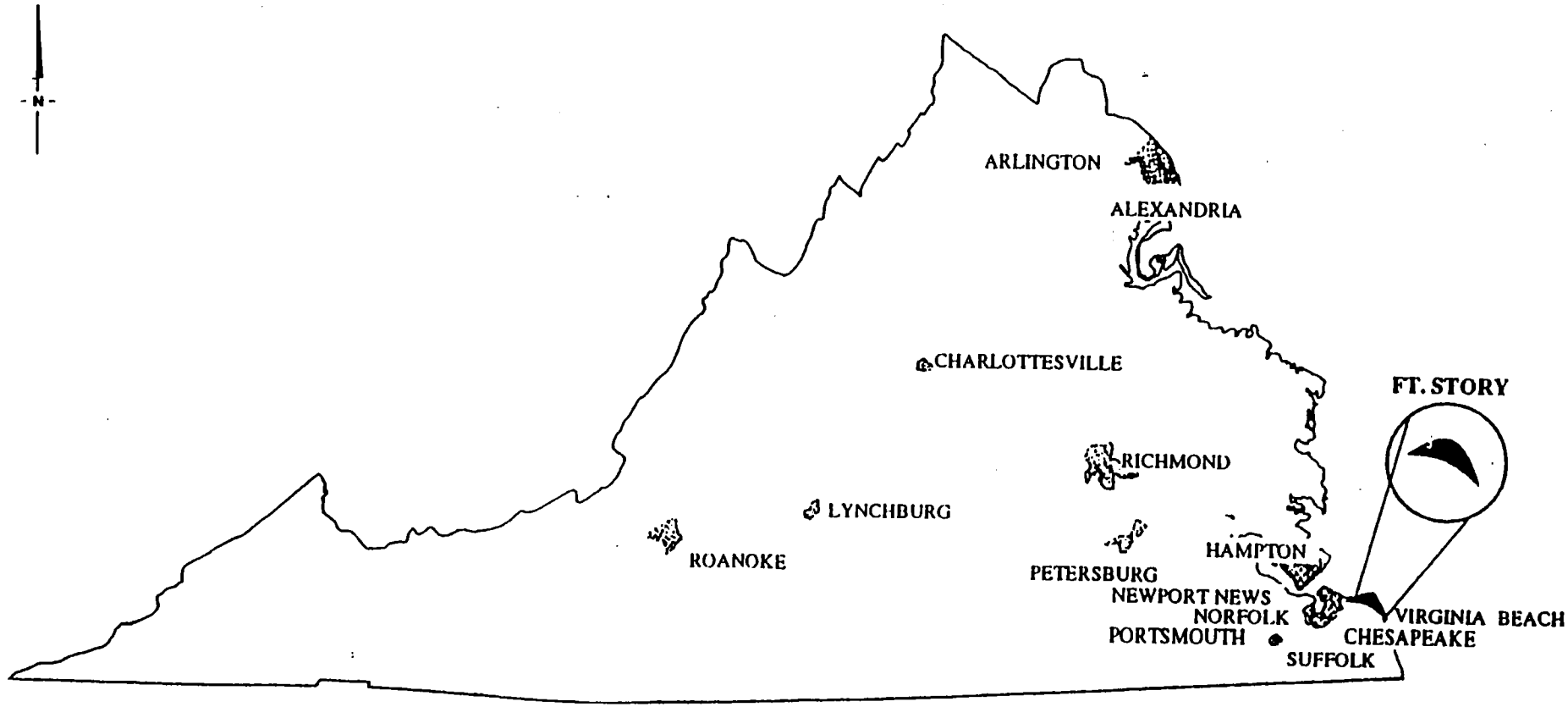
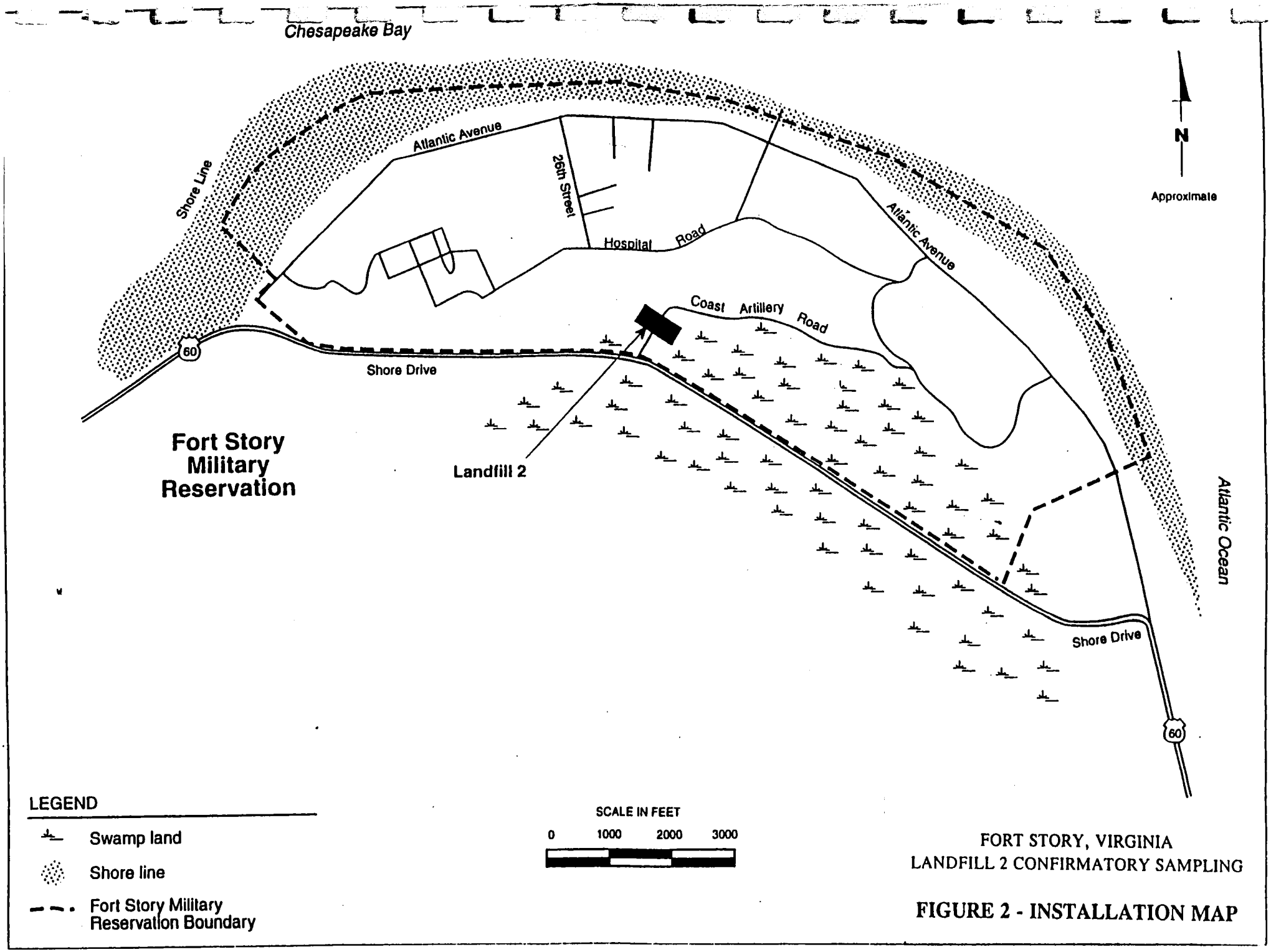


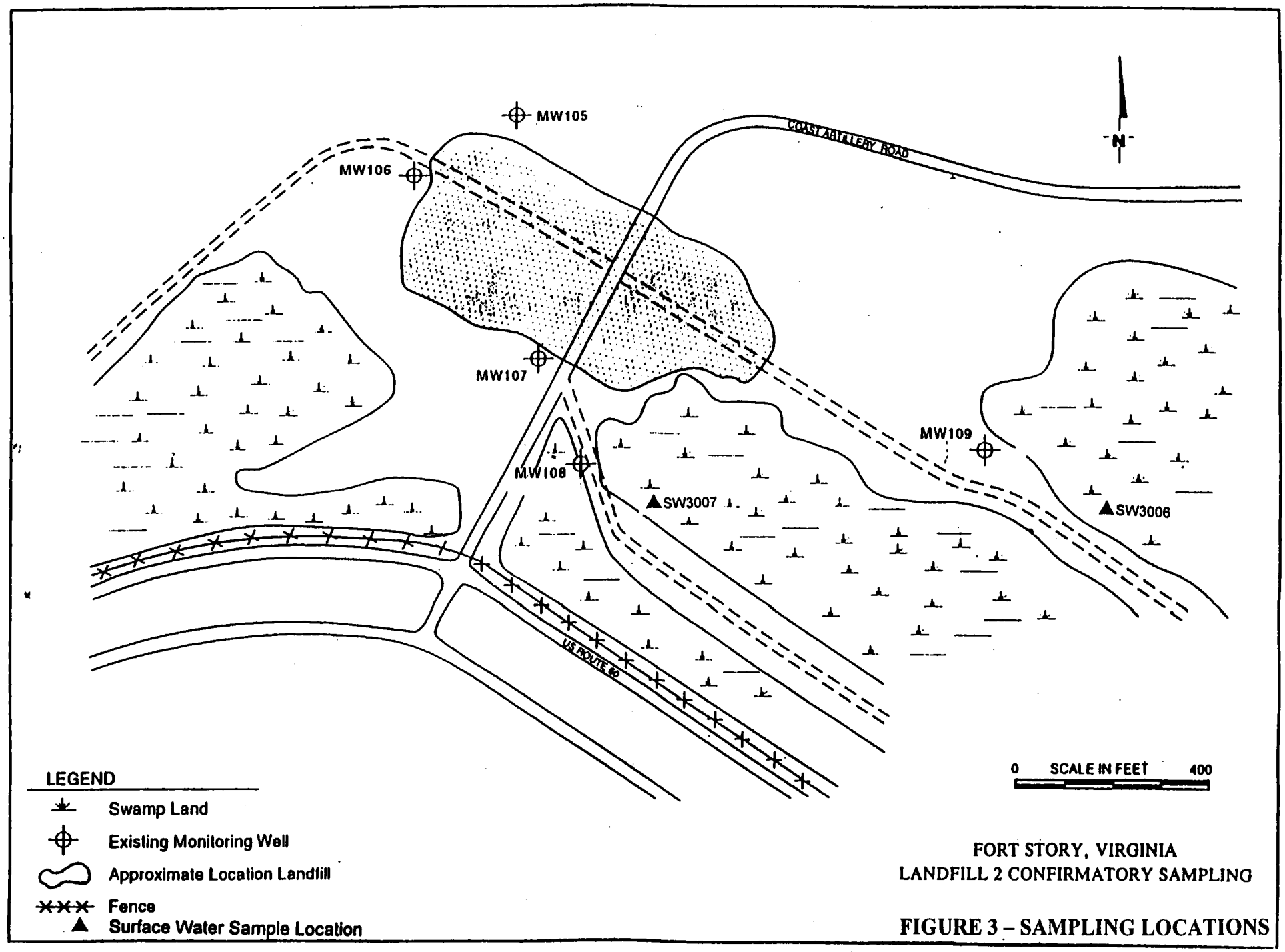
FORT STORY, VIRGINIA
LANDFILL 2 CONFIRMATORY SAMPLING

FIGURE 1 - VICINITY MAP



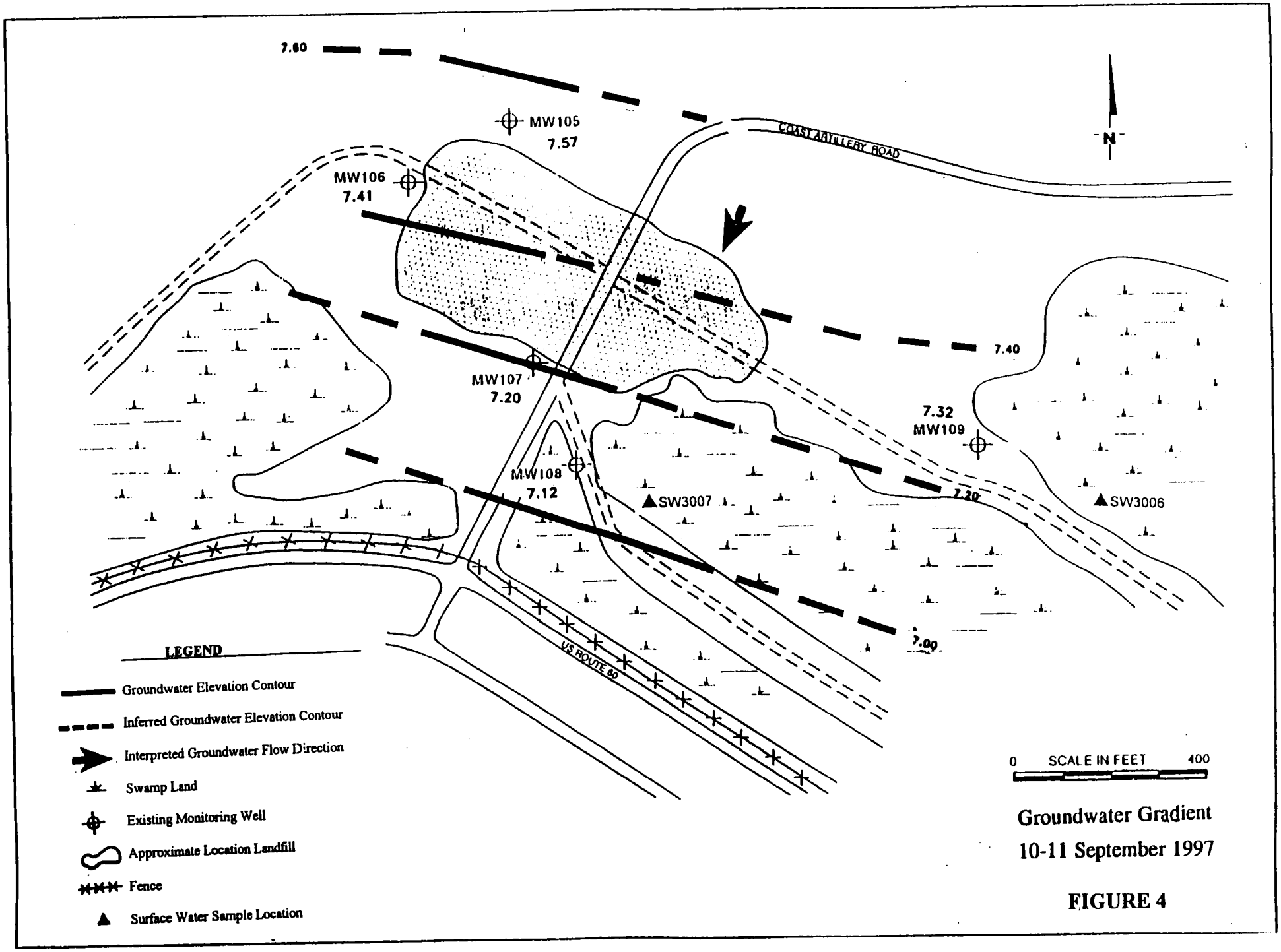
FORT STORY, VIRGINIA
LANDFILL 2 CONFIRMATORY SAMPLING

FIGURE 2 - INSTALLATION MAP



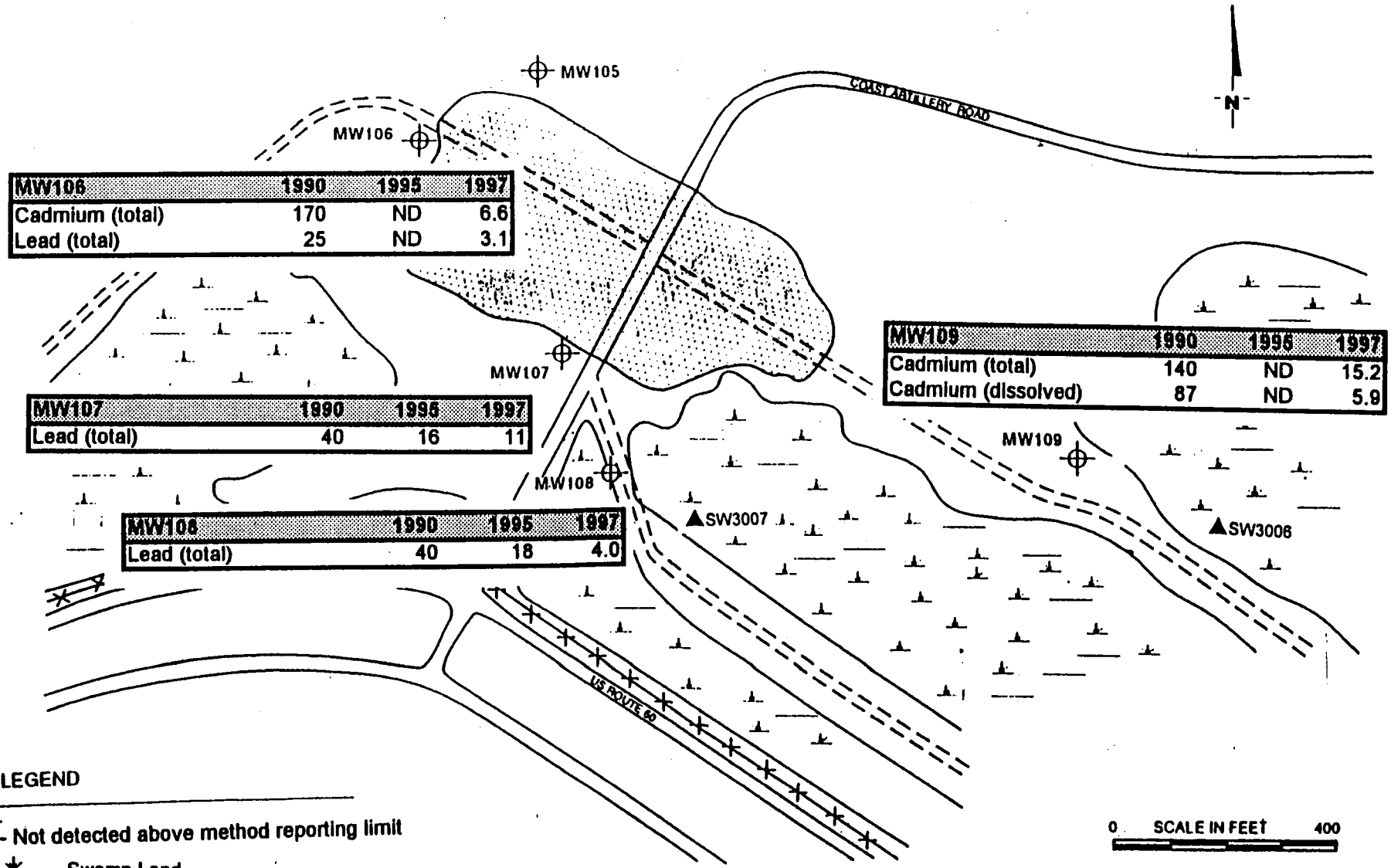
FORT STORY, VIRGINIA
LANDFILL 2 CONFIRMATORY SAMPLING

FIGURE 3 – SAMPLING LOCATIONS



Groundwater Gradient
10-11 September 1997

FIGURE 4



MW106	1990	1995	1997
Cadmium (total)	170	ND	6.6
Lead (total)	25	ND	3.1

MW107	1990	1995	1997
Lead (total)	40	16	11

MW108	1990	1995	1997
Lead (total)	40	18	4.0

MW109	1990	1995	1997
Cadmium (total)	140	ND	15.2
Cadmium (dissolved)	87	ND	5.9

LEGEND

ND - Not detected above method reporting limit

Swamp Land

Existing Monitoring Well

Approximate Location Landfill

Fence

Surface Water Sample Location

Groundwater and Surface Water
Metal Contaminant Concentrations

FIGURE 5

Table 1
Groundwater Elevation Data
Landfill No. 2
Fort Story, Virginia

Date Measured:			6/11/90		1/26/95		9/10-11/97	
Well Identification	Elevation of Ground Surface[a]	Elevation of Top of Casing[a]	Depth to Water (feet)[b]	Groundwater Elevation (feet above sea level)[c]	Depth to Water (feet)[d]	Groundwater Elevation (feet above sea level)[e]	Depth to Water (feet)[d]	Elevation (feet above sea level)[e]
MW105	16.89	16.56 f	8.73	8.16	9.21	7.35	8.99	7.57
MW106	9.75	9.52 g	1.73	8.02	2.16	7.36	2.11	7.41
MW107	10.84	10.60 h	2.84	8.00	3.12	7.48	3.40	7.20
MW108	9.29	8.98	1.51	7.78	1.68	7.30	1.86	7.12
MW109	10.07	9.68 i	1.99	8.08	2.35	7.33	2.36	7.32

a Elevations are in feet and are surveyed with reference to the National Geodetic Vertical Datum (NGVD) of 1929.
b Below ground surface.
c Elevations calculated relative to surveyed elevation at ground surface.
d Below top of casing.
e Elevations calculated relative to surveyed top of casing.
f Reported as 13.16 on the well monument.
g Reported as 11.76 on the well monument.
h Reported as 10.80 on the well monument.
i Reported as 11.31 on the well monument.

It is unknown why the top-of-casing elevations on four of the well monuments were different than the top-of-casing elevations used in the *Final Confirmatory Studies Report* (Montgomery Watson, 1995), which were also used to calculate the 1997 groundwater elevations.

Table 2
Groundwater and Surface Water Data Summary, September 1997
Landfill No. 2
Fort Story, Virginia

	Groundwater						Surface Water	
					Dup of 108			
SAMPLE ID	MW 105	MW 106	MW 107	MW 108	MW 110	MW 109	SW 3006	SW 3007
SAMPLE DATE	09/11/97	09/11/97	09/10/97	09/10/97	09/10/97	09/11/97	09/11/97	09/11/97
Volatile Organic Compounds (ug/l)								
Benzene	0.20J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acetone	<25	<25	92E	17J	<25	<25	<25	<25
Carbon Disulfide	<1.0	<1.0	<1.0	0.21J	<1.0	<1.0	<1.0	<1.0
2-Butanone (MEK)	<10	<10	<10	<10	<10	<10	3.8J	<10
Total Metals (ug/l)								
Aluminum	824	1,380	2,730	1,610	1,460	4,390	1,630	308
Antimony	<2.6	3.2J	4.9J	5.7	2.9J	4.9J	4.7J	<2.6
Arsenic	12.9	<2.2	17.2	<2.2	5.2J	18.1	3.7J	<2.2
Barium	19.9	33.7	99.6	20.0	20.6	26.8	62.0	106
Beryllium	<0.19	0.22J	<0.19	<0.19	<0.19	0.24J	<0.19	<0.19
Cadmium	<0.58	6.6	2.0	2.6	1.7	15.2	<0.58	<0.58
Calcium	22,400	13,010	81,500	22,000	21,800	10,400	9,040	27,800
Chromium	3.5	2.8	3.9	5.4	5.0	9.0	3.9	1.8J
Cobalt	<0.53	1.6J	3.6J	0.84J	1.4J	3.5J	2.3J	1.4J
Copper	<1.7	2.9J	168	2.5J	1.8J	34.6	15.8	<1.7
Iron	4,950	1,780	26,000	29,100	28,000	14,600	15,000	48,900
Lead	2.4J	3.1J	11.0	4.0J	2.7J	12.4	21.5	2.2J
Magnesium	2,420	448J	4,790	9,790	9,690	2,930	4,410	6,580
Manganese	37.1	105	659	529	553	245	203	697
Mercury	0.08J	<0.05	0.28	0.06J	<0.05	0.09J	0.10J	0.06J
Nickel	<1.2	<1.2	6.2	1.9J	1.9J	6.0	4.3J	<1.2
Potassium	1,340	621J	2,890	5,020	4,630	774J	2,170	3,440
Selenium	3.0J	4.1J	<2.6	3.9J	<2.6	3.2J	4.7J	4.2J
Silver	<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	<0.90
Sodium	35,800	3,540	9,100	17,500	16,600	10,700	11,700	11,400
Thallium	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3
Vanadium	4.6J	2.3J	7.9J	7.9J	7.7J	23.1	9.1J	2.1J
Zinc	6.4J	36.3	376	51.1	27.5	165	103	21.3
Dissolved Metals (ug/l)								
Aluminum	123J	902	125J	1,600	1,550	3,340	475	163J
Antimony	3.5J	4.6J	3.5J	<2.6	3.8J	<2.6	<2.6	3.4J
Arsenic	3.0J	2.6J	10.2	2.8J	4.0J	12.5	2.2J	<2.2
Barium	25.2	30.9	82.6	20.7	19.8	26.8	20.7	91.9
Beryllium	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19
Cadmium	<0.58	4.7	<0.58	0.63J	<0.58	5.9	<0.58	<0.58
Calcium	16,900	1,840	77,900	21,100	20,900	10,700	4,450	25,100
Chromium	1.3J	3.1	2.6	4.6	5.1	6.5	2.6	2.9
Cobalt	0.72J	2.0J	3.0J	1.2J	1.3J	2.3J	1.5J	0.98J
Copper	<1.7	3.0J	<1.7	<1.7	<1.7	10.1	2.0J	<1.7
Iron	1,180	1,260	22,900	28,900	28,600	14,500	4,960	34,800

Table 2
Groundwater and Surface Water Data Summary, September 1997
Landfill No. 2
Fort Story, Virginia

	Groundwater						Surface Water	
					Dup of 108			
SAMPLE ID	MW 105	MW 106	MW 107	MW 108	MW 110	MW 109	SW 3006	SW 3007
SAMPLE DATE	09/11/97	09/11/97	09/10/97	09/10/97	09/10/97	09/11/97	09/11/97	09/11/97
Lead	**1.7J**	**3.0J**	<1.2	**3.2J**	**2.9J**	**6.7**	**3.1J**	**2.1J**
Magnesium	**2,360**	**420J**	**4,140**	**9,160**	**9,090**	**4,600**	**3,250**	**6,150**
Manganese	**51.4**	**147**	**613**	**540**	**530**	**294**	**143**	**644**
Mercury	**0.09J**	<0.05	**0.06J**	**0.06J**	<0.05	**0.09J**	**0.06J**	<0.05
Nickel	<1.2	**3.1J**	**1.6J**	**2.4J**	**2.2J**	**3.4J**	<1.2	<1.2
Potassium	**1,060**	**493J**	**2,720**	**4,960**	**4,950**	**1,540**	**1,470**	**3,330**
Selenium	<2.6	**3.0J**	**3.1J**	**3.2J**	**3.6J**	<2.6	<2.6	**3.3J**
Silver	<0.90	<0.90	**2.3J**	<0.90	<0.90	<0.90	<0.90	<0.90
Sodium	**28,100**	**3,130**	**9,630**	**17,700**	**17,500**	**12,000**	**11,600**	**11,100**
Thallium	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3
Vanadium	**1.1J**	**1.7J**	**2.6J**	**7.9J**	**7.4J**	**17.5**	**2.2J**	**1.5J**
Zinc	**11.1J**	**44.5**	**66.7**	**22.5**	**21.3**	**111**	**54.3**	**21.5**
Miscellaneous (mg/l)								
Hardness as CaCO3	**240**	**140**	**730**	**660**	**950**	**200**	**720**	**1,000**
Ammonia-N	<0.030	<0.030	**5.9**	**1.5**	**1.7**	**0.5**	**0.23**	**1.4**
Chloride	**58**	**4.8**	**16**	**46**	**44**	**17**	**24**	**23**
Nitrate-N	**0.1J**	**0.15J**	<0.050	**0.11**	**3.3**	<0.050	**0.29**	**0.47**
Orthophosphate-P	**0.13J**	<0.050UJ	**0.33**	**0.14**	**0.13**	**0.2**	**0.14**	**0.28**
Sulfate as SO4	**36**	<5.0	<5.0	**7.8**	**7.7**	<5.0	<5.0	**22**
Total Dissolved Solids	**180**	**24**	**340**	**380**	**390**	**270**	**180**	**290**
Total Phosphorus	**0.28**	**0.12**	**0.51**	**0.22**	**0.16**	<0.10	**0.36**	**0.37**
Field Parameters								
Temperature (C)	18.9	19.2	21.4	15.6	15.6	19.0	23.7	22.0
pH	4.44	4.64	4.28	4.48	4.48	4.44	4.39	4.45
Conductivity (umhos/cm)	258	33	510	326	326	198	1,050	297
Dissolved Oxygen (mg/l)	2.11	2.68	4.32	2.46	2.46	0.35	0.23	0.12
PID (ppm)	0	0	0	0	0	41	NM	NM
Lower Explosive Limit (%)	0	0	0	0	0	5	NM	NM

< - Not detected above reporting limit.
Bold indicates a detection.
Shading indicates exceedance of Federal Maximum Contaminant Level (MCL).
E -Detected at upper end of calibration range, diluted sample and confirmed detection.
J - Estimated concentration.
UJ - Not detected above Sample Quantitation Limit (SQL), however the SQL may be inacurrate or imprecise.
NM - Not measured

Table 3
Federal and State Standards and Guidelines
Landfill No. 2
Fort Story, Virginia

	Groundwater				Surface Water	
	MCL (a)	Secondary MCL (a)	VGPL (b)	RBC (c) Tap Water	VWQS HH (d1)	VWQS FWAQ (d2)
Volatile Organic Compounds (ug/l)						
Benzene	5	NAv	NAv	0.36	12	NAv
Acetone	NAv	NAv	NAv	3,700	NAv	NAv
Carbon Disulfide	NAv	NAv	NAv	21	NAv	NAv
2-Butanone (MEK)	NAv	NAv	NAv	1,900	NAv	NAv
Metals (ug/l)						
Aluminum	NAv	50-200	NAv	37,000	NAv	NAv
Antimony	6	NAv	NAv	15	NAv	NAv
Arsenic	50	NAv	50	0.038 (g)	NAv	190(j)
Barium	2,000	NAv	1,000	2,600	2,000	NAv
Beryllium	4	NAv	NAv	0.016 (g)	NAv	NAv
Cadmium	5	NAv	0.4	18	16	0.38 (i)
Calcium	NAv	NAv	NAv	NAv	NAv	NAv
Chromium	100	NAv	50	180 (b)	170 (h)	11
Cobalt	NAv	NAv	NAv	2,200	NAv	NAv
Copper	1,300 (e)	1,000	1,000	1,400	1,300	3.6 (i)
Iron	NAv	300	300	NAv	300	NAv
Lead	15 (e)	NAv	50	NAv	15	0.54 (i)
Magnesium	NAv	NAv	NAv	NAv	NAv	NAv
Manganese	NAv	50	50	180	50	NAv
Mercury	2	NAv	0.05	11	0.144	0.012
Nickel	100	NAv	NAv	730	607	49 (i)
Potassium	NAv	NAv	NAv	NAv	NAv	NAv
Selenium	50	NAv	10	180	172	5.0
Silver	NAv	100	None	180	NAv	NAv
Sodium	NAv	NAv	270,000	NAv	NAv	NAv
Thallium	0.5	NAv	NAv	NAv	NAv	NAv
Vanadium	NAv	NAv	NAv	260	NAv	NAv
Zinc	NAv	5,000	50	11,000	5,000	41 (i)
Miscellaneous (mg/l)						
Hardness as CaCO3	NAv	NAv	120	NAv	NAv	NAv
Ammonia-N	NAv	NAv	0.025	NAv	NAv	NAv
Chloride	NAv	250	50	NAv	250	230
Nitrate-N	10	NAv	5	NAv	10	NAv
Orthophosphate-P	NAv	NAv	NAv	NAv	NAv	NAv
Sulfate as SO4	NAv	250	50	NAv	NAv	250
Total Dissolved Solids	NAv	500	1,000	NAv	NAv	500
Total Phosphorus	NAv	NAv	NAv	NAv	NAv	NAv

NAv - Not Available

a. Federal Maximum Contaminant Level (MCL). From: Drinking Water Regulations and Health Advisories, Office of Water, United States Environmental Protection Agency, October 1996.

b. Virginia Groundwater Protection Levels, VR680-21-04, May 20, 1992.

c. RBC - Risk based Concentratons from EPA Region III for tap water, June 1995

d1. Commonwealth of Virginia, State Water Control Board Regulations, Water Quality Standards (VR 680-21-00), May 20, 1992., for public water supplies for human health (HH).

d2. Commonwealth of Virginia, State Water Control Board Regulations, Water Quality Standards (VR 680-21-00), May 20, 1992., for protection of freshwater aquatic life (FWAQ).

e - Treatment Threshold Action Level

f - Chromium VI

g - As a carcinogen

h - Chromium III

i - calculated assuming minimum hardness of 25 mg/l.

j - Arsenic III

Table 4
Groundwater and Surface Water Data Summary, January 1995
Site 2 - Landfill 2
Confirmatory Studies
Fort Story, Virginia

Parameter/Analyte	SW3001	SW3001D	SW3002	MW105	MW106	MW107	MW108	MW109	MW109D
Volatiles Organic Compunds (ug/l)									
2-Butanone (MEK)	<10	<10	<10	<10	23	<10	<10	<10	<10
4-Methyl-2-pentanone (MIBK)	<10	<10	<10	<10	<10	<10	<10	12	<10
Acetone	<10	<10	<10	<10	<10	12	<10	<10	<10
Toluene	2.9	2.2	1.1	<1	<1	<1	<1	<1	<1
Tentatively Identified VOCs									
Acetic Acid, methyl ester	ND	ND	ND	ND	ND	2.6JT	ND	ND	ND
Pentane	ND	ND	ND	ND	ND	1.1JT	ND	ND	ND
Sulfur dioxide	ND	ND	ND	ND	ND	ND	ND	1.3JT	ND
Unknown	4.1JT	ND	ND	ND	7(3)JT	145(2)JT	6JT	ND	ND
Unknown alkane	ND	1.2JT	ND	ND	ND	ND	ND	ND	ND
Unknown methyl ethyl	ND	ND	1.3JT	ND	ND	ND	ND	ND	ND
Base-Neutral Acid Extractable Compounds (ug/l)	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pesticide and Polychlorinated Biphenyls (mg/l)	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Fuel Hydrocarbons (ug/l)	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Metals (ug/l)									
Aluminum	600	560	<340	1,100	1,100	3,400	2,300	8,600	9,400
Arsenic	<10	<10	<100	<100	<10	27	22	16	16
Barium	22	19	64	<10	24	73	27	47	53
Beryllium	<4	<4	<4	<4	<4	4	4	<4	<4
Calcium	5,800	6,100	21,000	16,000	3,100	69,000	15,000	8,500	9,200
Chromium	<10	<10	<10	<10	<10 UJ,b	<10 UJ,b	<10 UJ,b	14	15
Copper	<25	<25	<25	<25	<25	200	<25	<25	<25
Iron	12,000	11,000	33,000	4,100	1,500	31,000	31,000	14,000	15,000
Lead	8.7	6.1	<5	<5	<5	16	18	15	16
Magnesium	4,100	4,300	6,900	1,300	560	3,400	6,400	3,900	4,100
Manganese	170	170	550	40	51	560	440	280	290
Potassium	<1,000	<1,000	3,200	<1,000	<1,000	1,600	4,200	3,200	3,300
Sodium	14,000	15,000	22,000	8,300	3,100	6,300	15,000	11,000	12,000
Vanadium	<10	<10	<10	<10	<10	12	<10	20	22
Zinc	49	53	23	<20	38	280	460	60	84

Table 4
Groundwater and Surface Water Data Summary, January 1995
Site 2 - Landfill 2
Confirmatory Studies
Fort Story, Virginia

Parameter/Analyte	SW3001	SW3001D	SW3002	MW105	MW106	MW107	MW108	MW109	MW109D
Dissolved Metals (ug/l)									
Aluminum	**380**	**380**	<200	<200	**250**	<200	**1,200**	**1,500**	**1,500**
Arsenic	<10	<10	<10	<100	**<27**	**27**	**22**	<10	<10
Barium	**16**	**16**	**41**	<10	**24**	**55**	**21**	**22**	**21**
Calcium	**4,900**	**5,000**	**19,000**	**12,000**	**1,700**	**69,000**	**15,000**	**7,200**	**7,200**
Iron	**8,500**	**8,700**	**11,000**	**1,600**	**700**	**21,000**	**28,000**	**9,800**	**9,900**
Magnesium	**3,900**	**3,900**	**6,700**	**1,100**	**530**	**3,400**	**6,300**	**3,100**	**3,200**
Manganese	**150**	**160**	**480**	**25**	**44**	**560**	**430**	**230**	**220**
Potassium	<1,000	<1,000	**3,000**	<1,000	<1,000	**1,600**	**4,300**	**2,600**	**2,800**
Sodium	**15,000**	**15,000**	**6,700**	**9,900**	**3,100**	**7,000**	**16,000**	**11,000**	**12,000**
Zinc	**39**	**60**	**130**	<20	**37**	**49**	**25**	**21**	<20
Miscellaneous (ug/l)									
Alkalinity (to pH 4.5) as $CaCO_3$	<1,000	**2,200**	**27,000**	**15,000**	NA	NA	NA	**33,000**	**37,000**
Ammonia-N	**130**	**120**	**210**	**74**	NA	NA	NA	**3,000**	**3,500**
Chloride	**32,000**	**34,000**	**50,000**	**14,000**	NA	NA	NA	**20,000**	**25,000**
Nitrate-N	<50	**130**	170	<50	NA	NA	NA	<50	<50
Orthophosphate-P	<50	<500	<50	<80	NA	NA	NA	**96**	**80**
Sulfate as SO4	<5,000	**7,200**	<5,000	**13,000**	NA	NA	NA	**8,900**	**8,900**
Total Dissolved Solids	**180,000**	**170,000**	**150,000**	**44,000**	NA	NA	NA	**200,000**	**160,000**
Total Phosphorus (365.4)	**450**	**320**	**490**	**130**	NA	NA	NA	**820**	**760**

b - Concentration qualified due to low MS/MSD recovery.
JT - Associated value is tentatively identified and estimated.
NA - Not analyzed
UJ - Associated non-detection is estimated. Results are qualitatively acceptable.
ND - Not detected above method reporting limit
Bold indicates a detection.
Shaded cells mean exceeded Federal MCL Standard

Table 5
Groundwater Data Summary, June 1990
Site 2 - Landfill 2
Confirmatory Studies
Fort Story, Virginia

Parameters	MW105	MW105D	MW106	MW107	MW108	MW109
Volatiles Organic Compounds (ug/l)						
Toluene	ND	NA	ND	ND	ND	**1.3**
Carbon Disulfide	**2.8**	NA	**2.0**	**0.8**	**18**	**25**
Base-Neutral Acid Extractable Compounds (ug/l)						
Benzoic Acid	NDJ,D	NDD	NDD	ND	**120**	NDD
Pesticide /PCBs (ug/l)	ND	ND	ND	ND	ND	ND
Total Metals (ug/l)						
Arsenic	ND	ND	ND	**30**	ND	**30**
Cadmium	ND	ND	**170**	ND	ND	**140**
Chromium	**19**	**20**	**22**	**26**	**22**	**51**
Copper	**10c**	**11c**	**29c**	**97c**	**21c**	**36c**
Mercury	ND	ND	ND	ND	ND	**0.2**
Lead	**10**	ND	**25**	**40**	**20**	**60**
Zinc	ND	ND	**130**	**160**	**97**	**100**
Dissolved Metals (ug/l)						
Arsenic	ND	ND	ND	**11**	ND	**8**
Cadmium	ND	ND	ND	ND	ND	**87**
Lead	ND	ND	**3**	ND	ND	**5**
Zinc	**65**	**66**	ND	**29**	**66**	**66**
Cyanide (ug/l)	ND	ND	ND	ND	ND	ND
Inorganics (ug/l)						
Barium	ND	ND	**100**	**170**	ND	**140**
Fluoride	ND	ND	ND	**1,100**	ND	ND
Chloride	**13,700 (b)**	**13,600**	**3,400**	**7,800**	**31,900**	**17,400**
Sulfate	**15,000 (b)**	**15,000**	**5,400**	**3,200**	ND	ND
Field Parameters (a)						
Temperature (degree C)	12.8	12.8	12.3	11.8	6.4	7.8
pH	6.7	6.7	6.1	6.6	6.1	6.1
Conductivity (umho)	200	200	40	260	300	190
Turbidity (NTU)	58.4	58.4	200.2	144.8	707.2	457.2

a - Field parameters measured after purging and prior to sample collection in the field.
b - Reported as 13.7 and 15.0 in Table 4-3 of Final Confirmatory Report for Site 2 - Landfill 2, and assumed to be in error by factor of 1,000.
C - Compound found in associated blank sample
D - Sample dilution increased reported detection limits
J - Analytical results considered estimated, but below the quantitation limit
NA - Not analyzed
ND - Not detected above method reporting limit
Bold indicates a detection.
Shaded cells mean exceeded Federal MCL Standard

Table 6
Summary of Groundwater and Surface Water Exceedances of Standards or Guidelines, 1990, 1995, 1997
Landfill No. 2
Confirmatory Studies
Fort Story, Virginia

Standard or Guideline	Well or Surface	Groundwater											Surface Water			
		MCL (a)			Secondary MCL (a)		VGPL (b)			RBC (c)			VWQS for Public Health (d1)		VWQS for Aquatic Life (d2)	
Metal	Water ID	1990	1995	1997	1995	1997	1990	1995	1997	1990	1995	1997	1995	1997	1995	1997
Groundwater																
Aluminum (Total)	MW105				X	X										
	MW106				X	X										
	MW107				X	X										
	MW108				X	X										
	MW109				X	X										
Aluminum (Dissolved)	MW105					X										
	MW106				X	X										
	MW107					X										
	MW108				X	X										
	MW109				X	X										
Arsenic (Total)	MW105											X				
	MW107									X	X	X				
	MW108										X					
	MW109									X	X	X				
Arsenic (Dissolved)	MW105											X				
	MW106										X	X				
	MW107									X	X	X				
	MW108										X	X				
	MW109									X		X				
Beryllium (Total)	MW106											X				
	MW107										X					
	MW108										X					
	MW109											X				
Cadmium (Total)	MW106	X		X			X		X	X						
	MW107								X							
	MW108								X							
	MW109	X		X			X		X	X						
Cadmium (Dissolved)	MW106								X							
	MW108								X							
	MW109	X		X			X		X	X						
Iron (Total)	MW105				X	X		X	X							
	MW106				X	X		X	X							
	MW107				X	X		X	X							
	MW108				X	X		X	X							
	MW109				X	X		X	X							
Iron (Dissolved)	MW105				X	X		X	X							
	MW106				X	X		X	X							
	MW107				X	X		X	X							
	MW108				X	X		X	X							
	MW109				X	X		X	X							
Lead (Total)	MW106	X														
	MW107	X	X													
	MW108	X	X													
	MW109	X	X													
Manganese (Total)	MW106				X	X		X	X							
	MW107				X	X		X	X		X	X				
	MW108				X	X		X	X		X	X				
	MW109				X	X		X	X		X	X				

Table 6
Summary of Groundwater and Surface Water Exceedances of Standards or Guidelines, 1990, 1995, 1997
Landfill No. 2
Confirmatory Studies
Fort Story, Virginia

Standard or Guideline	Well or Surface	Groundwater											Surface Water			
		MCL (a)			Secondary MCL (a)		VGPL (b)			RBC (c)			VWQS for Public Health (d1)		VWQS for Aquatic Life (d2)	
Metal	Water ID	1990	1995	1997	1995	1997	1990	1995	1997	1990	1995	1997	1995	1997	1995	1997
Manganese (Dissolved	MW105					X			X							
	MW106					X			X							
	MW107				X	X		X	X		X	X				
	MW108				X	X		X	X		X	X				
	MW109				X	X		X	X		X	X				
Mercury (Total)	MW105								X							
	MW107								X							
	MW108								X							
	MW109						X		X							
Mercury (Dissolved)	MW105								X							
	MW107								X							
	MW108								X							
	MW109								X							
Zinc (Total)	MW106						X									
	MW107						X	X	X							
	MW108						X	X	X							
	MW109						X	X	X							
Zinc (Dissolved)	MW105						X									
	MW107								X							
	MW108						X									
	MW109						X		X							
Surface Water																
Copper (Total)	SW3006															X
Iron (Total)	SW3006												X	X		
	SW3007												X	X		
Lead (Total)	SW3006													X	X	X
	SW3007															X
Lead (Dissolved)	SW3006															X
	SW3007															X
Manganese (Total)	SW3006												X	X		
	SW3007												X	X		
Manganese (Dissolved	SW3006												X	X		
	SW3007												X	X		
Mercury (Total)	SW3006															X
	SW3007															X
Mercury (Dissolved)	SW3006															X
Zinc (Total)	SW3006														X	X
	SW3007															
Zinc (Dissolved)	SW3006															X
	SW3007														X	

a. Federal Maximum Contaminant Level (MCL). From: Drinking Water Regulations and Health Advisories, Office of Water, United States Environmental Protection Agency, May 1995.
b. Virginia Groundwater Protection Levels, VR680-21-04, May 20, 1992.
c. RBC - Risk based Concentratons from EPA Region III for tap water, June 1995
d1. Commonwealth of Virginia, State Water Control Board Regulations, Water Quality Standards (VR 680-21-00), May 20, 1992., for public water supplies for human health (HH).
d2. Commonwealth of Virginia, State Water Control Board Regulations, Water Quality Standards (VR 680-21-00), May 20, 1992., for protection of freshwater aquatic life (FWAQ).

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

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LOG NO: S7-MP040A
Received: 11 SEP 97
Reported: 29 OCT 97

Mr. Keith Matteson
Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

Project: Ft. Story 0285-690/Landfill #2/SDG#MP040A
Sampled By: Client
Code: 172871028

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040A-3	Method Blank	MP040A

PARAMETER	MP040A-3
Aluminum (6010)	
Aluminum (6010), ug/l	23.0U
Preparation Date	09.16.97
Date Analyzed	09.23.97
Dilution factor	1.0
Batch ID	0916G
Barium (6010)	
Barium (6010), ug/l	0.25U
Preparation Date	09.16.97
Date Analyzed	09.17.97
Dilution factor	1.0
Batch ID	0916G
Calcium (6010)	
Calcium (6010), ug/l	31.9B
Preparation Date	09.16.97
Date Analyzed	09.17.97
Dilution factor	1.0
Batch ID	0916G
Cobalt (6010)	
Cobalt (6010), ug/l	0.53U
Preparation Date	09.16.97
Date Analyzed	09.17.97
Dilution factor	1.0
Batch ID	0916G

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
MP040A-1	Matrix Spike % Recovery (MW-107)	09-10-97/1220	MP040A
MP040A-2	MS Duplicate % Recovery (MW-107)	09-10-97/1220	MP040A

PARAMETER	MP040A-1	MP040A-2
Manganese (Dissolved) (6010)		
Manganese (Dissolved) (6010)	99 %	100 %
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916H	0916H
Potassium (Dissolved) (6010)		
Potassium (Dissolved) (6010)	105 %	105 %
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.23.97	09.23.97
Dilution factor	1.0	1.0
Batch ID	0916H	0916H
Sodium (Dissolved) (6010)		
Sodium (Dissolved) (6010)	X	X
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.23.97	09.23.97
Dilution factor	1.0	1.0
Batch ID	0916H	0916H
Vanadium (Dissolved) (6010)		
Vanadium (Dissolved) (6010)	97 %	98 %
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916H	0916H

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11832 Rock Landing Drive, Suite 400
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Code: 172871028

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
MP040A-1	Matrix Spike % Recovery (MW-107)	09-10-97/1220	MP040A
MP040A-2	MS Duplicate % Recovery (MW-107)	09-10-97/1220	MP040A

PARAMETER	MP040A-1	MP040A-2
Calcium (Dissolved) (6010)		
Calcium (Dissolved) (6010)	X	X
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916H	0916H
Cobalt (Dissolved) (6010)		
Cobalt (6010)	94 %	94 %
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916H	0916H
Iron (Dissolved) (6010)		
Iron (Dissolved) (6010)	X	X
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.23.97	09.23.97
Dilution factor	1.0	1.0
Batch ID	0916H	0916H
Magnesium (Dissolved) (6010)		
Magnesium (Dissolved) (6010)	93 %	93 %
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916H	0916H

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
MP040A-1	Matrix Spike % Recovery (MW-107)	09-10-97/1220	MP040A
MP040A-2	MS Duplicate % Recovery (MW-107)	09-10-97/1220	MP040A

PARAMETER	MP040A-1	MP040A-2
Sodium (6010)		
Sodium (6010)	X	X
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.23.97	09.23.97
Dilution factor	1.0	1.0
Batch ID	0916G	0916G
Vanadium (6010)		
Vanadium (6010)	101 %	103 %
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916G	0916G
Aluminum (Dissolved) (6010)		
Aluminum (Dissolved) (6010)	95 %	96 %
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.23.97	09.23.97
Dilution factor	1.0	1.0
Batch ID	0916H	0916H
Barium (Dissolved) (6010)		
Barium (Dissolved) (6010)	106 %	107 %
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916H	0916H

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Code: 172871028

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
MP040A-1	Matrix Spike % Recovery (MW-107)	09-10-97/1220	MP040A
MP040A-2	MS Duplicate % Recovery (MW-107)	09-10-97/1220	MP040A

PARAMETER	MP040A-1	MP040A-2
Iron (6010)		
Iron (6010)	X	X
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.23.97	09.23.97
Dilution factor	1.0	1.0
Batch ID	0916G	0916G
Magnesium (6010)		
Magnesium (6010)	98 %	103 %
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916G	0916G
Manganese (6010)		
Manganese (6010)	106 %	110 %
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916G	0916G
Potassium (6010)		
Potassium (6010)	106 %	102 %
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.23.97	09.23.97
Dilution factor	1.0	1.0
Batch ID	0916G	0916G

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Code: 172871028

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
MP040A-1	Matrix Spike % Recovery (MW-107)	09-10-97/1220	MP040A
MP040A-2	MS Duplicate % Recovery (MW-107)	09-10-97/1220	MP040A

PARAMETER	MP040A-1	MP040A-2
Aluminum (6010)		
Aluminum (6010)	33 %	36 %
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.23.97	09.23.97
Dilution factor	1.0	1.0
Batch ID	0916G	0916G
Barium (6010)		
Barium (6010)	113 %	113 %
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916G	0916G
Calcium (6010)		
Calcium (6010)	X	X
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916G	0916G
Cobalt (6010)		
Cobalt (6010)	99 %	101 %
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916G	0916G

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LOG NO: S7-75189A
Received: 15 SEP 97
Reported: 29 OCT 97

Mr. Keith Matteson
Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

Project: Ft. Story 0285-690/Landfill #2/SDG#MP040A
Sampled By: Client
Code: 100971029

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75189A-1	MW 105	09-11-97/0940	MP040A
75189A-2	MW 106	09-11-97/1130	MP040A

PARAMETER	75189A-1	75189A-2
Manganese (Dissolved) (6010)		
Manganese (Dissolved) (6010), ug/l	51.4	147
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916H	0916H
Potassium (Dissolved) (6010)		
Potassium (Dissolved) (6010), ug/l	1060	493B
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.23.97	09.23.97
Dilution factor	1.0	1.0
Batch ID	0916H	0916H
Sodium (Dissolved) (6010)		
Sodium (Dissolved) (6010), ug/l	28100	3130
Preparation Date	09.16.97	09.16.97
Date Analyzed	10.28.97	09.23.97
Dilution factor	1.0	1.0
Batch ID	0916H	0916H
Vanadium (Dissolved) (6010)		
Vanadium (Dissolved) (6010), ug/l	1.1B	1.7B
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916H	0916H

Methods: EPA SW-846

Linda A Wolfe
Linda A. Wolfe, Project Manager

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Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

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Sampled By: Client
Code: 100971029

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75189A-1	MW 105	09-11-97/0940	MP040A
75189A-2	MW 106	09-11-97/1130	MP040A

PARAMETER	75189A-1	75189A-2
Calcium (Dissolved) (6010)		
Calcium (Dissolved) (6010), ug/l	16900	1840
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916H	0916H
Cobalt (Dissolved) (6010)		
Cobalt (6010), ug/l	0.72B	2.0B
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916H	0916H
Iron (Dissolved) (6010)		
Iron (Dissolved) (6010), ug/l	1180	1260
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.23.97	09.23.97
Dilution factor	1.0	1.0
Batch ID	0916H	0916H
Magnesium (Dissolved) (6010)		
Magnesium (Dissolved) (6010), ug/l	2360	420B
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916H	0916H

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Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

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Code: 100971029

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75189A-1	MW 105	09-11-97/0940	MP040A
75189A-2	MW 106	09-11-97/1130	MP040A

PARAMETER	75189A-1	75189A-2
Sodium (6010)		
Sodium (6010), ug/l	35800	3540
Preparation Date	09.16.97	09.16.97
Date Analyzed	10.28.97	09.18.97
Dilution factor	1.0	1.0
Batch ID	0916G	0916G
Vanadium (6010)		
Vanadium (6010), ug/l	4.6B	2.3B
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916G	0916G
Aluminum (Dissolved) (6010)		
Aluminum (Dissolved) (6010), ug/l	123B	902
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.23.97	09.23.97
Dilution factor	1.0	1.0
Batch ID	0916H	0916H
Barium (Dissolved) (6010)		
Barium (Dissolved) (6010), ug/l	25.2	30.9
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916H	0916H

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Malcolm Pirnie
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75189A-1	MW 105	09-11-97/0940	MP040A
75189A-2	MW 106	09-11-97/1130	MP040A

PARAMETER	75189A-1	75189A-2
Iron (6010)		
Iron (6010), ug/l	4950	1780
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.18.97	09.18.97
Dilution factor	1.0	1.0
Batch ID	0916G	0916G
Magnesium (6010)		
Magnesium (6010), ug/l	2420	448B
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916G	0916G
Manganese (6010)		
Manganese (6010), ug/l	37.1	105
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916G	0916G
Potassium (6010)		
Potassium (6010), ug/l	1340	621B
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.18.97	09.18.97
Dilution factor	1.0	1.0
Batch ID	0916G	0916G

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Malcolm Pirnie
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75189A-1	MW 105	09-11-97/0940	MP040A
75189A-2	MW 106	09-11-97/1130	MP040A

PARAMETER	75189A-1	75189A-2
Aluminum (6010)		
Aluminum (6010), ug/l	824	1380
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.18.97	09.18.97
Dilution factor	1.0	1.0
Batch ID	0916G	0916G
Barium (6010)		
Barium (6010), ug/l	19.9	33.7
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916G	0916G
Calcium (6010)		
Calcium (6010), ug/l	22400	13010
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916G	0916G
Cobalt (6010)		
Cobalt (6010), ug/l	0.53U	1.6B
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916G	0916G

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Mr. Keith Matteson
Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

Project: Ft. Story 0285-690/Landfill #2/SDG#MP040A
Sampled By: Client
Code: 172871028

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75154A-1	SW-3006	09-11-97/1500	MP040A
75154A-2	SW-3007	09-11-97/1550	MP040A
75154A-3	MW-109	09-11-97/1320	MP040A

PARAMETER	75154A-1	75154A-2	75154A-3
Sodium (Dissolved) (6010)			
Sodium (Dissolved) (6010), ug/l	11600	11100	12000
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.23.97	09.23.97	09.23.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916H	0916H	0916H
Vanadium (Dissolved) (6010)			
Vanadium (Dissolved) (6010), ug/l	2.2B	1.5B	17.5
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97	09.17.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916H	0916H	0916H

Methods: EPA SW-846

Linda A. Wolfe

Linda A. Wolfe, Project Manager

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

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Malcolm Pirnie
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75154A-1	SW-3006	09-11-97/1500	MP040A
75154A-2	SW-3007	09-11-97/1550	MP040A
75154A-3	MW-109	09-11-97/1320	MP040A

PARAMETER	75154A-1	75154A-2	75154A-3
Magnesium (Dissolved) (6010)			
Magnesium (Dissolved) (6010), ug/l	3250	6150	4600
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97	09.17.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916H	0916H	0916H
Manganese (Dissolved) (6010)			
Manganese (Dissolved) (6010), ug/l	143	644	294
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97	09.17.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916H	0916H	0916H
Potassium (Dissolved) (6010)			
Potassium (Dissolved) (6010), ug/l	1470	3330	1540
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.23.97	09.23.97	09.23.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916H	0916H	0916H

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75154A-1	SW-3006	09-11-97/1500	MP040A
75154A-2	SW-3007	09-11-97/1550	MP040A
75154A-3	MW-109	09-11-97/1320	MP040A

PARAMETER	75154A-1	75154A-2	75154A-3
Calcium (Dissolved) (6010)			
Calcium (Dissolved) (6010), ug/l	4450	25100	10700
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97	09.17.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916H	0916H	0916H
Cobalt (Dissolved) (6010)			
Cobalt (6010), ug/l	1.5B	0.98B	2.3B
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97	09.17.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916H	0916H	0916H
Iron (Dissolved) (6010)			
Iron (Dissolved) (6010), ug/l	4960	34800	14500
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.23.97	09.23.97	09.23.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916H	0916H	0916H

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75154A-1	SW-3006	09-11-97/1500	MP040A
75154A-2	SW-3007	09-11-97/1550	MP040A
75154A-3	MW-109	09-11-97/1320	MP040A

PARAMETER	75154A-1	75154A-2	75154A-3
Vanadium (6010)			
Vanadium (6010), ug/l	9.1B	2.1B	23.1
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97	09.17.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916G	0916G	0916G
Aluminum (Dissolved) (6010)			
Aluminum (Dissolved) (6010), ug/l	475	163B	3340
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.23.97	09.23.97	09.23.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916H	0916H	0916H
Barium (Dissolved) (6010)			
Barium (Dissolved) (6010), ug/l	20.7	91.9	26.8
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97	09.17.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916H	0916H	0916H

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Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75154A-1	SW-3006	09-11-97/1500	MP040A
75154A-2	SW-3007	09-11-97/1550	MP040A
75154A-3	MW-109	09-11-97/1320	MP040A

PARAMETER	75154A-1	75154A-2	75154A-3
Manganese (6010)			
Manganese (6010), ug/l	203	697	245
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97	09.17.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916G	0916G	0916G
Potassium (6010)			
Potassium (6010), ug/l	2170	3440	774B
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.18.97	09.18.97	09.18.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916G	0916G	0916G
Sodium (6010)			
Sodium (6010), ug/l	11700	11400	10700
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.18.97	09.18.97	09.18.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916G	0916G	0916G

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Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75154A-1	SW-3006	09-11-97/1500	MP040A
75154A-2	SW-3007	09-11-97/1550	MP040A
75154A-3	MW-109	09-11-97/1320	MP040A

PARAMETER	75154A-1	75154A-2	75154A-3
Cobalt (6010)			
Cobalt (6010), ug/l	2.3B	1.4B	3.5B
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97	09.17.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916G	0916G	0916G
Iron (6010)			
Iron (6010), ug/l	15000	48900	14600
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.18.97	09.18.97	09.18.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916G	0916G	0916G
Magnesium (6010)			
Magnesium (6010), ug/l	4410	6580	2930
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97	09.17.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916G	0916G	0916G

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Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

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LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75154A-1	SW-3006	09-11-97/1500	MP040A
75154A-2	SW-3007	09-11-97/1550	MP040A
75154A-3	MW-109	09-11-97/1320	MP040A

PARAMETER	75154A-1	75154A-2	75154A-3
Aluminum (6010)			
Aluminum (6010), ug/l	1630	308	4390
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.18.97	09.18.97	09.18.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916G	0916G	0916G
Barium (6010)			
Barium (6010), ug/l	62.0	106	26.8
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97	09.17.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916G	0916G	0916G
Calcium (6010)			
Calcium (6010), ug/l	9040	27800	10400
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97	09.17.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916G	0916G	0916G

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Mr. Keith Matteson
Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

Project: Ft. Story 0285-690/Landfill #2/SDG#MP040A
Sampled By: Client
Code: 172871028

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75106A-1	MW 107	09-10-97/1220	MP040A
75106A-2	MW 110	09-10-97/1330	MP040A
75106A-3	MW 108	09-10-97/1415	MP040A

PARAMETER	75106A-1	75106A-2	75106A-3
Sodium (Dissolved) (6010)			
Sodium (Dissolved) (6010), ug/l	9630	17500	17700
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.23.97	09.23.97	09.23.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916H	0916H	0916H
Vanadium (Dissolved) (6010)			
Vanadium (Dissolved) (6010), ug/l	2.6B	7.4B	7.9B
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97	09.17.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916H	0916H	0916H

Methods: EPA SW-846

Linda A Wolfe
Linda A. Wolfe, Project Manager

Final Page Of Report

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

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

LOG NO: S7-75106A
Received: 11 SEP 97
Reported: 29 OCT 97

Mr. Keith Matteson
Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

Project: Ft. Story 0285-690/Landfill #2/SDG#MP040A
Sampled By: Client
Code: 172871028

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75106A-1	MW 107	09-10-97/1220	MP040A
75106A-2	MW 110	09-10-97/1330	MP040A
75106A-3	MW 108	09-10-97/1415	MP040A

PARAMETER	75106A-1	75106A-2	75106A-3
Magnesium (Dissolved) (6010)			
Magnesium (Dissolved) (6010), ug/l	4140	9090	9160
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97	09.17.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916H	0916H	0916H
Manganese (Dissolved) (6010)			
Manganese (Dissolved) (6010), ug/l	613	530	540
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97	09.17.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916H	0916H	0916H
Potassium (Dissolved) (6010)			
Potassium (Dissolved) (6010), ug/l	2720	4950	4960
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.23.97	09.23.97	09.23.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916H	0916H	0916H

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75106A-3	MW 108	09-10-97/1415	MP040A

PARAMETER	75106A-1	75106A-2	75106A-3
Calcium (Dissolved) (6010)			
Calcium (Dissolved) (6010), ug/l	77900	20900	21100
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97	09.17.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916H	0916H	0916H
Cobalt (Dissolved) (6010)			
Cobalt (6010), ug/l	3.0B	1.3B	1.2B
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97	09.17.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916H	0916H	0916H
Iron (Dissolved) (6010)			
Iron (Dissolved) (6010), ug/l	22900	28600	28900
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.23.97	09.23.97	09.23.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916H	0916H	0916H

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75106A-2	MW 110	09-10-97/1330	MP040A
75106A-3	MW 108	09-10-97/1415	MP040A

PARAMETER	75106A-1	75106A-2	75106A-3
Vanadium (6010)			
Vanadium (6010), ug/l	7.9B	7.7B	7.9B
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97	09.17.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916G	0916G	0916G
Aluminum (Dissolved) (6010)			
Aluminum (Dissolved) (6010), ug/l	125B	1550	1600
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.23.97	09.23.97	09.23.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916H	0916H	0916H
Barium (Dissolved) (6010)			
Barium (Dissolved) (6010), ug/l	82.6	19.8	20.7
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97	09.17.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916H	0916H	0916H

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75106A-2	MW 110	09-10-97/1330	MP040A
75106A-3	MW 108	09-10-97/1415	MP040A

PARAMETER	75106A-1	75106A-2	75106A-3
Manganese (6010)			
Manganese (6010), ug/l	659	553	529
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97	09.17.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916G	0916G	0916G
Potassium (6010)			
Potassium (6010), ug/l	2890	4630	5020
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.23.97	09.23.97	09.18.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916G	0916G	0916G
Sodium (6010)			
Sodium (6010), ug/l	9100	16600	17500
Preparation Date	09.16.97	06.16.97	09.16.97
Date Analyzed	09.23.97	09.23.97	09.18.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916G	0916G	0916G

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75106A-2	MW 110	09-10-97/1330	MP040A
75106A-3	MW 108	09-10-97/1415	MP040A

PARAMETER	75106A-1	75106A-2	75106A-3
Cobalt (6010)			
Cobalt (6010), ug/l	3.6B	1.4B	0.84B
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97	09.17.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916G	0916G	0916G
Iron (6010)			
Iron (6010), ug/l	26000	28000	29100
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.23.97	09.23.97	09.18.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916G	0916G	0916G
Magnesium (6010)			
Magnesium (6010), ug/l	4790	9690	9790
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97	09.17.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916G	0916G	0916G

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75106A-1	MW 107	09-10-97/1220	MP040A
75106A-2	MW 110	09-10-97/1330	MP040A
75106A-3	MW 108	09-10-97/1415	MP040A

PARAMETER	75106A-1	75106A-2	75106A-3
Aluminum (6010)			
Aluminum (6010), ug/l	2730	1460	1610
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.23.97	09.23.97	09.18.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916G	0916G	0916G
Barium (6010)			
Barium (6010), ug/l	99.6	20.6	20.0
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97	09.17.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916G	0916G	0916G
Calcium (6010)			
Calcium (6010), ug/l	81500	21800	22000
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97	09.17.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916G	0916G	0916G

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Date - 10/29/97 Electronic Data Deliverable Form
Time - 11:42AM Form 420

SL Division : Savannah, Georgia
SL Project Manager : Linda A. Wolfe

Client Code : MALCOLM-VA
Customer : Malcolm Pirnie
Contact : Mr. Keith Matteson
Contact Phone : 757/873-8700

EDD Description : Ft. Story 0285-690/Landfill #2/SDG#MP040A
EDD created by : John S. Cash
LIMS EDD Program used : #SS.QC

This EDD contains the following 5 PC data file(s):

S775106A.XLS S775154A.XLS S775189A.XLS S7MP040A.XLS README.TXT

This EDD was created using the following 4 order(s) from the SL LIMS:

Order Number	Recd Date	Rept Date	Project Name
S775106A	09/11/97	10/29/97	Ft. Story 0285-690/Landfill #2/SDG#MP040A
S775154A	09/12/97	10/29/97	Ft. Story 0285-690/Landfill #2/SDG#MP040A
S775189A	09/15/97	10/29/97	Ft. Story 0285-690/Landfill #2/SDG#MP040A
S7MP040A	09/11/97	10/29/97	Ft. Story 0285-690/Landfill #2/SDG#MP040A

If you have any questions or problems with this EDD please call
Linda A. Wolfe at 912/354-7858.

Page 1 -- EDD Description Complete.

APPENDIX B

ANALYTICAL DATA SHEETS

GROUND WATER SAMPLING LOG

Project Number JH 1183/JG 1126 ~~Well~~ No. SW 3007

Client Name and Location Fort Story, VA

F.I.T. Barry Millman, Harris Chreme Date 9/11/97

Well Information Location Landfill 2

Permit No. N.A Depth _____ Screened _____

Diameter _____ Casing Stick-up _____ Measuring Point (MP) _____

Purge Data Date/Time _____ Method _____

Well Depth Below (MP) N.A (-) Initial Water Level _____ = Water Column _____

Water Column _____ * _____ gal/I in = Volume _____ gallons

Began Purging well @ Date/Time _____ Rate _____

Time	Water Level	Temp	pH	SC	Purge Vol gallons	DO

Sampling Data Initial Water Level N.A Time N.A

Sampled @ Date/Time 1550 9/11/97 Method _____

Parameters Metals, Hardness, Cl, NO_3, PO_4, SO_4 Sample-ID SW 3007

Depth N.A Final Water Level N.A Time N.A

Field Parameters Temp 22.0°C pH 4.45 SC 0.297

Field Observations: Lot of sediment Sample area 10ft x 10ft, light brown sample

Sampler's Signature [signature]

717

GROUND WATER SAMPLING LOG

Project Number JH 1183 136 1126 ~~Well~~ No. SW 3006

Client Name and Location Fort Story, VA

F.I.T. Barry Millman Harris Cheema Date 7/11/97

Well Information Location Landfill 2

Permit No. NA Depth _____ Screened _____

Diameter _____ Casing Stick-up _____ Measuring Point (MP) _____

Purge Data N. A Date/Time _____ Method _____

Well Depth Below (MP) _____ (-) Initial Water Level _____ = Water Column _____

Water Column _____ * _____ gal/I in = Volume _____ gallons

Began Purging well @ Date/Time _____ Rate _____

Time	Water Level	Temp	pH	SC	Purge Vol gallons	DO

Sampling Data Initial Water Level N. A Time N A

Sampled @ Date/Time 9/11/97 1500 Method _____

Parameters Metals, VOC, Hardness, Cl, NO_3, PO4 Sample-ID SW 3006

Depth N. A Final Water Level N. A Time N. A

Field Parameters Temp 23.7 pH 4.39 SC 1.05

Field Observations: Light brown color surface water

Sampler's Signature [signature]

8/7

GROUND WATER SAMPLING LOG

Project Number JH 11831JG1126 Well No. MW 109

Client Name and Location Fort Story, VA

F.I.T. Barry Millman, Harris Cheema Date 9/11/97

Well Information Location Landfill #2

Permit No. NA Depth 11.31 (measured) Screened NA

Diameter 2 inch. Casing Stick-up NA Measuring Point (MP) 11.31 ams1

TD: 11.75 TOC = 9.68 Date Installed = 3/25/90

Purge Data Date/Time 9/11/97 Method Pump

Well Depth Below (MP) 11.31 (-) Initial Water Level 2.36 = Water Column 8.95

Water Column 8.95 * 0.61 gal/I in = Volume 5.5 gallons x3=16 gal

Began Purging well @ Date/Time 1304 Rate -1 gal/m.

Time	Water Level	Temp (C)	pH	SC	Purge Vol gallons	DO
1305	2.36	20.2	4.36	0.211		0.45
1307	2.51	19.7	4.43	0.196	1.6	6.56
1310	2.56	19.6	4.47	0.193	4.8	6.57
1312	2.65	19.2	4.46	0.198	8	0.35
1316	2.65	19.0	4.44	0.198	12.8	0.32
1320	2.65	19.0	4.44	0.198	16	0.35

Sampling Data Initial Water Level 2.65 Time 1320

Sampled @ Date/Time 1320 9/11/97 Method Bailer (dedicated)

Parameters Metals, VOC, Hardness, Cl, NO3, PO4, SO4, F Sample-ID MW-109

Depth 7.95 Final Water Level 2.36 Time 1340

Field Parameters Temp 19.0 pH 4.44 SC 0.197

Field Observations: PID = 4.4 LEL = 5%

Sampler's Signature [illegible]

5/7

GROUND WATER SAMPLING LOG

Project Number JH1183 / JG1126 Well No. MW-108

Client Name and Location Fort Story VA

F.I.T. Barry Millman, Harris Cheema. Date 9/10/97

Well Information Location Landfill No. 2

Permit No. NA Depth 11.71 depth. Screened NA

Diameter 2 in. Casing Stick-up NA Measuring Point (MP)

P.I.D. 0.0 LEL = 0.0

Purge Data Date/Time 9/10/97 Method pump.

Well Depth Below (MP) 11.71 (-) Initial Water Level 1.86 = Water Column 9.85

Water Column 9.85 * 0.61 gal/lin ft = Volume 6.0 gallons

Began Purging well @ Date/Time 9/10/97 1352 Rate ~1 gpm.

Time	Water Level	Temp (°C)	pH	SC	Purge Vol gallons	DO	Sal
1352	1.86	16.9	4.40	.311 mho	–	0.5	0.
1353	NM	16.9	4.42	0.330	1.8	2.31	0.
1355	2.41	16.3	4.46	0.331	5	2.27	0.
1358	2.42	15.9	4.48	0.330	9	2.41	0.
1405	2.42	15.8	4.51	0.327	15	2.51	0.
1407	2.43	15.6	4.48	0.326	18	2.46	0.

Sampling Data Initial Water Level 1.86 Time 1400

Sampled @ Date/Time 14 15 Method duplicated bailer

Parameters Metals VOC, Hardness, Cl, SO4, Alk, Sol, TDS, F Sample-ID MW 108

Depth 9.85 Final Water Level 1.86 Time 1520

Field Parameters Temp 15.9 pH 4.45 SC 0.336

Field Observations: Water was clear and light brown/yellow. P.I.D. 0.0 LEL = 0.0 TD = 12.0 ft.

Sampler's Signature Barry Millman

4/4

GROUND WATER SAMPLING LOG

Project Number JH1183 JG 1126 Well No. MW-107

Client Name and Location Fort Story, VA

F.I.T. Barry Hillman, Harris Cheema Date 9/10/97

Well Information Location Landfill No. 2

Permit No. NA Depth 10.80 measured Screened NA

Diameter 2 in. Casing Stick-up NA Measuring Point (MP) 10.80 ams/

PID: 0.0 LEL: 0.0 Casing = 0.17 gal/ft + (2.22)0.2 = 0.61 g

Purge Data Date/Time 9/10/97 Method Pump

Well Depth Below (MP) 10.80 (-) Initial Water Level 3.40 = Water Column 7.40

Water Column 7.40 * 0.61 gal/l in ft = Volume 4.514 gallons

Began Purging well @ Date/Time 9/10/97 1122 Rate ~ 1/2 gpm

Time	Water Level	Temp (°C)	pH	SC	Purge Vol gallons	DO
1127	~~AM~~ 3.40 ~~BR~~ ~~AM~~	23.5 °C	4.33	0.48 ms/cm	~~1.25~~	6.37 mg/l
1133	5.14	22.1	4.43	0.494 ms/cm	1.5	4.05 mg/l
1136	5.22	22.2	4.45	0.49 ms/cm	4.5	4.80 mg/l
1142	8.19	19.3°	4.38	0.51 ms/cm	7	4.25 mg/l
1145	8.22	19.3	4.36	0.52 ms/cm	11	4.36 mg/l
1219	3.31	21.4	4.28	0.51 ms/cm	15 gal Final	4.32 mg/l

Sampling Data Initial Water Level 3.31 Time 1219

Sampled @ Date/Time 1220 9/10/97 Method Bailer (dedicated)

Parameters Metals, VOC, Hardness, Cl, NO_3, PO_4, SO_4, TDS, P, Sample-ID MW-107

Depth 7.48 Final Water Level 3.32 Time 1320

Field Parameters Temp 21.4 °C pH 4.28 SC 0.52 ms/cm

Field Observations: Water was turbid and light brown, with sediment.

Observations: TOC = 10.80 TD = 11.5 ft Date Installed = 3/24/90

Sampler's Signature Barry Hillman

GROUND WATER SAMPLING LOG

Project Number JH 1183 Well No. MW 106

Client Name and Location Fort Story, VA

F.I.T. Barry Millman, Harris Cheema Date 9/11/97

Well Information Location Landfill #2

Permit No. NA Depth 11.76 (measured) Screened NA

Diameter 2" Casing Stick-up NA Measuring Point (MP) 11.76 amsl

TOC = 9.52, TD = 11.75 ft Date of Installation = 3/25/90

Purge Data Date/Time 9/11/97 Method Bailer

Well Depth Below (MP) 11.76 (-) Initial Water Level 2.11 = Water Column 9.65

Water Column 9.65 * 0.61 gal/ft in = Volume 6 gallons

Began Purging well @ Date/Time 1030 Rate

Time	Water Level	Temp	pH	SC	Purge Vol gallons	DO
1040	2.11	19.6	4.49	0.041	—	3.59
1042	2.11	19.5	4.54	0.038	1.8	4.33
1050	2.11	19.5	4.50	0.035	5.5	2.6
1105	2.11	19.3	4.56	0.033	9.0	4.66
1115	2.12	19.2	4.59	0.032	14.5	2.63
1130	2.12	19.2	4.64	0.033	18.0	2.68

Sampling Data Initial Water Level 2.11 Time 1130

Sampled @ Date/Time 1130 9/11/97 Method Bailer

Parameters Metals, VOC, Hardness, Cl, NO_3, SO_4 Sample-ID MW 106

Depth 9.65 Final Water Level 2.11 Time 1155

Field Parameters Temp 19.2 pH 4.64 SC 0.033

Field Observations: PID = 0.0 LEL = 0%.

Sampler's Signature Harris Cheema

417

GROUND WATER SAMPLING LOG

Project Number JH 1183 Well No. MW 105

Client Name and Location Fort Story - VA

F.I.T. Barry Mullman, Harris Cheema Date 9/11/97

Well Information Location Landfill 2

Permit No. NA Depth 12.96+0.2=13.16 (measured) Screened NA

Diameter 2" Casing Stick-up NA Measuring Point (MP) 13.16 ft amsl

TOC = 16.66 Date Installed - 3/24/97 TD = 15 ft

Purge Data Date/Time 9/11/97 0840 Method Bailer

Well Depth Below (MP) 13.16 (-) Initial Water Level 8.99 = Water Column 4.17 ~~2.54 (x 3) = 8 gal~~

Water Column 4.17 * 0.61 gal/I in/ft = Volume 2.54 gallons

Began Purging well @ Date/Time 0905 Rate

Time	Water Level	Temp	pH	SC	Purge Vol gallons	DO
0920	8.99	19.3	4.48	.228	0.8	1.78
0925	8.99	17.1	4.47	.250	2.5	1.95
0935	8.99	19.1	4.47	0.254	4	2.04
0941	8.99	18.8	4.45	0.256	6.4	2.04
0950	8.99	18.9	4.44	0.258	8	2.11

Sampling Data Initial Water Level 8.99 Time 0951

Sampled @ Date/Time 9/11/97 0940 Method Bailer

Parameters metals, TOC, Hardness, Cl, NO_3, PO_4, SO_4 Sample-ID MW 105

Depth 4.17 Final Water Level 8.99 Time 1005

Field Parameters Temp 18.9 pH 4.44 SC 0.258

Field Observations: PID=0 LEL=0, Used Bailer to Purge, pump did not work

Sampler's Signature Harris Cheema

APPENDIX A

GROUNDWATER SAMPLING LOGS

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

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Newport News, VA 23606

Project: Ft. Story 0285-690/Landfill #2/SDG#MP040A
Sampled By: Client
Code: 172871028

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040A-3	Method Blank	MP040A

PARAMETER	MP040A-3
Iron (6010)	
Iron (6010), ug/l	76.0
Preparation Date	09.16.97
Date Analyzed	09.23.97
Dilution factor	1.0
Batch ID	0916G
Magnesium (6010)	
Magnesium (6010), ug/l	13.0U
Preparation Date	09.16.97
Date Analyzed	09.17.97
Dilution factor	1.0
Batch ID	0916G
Manganese (6010)	
Manganese (6010), ug/l	0.30U
Preparation Date	09.16.97
Date Analyzed	09.17.97
Dilution factor	1.0
Batch ID	0916G
Potassium (6010)	
Potassium (6010), ug/l	40.0U
Preparation Date	09.16.97
Date Analyzed	09.23.97
Dilution factor	1.0
Batch ID	0916G

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11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

Project: Ft. Story 0285-690/Landfill #2/SDG#MP040A
Sampled By: Client
Code: 172871028

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040A-3	Method Blank	MP040A

PARAMETER	MP040A-3
Sodium (6010)	
Sodium (6010), ug/l	13.0U
Preparation Date	09.16.97
Date Analyzed	09.23.97
Dilution factor	1.0
Batch ID	0916G
Vanadium (6010)	
Vanadium (6010), ug/l	0.77U
Preparation Date	09.16.97
Date Analyzed	09.17.97
Dilution factor	1.0
Batch ID	0916G
Aluminum (Dissolved) (6010)	
Aluminum (Dissolved) (6010), ug/l	23.0U
Preparation Date	09.16.97
Date Analyzed	09.23.97
Dilution factor	1.0
Batch ID	0916H
Barium (Dissolved) (6010)	
Barium (Dissolved) (6010), ug/l	0.25U
Preparation Date	09.16.97
Date Analyzed	09.17.97
Dilution factor	1.0
Batch ID	0916H

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LOG NO: S7-MP040A
Received: 11 SEP 97
Reported: 29 OCT 97

Mr. Keith Matteson
Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

Project: Ft. Story 0285-690/Landfill #2/SDG#MP040A
Sampled By: Client
Code: 172871028

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040A-3	Method Blank	MP040A

PARAMETER	MP040A-3
Calcium (Dissolved) (6010)	
Calcium (Dissolved) (6010), ug/l	28.0U
Preparation Date	09.16.97
Date Analyzed	09.17.97
Dilution factor	1.0
Batch ID	0916H
Cobalt (Dissolved) (6010)	
Cobalt (6010), ug/l	0.53U
Preparation Date	09.16.97
Date Analyzed	09.17.97
Dilution factor	1.0
Batch ID	0916H
Iron (Dissolved) (6010)	
Iron (Dissolved) (6010), ug/l	37.0B
Preparation Date	09.16.97
Date Analyzed	09.23.97
Dilution factor	1.0
Batch ID	0916H
Magnesium (Dissolved) (6010)	
Magnesium (Dissolved) (6010), ug/l	13.0U
Preparation Date	09.16.97
Date Analyzed	09.17.97
Dilution factor	1.0
Batch ID	0916H

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Sampled By: Client
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040A-3	Method Blank	MP040A

PARAMETER	MP040A-3
Manganese (Dissolved) (6010)	
Manganese (Dissolved) (6010), ug/l	0.30U
Preparation Date	09.16.97
Date Analyzed	09.17.97
Dilution factor	1.0
Batch ID	0916H
Potassium (Dissolved) (6010)	
Potassium (Dissolved) (6010), ug/l	40.0U
Preparation Date	09.16.97
Date Analyzed	09.23.97
Dilution factor	1.0
Batch ID	0916H
Sodium (Dissolved) (6010)	
Sodium (Dissolved) (6010), ug/l	13.0U
Preparation Date	09.16.97
Date Analyzed	09.23.97
Dilution factor	1.0
Batch ID	0916H
Vanadium (Dissolved) (6010)	
Vanadium (Dissolved) (6010), ug/l	0.77U
Preparation Date	09.16.97
Date Analyzed	09.17.97
Dilution factor	1.0
Batch ID	0916H

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Sampled By: Client
Code: 172871028

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040A-4	Lab Control Standard % Recovery	MP040A

PARAMETER	MP040A-4
Aluminum (6010)	
Aluminum (6010)	94 %
Preparation Date	09.16.97
Date Analyzed	09.23.97
Dilution factor	1.0
Batch ID	0916G
Barium (6010)	
Barium (6010)	112 %
Preparation Date	09.16.97
Date Analyzed	09.17.97
Dilution factor	1.0
Batch ID	0916G
Calcium (6010)	
Calcium (6010)	99 %
Preparation Date	09.16.97
Date Analyzed	09.17.97
Dilution factor	1.0
Batch ID	0916G
Cobalt (6010)	
Cobalt (6010)	100 %
Preparation Date	09.16.97
Date Analyzed	09.17.97
Dilution factor	1.0
Batch ID	0916G

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040A-4	Lab Control Standard % Recovery	MP040A

PARAMETER	MP040A-4
Iron (6010)	
Iron (6010)	94 %
Preparation Date	09.16.97
Date Analyzed	09.23.97
Dilution factor	1.0
Batch ID	0916G
Magnesium (6010)	
Magnesium (6010)	98 %
Preparation Date	09.16.97
Date Analyzed	09.17.97
Dilution factor	1.0
Batch ID	0916G
Manganese (6010)	
Manganese (6010)	105 %
Preparation Date	09.16.97
Date Analyzed	09.17.97
Dilution factor	1.0
Batch ID	0916G
Potassium (6010)	
Potassium (6010)	99 %
Preparation Date	09.16.97
Date Analyzed	09.23.97
Dilution factor	1.0
Batch ID	0916G

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Code: 172871028

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040A-4	Lab Control Standard % Recovery	MP040A

PARAMETER	MP040A-4
Sodium (6010)	
Sodium (6010)	94 %
Preparation Date	09.16.97
Date Analyzed	09.23.97
Dilution factor	1.0
Batch ID	0916G
Vanadium (6010)	
Vanadium (6010)	101 %
Preparation Date	09.16.97
Date Analyzed	09.17.97
Dilution factor	1.0
Batch ID	0916G
Aluminum (Dissolved) (6010)	
Aluminum (Dissolved) (6010)	96 %
Preparation Date	09.16.97
Date Analyzed	09.23.97
Dilution factor	1.0
Batch ID	0916H
Barium (Dissolved) (6010)	
Barium (Dissolved) (6010)	105 %
Preparation Date	09.16.97
Date Analyzed	09.17.97
Dilution factor	1.0
Batch ID	0916H

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Code: 172871028

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040A-4	Lab Control Standard % Recovery	MP040A

PARAMETER	MP040A-4
Calcium (Dissolved) (6010)	
Calcium (Dissolved) (6010)	96 %
Preparation Date	09.16.97
Date Analyzed	09.17.97
Dilution factor	1.0
Batch ID	0916H
Cobalt (Dissolved) (6010)	
Cobalt (6010)	95 %
Preparation Date	09.16.97
Date Analyzed	09.17.97
Dilution factor	1.0
Batch ID	0916H
Iron (Dissolved) (6010)	
Iron (Dissolved) (6010)	95 %
Preparation Date	09.16.97
Date Analyzed	09.23.97
Dilution factor	1.0
Batch ID	0916H
Magnesium (Dissolved) (6010)	
Magnesium (Dissolved) (6010)	95 %
Preparation Date	09.16.97
Date Analyzed	09.17.97
Dilution factor	1.0
Batch ID	0916H

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040A-4	Lab Control Standard % Recovery	MP040A

PARAMETER	MP040A-4
Manganese (Dissolved) (6010)	
Manganese (Dissolved) (6010)	100 %
Preparation Date	09.16.97
Date Analyzed	09.17.97
Dilution factor	1.0
Batch ID	0916H
Potassium (Dissolved) (6010)	
Potassium (Dissolved) (6010)	104 %
Preparation Date	09.16.97
Date Analyzed	09.23.97
Dilution factor	1.0
Batch ID	0916H
Sodium (Dissolved) (6010)	
Sodium (Dissolved) (6010)	97 %
Preparation Date	09.16.97
Date Analyzed	09.23.97
Dilution factor	1.0
Batch ID	0916H
Vanadium (Dissolved) (6010)	
Vanadium (Dissolved) (6010)	96 %
Preparation Date	09.16.97
Date Analyzed	09.17.97
Dilution factor	1.0
Batch ID	0916H

Methods: EPA SW-846

Linda A. Wolfe

Linda A. Wolfe, Project Manager

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Date - 10/20/97
Time - 02:42PM

Electronic Data Deliverable Form

SL Division : Savannah, Georgia
SL Project Manager : Linda A. Wolfe

Client Code : MALCOLM-VA
Customer : Malcolm Pirnie
Contact : Mr. Keith Matteson
Contact Phone : 757/873-8700

EDD Description : Ft. Story 0285-690/Landfill #2/SDG#MP040
EDD created by : John S. Cash
LIMS EDD Program used : #SS.QC

This EDD contains the following 5 PC data file(s):

S775106.XLS S775154.XLS S775189.XLS S7MP040.XLS README.TXT

This EDD was created using the following 4 order(s) from the SL LIMS:

Order Number	Recd Date	Rept Date	Project Name
S775106	09/11/97	10/09/97	Ft. Story 0285-690/Landfill #2/SDG#MP040
S775154	09/12/97	10/09/97	Ft. Story 0285-690/Landfill #2/SDG#MP040
S775189	09/15/97	10/09/97	Ft. Story 0285-690/Landfill #2/SDG#MP040
S7MP040	09/11/97	10/10/97	Ft. Story 0285-690/Landfill #2/SDG#MP040

If you have any questions or problems with this EDD please call
Linda A. Wolfe at 912/354-7858.

Page 1 -- EDD Description Complete.

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LOG NO: S7-75106
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Mr. Keith Matteson
Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

Project: Ft. Story 0285-690/Landfill #2/SDG#MP040
Sampled By: Client
Code: 114871020

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG
75106-1	MW 107	09-10-97/1220	MP040
75106-1-DL	MW 107	09-10-97/1220	MP040
75106-2	MW 110	09-10-97/1330	MP040
75106-3	MW 108	09-10-97/1415	MP040

PARAMETER	75106-1	75106-1-DL	75106-2	75106-3
Volatiles by GC/MS (8260)				
Benzene, ug/l	1.0U	2.5U	1.0U	1.0U
Bromodichloromethane, ug/l	1.0U	2.5U	1.0U	1.0U
Bromoform, ug/l	1.0U	2.5U	1.0U	1.0U
Bromomethane, ug/l	1.0U	2.5U	1.0U	1.0U
Carbon tetrachloride, ug/l	1.0U	2.5U	1.0U	1.0U
Chlorobenzene, ug/l	1.0U	2.5U	1.0U	1.0U
Chloroethane, ug/l	1.0U	2.5U	1.0U	1.0U
Chloroform, ug/l	1.0U	2.5U	1.0U	1.0U
Chloromethane, ug/l	1.0U	2.5U	1.0U	1.0U
Chlorodibromomethane, ug/l	1.0U	2.5U	1.0U	1.0U
1,1-Dichloroethane, ug/l	1.0U	2.5U	1.0U	1.0U
1,2-Dichloroethane, ug/l	1.0U	2.5U	1.0U	1.0U
1,1-Dichloroethene, ug/l	1.0U	2.5U	1.0U	1.0U
trans-1,2-Dichloroethene, ug/l	1.0U	2.5U	1.0U	1.0U
Cis/Trans-1,2-Dichloroethene, ug/l	1.0U	2.5U	1.0U	1.0U
1,2-Dichloropropane, ug/l	1.0U	2.5U	1.0U	1.0U
Ethylbenzene, ug/l	1.0U	2.5U	1.0U	1.0U
Hexachlorobutadiene, ug/l	1.0U	2.5U	1.0U	1.0U
Methylene chloride (Dichloromethane), ug/l	5.0U	12U	5.0U	5.0U

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Sampled By: Client
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75106-1	MW 107	09-10-97/1220	MP040
75106-1-DL	MW 107	09-10-97/1220	MP040
75106-2	MW 110	09-10-97/1330	MP040
75106-3	MW 108	09-10-97/1415	MP040

PARAMETER	75106-1	75106-1-DL	75106-2	75106-3
Styrene, ug/l	1.0U	2.5U	1.0U	1.0U
1,1,2,2-Tetrachloroethane, ug/l	1.0U	2.5U	1.0U	1.0U
Tetrachloroethene, ug/l	1.0U	2.5U	1.0U	1.0U
Toluene, ug/l	1.0U	2.5U	1.0U	1.0U
1,1,1-Trichloroethane, ug/l	1.0U	2.5U	1.0U	1.0U
1,1,2-Trichloroethane, ug/l	1.0U	2.5U	1.0U	1.0U
Trichloroethene, ug/l	1.0U	2.5U	1.0U	1.0U
Vinyl chloride, ug/l	1.0U	2.5U	1.0U	1.0U
Acetone, ug/l	92E	92D	25U	17J
Acrylonitrile, ug/l	20U	50U	20U	20U
Carbon Disulfide, ug/l	1.0U	2.5U	1.0U	0.21J
cis-1,3-Dichloropropene, ug/l	1.0U	2.5U	1.0U	1.0U
trans-1,3-Dichloropropene, ug/l	1.0U	2.5U	1.0U	1.0U
2-Hexanone, ug/l	10U	25U	10U	10U
2-Butanone (MEK), ug/l	10U	25U	10U	10U
4-Methyl-2-pentanone (MIBK), ug/l	10U	25U	10U	10U
Xylenes, ug/l	2.0U	5.0U	2.0U	2.0U
1,2-Dichlorobenzene, ug/l	1.0U	2.5U	1.0U	1.0U
1,4-Dichlorobenzene, ug/l	1.0U	2.5U	1.0U	1.0U
Surrogate - Toluene-d8	100 %	112 %	100 %	110 %

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Malcolm Pirnie
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Project: Ft. Story 0285-690/Landfill #2/SDG#MP040
Sampled By: Client
Code: 114871020

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG
75106-1	MW 107	09-10-97/1220	MP040
75106-1-DL	MW 107	09-10-97/1220	MP040
75106-2	MW 110	09-10-97/1330	MP040
75106-3	MW 108	09-10-97/1415	MP040

PARAMETER	75106-1	75106-1-DL	75106-2	75106-3
Surrogate - 4-Bromofluorobenzene	110 %	116 %	110 %	110 %
Surrogate - Dibromofluorobenzene	110 %	112 %	110 %	98 %
Date Analyzed	09.16.97	09.16.97	09.16.97	09.19.97
Batch ID	0915C	0915C	0915C	0915C
Clock ID	1B0915	1B0916	1B0915	1B0919
Instrument ID	MSB5970	MSB5970	MSB5970	MSB5970

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75106-1	MW 107	09-10-97/1220	MP040
75106-1-DL	MW 107	09-10-97/1220	MP040
75106-2	MW 110	09-10-97/1330	MP040
75106-3	MW 108	09-10-97/1415	MP040

PARAMETER	75106-1	75106-1-DL	75106-2	75106-3
Priority Pollutant Metals				
Antimony (6010), ug/l	4.9B	---	2.9B	5.7
Arsenic (6010), ug/l	17.2	---	5.2B	2.2U
Beryllium (6010), ug/l	0.19U	---	0.19U	0.19U
Cadmium (6010), ug/l	2.0	---	1.7	2.6
Chromium (6010), ug/l	3.9	---	5.0	5.4
Copper (6010), ug/l	168	---	1.8B	2.5B
Lead (6010), ug/l	11.0	---	2.7B	4.0B
Nickel (6010), ug/l	6.2	---	1.9B	1.9B
Selenium (6010), ug/l	2.6U	---	2.6U	3.9B
Silver (6010), ug/l	0.90U	---	0.90U	0.90U
Thallium (6010), ug/l	2.3U	---	2.3U	2.3U
Zinc (6010), ug/l	376	---	27.5	51.1
Preparation Date	09.16.97	---	09.16.97	09.16.97
Date Analyzed	09.17.97	---	09.17.97	09.17.97
Batch ID	0916G	---	0916G	0916G
Dilution factor	1.0	---	1.0	1.0

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Sampled By: Client
Code: 114871020

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG
75106-1	MW 107	09-10-97/1220	MP040
75106-1-DL	MW 107	09-10-97/1220	MP040
75106-2	MW 110	09-10-97/1330	MP040
75106-3	MW 108	09-10-97/1415	MP040

PARAMETER	75106-1	75106-1-DL	75106-2	75106-3
Mercury (7470)				
Mercury (7470), ug/l	0.28	---	0.05U	0.06B
Preparation Date	09.16.97	---	09.16.97	09.16.97
Date Analyzed	09.17.97	---	09.17.97	09.17.97
Dilution factor	1.0	---	1.0	1.0
Batch ID	0916U	---	0916U	0916U

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75106-1	MW 107	09-10-97/1220	MP040
75106-1-DL	MW 107	09-10-97/1220	MP040
75106-2	MW 110	09-10-97/1330	MP040
75106-3	MW 108	09-10-97/1415	MP040

PARAMETER	75106-1	75106-1-DL	75106-2	75106-3
Priority Pollutant Metals (Dissolved)				
Antimony (Dissolved) (6010), ug/l	3.5B	---	3.8B	2.6U
Arsenic (Dissolved) (6010), ug/l	10.2	---	4.0B	2.8B
Beryllium (Dissolved) (6010), ug/l	0.19U	---	0.19U	0.19U
Cadmium (Dissolved) (6010), ug/l	0.58U	---	0.58U	0.63B
Chromium (Dissolved) (6010), ug/l	2.6	---	5.1	4.6
Copper (Dissolved) (6010), ug/l	1.7U	---	1.7U	1.7U
Lead (Dissolved) (6010), ug/l	1.2U	---	2.9B	3.2B
Nickel (Dissolved) (6010), ug/l	1.6B	---	2.2B	2.4B
Selenium (Dissolved) (6010), ug/l	3.1B	---	3.6B	3.2B
Silver (Dissolved) (6010), ug/l	2.3B	---	0.90U	0.90U
Thallium (Dissolved) (6010), ug/l	2.3U	---	2.3U	2.3U
Zinc (Dissolved) (6010), ug/l	66.7	---	21.3	22.5
Preparation Date	09.16.97	---	09.16.97	09.16.97
Date Analyzed	09.17.97	---	09.17.97	09.17.97
Dilution factor	1.0	---	1.0	1.0
Batch ID	0916H	---	0916H	0916H

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LOG NO: S7-75106
Received: 11 SEP-97
Reported: 09 OCT 97

Mr. Keith Matteson
Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

Project: Ft. Story 0285-690/Landfill #2/SDG#MP040
Sampled By: Client
Code: 114871020

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG
75106-1	MW 107	09-10-97/1220	MP040
75106-1-DL	MW 107	09-10-97/1220	MP040
75106-2	MW 110	09-10-97/1330	MP040
75106-3	MW 108	09-10-97/1415	MP040

PARAMETER	75106-1	75106-1-DL	75106-2	75106-3
Mercury (Dissolved)				
Mercury (Dissolved) (7470), ug/l	0.06B	---	0.05U	0.06B
Preparation Date	09.16.97	---	09.16.97	09.16.97
Date Analyzed	09.17.97	---	09.17.97	09.17.97
Dilution factor	1.0	---	1.0	1.0
Batch ID	0916U	---	0916U	0916U
Hardness as CaCO3 (130.2)				
Hardness as CaCO3, mg/l	730	---	950	660
Preparation Date	09.22.97	---	09.22.97	09.22.97
Date Analyzed	09.22.97	---	09.22.97	09.22.97
Dilution factor	1.0	---	1.0	1.0
Batch ID	0922A	---	0922A	0922A
Ammonia-N (350.1)				
Ammonia-N (350.1), mg/l	5.9	---	1.7	1.5
Preparation Date	09.22.97	---	09.22.97	09.22.97
Date Analyzed	09.22.97	---	09.22.97	09.22.97
Dilution factor	5.0	---	1.0	1.0
Batch ID	0922C	---	0922A	0922A

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Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

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Sampled By: Client
Code: 114871020

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75106-1	MW 107	09-10-97/1220	MP040
75106-1-DL	MW 107	09-10-97/1220	MP040
75106-2	MW 110	09-10-97/1330	MP040
75106-3	MW 108	09-10-97/1415	MP040

PARAMETER	75106-1	75106-1-DL	75106-2	75106-3
Chloride (325.2)				
Chloride (325.2), mg/l	16	---	44	46
Preparation Date	09.25.97	---	09.25.97	09.25.97
Date Analyzed	09.25.97	---	09.25.97	09.25.97
Dilution factor	1.0	---	1.0	1.0
Batch ID	0925A	---	0925A	0925A
Nitrate-N (353.2)				
Nitrate-N, mg/l	0.050U	---	3.3	0.11
Preparation Date	09.15.97	---	09.15.97	09.15.97
Date Analyzed	09.15.97	---	09.15.97	09.15.97
Dilution factor	1.0	---	2.0	1.0
Batch ID	0923A	---	0923C	0923A
Orthophosphate-P (365.1)				
Ortho-Phosphate-P (365.1), mg/l	0.33	---	0.13	0.14
Preparation Date	09.15.97	---	09.15.97	09.15.97
Date Analyzed	09.15.97	---	09.15.97	09.15.97
Dilution factor	1.0	---	1.0	1.0
Batch ID	0915A	---	0915A	0915A

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Malcolm Pirnie
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75106-1	MW 107	09-10-97/1220	MP040
75106-1-DL	MW 107	09-10-97/1220	MP040
75106-2	MW 110	09-10-97/1330	MP040
75106-3	MW 108	09-10-97/1415	MP040

PARAMETER	75106-1	75106-1-DL	75106-2	75106-3
Sulfate as SO4				
Sulfate as SO4, mg/l	5.0U	---	7.7	7.8
Preparation Date	09.30.97	---	09.30.97	09.30.97
Date Analyzed	09.30.97	---	09.30.97	09.30.97
Dilution factor	1.0	---	1.0	1.0
Batch ID	0930A	---	0930A	0930A
Total Dissolved Solids (160.1)				
Total Dissolved Solids (160.1), mg/l	340	---	390	380
Preparation Date	09.15.97	---	09.15.97	09.15.97
Date Analyzed	09.16.97	---	09.16.97	09.16.97
Dilution factor	1.0	---	1.0	1.0
Batch ID	0915A	---	0915A	0915A
Phosphorus, Total				
Total Phosphorus (365.4), mg/l	0.51	---	0.16	0.22
Preparation Date	09.16.97	---	09.12.97	09.12.97
Date Analyzed	09.17.97	---	09.15.97	09.15.97
Dilution factor	1.0	---	1.0	1.0
Batch ID	0916C	---	0912A	0912A

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Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

Project: Ft. Story 0285-690/Landfill #2/SDG#MP040
Sampled By: Client
Code: 114871020

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
75106-4	Trip Blank	09-10-97

PARAMETER	75106-4
Volatiles by GC/MS (8260)	
Benzene, ug/l	1.0U
Bromodichloromethane, ug/l	1.0U
Bromoform, ug/l	1.0U
Bromomethane, ug/l	1.0U
Carbon tetrachloride, ug/l	1.0U
Chlorobenzene, ug/l	1.0U
Chloroethane, ug/l	1.0U
Chloroform, ug/l	1.0U
Chloromethane, ug/l	1.0U
Chlorodibromomethane, ug/l	1.0U
1,1-Dichloroethane, ug/l	1.0U
1,2-Dichloroethane, ug/l	1.0U
1,1-Dichloroethene, ug/l	1.0U
trans-1,2-Dichloroethene, ug/l	1.0U
Cis/Trans-1,2-Dichloroethene, ug/l	1.0U
1,2-Dichloropropane, ug/l	1.0U
Ethylbenzene, ug/l	1.0U
Hexachlorobutadiene, ug/l	1.0U
Methylene chloride (Dichloromethane), ug/l	5.0U
Styrene, ug/l	1.0U
1,1,2,2-Tetrachloroethane, ug/l	1.0U

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
75106-4	Trip Blank	09-10-97

PARAMETER	75106-4
Tetrachloroethene, ug/l	1.0U
Toluene, ug/l	1.0U
1,1,1-Trichloroethane, ug/l	1.0U
1,1,2-Trichloroethane, ug/l	1.0U
Trichloroethene, ug/l	1.0U
Vinyl chloride, ug/l	1.0U
Acetone, ug/l	10J
Acrylonitrile, ug/l	20U
Carbon Disulfide, ug/l	1.0U
cis-1,3-Dichloropropene, ug/l	1.0U
trans-1,3-Dichloropropene, ug/l	1.0U
2-Hexanone, ug/l	10U
2-Butanone (MEK), ug/l	10U
4-Methyl-2-pentanone (MIBK), ug/l	10U
Xylenes, ug/l	2.0U
1,2-Dichlorobenzene, ug/l	1.0U
1,4-Dichlorobenzene, ug/l	1.0U
Surrogate - Toluene-d8	100 %
Surrogate - 4-Bromofluorobenzene	110 %
Surrogate - Dibromofluorobenzene	110 %
Date Analyzed	09.16.97
Batch ID	0915C
Clock ID	1B0915
Instrument ID	MSB5970

Methods: EPA SW-846

Linda Wolfe

Linda A. Wolfe, Project Manager

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

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Mr. Keith Matteson
Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

Project: Ft. Story 0285-690/Landfill #2/SDG#MP040
Sampled By: Client
Code: 114871020

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75154-1	SW-3006	09-11-97/1500	MP040
75154-2	SW-3007	09-11-97/1550	MP040
75154-3	MW-109	09-11-97/1320	MP040

PARAMETER	75154-1	75154-2	75154-3
Priority Pollutant Metals			
Antimony (6010), ug/l	4.7B	2.6U	4.9B
Arsenic (6010), ug/l	3.7B	2.2U	18.1
Beryllium (6010), ug/l	0.19U	0.19U	0.24B
Cadmium (6010), ug/l	0.58U	0.58U	15.2
Chromium (6010), ug/l	3.9	1.8B	9.0
Copper (6010), ug/l	15.8	1.7U	34.6
Lead (6010), ug/l	21.5	2.2B	12.4
Nickel (6010), ug/l	4.3B	1.2U	6.0
Selenium (6010), ug/l	4.7B	4.2B	3.2B
Silver (6010), ug/l	0.90U	0.90U	0.90U
Thallium (6010), ug/l	2.3U	2.3U	2.3U
Zinc (6010), ug/l	103	21.3	165
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97	09.17.97
Batch ID	0916G	0916G	0916G
Dilution factor	1.0	1.0	1.0
Mercury (7470)			
Mercury (7470), ug/l	0.10B	0.06B	0.09B
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97	09.17.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916U	0916U	0916U

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75154-1	SW-3006	09-11-97/1500	MP040
75154-2	SW-3007	09-11-97/1550	MP040
75154-3	MW-109	09-11-97/1320	MP040

PARAMETER	75154-1	75154-2	75154-3
Priority Pollutant Metals (Dissolved)			
Antimony (Dissolved) (6010), ug/l	2.6U	3.4B	2.6U
Arsenic (Dissolved) (6010), ug/l	2.2B	2.2U	12.5
Beryllium (Dissolved) (6010), ug/l	0.19U	0.19U	0.19U
Cadmium (Dissolved) (6010), ug/l	0.58U	0.58U	5.9
Chromium (Dissolved) (6010), ug/l	2.6	2.9	6.5
Copper (Dissolved) (6010), ug/l	2.0B	1.7U	10.1
Lead (Dissolved) (6010), ug/l	3.1B	2.1B	6.7
Nickel (Dissolved) (6010), ug/l	1.2U	1.2U	3.4B
Selenium (Dissolved) (6010), ug/l	2.6U	3.3B	2.6U
Silver (Dissolved) (6010), ug/l	0.90U	0.90U	0.90U
Thallium (Dissolved) (6010), ug/l	2.3U	2.3U	2.3U
Zinc (Dissolved) (6010), ug/l	54.3	21.5	111
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97	09.17.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916H	0916H	0916H
Mercury (Dissolved)			
Mercury (Dissolved) (7470), ug/l	0.06B	0.05U	0.09B
Preparation Date	09.16.97	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97	09.17.97
Dilution factor	1.0	1.0	1.0
Batch ID	0916U	0916U	0916U

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75154-1	SW-3006	09-11-97/1500	MP040
75154-2	SW-3007	09-11-97/1550	MP040
75154-3	MW-109	09-11-97/1320	MP040

PARAMETER	75154-1	75154-2	75154-3
Hardness as CaCO3 (130.2)			
Hardness as CaCO3, mg/l	720	1000	200
Preparation Date	09.22.97	09.22.97	09.22.97
Date Analyzed	09.22.97	09.22.97	09.22.97
Dilution factor	1.0	1.0	1.0
Batch ID	0922A	0922A	0922A
Ammonia-N (350.1)			
Ammonia-N (350.1), mg/l	0.23	1.4	0.50
Preparation Date	09.22.97	09.22.97	09.22.97
Date Analyzed	09.22.97	09.22.97	09.22.97
Dilution factor	1.0	1.0	1.0
Batch ID	0922A	0922A	0922A
Chloride (325.2)			
Chloride (325.2), mg/l	24	23	17
Preparation Date	09.25.97	09.25.97	09.25.97
Date Analyzed	09.25.97	09.25.97	09.25.97
Dilution factor	1.0	1.0	1.0
Batch ID	0925A	0925A	0925A

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75154-1	SW-3006	09-11-97/1500	MP040
75154-2	SW-3007	09-11-97/1550	MP040
75154-3	MW-109	09-11-97/1320	MP040

PARAMETER	75154-1	75154-2	75154-3
Nitrate-N (353.2)			
Nitrate-N, mg/l	0.29	0.47	0.050U
Preparation Date	09.12.97	09.12.97	09.12.97
Date Analyzed	09.12.97	09.12.97	09.12.97
Dilution factor	1.0	1.0	1.0
Batch ID	0923A	0923A	0923A
Orthophosphate-P (365.1)			
Ortho-Phosphate-P (365.1), mg/l	0.14	0.28	0.20
Preparation Date	09.12.97	09.12.97	09.12.97
Date Analyzed	09.12.97	09.12.97	09.12.97
Dilution factor	1.0	1.0	1.0
Batch ID	0912D	0912D	0912D
Sulfate as SO4			
Sulfate as SO4, mg/l	5.0U	22	5.0U
Preparation Date	09.30.97	09.30.97	09.30.97
Date Analyzed	09.30.97	09.30.97	09.30.97
Dilution factor	1.0	1.0	1.0
Batch ID	0930A	0930A	0930A

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75154-1	SW-3006	09-11-97/1500	MP040
75154-2	SW-3007	09-11-97/1550	MP040
75154-3	MW-109	09-11-97/1320	MP040

PARAMETER	75154-1	75154-2	75154-3
Total Dissolved Solids (160.1)			
Total Dissolved Solids (160.1), mg/l	180	290	270
Preparation Date	09.15.97	09.15.97	09.15.97
Date Analyzed	09.16.97	09.16.97	09.16.97
Dilution factor	1.0	1.0	1.0
Batch ID	0915A	0915A	0915A
Phosphorus, Total			
Total Phosphorus (365.4), mg/l	0.36	0.37	0.10U
Preparation Date	09.12.97	09.12.97	09.12.97
Date Analyzed	09.15.97	09.15.97	09.15.97
Dilution factor	1.0	1.0	1.0
Batch ID	0912A	0912A	0912A

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75154-4	IDW-1	09-11-97/1645	MP040

PARAMETER	75154-4
Pesticides in TCLP Extract (8080)	
Chlordane (TCLP), mg/l	0.025U
Endrin (TCLP), mg/l	0.0050U
Heptachlor (TCLP), mg/l	0.0025U
Lindane (g-BHC) (TCLP), mg/l	0.0025U
Methoxychlor (TCLP), mg/l	0.025U
Toxaphene (TCLP), mg/l	0.25U
Heptachlor epoxide (TCLP), mg/l	0.0025U
Surrogate-DBC	100 %
Surrogate-TCX	44 %
TCLP (1311) Sec. 7.2 Extraction Date	09.15.97
Extraction Date (Extract)	09.17.97
Date Analyzed	09.19.97
Dilution factor	1.0
Batch ID	09170
Instrument ID	SGKECD

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75154-4	IDW-1	09-11-97/1645	MP040

PARAMETER	75154-4
Semivolatiles in TCLP Extract (8270)	
Cresol (ortho) (TCLP), mg/l	0.050U
Cresol m & p (TCLP), mg/l	0.050U
1,4-Dichlorobenzene (TCLP), mg/l	0.050U
2,4-Dinitrotoluene (TCLP), mg/l	0.050U
Hexachlorobenzene (TCLP), mg/l	0.050U
Hexachlorobutadiene (TCLP), mg/l	0.050U
Hexachloroethane (TCLP), mg/l	0.050U
Nitrobenzene (TCLP), mg/l	0.050U
Pentachlorophenol (TCLP), mg/l	0.25U
2,4,5-Trichlorophenol (TCLP), mg/l	0.050U
2,4,6-Trichlorophenol (TCLP), mg/l	0.050U
Pyridine (TCLP), mg/l	1.0U
Surrogate-2FP	74 %
Surrogate-PHL	80 %
Surrogate-NBZ	100 %
Surrogate-2FBP	72 %
Surrogate-TBP	72 %
Surrogate-TPH	92 %
TCLP (1311) Sec. 7.2 Extraction Date	09.15.97
Extraction Date (Extract)	09.17.97
Date Analyzed	09.23.97
Dilution factor	1.0
Batch ID	0917B
Instrument ID	MSE5970

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LOG NO: S7-75154
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Reported: 09 OCT 97

Mr. Keith Matteson
Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

Project: Ft. Story 0285-690/Landfill #2/SDG#MP040
Sampled By: Client
Code: 114871020

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75154-4	IDW-1	09-11-97/1645	MP040

PARAMETER	75154-4
Herbicides in TCLP Extract (8150)	
2,4-D (TCLP), mg/l	0.025U
2,4,5-TP Silvex (TCLP), mg/l	0.025U
Surrogate-2,4-Dichlorophenyl acetic acid (DCAA)	105 %
TCLP (1311) Sec. 7.2 Extraction Date	09.15.97
Extraction Date (Extract)	09.18.97
Date Analyzed	09.24.97
Dilution factor	1.0
Batch ID	0918N
Instrument ID	SGNECD
Metals in TCLP Extract (6010)	
Arsenic (TCLP-6010), mg/l	0.20U
Barium (TCLP-6010), mg/l	1.0U
Cadmium (TCLP-6010), mg/l	0.010U
Chromium (TCLP-6010), mg/l	0.050U
Lead (TCLP-6010), mg/l	0.20U
Selenium (TCLP-6010), mg/l	0.50U
Silver (TCLP-6010), mg/l	0.010U
TCLP (1311) Sec. 7.2 Extraction Date	09.15.97
Preparation Date	09.16.97
Date Analyzed	09.17.97
Dilution factor	1.0
Batch ID	0916P

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Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
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Sampled By: Client
Code: 114871020

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75154-4	IDW-1	09-11-97/1645	MP040

PARAMETER	75154-4
Mercury in TCLP Extract (7470)	
Mercury (TCLP-7470), mg/l	0.020U
TCLP (1311) Sec. 7.2 Extraction Date	09.15.97
Preparation Date	09.16.97
Date Analyzed	09.17.97
Dilution factor	1.0
Batch ID	0916R

Methods: EPA SW-846

Linda A. Wolfe, Project Manager

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LOG NO: S7-75189
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Mr. Keith Matteson
Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

Project: Ft. Story 0285-690/Landfill #2/SDG#MP040
Sampled By: Client
Code: 114771020

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75189-1	MW 105	09-11-97/0940	MP040
75189-2	MW 106	09-11-97/1130	MP040

PARAMETER	75189-1	75189-2
Priority Pollutant Metals		
Antimony (6010), ug/l	2.6U	3.2B
Arsenic (6010), ug/l	12.9	2.2U
Beryllium (6010), ug/l	0.19U	0.22B
Cadmium (6010), ug/l	0.58U	6.6
Chromium (6010), ug/l	3.5	2.8
Copper (6010), ug/l	1.7U	2.9B
Lead (6010), ug/l	2.4B	3.1B
Nickel (6010), ug/l	1.2U	1.2U
Selenium (6010), ug/l	3.0B	4.1B
Silver (6010), ug/l	0.90U	0.90U
Thallium (6010), ug/l	2.3U	2.3U
Zinc (6010), ug/l	6.4B	36.3
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Batch ID	0916G	0916G
Dilution factor	1.0	1.0
Mercury (7470)		
Mercury (7470), ug/l	0.08B	0.05U
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916U	0916U

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Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

Project: Ft. Story 0285-690/Landfill #2/SDG#MP040
Sampled By: Client
Code: 114771020

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75189-1	MW 105	09-11-97/0940	MP040
75189-2	MW 106	09-11-97/1130	MP040

PARAMETER	75189-1	75189-2
Priority Pollutant Metals (Dissolved)		
Antimony (Dissolved) (6010), ug/l	3.5B	4.6B
Arsenic (Dissolved) (6010), ug/l	3.0B	2.6B
Beryllium (Dissolved) (6010), ug/l	0.19U	0.19U
Cadmium (Dissolved) (6010), ug/l	0.58U	4.7
Chromium (Dissolved) (6010), ug/l	1.3B	3.1
Copper (Dissolved) (6010), ug/l	1.7U	3.0B
Lead (Dissolved) (6010), ug/l	1.7B	3.0B
Nickel (Dissolved) (6010), ug/l	1.2U	3.1B
Selenium (Dissolved) (6010), ug/l	2.6U	3.0B
Silver (Dissolved) (6010), ug/l	0.90U	0.90U
Thallium (Dissolved) (6010), ug/l	2.3U	2.3U
Zinc (Dissolved) (6010), ug/l	11.1B	44.5
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916H	0916H
Mercury (Dissolved)		
Mercury (Dissolved) (7470), ug/l	0.09B	0.05U
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916U	0916U

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Malcolm Pirnie
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75189-1	MW 105	09-11-97/0940	MP040
75189-2	MW 106	09-11-97/1130	MP040

PARAMETER	75189-1	75189-2
Hardness as CaCO3 (130.2)		
Hardness as CaCO3, mg/l	240	140
Preparation Date	09.22.97	09.22.97
Date Analyzed	09.22.97	09.22.97
Dilution factor	1.0	1.0
Batch ID	0922A	0922A
Ammonia-N (350.1)		
Ammonia-N (350.1), mg/l	0.030U	0.030U
Preparation Date	09.22.97	09.22.97
Date Analyzed	09.22.97	09.22.97
Dilution factor	1.0	1.0
Batch ID	0922A	0922A
Chloride (325.2)		
Chloride (325.2), mg/l	58	4.8
Preparation Date	09.25.97	09.25.97
Date Analyzed	09.25.97	09.25.97
Dilution factor	1.0	1.0
Batch ID	0925A	0925A
Nitrate-N (353.2)		
Nitrate-N, mg/l	0.10	0.15
Preparation Date	09.15.97	09.15.97
Date Analyzed	09.15.97	09.15.97
Dilution factor	1.0	1.0
Batch ID	0923A	0923B

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Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75189-1	MW 105	09-11-97/0940	MP040
75189-2	MW 106	09-11-97/1130	MP040

PARAMETER	75189-1	75189-2
Orthophosphate-P (365.1)		
Ortho-Phosphate-P (365.1), mg/l	0.13	0.050U
Preparation Date	09.15.97	09.15.97
Date Analyzed	09.15.97	09.15.97
Dilution factor	1.0	1.0
Batch ID	0915A	0915A
Sulfate as SO4		
Sulfate as SO4, mg/l	36	5.0U
Preparation Date	09.30.97	09.30.97
Date Analyzed	09.30.97	09.30.97
Dilution factor	1.0	1.0
Batch ID	0930A	0930A
Total Dissolved Solids (160.1)		
Total Dissolved Solids (160.1), mg/l	180	24
Preparation Date	09.15.97	09.15.97
Date Analyzed	09.16.97	09.16.97
Dilution factor	1.0	1.0
Batch ID	0915B	0915B
Phosphorus, Total		
Total Phosphorus (365.4), mg/l	0.28	0.12
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916C	0916C

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Mr. Keith Matteson
Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

Project: Ft. Story 0285-690/Landfill #2/SDG#MP040
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75189-1	MW 105	09-11-97/0940	MP040
75189-2	MW 106	09-11-97/1130	MP040

PARAMETER	75189-1	75189-2
Volatiles by GC/MS (8260)		
Benzene, ug/l	0.20J	1.0U
Bromodichloromethane, ug/l	1.0U	1.0U
Bromoform, ug/l	1.0U	1.0U
Bromomethane, ug/l	1.0U	1.0U
Carbon tetrachloride, ug/l	1.0U	1.0U
Chlorobenzene, ug/l	1.0U	1.0U
Chloroethane, ug/l	1.0U	1.0U
Chloroform, ug/l	1.0U	1.0U
Chloromethane, ug/l	1.0U	1.0U
Chlorodibromomethane, ug/l	1.0U	1.0U
1,1-Dichloroethane, ug/l	1.0U	1.0U
1,2-Dichloroethane, ug/l	1.0U	1.0U
1,1-Dichloroethene, ug/l	1.0U	1.0U
trans-1,2-Dichloroethene, ug/l	1.0U	1.0U
Cis/Trans-1,2-Dichloroethene, ug/l	1.0U	1.0U
1,2-Dichloropropane, ug/l	1.0U	1.0U
Ethylbenzene, ug/l	1.0U	1.0U
Hexachlorobutadiene, ug/l	1.0U	1.0U
Methylene chloride (Dichloromethane), ug/l	5.0U	5.0U
Styrene, ug/l	1.0U	1.0U
1,1,2,2-Tetrachloroethane, ug/l	1.0U	1.0U

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75189-1	MW 105	09-11-97/0940	MP040
75189-2	MW 106	09-11-97/1130	MP040

PARAMETER	75189-1	75189-2
Tetrachloroethene, ug/l	1.0U	1.0U
Toluene, ug/l	1.0U	1.0U
1,1,1-Trichloroethane, ug/l	1.0U	1.0U
1,1,2-Trichloroethane, ug/l	1.0U	1.0U
Trichloroethene, ug/l	1.0U	1.0U
Vinyl chloride, ug/l	1.0U	1.0U
Acetone, ug/l	25U	25U
Acrylonitrile, ug/l	20U	20U
Carbon Disulfide, ug/l	1.0U	1.0U
cis-1,3-Dichloropropene, ug/l	1.0U	1.0U
trans-1,3-Dichloropropene, ug/l	1.0U	1.0U
2-Hexanone, ug/l	10U	10U
2-Butanone (MEK), ug/l	10U	10U
4-Methyl-2-pentanone (MIBK), ug/l	10U	10U
Xylenes, ug/l	2.0U	2.0U
1,2-Dichlorobenzene, ug/l	1.0U	1.0U
1,4-Dichlorobenzene, ug/l	1.0U	1.0U
Surrogate - Toluene-d8	110 %	110 %
Surrogate - 4-Bromofluorobenzene	110 %	110 %
Surrogate - Dibromofluorobenzene	97 %	92 %
Date Analyzed	09.19.97	09.18.97
Batch ID	0918C	0918C
Clock ID	1B0919	1B0918
Instrument ID	MSB5970	MSB5970

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Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

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Sampled By: Client
Code: 114771020

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75189-3	MW 109	09-11-97/1320	MP040
75189-4	SW 3006	09-11-97/1500	MP040
75189-5	SW 3007	09-11-97/1550	MP040

PARAMETER	75189-3	75189-4	75189-5
Volatiles by GC/MS (8260)			
Benzene, ug/l	1.0U	1.0U	1.0U
Bromodichloromethane, ug/l	1.0U	1.0U	1.0U
Bromoform, ug/l	1.0U	1.0U	1.0U
Bromomethane, ug/l	1.0U	1.0U	1.0U
Carbon tetrachloride, ug/l	1.0U	1.0U	1.0U
Chlorobenzene, ug/l	1.0U	1.0U	1.0U
Chloroethane, ug/l	1.0U	1.0U	1.0U
Chloroform, ug/l	1.0U	1.0U	1.0U
Chloromethane, ug/l	1.0U	1.0U	1.0U
Chlorodibromomethane, ug/l	1.0U	1.0U	1.0U
1,1-Dichloroethane, ug/l	1.0U	1.0U	1.0U
1,2-Dichloroethane, ug/l	1.0U	1.0U	1.0U
1,1-Dichloroethene, ug/l	1.0U	1.0U	1.0U
trans-1,2-Dichloroethene, ug/l	1.0U	1.0U	1.0U
Cis/Trans-1,2-Dichloroethene, ug/l	1.0U	1.0U	1.0U
1,2-Dichloropropane, ug/l	1.0U	1.0U	1.0U
Ethylbenzene, ug/l	1.0U	1.0U	1.0U
Hexachlorobutadiene, ug/l	1.0U	1.0U	1.0U
Methylene chloride (Dichloromethane), ug/l	5.0U	5.0U	5.0U
Styrene, ug/l	1.0U	1.0U	1.0U

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75189-3	MW 109	09-11-97/1320	MP040
75189-4	SW 3006	09-11-97/1500	MP040
75189-5	SW 3007	09-11-97/1550	MP040

PARAMETER	75189-3	75189-4	75189-5
1,1,2,2-Tetrachloroethane, ug/l	1.0U	1.0U	1.0U
Tetrachloroethene, ug/l	1.0U	1.0U	1.0U
Toluene, ug/l	1.0U	1.0U	1.0U
1,1,1-Trichloroethane, ug/l	1.0U	1.0U	1.0U
1,1,2-Trichloroethane, ug/l	1.0U	1.0U	1.0U
Trichloroethene, ug/l	1.0U	1.0U	1.0U
Vinyl chloride, ug/l	1.0U	1.0U	1.0U
Acetone, ug/l	25U	25U	25U
Acrylonitrile, ug/l	20U	20U	20U
Carbon Disulfide, ug/l	1.0U	1.0U	1.0U
cis-1,3-Dichloropropene, ug/l	1.0U	1.0U	1.0U
trans-1,3-Dichloropropene, ug/l	1.0U	1.0U	1.0U
2-Hexanone, ug/l	10U	10U	10U
2-Butanone (MEK), ug/l	10U	3.8J	10U
4-Methyl-2-pentanone (MIBK), ug/l	10U	10U	10U
Xylenes, ug/l	2.0U	2.0U	2.0U
1,2-Dichlorobenzene, ug/l	1.0U	1.0U	1.0U
1,4-Dichlorobenzene, ug/l	1.0U	1.0U	1.0U
Surrogate - Toluene-d8	110 %	110 %	110 %
Surrogate - 4-Bromofluorobenzene	110 %	110 %	110 %
Surrogate - Dibromofluorobenzene	89 %	90 %	100 %
Date Analyzed	09.18.97	09.18.97	09.19.97
Batch ID	0918C	0918C	0918C
Clock ID	1B0918	1B0918	1B0919
Instrument ID	MSB5970	MSB5970	MSB5970

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75189-3	MW 109	09-11-97/1320	MP040
75189-4	SW 3006	09-11-97/1500	MP040
75189-5	SW 3007	09-11-97/1550	MP040

PARAMETER	75189-3	75189-4	75189-5

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
75189-6	IDW-1	09-11-97/1645	MP040

PARAMETER	75189-6
Volatiles in TCLP Extract (8260)	
Benzene (TCLP), mg/l	0.020U
Carbon tetrachloride (TCLP), mg/l	0.020U
Chlorobenzene (TCLP), mg/l	0.020U
Chloroform (TCLP), mg/l	0.020U
1,2-Dichloroethane (TCLP), mg/l	0.020U
1,1-Dichloroethylene (TCLP), mg/l	0.020U
Methyl ethyl ketone (TCLP), mg/l	0.20U
Tetrachloroethylene (TCLP), mg/l	0.020U
Trichloroethylene (TCLP), mg/l	0.020U
Vinyl chloride (TCLP), mg/l	0.040U
Surrogate - Toluene-d8	115 %
Surrogate - 4-Bromofluorobenzene	110 %
Surrogate - Dibromofluoromethane	105 %
TCLP (1311) Sec. 7.3 Extraction Date	09.17.97
Date Analyzed	09.18.97
Dilution factor	1.0
Batch ID	0917A
Clock ID	1I0918

Methods: EPA SW-846

Linda A. Wolfe, Project Manager

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

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Received: 11 SEP 97
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Mr. Keith Matteson
Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

Project: Ft. Story 0285-690/Landfill #2/SDG#MP040
Sampled By: Client
Code: 114971020

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
MP040-1	Matrix Spike % Recovery (MW-107)	09-10-97/1220	MP040
MP040-2	MS Duplicate % Recovery (MW-107)	09-10-97/1220	MP040

PARAMETER	MP040-1	MP040-2
Volatiles by GC/MS (8260)		
Benzene	120 %	120 %
Chlorobenzene	110 %	110 %
1,1-Dichloroethene	95 %	70 %
Toluene	100 %	93 %
Trichloroethene	100 %	93 %
Surrogate - Toluene-d8	110 %	110 %
Surrogate - 4-Bromofluorobenzene	110 %	100 %
Surrogate - Dibromofluorobenzene	97 %	88 %
Date Analyzed	09.19.97	09.18.97
Batch ID	0915C	0915C
Clock ID	1B0919	1B0918
Instrument ID	MSB5970	MSB5970

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Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
MP040-1	Matrix Spike % Recovery (MW-107)	09-10-97/1220	MP040
MP040-2	MS Duplicate % Recovery (MW-107)	09-10-97/1220	MP040

PARAMETER	MP040-1	MP040-2
Priority Pollutant Metals		
Antimony (6010)	87 %	87 %
Arsenic (6010)	96 %	96 %
Beryllium (6010)	101 %	103 %
Cadmium (6010)	96 %	98 %
Chromium (6010)	99 %	99 %
Copper (6010)	101 %	98 %
Lead (6010)	96 %	99 %
Nickel (6010)	98 %	99 %
Selenium (6010)	92 %	93 %
Silver (6010)	105 %	106 %
Thallium (6010)	93 %	96 %
Zinc (6010)	107 %	110 %
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Batch ID	0916G	0916G
Dilution factor	1.0	1.0
Mercury (7470)		
Mercury (7470)	93 %	89 %
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916U	0916U

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

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LOG NO: S7-MP040
Received: 11 SEP 97
Reported: 10 OCT 97

Mr. Keith Matteson
Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

Project: Ft. Story 0285-690/Landfill #2/SDG#MP040
Sampled By: Client
Code: 114971020

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
MP040-1	Matrix Spike % Recovery (MW-107)	09-10-97/1220	MP040
MP040-2	MS Duplicate % Recovery (MW-107)	09-10-97/1220	MP040

PARAMETER	MP040-1	MP040-2
Priority Pollutant Metals (Dissolved)		
Antimony (Dissolved) (6010)	97 %	96 %
Arsenic (Dissolved) (6010)	90 %	90 %
Beryllium (Dissolved) (6010)	97 %	97 %
Cadmium (Dissolved) (6010)	92 %	92 %
Chromium (Dissolved) (6010)	99 %	99 %
Copper (Dissolved) (6010)	100 %	100 %
Lead (Dissolved) (6010)	93 %	92 %
Nickel (Dissolved) (6010)	100 %	99 %
Selenium (Dissolved) (6010)	86 %	86 %
Silver (Dissolved) (6010)	95 %	96 %
Thallium (Dissolved) (6010)	91 %	92 %
Zinc (Dissolved) (6010)	101 %	102 %
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916H	0916H
Mercury (Dissolved)		
Mercury (Dissolved) (7470)	93 %	84 %
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916U	0916U

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Mr. Keith Matteson
Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

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Code: 114971020

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG
MP040-1	Matrix Spike % Recovery (MW-107)	09-10-97/1220	MP040
MP040-2	MS Duplicate % Recovery (MW-107)	09-10-97/1220	MP040

PARAMETER	MP040-1	MP040-2
Ammonia-N (350.1)		
Ammonia-N (350.1)	110 %	92 %
Preparation Date	09.22.97	09.22.97
Date Analyzed	09.22.97	09.22.97
Dilution factor	1.0	1.0
Batch ID	0922C	0922C
Chloride (325.2)		
Chloride (325.2)	104 %	109 %
Preparation Date	09.25.97	09.25.97
Date Analyzed	09.25.97	09.25.97
Dilution factor	1.0	1.0
Batch ID	0925A	0925A
Nitrate-N (353.2)		
Nitrate-N	94 %	94 %
Preparation Date	09.15.97	09.15.97
Date Analyzed	09.15.97	09.15.97
Dilution factor	1.0	1.0
Batch ID	0923A	0923A
Sulfate as SO4		
Sulfate as SO4	110 %	108 %
Preparation Date	09.30.97	09.30.97
Date Analyzed	09.30.97	09.30.97
Dilution factor	1.0	1.0
Batch ID	0930A	0930A

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Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
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Sampled By: Client
Code: 114971020

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
MP040-1	Matrix Spike % Recovery (MW-107)	09-10-97/1220	MP040
MP040-2	MS Duplicate % Recovery (MW-107)	09-10-97/1220	MP040

PARAMETER	MP040-1	MP040-2
Phosphorus, Total		
Total Phosphorus (365.4)	94 %	97 %
Preparation Date	09.16.97	09.16.97
Date Analyzed	09.17.97	09.17.97
Dilution factor	1.0	1.0
Batch ID	0916C	0916C

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Sampled By: Client
Code: 114971020

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040-3	Method Blank	MP040
MP040-7	Method Blank	MP040
MP040-10	Method Blank	MP040
MP040-15	Method Blank	MP040

PARAMETER	MP040-3	MP040-7	MP040-10	MP040-15
Volatiles by GC/MS (8260)				
Benzene, ug/l	1.0U	1.0U	1.0U	1.0U
Bromodichloromethane, ug/l	1.0U	1.0U	1.0U	1.0U
Bromoform, ug/l	1.0U	1.0U	1.0U	1.0U
Bromomethane, ug/l	1.0U	1.0U	1.0U	1.0U
Carbon tetrachloride, ug/l	1.0U	1.0U	1.0U	1.0U
Chlorobenzene, ug/l	1.0U	1.0U	1.0U	1.0U
Chloroethane, ug/l	1.0U	1.0U	1.0U	1.0U
Chloroform, ug/l	1.0U	1.0U	1.0U	1.0U
Chloromethane, ug/l	1.0U	1.0U	1.0U	1.0U
Chlorodibromomethane, ug/l	1.0U	1.0U	1.0U	1.0U
1,1-Dichloroethane, ug/l	1.0U	1.0U	1.0U	1.0U
1,2-Dichloroethane, ug/l	1.0U	1.0U	1.0U	1.0U
1,1-Dichloroethene, ug/l	1.0U	1.0U	1.0U	1.0U
trans-1,2-Dichloroethene, ug/l	1.0U	1.0U	1.0U	1.0U
Cis/Trans-1,2-Dichloroethene, ug/l	1.0U	1.0U	1.0U	1.0U
1,2-Dichloropropane, ug/l	1.0U	1.0U	1.0U	1.0U
Ethylbenzene, ug/l	1.0U	1.0U	1.0U	1.0U
Hexachlorobutadiene, ug/l	1.0U	1.0U	1.0U	1.0U
Methylene chloride (Dichloromethane), ug/l	5.0U	5.0U	5.0U	5.0U

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040-3	Method Blank	MP040
MP040-7	Method Blank	MP040
MP040-10	Method Blank	MP040
MP040-15	Method Blank	MP040

PARAMETER	MP040-3	MP040-7	MP040-10	MP040-15
Styrene, ug/l	1.0U	1.0U	1.0U	1.0U
1,1,2,2-Tetrachloroethane, ug/l	1.0U	1.0U	1.0U	1.0U
Tetrachloroethene, ug/l	1.0U	1.0U	1.0U	1.0U
Toluene, ug/l	1.0U	1.0U	1.0U	1.0U
1,1,1-Trichloroethane, ug/l	1.0U	1.0U	1.0U	1.0U
1,1,2-Trichloroethane, ug/l	1.0U	1.0U	1.0U	1.0U
Trichloroethene, ug/l	1.0U	1.0U	1.0U	1.0U
Vinyl chloride, ug/l	1.0U	1.0U	1.0U	1.0U
Acetone, ug/l	25U	25U	25U	25U
Acrylonitrile, ug/l	20U	20U	20U	20U
Carbon Disulfide, ug/l	1.0U	1.0U	1.0U	1.0U
cis-1,3-Dichloropropene, ug/l	1.0U	1.0U	1.0U	1.0U
trans-1,3-Dichloropropene, ug/l	1.0U	1.0U	1.0U	1.0U
2-Hexanone, ug/l	10U	10U	10U	10U
2-Butanone (MEK), ug/l	10U	10U	10U	10U
4-Methyl-2-pentanone (MIBK), ug/l	10U	10U	10U	10U
Xylenes, ug/l	2.0U	2.0U	2.0U	2.0U
1,2-Dichlorobenzene, ug/l	1.0U	1.0U	1.0U	1.0U
1,4-Dichlorobenzene, ug/l	1.0U	1.0U	1.0U	1.0U
Surrogate - Toluene-d8	100 %	98 %	110 %	110 %

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG"
MP040-3	Method Blank	MP040
MP040-7	Method Blank	MP040
MP040-10	Method Blank	MP040
MP040-15	Method Blank	MP040

PARAMETER	MP040-3	MP040-7	MP040-10	MP040-15
Surrogate - 4-Bromofluorobenzene	110 %	110 %	110 %	110 %
Surrogate - Dibromofluorobenzene	120 %	110 %	110 %	100 %
Date Analyzed	09.15.97	09.16.97	09.18.97	09.19.97
Batch ID	0915C	0915C	0918C	0918C
Clock ID	1B0915	1B0916	1B0918	1B0919
Instrument ID	MSB5970	MSB5970	MSB5970	MSB5970

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040-3	Method Blank	MP040
MP040-7	Method Blank	MP040
MP040-10	Method Blank	MP040
MP040-15	Method Blank	MP040

PARAMETER	MP040-3	MP040-7	MP040-10	MP040-15
Priority Pollutant Metals				
Antimony (6010), ug/l	3.4B	---	---	---
Arsenic (6010), ug/l	2.2U	---	---	---
Beryllium (6010), ug/l	0.19U	---	---	---
Cadmium (6010), ug/l	0.58U	---	---	---
Chromium (6010), ug/l	0.88U	---	---	---
Copper (6010), ug/l	1.7U	---	---	---
Lead (6010), ug/l	1.6B	---	---	---
Nickel (6010), ug/l	1.2U	---	---	---
Selenium (6010), ug/l	2.6U	---	---	---
Silver (6010), ug/l	0.90U	---	---	---
Thallium (6010), ug/l	-4.9B	---	---	---
Zinc (6010), ug/l	3.7U	---	---	---
Preparation Date	09.16.97	---	---	---
Date Analyzed	09.17.97	---	---	---
Batch ID	0916G	---	---	---
Dilution factor	1.0	---	---	---

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Malcolm Pirnie
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Sampled By: Client
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG
MP040-3	Method Blank	MP040
MP040-7	Method Blank	MP040
MP040-10	Method Blank	MP040
MP040-15	Method Blank	MP040

PARAMETER	MP040-3	MP040-7	MP040-10	MP040-15
Mercury (7470)				
Mercury (7470), ug/l	0.05U	---	---	---
Preparation Date	09.16.97	---	---	---
Date Analyzed	09.17.97	---	---	---
Dilution factor	1.0	---	---	---
Batch ID	0916U	---	---	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040-3	Method Blank	MP040
MP040-7	Method Blank	MP040
MP040-10	Method Blank	MP040
MP040-15	Method Blank	MP040

PARAMETER	MP040-3	MP040-7	MP040-10	MP040-15
Priority Pollutant Metals (Dissolved)				
Antimony (Dissolved) (6010), ug/l	3.7B	---	---	---
Arsenic (Dissolved) (6010), ug/l	2.2U	---	---	---
Beryllium (Dissolved) (6010), ug/l	0.19U	---	---	---
Cadmium (Dissolved) (6010), ug/l	0.58U	---	---	---
Chromium (Dissolved) (6010), ug/l	1.3B	---	---	---
Copper (Dissolved) (6010), ug/l	1.7U	---	---	---
Lead (Dissolved) (6010), ug/l	1.2U	---	---	---
Nickel (Dissolved) (6010), ug/l	1.2U	---	---	---
Selenium (Dissolved) (6010), ug/l	2.6U	---	---	---
Silver (Dissolved) (6010), ug/l	0.90U	---	---	---
Thallium (Dissolved) (6010), ug/l	-3.0B	---	---	---
Zinc (Dissolved) (6010), ug/l	3.7U	---	---	---
Preparation Date	09.16.97	---	---	---
Date Analyzed	09.17.97	---	---	---
Dilution factor	1.0	---	---	---
Batch ID	0916H	---	---	---

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Mr. Keith Matteson
Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

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Sampled By: Client
Code: 114971020

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG
MP040-3	Method Blank	MP040
MP040-7	Method Blank	MP040
MP040-10	Method Blank	MP040
MP040-15	Method Blank	MP040

PARAMETER	MP040-3	MP040-7	MP040-10	MP040-15
Mercury (Dissolved)				
Mercury (Dissolved) (7470), ug/l	0.05U	---	---	---
Preparation Date	09.16.97	---	---	---
Date Analyzed	09.17.97	---	---	---
Dilution factor	1.0	---	---	---
Batch ID	0916U	---	---	---
Hardness as CaCO3 (130.2)				
Hardness as CaCO3, mg/l	10U	---	---	---
Preparation Date	09.22.97	---	---	---
Date Analyzed	09.22.97	---	---	---
Dilution factor	1.0	---	---	---
Batch ID	0922A	---	---	---
Ammonia-N (350.1)				
Ammonia-N (350.1), mg/l	0.030U	0.030U	---	---
Preparation Date	09.22.97	09.22.97	---	---
Date Analyzed	09.22.97	09.22.97	---	---
Dilution factor	1.0	1.0	---	---
Batch ID	0922C	0922A	---	---

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Malcolm Pirnie
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040-3	Method Blank	MP040
MP040-7	Method Blank	MP040
MP040-10	Method Blank	MP040
MP040-15	Method Blank	MP040

PARAMETER	MP040-3	MP040-7	MP040-10	MP040-15
Chloride (325.2)				
Chloride (325.2), mg/l	1.0U		---	---
Preparation Date	09.25.97		---	---
Date Analyzed	09.25.97		---	---
Dilution factor	1.0		---	---
Batch ID	0925A		---	---
Nitrate-N (353.2)				
Nitrate-N, mg/l	0.050U	0.050U	0.050U	---
Preparation Date	09.15.97	09.15.97	09.15.97	---
Date Analyzed	09.15.97	09.15.97	09.15.97	---
Dilution factor	1.0	1.0	1.0	---
Batch ID	0923A	0923B	0923C	---
Orthophosphate-P (365.1)				
Ortho-Phosphate-P (365.1), mg/l	0.050U	0.050U	---	---
Preparation Date	09.12.97	09.15.97	---	---
Date Analyzed	09.12.97	09.15.97	---	---
Dilution factor	1.0	1.0	---	---
Batch ID	0912D	0915A	---	---

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Malcolm Pirnie
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Sampled By: Client
Code: 114971020

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040-3	Method Blank	MP040
MP040-7	Method Blank	MP040
MP040-10	Method Blank	MP040
MP040-15	Method Blank	MP040

PARAMETER	MP040-3	MP040-7	MP040-10	MP040-15
Sulfate as SO4				
Sulfate as SO4, mg/l	5.0U	---	---	---
Preparation Date	09.30.97	---	---	---
Date Analyzed	09.30.97	---	---	---
Dilution factor	1.0	---	---	---
Batch ID	0930A	---	---	---
Total Dissolved Solids (160.1)				
Total Dissolved Solids (160.1), mg/l	5.0U	5.0U	---	---
Preparation Date	09.15.97	09.15.97	---	---
Date Analyzed	09.16.97	09.16.97	---	---
Dilution factor	1.0	1.0	---	---
Batch ID	0915A	0915B	---	---
Phosphorus, Total				
Total Phosphorus (365.4), mg/l	0.10U	0.10U	---	---
Preparation Date	09.12.97	09.16.97	---	---
Date Analyzed	09.15.97	09.17.97	---	---
Dilution factor	1.0	1.0	---	---
Batch ID	0912A	0916C	---	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG
MP040-4	Lab Control Standard % Recovery	MP040
MP040-8	Lab Control Standard % Recovery	MP040
MP040-11	Lab Control Standard % Recovery	MP040
MP040-16	Lab Control Standard % Recovery	MP040

PARAMETER	MP040-4	MP040-8	MP040-11	MP040-16
Volatiles by GC/MS (8260)				
Benzene	110 %	130 %	110 %	120 %
Chlorobenzene	110 %	120 %	100 %	110 %
1,1-Dichloroethene	100 %	120 %	99 %	98 %
Toluene	110 %	100 %	90 %	96 %
Trichloroethene	110 %	100 %	92 %	97 %
Surrogate - Toluene-d8	110 %	100 %	110 %	110 %
Surrogate - 4-Bromofluorobenzene	110 %	110 %	110 %	110 %
Surrogate - Dibromofluorobenzene	100 %	110 %	110 %	100 %
Date Analyzed	09.15.97	09.16.97	09.18.97	09.19.97
Batch ID	0915C	0915C	0918C	0918C
Clock ID	1B0915	1B0916	1B0918	1B0919
Instrument ID	MSB5970	MSB5970	MSB5970	MSB5970

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LOG NO: S7-MP040
Received: 11 SEP 97
Reported: 10 OCT 97

Mr. Keith Matteson
Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

Project: Ft. Story 0285-690/Landfill #2/SDG#MP040
Sampled By: Client
Code: 114971020

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040-4	Lab Control Standard % Recovery	MP040
MP040-8	Lab Control Standard % Recovery	MP040
MP040-11	Lab Control Standard % Recovery	MP040
MP040-16	Lab Control Standard % Recovery	MP040

PARAMETER	MP040-4	MP040-8	MP040-11	MP040-16
Priority Pollutant Metals				
Antimony (6010)	102 %	---	---	---
Arsenic (6010)	96 %	---	---	---
Beryllium (6010)	100 %	---	---	---
Cadmium (6010)	91 %	---	---	---
Chromium (6010)	99 %	---	---	---
Copper (6010)	98 %	---	---	---
Lead (6010)	99 %	---	---	---
Nickel (6010)	98 %	---	---	---
Selenium (6010)	93 %	---	---	---
Silver (6010)	105 %	---	---	---
Thallium (6010)	96 %	---	---	---
Zinc (6010)	108 %	---	---	---
Preparation Date	09.16.97	---	---	---
Date Analyzed	09.17.97	---	---	---
Dilution factor	1.0	---	---	---
Batch ID	0916G	---	---	---

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Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
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Sampled By: Client
Code: 114971020

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040-4	Lab Control Standard % Recovery	MP040
MP040-8	Lab Control Standard % Recovery	MP040
MP040-11	Lab Control Standard % Recovery	MP040
MP040-16	Lab Control Standard % Recovery	MP040

PARAMETER	MP040-4	MP040-8	MP040-11	MP040-16
Mercury (7470)				
Mercury (7470)	92 %	---	---	---
Preparation Date	09.16.97	---	---	---
Date Analyzed	09.17.97	---	---	---
Dilution factor	1.0	---	---	---
Batch ID	0916U	---	---	---

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Mr. Keith Matteson
Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

Project: Ft. Story 0285-690/Landfill #2/SDG#MP040
Sampled By: Client
Code: 114971020

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040-4	Lab Control Standard % Recovery	MP040
MP040-8	Lab Control Standard % Recovery	MP040
MP040-11	Lab Control Standard % Recovery	MP040
MP040-16	Lab Control Standard % Recovery	MP040

PARAMETER	MP040-4	MP040-8	MP040-11	MP040-16
Priority Pollutant Metals (Dissolved)				
Antimony (Dissolved) (6010)	97 %	---	---	---
Arsenic (Dissolved) (6010)	91 %	---	---	---
Beryllium (Dissolved) (6010)	96 %	---	---	---
Cadmium (Dissolved) (6010)	93 %	---	---	---
Chromium (Dissolved) (6010)	101 %	---	---	---
Copper (Dissolved) (6010)	96 %	---	---	---
Lead (Dissolved) (6010)	94 %	---	---	---
Nickel (Dissolved) (6010)	99 %	---	---	---
Selenium (Dissolved) (6010)	88 %	---	---	---
Silver (Dissolved) (6010)	97 %	---	---	---
Thallium (Dissolved) (6010)	93 %	---	---	---
Zinc (Dissolved) (6010)	103 %	---	---	---
Preparation Date	09.16.97	---	---	---
Date Analyzed	09.17.97	---	---	---
Dilution factor	1.0	---	---	---
Batch ID	0916H	---	---	---

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Mr. Keith Matteson
Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

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Sampled By: Client
Code: 114971020

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040-4	Lab Control Standard % Recovery	MP040
MP040-8	Lab Control Standard % Recovery	MP040
MP040-11	Lab Control Standard % Recovery	MP040
MP040-16	Lab Control Standard % Recovery	MP040

PARAMETER	MP040-4	MP040-8	MP040-11	MP040-16
Mercury (Dissolved)				
Mercury (Dissolved) (7470)	92 %	---	---	---
Preparation Date	09.16.97	---	---	---
Date Analyzed	09.17.97	---	---	---
Dilution factor	1.0	---	---	---
Batch ID	0916U	---	---	---
Hardness as CaCO3 (130.2)				
Hardness as CaCO3	104 %	---	---	---
Preparation Date	09.22.97	---	---	---
Date Analyzed	09.22.97	---	---	---
Dilution factor	1.0	---	---	---
Batch ID	0922A	---	---	---
Ammonia-N (350.1)				
Ammonia-N (350.1)	109 %	101 %	---	---
Preparation Date	09.22.97	09.22.97	---	---
Date Analyzed	09.22.97	09.22.97	---	---
Dilution factor	1.0	1.0	---	---
Batch ID	0922C	0922A	---	---

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Malcolm Pirnie
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040-4	Lab Control Standard % Recovery	MP040
MP040-8	Lab Control Standard % Recovery	MP040
MP040-11	Lab Control Standard % Recovery	MP040
MP040-16	Lab Control Standard % Recovery	MP040

PARAMETER	MP040-4	MP040-8	MP040-11	MP040-16
Chloride (325.2)				
Chloride (325.2)	115 %	*	---	---
Preparation Date	09.25.97	---	---	---
Date Analyzed	09.25.97	---	---	---
Dilution factor	1.0	---	---	---
Batch ID	0925A	---	---	---
Nitrate-N (353.2)				
Nitrate-N	94 %	93 %	88 %	---
Preparation Date	09.15.97	09.15.97	09.15.97	---
Date Analyzed	09.15.97	09.15.97	09.15.97	---
Dilution factor	1.0	1.0	1.0	---
Batch ID	0923A	0923B	0923C	---
Orthophosphate-P (365.1)				
Ortho-Phosphate-P (365.1)	99 %	91 %	---	---
Preparation Date	09.12.97	09.15.97	---	---
Date Analyzed	09.12.97	09.15.97	---	---
Dilution factor	1.0	1.0	---	---
Batch ID	0912D	0915A	---	---

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Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
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Code: 114971020

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040-4	Lab Control Standard % Recovery	MP040
MP040-8	Lab Control Standard % Recovery	MP040
MP040-11	Lab Control Standard % Recovery	MP040
MP040-16	Lab Control Standard % Recovery	MP040

PARAMETER	MP040-4	MP040-8	MP040-11	MP040-16
Sulfate as SO4				
Sulfate as SO4	116 %	---	---	---
Preparation Date	09.30.97	---	---	---
Date Analyzed	09.30.97	---	---	---
Dilution factor	1.0	---	---	---
Batch ID	0930A	---	---	---
Total Dissolved Solids (160.1)				
Total Dissolved Solids (160.1)	97 %	96 %	---	---
Preparation Date	09.15.97	09.15.97	---	---
Date Analyzed	09.16.97	09.16.97	---	---
Dilution factor	1.0	1.0	---	---
Batch ID	0915A	0915B	---	---
Phosphorus, Total				
Total Phosphorus (365.4)	108 %	82 %	---	---
Preparation Date	09.12.97	09.16.97	---	---
Date Analyzed	09.15.97	09.17.97	---	---
Dilution factor	1.0	1.0	---	---
Batch ID	0912A	0916C	---	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040-5	Method Blank	MP040
MP040-9	Method Blank	MP040

PARAMETER	MP040-5	MP040-9
Pesticides in TCLP Extract (8080)		
Chlordane (TCLP), mg/l	0.025U	---
Endrin (TCLP), mg/l	0.0050U	---
Heptachlor (TCLP), mg/l	0.0025U	---
Lindane (g-BHC) (TCLP), mg/l	0.0025U	---
Methoxychlor (TCLP), mg/l	0.025U	---
Toxaphene (TCLP), mg/l	0.25U	---
Heptachlor epoxide (TCLP), mg/l	0.0025U	---
Surrogate-DBC	104 %	---
Surrogate-TCX	48 %	---
TCLP (1311) Sec. 7.2 Extraction Date	09.15.97	---
Extraction Date (Extract)	09.17.97	---
Date Analyzed	09.19.97	---
Dilution factor	1.0	---
Batch ID	09170	---
Instrument ID	SGKECD	---

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Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG"
MP040-5	Method Blank	MP040
MP040-9	Method Blank	MP040

PARAMETER	MP040-5	MP040-9
Semivolatiles in TCLP Extract (8270)		
Cresol (ortho) (TCLP), mg/l	0.050U	0.050U
Cresol m & p (TCLP), mg/l	0.050U	0.050U
1,4-Dichlorobenzene (TCLP), mg/l	0.050U	0.050U
2,4-Dinitrotoluene (TCLP), mg/l	0.050U	0.050U
Hexachlorobenzene (TCLP), mg/l	0.050U	0.050U
Hexachlorobutadiene (TCLP), mg/l	0.050U	0.050U
Hexachloroethane (TCLP), mg/l	0.050U	0.050U
Nitrobenzene (TCLP), mg/l	0.050U	0.050U
Pentachlorophenol (TCLP), mg/l	0.25U	0.25U
2,4,5-Trichlorophenol (TCLP), mg/l	0.050U	0.050U
2,4,6-Trichlorophenol (TCLP), mg/l	0.050U	0.050U
Pyridine (TCLP), mg/l	1.0U	1.0U
Surrogate-2FP	64 %	48 %
Surrogate-PHL	72 %	54 %
Surrogate-NBZ	88 %	64 %
Surrogate-2FBP	68 %	64 %
Surrogate-TBP	54 %	50 %
Surrogate-TPH	120 %	88 %
TCLP (1311) Sec. 7.2 Extraction Date	09.15.97	09.15.97
Extraction Date (Extract)	09.17.97	09.17.97
Date Analyzed	09.22.97	09.25.97
Dilution factor	1.0	1.0
Batch ID	0917B	0917B
Instrument ID	MSE5970	MSJ5971

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Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

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Sampled By: Client
Code: 114971020

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040-5	Method Blank	MP040
MP040-9	Method Blank	MP040

PARAMETER	MP040-5	MP040-9
Herbicides in TCLP Extract (8150)		
2,4-D (TCLP), mg/l	0.025U	---
2,4,5-TP Silvex (TCLP), mg/l	0.025U	---
Surrogate-2,4-Dichloropheny l acetic acid (DCAA)	85 %	---
TCLP (1311) Sec. 7.2 Extraction Date	09.15.97	---
Extraction Date (Extract)	09.18.97	---
Date Analyzed	09.23.97	---
Dilution factor	1.0	---
Batch ID	0918N	---
Instrument ID	SGNECD	---

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Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040-5	Method Blank	MP040
MP040-9	Method Blank	MP040

PARAMETER	MP040-5	MP040-9
Metals in TCLP Extract (6010)		
Arsenic (TCLP-6010), mg/l	0.20U	---
Barium (TCLP-6010), mg/l	1.0U	---
Cadmium (TCLP-6010), mg/l	0.010U	---
Chromium (TCLP-6010), mg/l	0.050U	---
Lead (TCLP-6010), mg/l	0.20U	---
Selenium (TCLP-6010), mg/l	0.50U	---
Silver (TCLP-6010), mg/l	0.010U	---
TCLP (1311) Sec. 7.2 Extraction Date	09.15.97	---
Preparation Date	09.16.97	---
Date Analyzed	09.17.97	---
Dilution factor	1.0	---
Batch ID	0916P	---
Mercury in TCLP Extract (7470)		
Mercury (TCLP-7470), mg/l	0.020U	---
TCLP (1311) Sec. 7.2 Extraction Date	09.15.97	---
Preparation Date	09.16.97	---
Date Analyzed	09.17.97	---
Dilution factor	1.0	---
Batch ID	0916R	---

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Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
Newport News, VA 23606

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040-5	Method Blank	MP040
MP040-9	Method Blank	MP040

PARAMETER	MP040-5	MP040-9
Volatiles in TCLP Extract (8260)		
Benzene (TCLP), mg/l	0.020U	---
Carbon tetrachloride (TCLP), mg/l	0.020U	---
Chlorobenzene (TCLP), mg/l	0.020U	---
Chloroform (TCLP), mg/l	0.020U	---
1,2-Dichloroethane (TCLP), mg/l	0.020U	---
1,1-Dichloroethylene (TCLP), mg/l	0.020U	---
Methyl ethyl ketone (TCLP), mg/l	0.20U	---
Tetrachloroethylene (TCLP), mg/l	0.020U	---
Trichloroethylene (TCLP), mg/l	0.020U	---
Vinyl chloride (TCLP), mg/l	0.040U	---
Surrogate - Toluene-d8	115 %	---
Surrogate - 4-Bromofluorobenzene	105 %	---
Surrogate - Dibromofluoromethane	105 %	---
TCLP (1311) Sec. 7.3 Extraction Date	09.17.97	---
Date Analyzed	09.18.97	---
Dilution factor	1.0	---
Batch ID	0917A	---
Clock ID	1I0918	---

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Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040-6	Lab Control Standard % Recovery	MP040

PARAMETER	MP040-6
Pesticides in TCLP Extract (8080)	
Endrin (TCLP)	84 %
Heptachlor (TCLP)	66 %
Lindane (g-BHC) (TCLP)	76 %
Methoxychlor (TCLP)	81 %
Heptachlor epoxide (TCLP)	78 %
Surrogate-DBC	104 %
Surrogate-TCX	49 %
TCLP (1311) Sec. 7.2 Extraction Date	09.15.97
Extraction Date (Extract)	09.17.97
Date Analyzed	09.19.97
Dilution factor	1.0
Batch ID	09170
Instrument ID	SGKECD

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Malcolm Pirnie
11832 Rock Landing Drive, Suite 400
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040-6	Lab Control Standard % Recovery	MP040

PARAMETER	MP040-6
Semivolatiles in TCLP Extract (8270)	
Cresol (ortho) (TCLP)	72 %
Cresol m & p (TCLP)	72 %
1,4-Dichlorobenzene (TCLP)	60 %
2,4-Dinitrotoluene (TCLP)	64 %
Hexachlorobenzene (TCLP)	60 %
Hexachlorobutadiene (TCLP)	58 %
Hexachloroethane (TCLP)	60 %
Nitrobenzene (TCLP)	66 %
Pentachlorophenol (TCLP)	76 %
2,4,5-Trichlorophenol (TCLP)	70 %
2,4,6-Trichlorophenol (TCLP)	76 %
Pyridine (TCLP)	46 %
Surrogate-2FP	58 %
Surrogate-PHL	64 %
Surrogate-NBZ	64 %
Surrogate-2FBP	64 %
Surrogate-TBP	76 %
Surrogate-TPH	92 %
TCLP (1311) Sec. 7.2 Extraction Date	09.15.97
Extraction Date (Extract)	09.17.97
Date Analyzed	09.25.97
Dilution factor	1.0
Batch ID	0917B
Instrument ID	MSJ5971

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Malcolm Pirnie
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040-6	Lab Control Standard % Recovery	MP040

PARAMETER	MP040-6
Herbicides in TCLP Extract (8150)	
2,4-D (TCLP)	100 %
2,4,5-TP Silvex (TCLP)	120 %
Surrogate-2,4-Dichloropheny l acetic acid (DCAA)	100 %
TCLP (1311) Sec. 7.2 Extraction Date	09.15.97
Extraction Date (Extract)	09.18.97
Date Analyzed	09.24.97
Dilution factor	1.0
Batch ID	0918N
Instrument ID	SGNECD
Metals in TCLP Extract (6010)	
Arsenic (TCLP-6010)	93 %
Barium (TCLP-6010)	103 %
Cadmium (TCLP-6010)	100 %
Chromium (TCLP-6010)	105 %
Lead (TCLP-6010)	100 %
Selenium (TCLP-6010)	91 %
Silver (TCLP-6010)	96 %
TCLP (1311) Sec. 7.2 Extraction Date	09.15.97
Preparation Date	09.16.97
Date Analyzed	09.17.97
Dilution factor	1.0
Batch ID	0916P

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Malcolm Pirnie
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Sampled By: Client
Code: 114971020

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
MP040-12	Matrix Spike % Recovery (SW-3006)	09-11-97/1500	MP040
MP040-13	MS Duplicate % Recovery (SW-3006)	09-11-97/1500	MP040

PARAMETER	MP040-12	MP040-13
Orthophosphate-P (365.1)		
Ortho-Phosphate-P (365.1)	81 %	81 %
Preparation Date	09.12.97	09.12.97
Date Analyzed	09.12.97	09.12.97
Dilution factor	1.0	1.0
Batch ID	0912A	0912A

Linda Wolfe

Linda A. Wolfe, Project Manager

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Malcolm Pirnie
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	SDG#
MP040-6	Lab Control Standard % Recovery	MP040

PARAMETER	MP040-6
Mercury in TCLP Extract (7470)	
Mercury (TCLP-7470)	96 %
TCLP (1311) Sec. 7.2 Extraction Date	09.15.97
Preparation Date	09.16.97
Date Analyzed	09.17.97
Dilution factor	1.0
Batch ID	0916R
Volatiles in TCLP Extract (8260)	
Benzene (TCLP)	112 %
Chlorobenzene (TCLP)	120 %
1,1-Dichloroethylene (TCLP)	110 %
Trichloroethylene (TCLP)	104 %
Surrogate - Toluene-d8	118 %
Surrogate - 4-Bromofluorobenzene	104 %
Surrogate - Dibromofluoromethane	102 %
TCLP (1311) Sec. 7.3 Extraction Date	09.17.97
Date Analyzed	09.18.97
Dilution factor	1.0
Batch ID	0917A
Clock ID	1I0918

Methods: EPA SW-846

Appendix B
May 1999 Sampling Event Data

GROUNDWATER SAMPLING AND ANALYSIS REPORT
Landfill No. 2
Fort Story, Virginia

MOVING TO PROTECT OUR WORLD

USATC ENVIRONMENTAL

MALCOLM PIRNIE

11832 Rock Landing Drive
Newport News, Virginia
(804)873-8700
(804)873-8723 (FAX)

DAILY NOTES

PROJECT: Fort Story GW PROJECT NO.: 2261-006 PAGE 1 OF 1
PERSONNEL: Paul Landin LOCATION: Fort Story VA DATE: 5/5/99
WEATHER: Sunny, 72°F OTHER:

TIME:	LOG ENTRY
11:00	Arrived on-site, proceeded to locate MW-108 & MW-109 from Coast Artillery Road. Figure 1 w/in Preliminary Draft letter report does not accurately reflect Coast Artillery Road's entrance as decommissioned. Went to DPW to review facility Maps to assist in locating wells. Determined proper location for roads leading to MW-109 & MW-108 from DPW Facility map.
12:00	Located approximate location of MW's from map, performed foot search to locate wells.
1:00	Located MW-108, Cap was un-secure. standing water inside well casing below TOC.
1:40	Began sampling MW-108
2:15	Completed " " "
2:20	Arrived at MW-109, well lock is rusted. Top of casing is submerged. Bailed water below TOC. Pulled off lock w/ well cap. Inside of casing is smeared w/ black residue.
2:50	Completed Monitoring at MW-109
1510	Leave Site

SIGNATURE: Paul Landin CHECKED BY: TITLE: E-2 DATE: 5/5/

Revision Date: February 1991

3. GROUNDWATER SAMPLING FORM

1. Date 5-5-99 Sample No. MW-106
   Time 13:46
2. Location Fort Story, VA
3. Well No. MW-106 Sketch on Back (Y or N) _____
4. Total Depth 11.41 BTOC Number of Screened Interval(s) _____
5. Depth to Screen/Length(s) _____
6. (Y or N) Well Secure? No Comments CAP LOOSE ON TOP, COVERED IN PINE NEEDLES
7. Sampler THS/DAL Other present _____
8. Organic Vapor Detector FEL No. _____, Reading _____
9. Weather: Wind _____, Precipitation _____, Air Temperature _____
10. Water Level Measurement: FEL No. 1.47 BTOC
11. Sampler _____
12. Previous Well Sampled N/A
    Decon Method (Lab/Field) Field
13. Equipment Blank Taken (Y or N) No
14. Casing Type PVC, I.D. 2", Gal/Ft. 0.163 (1)
15. Total Depth 11.41 - Depth to Water 1.47 = Ht. 9.94
16. Well Volume ~~1.62 0.163~~ = Ht. 9.94 X Gal/Ft. ~~6" 0.163~~ (1)
17. Required Purge Volume (≥ 3X Well Vol.), Actual Purge 4.86
18. Purge Water Containerized No
19. FEL No.'s Cond. _____ pH _____ Temperature _____ Redox _____
20.

		~~µmhos/cm~~	pH	Temp.	Redox mv	DO
Cond. Initial	0	.235	4.72	15.5	44	12.58
(Purged Cycle)	1	.101	5.21	15.2	14	12.39
	2	.083	5.13	15.5	7	12.14
	4	.080	4.98	15.0	4	11.89
Sample	5	0.079	5.00	14.9	2	11.72

21. Turbid (Y or N) N
22. Color Clear
23. Sample Filtered No, Filter Size _____
24. Reviewed By _____ Date/Time _____

9.94
.163
2

~~0.163~~
1.982

Revision Date: February 1991

3. GROUNDWATER SAMPLING FORM

1. Date 5-5-99 Sample No. _____
   Time 1415
2. Location MW-109 FORT STORY, VA
3. Well No. MW-109 Sketch on Back (Y or N) _____
4. Total Depth 11.03 Number of Screened Interval(s) _____
5. Depth to Screen/Length(s) _____
6. (Y or N) Well Secure? Y Comments FLUSH MOUNTED. BURIED UNDER DIRT. TOC. SUBMERGED. BAILED PRIOR TO REMOVING TOP
7. Sampler _____ Other present _____
8. Organic Vapor Detector FEL No. _____, Reading _____
9. Weather: Wind 0-5, Precipitation N, Air Temperature 75°F
10. Water Level Measurement: FEL No. 1.69 BTOC
11. Sampler _____
12. Previous Well Sampled MW-106
    Decon Method (Lab/Field) Field
13. Equipment Blank Taken (Y or N) No
14. Casing Type PVC, I.D. 2", Gal/Ft. .163 (1)
15. Total Depth 9.34 - Depth to Water 11.03 = Ht. 1.69
16. Well Volume 1.52 = Ht. 9.34 X Gal/Ft. 0.163 (1)
17. Required Purge Volume (≥ 3X Well Vol.), Actual Purge 4.50
18. Purge Water Containerized _____
19. FEL No.'s Cond. _____ pH _____ Temperature _____ Redox _____
20.

		Cond. (µmhos/cm)	pH	Temp.	Redox mv	DO
Cond. Initial	0	0.102 ~~6.02~~	6.02	14.9	255	12.15
(Purged Cycle)	2	0.110	5.53	14.6	110	11.87
	3	0.110	5.56	14.5	48	11.98
	4	0.113	5.41	14.5	25	11.67
Sample	5	0.108	5.64	14.9	28	11.63

21. Turbid (Y or N) N ?
22. Color LIGHT BROWN TO YELLOW
23. Sample Filtered No, Filter Size _____
24. Reviewed By _____ Date/Time _____

2802
5604
934
1.52242

9.34
0.163
2802
5604
934
~~9884~~ 2

~~2802~~
~~5604~~
~~934~~
~~42~~

CLIENT:	Malcolm Pirnie	SUBMITTED BY:	James R. Reed & Associates 11864 Canon Blvd., Suite 103 Newport News, VA 23606 757-873-4703 phone 757-873-1498 fax		
ATTN:	Keith Matteson				
ADDRESS:	11832 Rock Landing Drive, Suite 400				
CITY:	Newport News, VA 23606				
PHONE:	873-8700	SAMPLE RECEIPT DATE:	5/5/99	TIME:	1655
FAX:					
		RECEIVED BY:	LRA		
		GRAB COLLECTION DATE:	5/5/99	GRAB TIME:	1410
SPECIAL NOTES: **RE: Fort Story**		COMPOSITE COLLECTION:	Start Date / Start Time	End Date	End Time
		COLLECTED BY:	Malcolm Pirnie		
		PICKED UP BY:	Malcolm Pirnie		
		NUMBER OF CONTAINERS:	1	Condition	X_GOOD __OTHER
		EXPLAIN			

SAMPLE ID: MW-106

SAMPLE NO: 99-5370

Pres.	Parameter	Method Number	JRA Quantification Level(mg/L)*	Result (mg/L)	Analyst/Date/Time
HNO_3	Total Cadmium	200.7	0.0005	0.0072	FPE-05/10/99 @ 2055

NOTES: *JRA Quantification Level is the concentration of the lowest calibration standard above zero with a reliable signal.

RESPECTFULLY SUBMITTED BY:

Elaine Claiborne

Elaine Claiborne, Laboratory Director

Date: May 11, 1999

CLIENT:	Malcolm Pirnie	SUBMITTED BY:	James R. Reed & Associates 11864 Canon Blvd., Suite 103 Newport News, VA 23606 757-873-4703 phone 757-873-1498 fax		
ATTN:	Keith Matteson				
ADDRESS:	11832 Rock Landing Drive, Suite 400				
CITY:	Newport News, VA 23606				
PHONE:	873-8700	SAMPLE RECEIPT DATE:	5/5/99	TIME:	1655
FAX:					
		RECEIVED BY:	LRA		
		GRAB COLLECTION DATE:	5/5/99	GRAB TIME:	1445
SPECIAL NOTES: **RE: Fort Story**		COMPOSITE COLLECTION:	Start Date / Start Time	End Date	End Time
		COLLECTED BY:	Malcolm Pirnie		
		PICKED UP BY:	Malcolm Pirnie		
		NUMBER OF CONTAINERS:	1	Condition	X_GOOD OTHER
		EXPLAIN			

SAMPLE ID: MW-109

SAMPLE NO: 99-5371

Pres.	Parameter	Method Number	JRA Quantification Level(mg/L)*	Result (mg/L)	Analyst/Date/Time
HNO_3	Total Cadmium	200.7	0.0005	<0.0005	FPE-05/10/99 @ 1920

NOTES: *JRA Quantification Level is the concentration of the lowest calibration standard above zero with a reliable signal.

RESPECTFULLY SUBMITTED BY:

Elaine Claiborne

Elaine Claiborne, Laboratory Director

Date: May 11, 1999

CHAIN OF CUSTODY

ANALYSES REQUESTED

REED & ASSOCIATES

Company Name: Malcolm Pirnie
Company Contact: KEITH MATTESON Telephone: 873-8700
Results To: " Bill To:
Address: 11832 Rock Landing Drive
Newport News, VA 23606
Project ID: FORT STORY

Sample Type*	Sample Location	Composite Start Date	Composite Start Time	Composite End Date	Composite End Time	Grab Date	Grab Time	# of cont.	Total Cadmium
GW	MW-106					5-5-99	14:10	1	X
GW	MW-109					5-5-99	14:45	1	X

*Indicates wastewater (WW), groundwater (GW), drinking water (DW), hazardous waste (HW), sludge, soil, or other sample matrix

Sampled By: Paul A Landin Date: 5-5-99 Time: 1500
On Site Relinquished By: Date: Time:
Received By: Date: Time:
Relinquised By: Paul A Landin Date: Time:
Received By: Date: 5-5-99 Time: 1655
Date: 5-5-99 Time: 1655

JAMES R. REED & ASSOCIATES (804) 873-4707

Appendix C
March 2000 Sampling Event Data

GROUNDWATER SAMPLING AND ANALYSIS REPORT
Landfill No. 2
Fort Story, Virginia

MOVING TO PROTECT OUR WORLD

USATC ENVIRONMENTAL

MALCOLM PIRNIE

11532 Rock Landing Drive
Newport News, Virginia
(804)873-8700
(804)873-8723 (FAX)

DAILY NOTES

PROJECT: Fort Story GW PROJECT NO.: 0285783 PAGE 1 OF
PERSONNEL: PAL/DGM LOCATION: Fort Story, VA DATE: 8-17-99
WEATHER: 90°F SUNNY OTHER:

TIME:	LOG ENTRY
0930	ARRIVE ON SITE, MOVE TO LF SITE (MWBC OR 109)
	I HAD ORDERED PUMP FOR MW-109 BUT NOW
	UNSURE. WILL VERIFY W/ GWC BEFORE
	INSTALLING
1005	INSTALL 4MW-1. NO PROBLEMS ENCOUNTERED
	CLEANED AROUND WELL
1030	INSTALLED MW-114A. WELL CAP NEEDS TO
	BE LOWERED OR WELL HEAD ASSEMBLY
	CHANGED. WE COULD NOT CLOSE CAP. WE
	TIED A BAG AROUND THE WELL TO
	KEEP IT CLEAN. WILL NOTIFY ~~AKP~~ TO RESOLVE
	PRIOR TO SAMPLING
1035	CALLED GWC TO CONFIRM MW106 OR MW109
	WILL CALL BACK IN FEW MINUTES. GWC CONFIRMS
	MW106
1130	FINISH MW112. HAD TO CHANGE LENGTH
	TO FIT. TOOK OFF APPROX 3". [NEEDS COVER]
1135	MOVE TO MW-111 (114) FINISH MW-111.
1145	BREAK FOR LUNCH
1230	RETURN. MOVE TO ~~MW~~ MW-118 IN PARKING LOT
1250	FINISH MW118.
1320	FINISH MW117. HAD TO ASSEMBLE. DID NOT
	HOOK UP AIR FREEZE LINE
1335	FINISH 6MW-1

SIGNATURE: CHECKED BY: TITLE: DATE:

FAX TO: 757-099-5131

MALCOLM PIRNIE

11532 Rock Landing Drive
Newport News, Virginia
(804)873-8700
(804)873-8723 (FAX)

DAILY NOTES

PROJECT: FORT STORY GW PROJECT NO.: 0285783 PAGE 2 OF
PERSONNEL: PAL/PGM LOCATION: FORT STORY, VA DATE: 8-17-99
WEATHER: 90°F SUNNY OTHER:

TIME:	LOG ENTRY
1405	FINISH MW-115 & GMW-1 GO TO GMW-4
1415	FINISH GMW-4. GO TO MW106
1430	FINISH MW-106. IT DOES NOT HAVE COVER
1435	LEAVE SITE

SIGNATURE:	CHECKED BY:	TITLE:	DATE:

SEVERN TRENT STL

STL Savannah • 5102 LaRoche Avenue • Savannah, GA 31404 • Tel 912 354 7858 • Fax 912 351 3673 • www.stl-inc.com

LOG NO: S0-01998
Received: 28 MAR 00
Reported: 02 MAY 00

Mr. Anthony Pace
Malcolm Pirnie
701 Town Center Drive, Suite 600
Newport News, VA 23606

Project: Ft. Story 0285-783/Remedial Investigation/FTS01
Sampled By: Client
Code: 101130321

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
01998-9	MW-106	03-23-00/13:40	FTS01

PARAMETER	01998-9
Cadmium (6010), ug/l	2.8B
Dilution Factor	1
Prep Date	03.30.00
Analysis Date	04.04.00
Batch ID	0330H
Cadmium (Dissolved) (6010B), ug/l	0.50U
Dilution Factor	1
Prep Date	04.10.00
Analysis Date	04.12.00
Batch ID	0410K

Methods: EPA SW-846, Update III.

Linda A Wolfe
Linda A. Wolfe, Project Manager

RECEIVED
MAR 24 2003

Final Page Of Report

Serial Number 00[illegible]02

STL Savannah Laboratories
a division of Severn Trent Laboratories, Inc.

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

5102 LaRoche Avenue, Savannah, GA 31404 — Phone: (912) 354-7858 — Fax: (912) 352-0165
2846 Industrial Plaza Drive, Tallahassee, FL 32301 — Phone: (850) 878-3994 — Fax: (850) 878-9504
900 Lakeside Drive, Mobile, AL 36693 — Phone: (334) 666-6633 — Fax: (334) 666-6696
6712 Benjamin Rd., Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 — Fax: (813) 885-7049

PROJECT REFERENCE	Ft Story Remedial Invst.
PROJECT NO.	0285-783
PROJECT LOCATION (STATE)	VA
STL (LAB) PROJECT MANAGER	L. WOLTE
P.O. NUMBER	
CONTRACT NO.	
CLIENT (SITE) PM	TONY PACE
CLIENT PHONE	757-873-8760
CLIENT FAX	757-873-8243
CLIENT NAME	Malcolm Pirnie INC
CLIENT EMAIL	apace@pirnie.com
CLIENT ADDRESS	11832 Rock Landing drive Suite 410, Newport News, VA 23606
COMPANY CONTRACTING THIS WORK (if applicable):	ACOL

PAGE ___ OF ___

STANDARD REPORT DELIVERY ○
DATE DUE ___
EXPEDITED REPORT DELIVERY (SURCHARGE) ○
DATE DUE ___
NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	COMPOSITE (C) OR GRAB (G) INDICATE	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT, ETC)	VOC (HCL)	PEST/PCB (NONE)	TSS/TDS (NONE)	TOT. MET. (HNO3)	DISS. MET. (HNO3)	TOT CADMIUM (HNO3)	DISS CADMIUM (HNO3)				REMARKS
3/23/00	1340	MW-106	G	✓				—	—	—	—	—	1	1				
3/23/00	1415	6MW-1	G	✓				3	2	1	1	1	—	—				
3/23/00	1450	6MW-3S	G	✓				3	2	1	1	1	—	—				
3/23/00	1400	6MW-3SD	G	✓				3	2	1	1	1	—	—				
3/23/00	1010	MW-118	G	✓				3	—	—	—	—	—	—				
3/23/00	1040	MW-117	G	✓				3	—	—	—	—	—	—				
3/23/00	1135	MW-115	G	✓				3	—	—	—	—	—	—				
		010D (TRIP BLANK)	G	✓				3	—	—	—	—	—	—				
3/23/00	1545	6MW-4	G	✓				3	2	1	1	1	—	—				

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
[illegible]								
RECEIVED BY: (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**
[illegible]								

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	STL-SL LOG NO.	LABORATORY REMARKS:
[illegible]	3/23/00	1015	YES ✓ NO		50.0198	

STL SAVANNAH LABORATORY COPY