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FINAL CONSTRUCTION COMPLETION REPORT FOR GROUNDWATER REMEDIATION AT SITE 11 NSB KINGS BAY GA

8/1/2002

CH2M HILL

0557

NSB Kings Bay Administrative Record
Document Index Number

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Construction Completion Report

Revision No. 00

Groundwater Remediation at Site 11, Old Camden County Landfill

Naval Submarine Base Kings Bay
Kings Bay, Georgia

Contract No. N62467-98-D-0995
Contract Task Order No. 0047

August 2002

PREPARED FOR

Department of the Navy, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29406

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November 22, 2002

Mr. Anthony Robinson
Southern Division, Naval Facilities Engineering Command
P.O. Box 190010
North Charleston, SC 29419-9010

RE: Contract No. N62467-98-D-0995
Contract Task Order No. 0047
Naval Submarine Base (NSB) Kings Bay – Kings Bay, Georgia
Construction Completion Report for Groundwater Remediation at Site 11, Old Camden County Landfill

Dear Mr. Robinson:

CH2M HILL Constructors, Inc. is pleased to provide two copies of the enclosed Completion Report for the Groundwater Remediation at Site 11, Old Camden County Landfill, NSB Kings Bay, Georgia.

If you have any questions or comments regarding the enclosed, please do not hesitate to contact Michael Halil at (904) 777-4812 or at mhalil@vnet.net.

Sincerely,

CH2M HILL Constructors, Inc.

Michael Halil, P.E.
Project Manager

cc: John Garner, NSB Kings Bay (5 copies/5 CDs)
Larry Blackburn, SOUTHDIV (1 CD)
Jimmy Jones, SOUTHDIV (w/o encl)
CCI Project File No. 160027

Construction Completion Report
Groundwater Remediation at
Site 11, Old Camden County Landfill

Naval Submarine Base Kings Bay
Kings Bay, Georgia

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Prepared by

CH2MHILL Constructors, Inc.

115 Perimeter Center Place, N.E.
Suite 700
Atlanta, GA 30346

Submitted to
Department of the Navy, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29406

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CH2MHILL Constructors, Inc.

115 Perimeter Center Place, N.E.
Suite 700
Atlanta, GA 30346

August 2002

Prepared/Approved By:

Michael D. Halil — August 20, 2002

Michael D. Halil, Project Manager — Date

Approved By:

R. Scott Newman — August 20, 2002

R. Scott Newman, Program Manager — Date

Client Acceptance:

U.S. Navy Responsible Authority — Date

CH2MHILL
Constructors, Inc.

CERTIFICATE OF COMPLETION

CH2M HILL Constructors, Inc., attests that, to the best of its knowledge and belief, the Groundwater Remediation at Site 11, Old Camden County Landfill at Naval Submarine Base Kings Bay, Kings Bay, Georgia, delivered under Contract No. N62467-98-D-0995, Contract Task Order No. 0047, has been completed, inspected, and tested, and is in compliance with the contract.

Mr. Scott Sloan	08/20/02
Project Quality Control Manager	Date

Contents

1.0 Introduction 1-1
1.1 Site History 1-1
1.2 Project Scope and Project Objectives 1-2
2.0 Chronology of Events and Problems Encountered 2-1
2.1 Chronology of Events 2-1
2.2 Problems Encountered 2-1
3.0 Construction Activities and Quality Control 3-1
3.1 Construction Participants 3-1
3.2 Summary of Construction Activities and Quality Control 3-2
3.2.1 Source Area Delineation 3-2
3.2.2 Fenton's Reagent Chemical Oxidation Injection 3-3
3.2.3 pH Adjustment 3-4
3.2.4 Vegetable Oil Injection 3-4
3.2.5 Demobilization 3-5
4.0 Site Status Summary 4-1
4.1 Site Status Summary 4-1
5.0 References 5-1

Tables

1-1 Post-Phase III Sampling Event Analytical Results 1-2
2-1 Chronology of Events 2-1

Figures

3-1 Organization of Construction Participants 3-1

Appendices

A Site Photographs
B Site Survey
C Membrane Interface Probe Reports
D Laboratory Analytical Summary Tables and Reports
E Geo-Cleanse International, Inc. Phase IV Field Summary Report
F Underground Injection Control Permits

Acronyms

BEI	Bechtel Environmental, Inc.
bls	below land surface
CCI	CH2M HILL Constructors, Inc.
CTO	Contract Task Order
CVOCs	chlorinated volatile organic compounds
DCE	cis-1,2-dichloroethene
DPT	direct-push technology
GC	gas chromatograph
GCI	Geo-Cleanse International, Inc.
J.A. Jones	J.A. Jones Environmental Services Company
MIP	membrane interface probe
NAVFAC	Navy, Southern Division, Naval Facilities Engineering Command
NSB	Naval Submarine Base
PCE	tetrachloroethene
TCE	trichloroethene
USEPA	U. S. Environmental Protection Agency
VC	vinyl chloride

1.0 Introduction

CH2M HILL Constructors, Inc. (CCI), with J.A. Jones Environmental Services Company (J.A. Jones), has been contracted by the Department of the Navy, Southern Division, Naval Facilities Engineering Command (Southern Division, NAVFAC), to prepare this Construction Completion Report for work performed by CCI/J.A. Jones at Site 11, Old Camden County Landfill (Site 11) at Naval Submarine Base (NSB) Kings Bay, Kings Bay, Georgia. This work was performed under Contract No. N62467-98-D-0995, Contract Task Order (CTO) No. 0047 and in accordance with the management approach outlined in the CCI Contract Management Plan (CCI, 1998), Work Plan (CCI, 2000), and Work Plan Addendum 2 (CCI, 2001).

The objective of this report is to provide documentation of the activities associated with groundwater remediation at Site 11, NSB Kings Bay, Kings Bay, Georgia.

1.1 Site History

NSB Kings Bay occupies approximately 16,168 acres in Camden County, Georgia. Site 11 is identified as the Old Camden County Landfill, which is now incorporated in NSB Kings Bay. The Old Camden County Landfill was used for municipal solid waste disposal in the 1960s and 1970s. Waste was disposed by digging trenches, filling the trenches with waste, and then backfilling the trenches. The contaminants of concern at Site 11 include chlorinated volatile organic compounds (CVOCs), specifically tetrachloroethene (PCE), and its degradation constituents trichloroethene (TCE), cis-1,2-dichloroethene (DCE), and vinyl chloride (VC).

Bechtel Environmental, Inc. (BEI), with Geo-Cleanse International, Inc. (GCI), performed three phases of chemical oxidation treatment during August 1998 through April 2000. During the entire treatment program, a total of 54 injectors were installed and an approximate total of 34,850 gallons of 50 percent hydrogen peroxide and an equivalent amount of ferrous iron catalyst were delivered to the subsurface.

Phase I chemical oxidation treatment was performed from August 1998 through February 1999. Because of a concentration increase in three piezometers and Injector I-14 following Phase I treatment, BEI conducted a cone penetration testing program in April 1999 to confirm and delineate the horizontal extent of dissolved groundwater contamination.

Phase II chemical oxidation treatment was performed from May 1999 to July 1999 on areas east and west of the Phase I area of concern. Because of a concentration rebound in Injector I-14 following the Phase II treatment, BEI conducted a Geoprobe investigation in August 1999 to investigate and locate the potential new source of PCE at Injector I-14. Excavation of the suspected source area near Injector I-14 was conducted in September 1999. The excavation yielded several 5-gallon containers, one containing a gray-colored, paint–like waste, and one approximate 20-gallon container containing a black sludge-like waste. The black waste contained PCE with the highest concentration of all compounds tested.

Phase III chemical oxidation treatment was performed from January 2000 to April 2000 on the delineated source area southeast of Injector I-14. Based on the analytical results from the post-Phase III sampling event conducted by BEI on May 30, 2000, a source area of PCE contamination appeared to remain beneath the Phase III injectors.

The post-Phase III sampling event analytical results are summarized below in Table 1-1, and the site survey showing the injector locations is provided in Appendix B.

TABLE 1-1
Post-Phase III Sampling Event Analytical Results

	Concentration in micrograms per liter (mg/L)				
Injector ID	**PCE**	**TCE**	**cis-1,2-DCE**	**VC**	**Total Chlorinated Ethenes**
I-11	170	7	6.5I	5U	183.5
I-12	47	1.8I	1U	1U	48.8
I-13	41	5U	5U	5U	41
I-14	32	2.8	1.6I	1U	36.4
I-18	99	1.6I	1U	1U	100.6
I-24	13	1.4I	1.3I	1U	15.7
I-25	81	1U	2	1U	83
I-26	49	1U	1.5I	1U	50.5
I-60	10,000	100U	100U	100U	10,000
I-61	820	20U	20U	20U	820
I-62	120	5U	5U	5U	120
I-63	130	5U	5U	5U	130
I-64	92	5U	5U	5U	92
I-65	210	5U	5U	5U	210
I-66	260	5U	5U	5U	260
I-67	72	5U	5.2I	5U	72
I-68	4	1U	1U	1U	4
I-69	36	1.8I	1U	1U	37.8

Notes:

U denotes compound was analyzed for but not detected to the level shown.

I denotes analyte detected, however the value is between the method detection limit and the practical quantitation limit.

1.2 Project Scope and Project Objectives

On July 5, 2000, CCI/J.A. Jones received work authorization from Southern Division, NAVFAC to complete the following scope of work associated with groundwater remediation at Site 11, NSB Kings Bay, Kings Bay, Georgia. Additional details on the proposed scope of work are included in the CTO No. 0047 Work Plan (CCI, 2000) and Work Plan No. 02 (CCI, 2001), respectively.

The project objectives outlined in the CTO No. 0047 Work Plan (CCI, 2000) and Work Plan No. 02 (CCI, 2001) were to delineate the horizontal and vertical extent of the potential source

area PCE contamination (and its degradation products) beneath the Phase III chemical oxidation treatment injectors through the use of direct-push technology (DPT) and an onsite mobile laboratory, and utilize the collected analytical data to design and implement a Fenton's reagent chemical oxidation and vegetable oil injection strategy to remediate the groundwater contamination located in the delineated source area.

2.0 Chronology of Events and Problems Encountered

2.1 Chronology of Events

The chronology of events at the site is listed below in Table 2-1. Specific details describing the construction activities are found in Section 3.0 of this report.

TABLE 2-1
Chronology of Events

Event	Date
Work Plan Submitted	October 9, 2000
Source Area Delineation No. 1	November 1 – 16, 2000
Environmental Conditions Report Submitted	November 17, 2000
Source Area Delineation No.2	January 8 – 12, 2001
Work Plan No. 02 Submitted	September 11, 2001
Chemical Oxidation Injector Installation	September 23 – October 2, 2001
Primary Chemical Oxidation Injection	October 22 – November 1, 2001
Polish Chemical Oxidation Injection	November 12 – 14, 2001
pH Adjustment	December 10 – 11, 2001
Soybean Oil Injection	December 12, 2001 – January 23, 2002
Site Survey	March 14, 2002

2.2 Problems Encountered

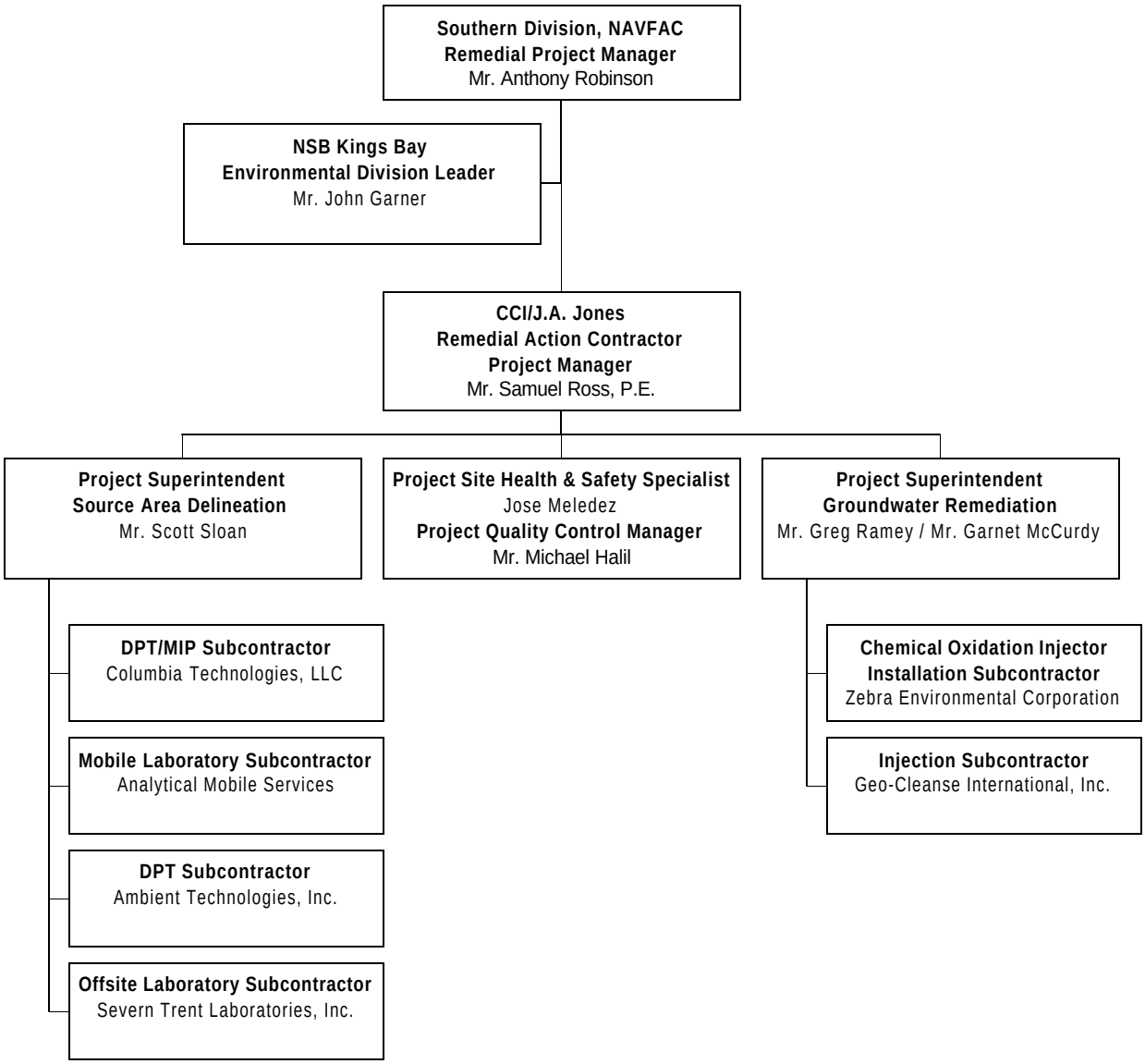
No problems were encountered during the completion of the scope of work.

3.0 Construction Activities and Quality Control

3.1 Construction Participants

The Construction participants and their respective responsibilities for the project are discussed in this section. The primary construction participants are shown below in Figure 3-1.

FIGURE 3-1
Organization of Construction Participants



3.2 Summary of Construction Activities and Quality Control

Construction activities for the project included:

- Source area delineation
- Fenton's Reagent chemical oxidation injection
- pH adjustment
- Vegetable oil injection
- Demobilization

CCI/J.A. Jones provided oversight of all field operations throughout the course of the project. CCI/J.A. Jones field oversight staff included a Project Superintendent, Site Health and Safety Specialist, and Project Quality Control Manager. Detailed records of subcontractor activities were maintained in field logbooks and site field records. Project photographs were taken throughout the project and representative photographs are provided in Appendix A. The Site Survey showing the source area delineation sample, Fenton's reagent chemical oxidation injector, and vegetable oil injection locations is provided in Appendix B.

3.2.1 Source Area Delineation

A source area delineation effort was conducted by CCI/J.A. Jones from November 6, 2000 through January 12, 2001 to delineate the horizontal and vertical extent of the potential source area PCE contamination (and its degradation products) beneath the Phase III chemical oxidation treatment injectors. Source area delineation was completed in accordance with the CTO No. 0047 Work Plan (CCI, 2000).

Source Area Delineation No. 1

From November 6-21, 2000, Source Area Delineation No. 1 was completed utilizing a membrane interface probe (MIP)/DPT rig provided by Columbia Technologies, LLC, and an onsite mobile laboratory provided by Analytical Mobile Services. The MIP technology was utilized to provide a vertical profile of the subsurface on a horizontal 10-foot grid from Injector I-60. The MIP is pushed into the ground using the DPT rig at a rate of 1-foot per minute. A soil conductivity sensor on the probe continuously logs the changes in the subsurface conductivity. A thermister on the probe heats the surrounding soil and water, which volatilizes the contaminants causing them to migrate across a permeable membrane and into the probe. A carrier gas transports the volatilized gases to a lab-grade gas chromatograph (GC) at the surface. The GC results log continuously into a computer and display real time. The MIP data was used to determine the groundwater sample collection locations and intervals. The MIP reports are provided in Appendix C.

Following completion of the MIP, groundwater samples were collected on a horizontal 10-foot grid from Injector I-60, but based on the initial groundwater sample analytical results; the spacing was increased to a 50-foot grid to locate a "clean" boundary. Groundwater samples were collected from each boring using the DPT rig with peristaltic sampling pump and analyzed by the onsite mobile laboratory for United States Environmental Protection Agency (USEPA) SW-846 Method 8021B. Each boring was abandoned immediately following MIP boring or groundwater sample collection by sealing

the boring with grout from the bottom of the boring to the ground surface using the DPT rods and screen.

Based on the groundwater sample analytical results collected during this initial effort, the vertical interval of contamination in the source area was determined to be from 44 to 48 feet below land surface (bls); however, additional groundwater collection sampling and analysis was determined to be necessary to delineate the horizontal extent of contamination.

The onsite mobile laboratory analytical reports and summary table are provided in Appendix D. The site survey showing the MIP/DPT sample locations is provided in Appendix B.

Source Area Delineation No. 2

From January 8 to 12, 2001, Source Area Delineation No. 2 was completed utilizing a DPT rig provided by Ambient Technologies, Inc. with offsite laboratory Severn Trent Laboratories, Inc. Groundwater samples were collected on a 25-foot grid centered 5 feet to the west of Injector I-60, with samples collected from each of nine borings at depths of 36 to 40 feet bls, 40 to 44 feet bls, 44 to 48 feet bls, and 48 to 52 feet bls and analyzed by Severn Trent Laboratories, Inc. for USEPA SW-846 Method 8021B. Each boring was abandoned immediately following groundwater sample collection by sealing the boring with grout from the bottom of the boring to the ground surface using the DPT rods and screen. The offsite laboratory analytical reports and summary table are provided in Appendix D. The site survey showing the DPT sample locations is provided in Appendix B.

In addition to the above delineation effort, Injector I-60 was sampled on February 7, 2001 and analyzed by offsite laboratory Severn Trent Laboratories, Inc. for USEPA SW-846 Method 8021B. The laboratory analytical report for this event is provided in Appendix D.

This delineation effort, along with the initial effort, provided sufficient data to determine the horizontal extent of contamination and the area requiring remediation.

3.2.2 Fenton's Reagent Chemical Oxidation Injection

Based on the source area delineation data, a Fenton's reagent chemical oxidation treatment zone was targeted by GCI in the depth interval from approximately 40 to 50 feet bls surrounding previously installed and treated Injector I-60. A total of 20 new injectors, identified as I-70 through I-89, were installed to focus on the treatment zone. Zebra Environmental Corporation installed the injectors by DPT to a depth of 48 feet bls with a screen interval from 45 to 48 feet bls.

The following materials and procedures were used for the installation of the injectors. The injectors were constructed with stainless steel, 0.010-slot width screens with Schedule 80 black steel riser pipe and couplings. The riser pipe was ¾-inch in diameter and the screen was 1.25 inches in diameter and 3 feet in length. The injectors were installed by advancing a 3.25-inch outside diameter/2.5-inch inside diameter casing with a disposable tip to depth. The injector was then placed inside the casing and the casing was packed with filter sand extending 1-foot above the top of the screen. The casing was systematically extracted as completion materials were added to ensure that materials did not bridge within the drive casing. Next, a 1-foot layer of fine (20/60 grade) sand was added to prohibit grout

infiltration of the filter pack sand. The injectors were then sealed to grade with a cement/bentonite grout mix.

The Fenton's reagent chemical oxidation injection program was performed by GCI in two phases: 1) a primary injection and 2) a polishing phase. Typical injection rates ranged from 0.4 to 1.5 gallons per minute, and the total volume of fluids injected at the site was approximately 23,585 gallons (approximately 12,220 gallons of catalyst and 11,365 gallons of 50 percent hydrogen peroxide). At no time during the injection was the concentration of hydrogen peroxide injected greater than 25 percent.

GCI collected groundwater samples for field analytical tests on a daily basis during the injection program. The samples were collected from wells located adjacent to where Fenton's reagent injection was being performed. The field parameters collected were pH, total iron, chloride, alkalinity, hydrogen peroxide, and photoionization detector headspace. These analytical parameters were used by GCI as a screening tool to assist with the injection program.

Details of the Fenton's reagent chemical oxidation injection program are provided in the GCI Phase IV Field Summary Report in Appendix E, and the UIC permit for the Fenton's reagent chemical oxidation injection is included in Appendix F. The Site Survey showing the Fenton's reagent chemical oxidation injector locations is provided in Appendix B.

3.2.3 pH Adjustment

Following the polish Fenton's reagent chemical oxidation injection, groundwater pH across the site was less than 5.0. An injection of potassium hydroxide was conducted by GCI on December 10-11, 2001, because the Fenton's reagent chemical oxidation treatment was to be followed by a vegetable oil injection to enhance natural degradation of residual contaminants (which typically occurs at pH only above 5.0). The potassium hydroxide injection solution was weak (pH of 9.0), but sufficient to overcome the groundwater pH. A total of 5,500 gallons of potassium hydroxide solution was injected into the Fenton's reagent chemical oxidation injectors. Upon completion of the potassium hydroxide injection, groundwater samples were collected from across the site and analyzed for pH. The results indicated an acceptable pH range from 5.0 to 7.5. Details of the pH adjustment are provided in the GCI Phase IV Field Summary Report in Appendix E, and the UIC permit for the potassium hydroxide injection is included in Appendix F.

3.2.4 Vegetable Oil Injection

In accordance with the CTO No. 0047 Work Plan No. 02 (CCI, 2001), sediment samples were collected using the DPT rig during new Fenton's reagent chemical oxidation injector installation at the screened depth interval (44 to 48 feet bls) and analyzed for bioavailable iron, soil bulk density, and fraction of organic carbon to assist in the development of a fate and transport model. The bioavailable iron sample was collected during installation of Injector I-85 and was submitted to Mr. Cliff Casey, Navy Environmental Technical Support for analysis. Two sediment samples were collected during installation of Injectors I-84 and I-85 and analyzed by Ellis and Associates for soil bulk density. One sediment sample was collected during installation of Injector I-81 and analyzed by GPL Laboratories, LLC for total organic carbon by USEPA SW-846 Method 9060. The fraction of organic carbon was

determined by calculating the gram of total organic carbon per gram of soil based on the total organic carbon result. The laboratory analytical reports are provided in Appendix D. The site survey showing the Fenton's reagent chemical oxidation injector locations is provided in Appendix B.

GCI subcontracted Precision Sampling to provide the DPT rig to assist in vegetable oil injection. The specific type of vegetable oil utilized was soybean oil manufactured by Cargill Foods. The soybean oil contained 7.5 percent (by weight) lecithin to act as an emulsifier and enhance mixing with water. A total of 25,208 gallons of emulsified soybean oil containing approximately 35 percent oil with lecithin, 65 percent water, and 100-mg/L iodine (as sodium bromide, to be utilized as a tracer to assist in determining the contaminant degradation, oil travel time, and oil dispersion) was injected into 39 DPT injection points and three Fenton's reagent chemical oxidation injectors. Typically, the vegetable oil was injected into the 39 DPT injection points from 28 to 48 feet bls. The total volume of fluids injected was 8,839 gallons of soybean oil with lecithin and 16,369 gallons of water. Following vegetable oil injection completion, each DPT boring was properly abandoned by sealing with grout from the bottom of the boring to the ground surface using the DPT rods and screen.

The vegetable oil injection equipment was modified during the program by request of Mr. Cliff Casey, Navy Environmental Technical Support in order to improve mixing. The original setup included one 400-gallon tank, two centrifugal pumps, three flow meters, one 24-inch static mixer, and valve system and hosing. The first modification was to increase the velocity of the fluids into the static mixer, and replace the static mixer to a 12-inch stainless unit with additional tightly spaced vanes. The centrifugal pumps were also replaced with diaphragm pumps to increase fluid velocity and overcome static water head at the injection points. The second modification, due primarily to colder seasonal temperatures, was to heat the soybean oil and water to a temperature greater than 70°F, utilizing separate tanks for oil, water, and the oil/water emulsion. This modification was intended to inhibit separation of the oil and the oil/water mix, and to eliminate air induction to the solution. Immersion heaters were installed to heat the materials. The modified system included: three 400-gallon tanks, three double diaphragm pumps, three flow meters, a 12-inch static mixer, four immersion heaters, two generators, air compressor for the diaphragm pumps, a tent enclosure for better temperature maintenance, and the necessary valves and hoses to distribute the oil/water mix to the injection locations.

Details of the vegetable oil injection are provided in the GCI Phase IV Field Summary Report in Appendix E. The vegetable oil injection locations, labeled as IP-01 to IP-39, are shown on the site survey provided in Appendix B.

3.2.5 Demobilization

GCI completed demobilization on January 23, 2002, following vegetable oil injection. During demobilization, temporary facilities, utilities, and equipment were removed from the site. In addition, any debris or solid waste material remaining from site activities was removed and properly disposed of offsite.

A site survey of the source area delineation sample, Fenton's reagent chemical oxidation injector, and vegetable oil injection locations was performed by L.D. Bradley Land Surveyors on March 14, 2002, and is provided in Appendix B.

4.0 Site Status Summary

4.1 Site Status Summary

The initial project objectives, as outlined in the CTO No. 0047 Work Plan (CCI, 2000) and Work Plan No. 02 (CCI, 2001), were to delineate the horizontal and vertical extent of the potential source area PCE contamination (and its degradation products) beneath the Phase III chemical oxidation treatment injectors through the use of DPT and an on site mobile laboratory, and utilize the collected analytical data to design and implement a Fenton's reagent chemical oxidation and vegetable oil injection strategy to remediate the groundwater contamination located in the delineated source area.

As outlined in Section 3.0 Construction Activities and Quality Control, CCI/J.A. Jones has completed the following activities at Site 11, NSB Kings Bay, Kings Bay, Georgia:

- Delineated the horizontal and vertical extent of the potential source area PCE contamination (and its degradation products) beneath the Phase III chemical oxidation treatment injectors through the use of DPT and onsite mobile and offsite laboratories.
- Utilized the collected analytical data to design a Fenton's reagent chemical oxidation and vegetable oil injection strategy to remediate the groundwater contamination located in the delineated source area.
- Installed 20 additional chemical oxidation injectors to focus on the delineated depth of source area contamination.
- Completed Fenton's reagent chemical oxidation injections (primary and polish) with 23,585 gallons of catalyst and 50 percent hydrogen peroxide.
- Completed injection of 8,839 gallons of soybean oil with lecithin and 16,369 gallons of water into 39 temporary injection points and three chemical oxidation injectors.

As outlined in this Construction Completion Report, CCI/J.A. Jones has achieved the initial project objectives stated in the CTO No. 0047 Work Plan (CCI, 2000) and Work Plan Addendum 02 (CCI, 2001). Site 11 is currently being monitored under a quarterly groundwater monitoring program. The following activities are conducted as part of the quarterly groundwater monitoring program:

- Monitoring well inspections
- Monitoring well headspace, depth to water, and total depth measurement
- Monitoring well groundwater sampling and analyses

5.0 References

CH2M HILL Constructors, Inc. July 1998. Contract Management Plan for Response Action Contract No. N62467-98-D-0995.

CH2M HILL Constructors, Inc. October 2000. CTO No. 0047 Work Plan, Source Area Delineation at Site 11, Old Camden County Landfill, Naval Submarine Base Kings Bay, Kings Bay, Georgia.

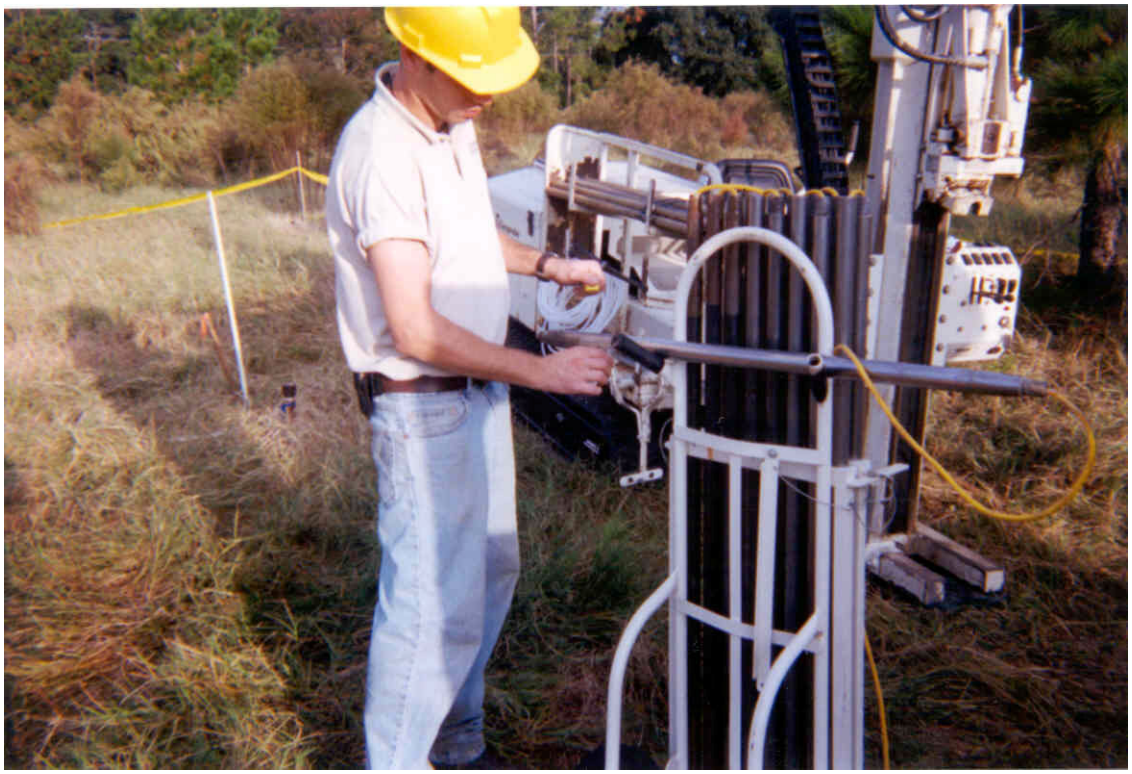
CH2M HILL Constructors, Inc. August 2001. CTO No. 0047 Work Plan No. 02, Groundwater Remediation at Site 11, Old Camden County Landfill, Naval Submarine Base Kings Bay, Kings Bay, Georgia.

Appendix A

Site Photographs

1. View of the MIP GC and associated equipment.

2. View of the DPT rig advancing the MIP and DPT rods.

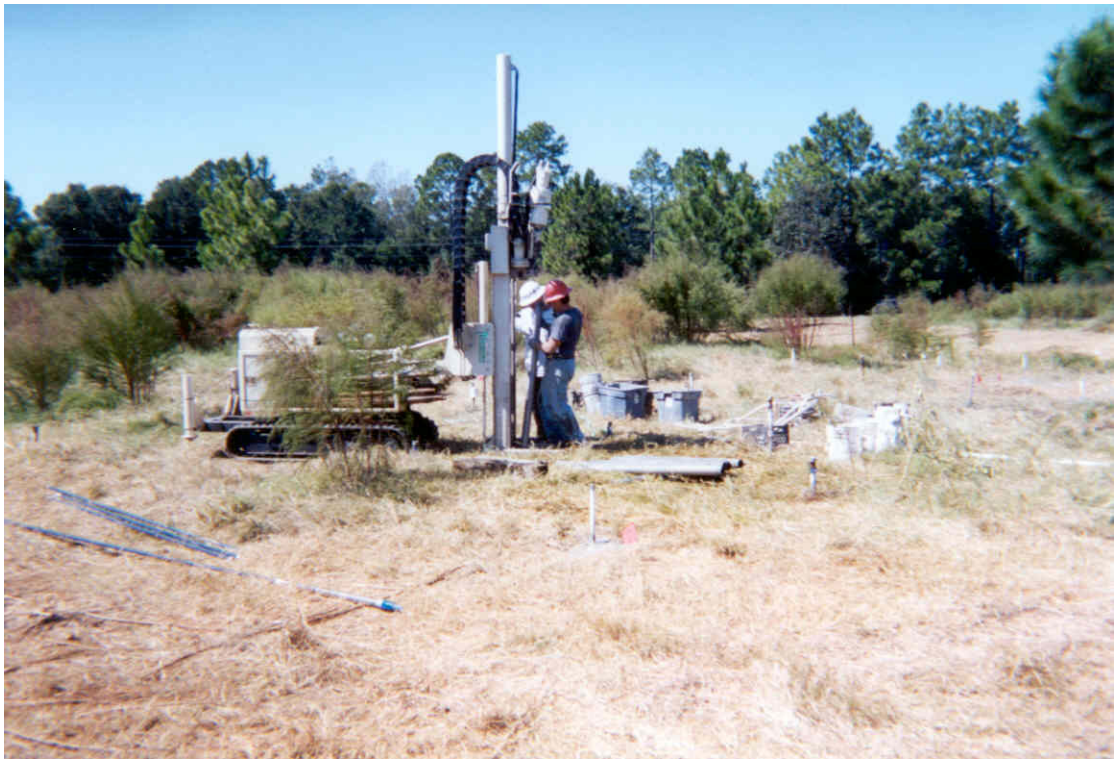


3. View of the MIP technician calibrating the MIP.

4. Preparing to collect a groundwater sample of a DPT sample point.

5. View of Site 11 from west prior to injector installation.

6. View of the Fenton's reagent chemical oxidation injector screen.



7. View of the DPT rig during installation of Fenton's reagent chemical oxidation injector.

8. View of a completed Fenton's reagent chemical oxidation injector.

9. View of inside the GeoCleanse International, Inc. chemical oxidation injection trailer.

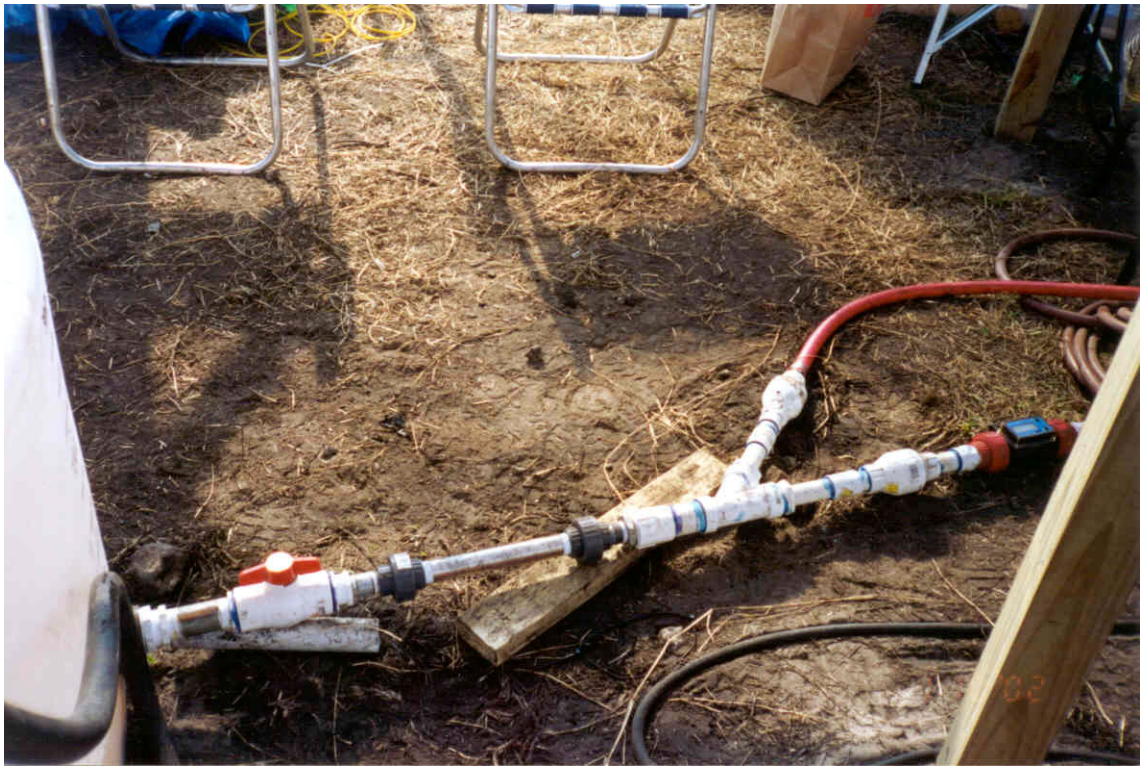
10. View of the Fenton's reagent chemical oxidation injector head assembly.

11. View of the hydrogen peroxide storage tank.

12. View of the soybean oil emulsification.

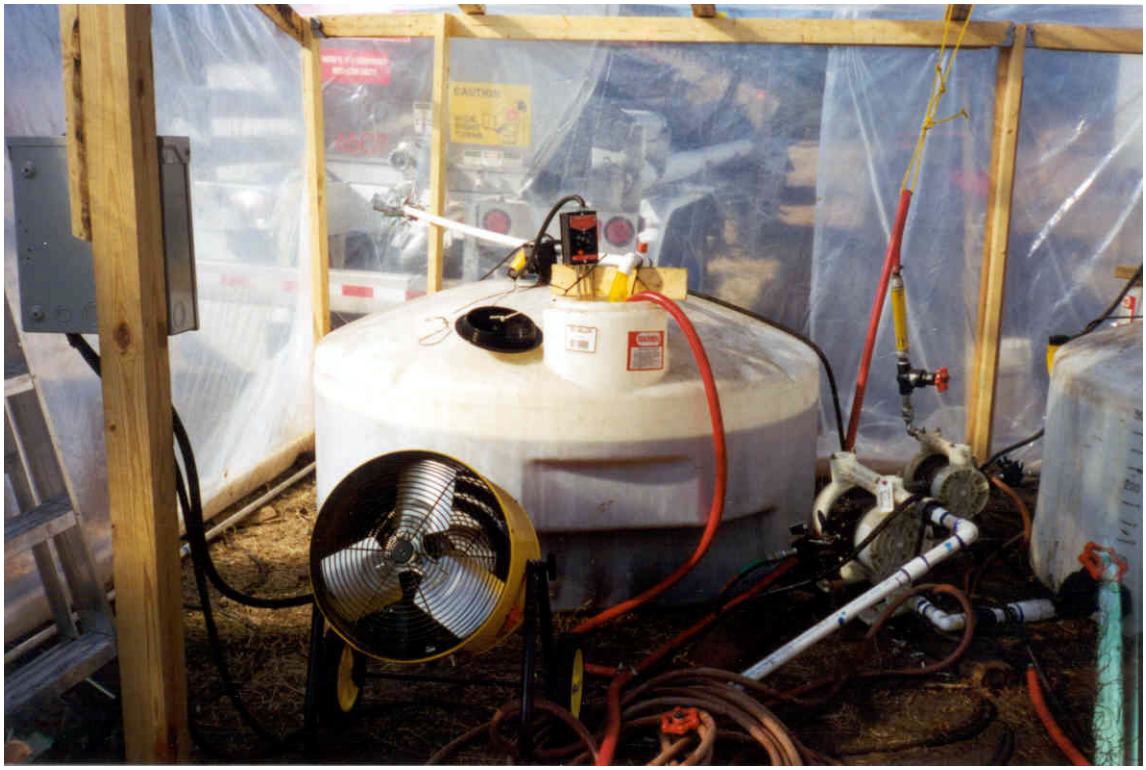
13. View of the soybean oil emulsification passing through the flowmeter.

14. View of soybean oil injection equipment setup. In the background is the tanker used to store the soybean oil.



15. View of the inline static mixer used to emulsify the soybean oil and water.

16. View of the enclosure for the soybean oil injection equipment.



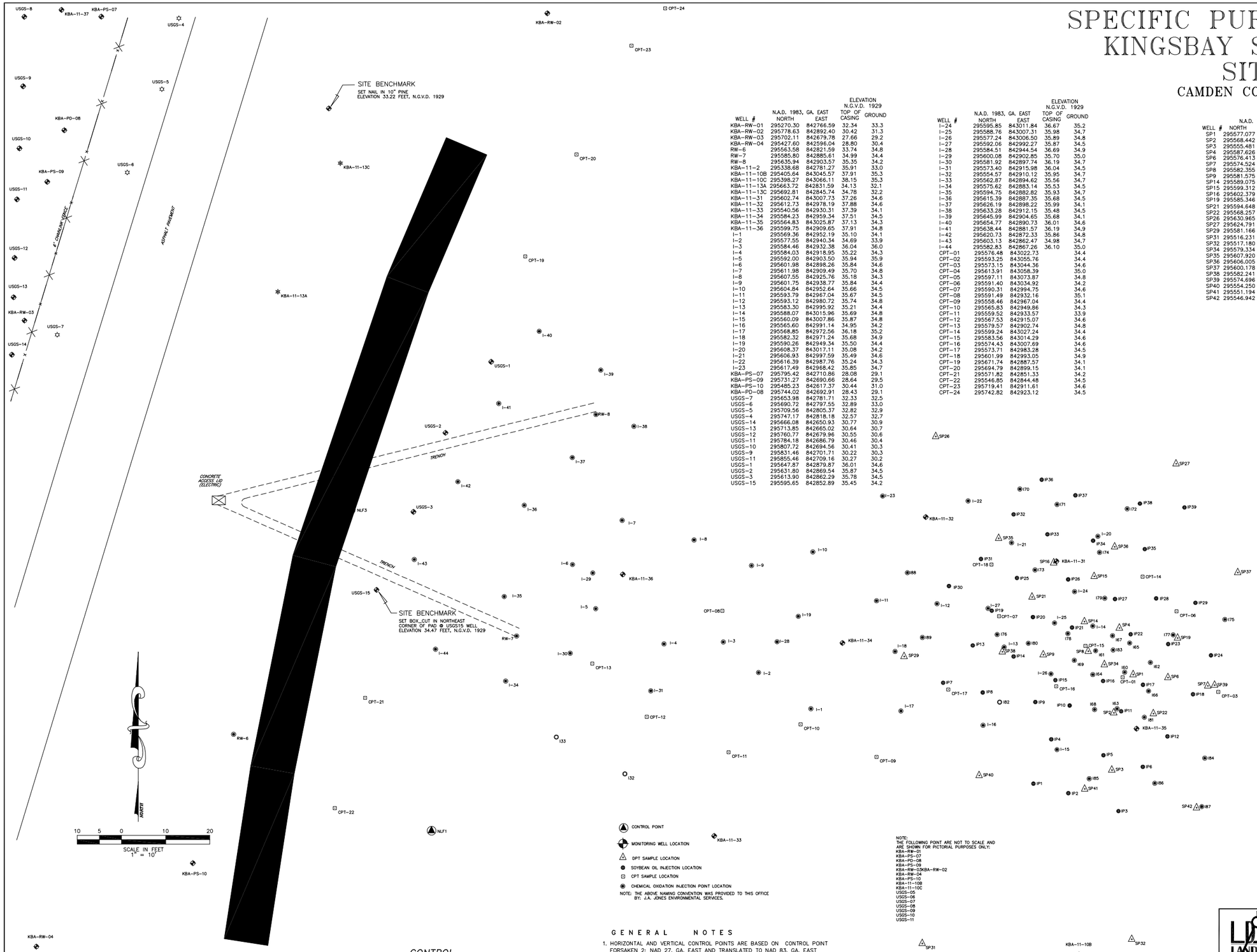
17. View of the soybean oil tank, heater assembly, and injection equipment.

Appendix B

Site Survey

SPECIFIC PURPOSE SURVEY OF KINGSBAY SUBMARINE BASE SITE 11

CAMDEN COUNTY, GEORGIA



WELL #	N.A.D. 1983, GA. EAST NORTH	EAST	ELEVATION N.G.V.D. 1929 TOP OF CASING	GROUND
KBA-RW-01	295270.30	842766.59	32.34	33.3
KBA-RW-02	295778.63	842892.40	30.42	31.3
KBA-RW-03	295702.11	842679.78	27.66	29.2
KBA-RW-04	295427.60	842596.04	28.80	30.4
RW-6	295563.58	842821.59	33.74	34.8
RW-7	295585.80	842885.61	34.99	34.4
RW-8	295635.94	842903.57	35.35	34.2
KBA-11-2	295338.68	842781.27	35.91	33.0
KBA-11-10B	295405.64	843045.57	37.91	35.3
KBA-11-10C	295398.27	843066.11	38.15	35.3
KBA-11-13A	295663.72	842831.59	34.13	32.1
KBA-11-13C	295692.81	842845.74	34.78	32.2
KBA-11-31	295602.74	843007.73	37.26	34.6
KBA-11-32	295612.73	842978.19	37.88	34.6
KBA-11-33	295540.56	842930.31	37.39	34.1
KBA-11-34	295584.23	842959.34	37.51	34.5
KBA-11-35	295564.83	843025.87	37.13	34.3
KBA-11-36	295599.75	842909.65	37.91	34.8
I-1	295569.36	842952.19	35.10	34.1
I-2	295577.55	842940.34	34.69	33.9
I-3	295584.46	842932.38	36.04	36.0
I-4	295584.03	842918.95	35.22	34.3
I-5	295592.00	842903.50	35.94	35.9
I-6	295601.98	842898.26	35.84	34.8
I-7	295611.98	842909.49	35.70	34.8
I-8	295607.55	842925.76	35.18	34.3
I-9	295601.75	842938.77	35.84	34.4
I-10	295604.84	842952.64	35.66	34.5
I-11	295593.79	842967.04	35.67	34.5
I-12	295593.12	842980.72	35.74	34.8
I-13	295583.30	842995.92	35.21	34.4
I-14	295588.07	843015.96	35.69	34.8
I-15	295560.09	843007.86	35.87	34.8
I-16	295565.60	842991.14	34.95	34.2
I-17	295568.85	842972.56	36.18	35.2
I-18	295582.32	842971.24	35.68	34.9
I-19	295590.26	842949.34	35.50	34.4
I-20	295608.37	843017.11	35.08	34.2
I-21	295606.93	842997.59	35.49	34.6
I-22	295616.39	842987.76	35.24	34.3
I-23	295617.49	842968.42	35.85	34.7
KBA-PS-07	295795.42	842710.86	28.08	29.1
KBA-PS-09	295731.27	842690.66	28.64	29.5
KBA-PS-10	295485.23	842617.37	30.44	31.0
KBA-PD-08	295744.02	842692.91	28.43	29.1
USGS-7	295653.98	842781.71	32.33	32.5
USGS-6	295690.72	842797.55	32.89	33.0
USGS-5	295709.56	842805.37	32.82	32.9
USGS-4	295747.17	842818.18	32.57	32.7
USGS-14	295666.08	842650.93	30.77	30.9
USGS-13	295713.85	842665.02	30.64	30.7
USGS-12	295760.77	842679.96	30.55	30.6
USGS-11	295784.18	842686.79	30.46	30.4
USGS-10	295807.72	842694.56	30.41	30.3
USGS-9	295831.46	842701.71	30.22	30.3
USGS-11	295855.46	842709.16	30.27	30.2
USGS-1	295647.87	842879.87	36.01	34.6
USGS-2	295631.80	842869.54	35.87	34.5
USGS-3	295613.90	842862.29	35.78	34.5
USGS-15	295595.65	842852.89	35.45	34.2

WELL #	N.A.D. 1983, GA. EAST NORTH	EAST	ELEVATION N.G.V.D. 1929 TOP OF CASING	GROUND
I-24	295595.85	843011.84	36.67	35.2
I-25	295588.76	843007.31	35.98	34.7
I-26	295577.24	843006.50	35.89	34.8
I-27	295592.06	842992.27	35.87	34.5
I-28	295584.51	842944.54	36.69	34.9
I-29	295600.08	842902.85	35.70	35.0
I-30	295581.92	842897.74	36.19	34.7
I-31	295573.40	842915.98	36.04	34.5
I-32	295554.57	842910.12	35.95	34.7
I-33	295562.87	842894.62	35.56	34.7
I-34	295575.62	842883.14	35.53	34.5
I-35	295594.75	842882.82	35.93	34.7
I-36	295615.39	842887.35	35.68	34.5
I-37	295626.19	842898.22	35.99	34.1
I-38	295633.28	842912.15	35.48	34.5
I-39	295645.99	842904.65	35.68	34.1
I-40	295654.77	842890.73	36.01	34.6
I-41	295638.44	842881.57	36.19	34.9
I-42	295620.73	842872.33	35.86	34.8
I-43	295603.13	842862.47	34.98	34.7
I-44	295582.83	842867.26	36.10	35.0
CPT-01	295576.48	843022.73		34.4
CPT-02	295593.25	843055.76		34.4
CPT-03	295573.15	843044.36		34.6
CPT-04	295613.91	843058.39		35.0
CPT-05	295597.11	843073.87		34.8
CPT-06	295591.40	843034.92		34.2
CPT-07	295590.31	842994.75		34.6
CPT-08	295591.49	842932.16		35.1
CPT-09	295558.46	842967.04		34.4
CPT-10	295565.83	842949.86		34.3
CPT-11	295559.52	842933.57		33.9
CPT-12	295567.53	842915.07		34.6
CPT-13	295579.57	842902.74		34.8
CPT-14	295599.24	843027.24		34.4
CPT-15	295583.56	843014.29		34.6
CPT-16	295574.43	843007.69		34.6
CPT-17	295573.71	842983.28		34.5
CPT-18	295601.99	842993.05		34.9
CPT-19	295671.74	842887.57		34.1
CPT-20	295694.79	842899.15		34.1
CPT-21	295571.82	842851.33		34.2
CPT-22	295546.85	842844.48		34.5
CPT-23	295719.41	842911.61		34.6
CPT-24	295742.82	842923.12		34.5

WELL #	N.A.D. 1983, GA. EAST NORTH	EAST	ELEVATION N.G.V.D. 1929 GROUND
SP1	295577.077	843025.126	34.47
SP2	295568.442	843020.737	34.51
SP3	295555.481	843020.298	33.85
SP4	295587.626	843022.009	34.72
SP6	295576.413	843032.991	34.61
SP7	295574.524	843042.006	34.45
SP8	295582.355	843014.961	34.64
SP9	295581.575	843004.795	34.44
SP14	295589.075	843014.105	34.65
SP15	295599.312	843016.312	34.39
SP16	295602.379	843007.162	34.13
SP19	295585.346	843035.181	34.28
SP21	295594.648	843002.258	34.60
SP22	295568.257	843029.701	34.39
SP26	295630.965	842980.464	33.80
SP27	295624.791	843034.836	34.13
SP29	295581.166	842973.310	34.75
SP31	295516.231	842977.408	34.44
SP32	295517.180	843024.802	34.47
SP34	295579.334	843018.614	34.58
SP35	295607.920	842994.702	34.64
SP36	295606.005	843020.947	34.15
SP37	295600.178	843048.790	34.26
SP38	295582.241	842995.518	34.34
SP39	295574.696	843043.548	34.48
SP40	295554.250	842990.283	34.46
SP41	295551.194	843014.164	33.68
SP42	295546.942	843039.466	33.88

WELL #	N.A.D. 1983, GA. EAST NORTH	EAST	ELEVATION N.G.V.D. 1929 TOP OF CASING	GROUND
IP1	295552.407	843002.536		34.5
IP2	295550.249	843010.434		33.9
IP3	295546.187	843021.771		33.8
IP4	295562.430	843006.577		34.4
IP5	295558.823	843018.381		33.6
IP6	295556.205	843027.288		33.5
IP7	295575.233	842982.100		34.4
IP8	295573.025	842991.055		34.1
IP9	295570.869	843002.969		33.9
IP10	295570.077	843010.732		34.4
IP11	295568.781	843022.388		34.7
IP12	295563.093	843032.843		34.1
IP13	295583.681	842988.808		34.1
IP14	295581.175	842998.063		34.2
IP15	295575.824	843007.499		34.6
IP16	295575.631	843018.294		34.3
IP17	295574.773	843027.312		39.5
IP18	295572.634	843038.627		39.6
IP19	295591.538	842993.119		39.4
IP20	295590.089	843002.427		39.2
IP21	295587.732	843011.265		39.5
IP22	295586.200	843024.537		39.7
IP23	295583.983	843033.019		39.2
IP24	295581.433	843042.696		39.3
IP25	295598.938	842998.805		39.8
IP26	295598.624	843010.393		39.7
IP27	295594.180	843020.989		39.5
IP28	295594.321	843030.294		39.3
IP29	295593.321	843039.187		39.3
IP30	295597.114	842983.415		39.3
IP31	295603.239	842993.667		39.8
IP32	295613.346	842998.046		38.7
IP33	295608.828	843005.694		39.0
IP34	295607.384	843016.030		39.1
IP35	295605.480	843027.730		39.4
IP36	295621.188	843004.406		34.1
IP37	295617.660	843012.037		34.3
IP38	295615.785	843026.626		33.9
IP39	295614.908	843036.703		34.4
I70	295619.072	842999.479	35.39	33.5
I71	295615.573	843007.882	35.69	33.9
I72	295614.603	843023.755	34.77	33.6
I73	295600.773	843002.893	36.52	34.9
I74	295604.746	843017.483	35.36	34.2
I75	295589.552	843045.856	35.93	34.1
I76	295586.147	842994.329	35.82	34.5
I77	295586.078	843034.146	35.79	34.4
I78	295586.368	843010.310	35.35	33.9
I79	295594.365	843018.667	36.18	34.7
I80	295584.160	843001.388	35.82	33.9
I81	295567.420	843027.631	35.71	34.3
I82	295570.853	842994.894	36.49	33.6
I83	295582.647	843020.565	35.27	34.6
I84	295558.167	843041.296	35.09	33.8
I85	295553.511	843015.150	35.47	33.6
I86	295552.486	843029.988	34.94	33.3
I87	295547.209	843040.622	36.08	33.8
I88	295600.131	842974.037	35.48	34.2
I89	295585.487	842977.427	33.16	34.2

WELL No.	N.A.D. 1983, GA. EAST NORTH	EAST	ELEVATION N.G.V.D. 1929 TOP OF CASING	GROUND
I60	295577.6100	843023.1800	35.49	34.4
I61	295582.4800	843016.6000	34.99	34.5
I62	295579.8200	843029.0000	34.93	34.6
I63	295569.3500	843021.4600	35.14	34.6
I64	295577.0800	843015.9700	35.23	34.5
I65	295584.2200	843024.3100	34.87	34.5
I66	295573.3700	843028.5800	35.72	34.7
I67	295585.8700	843020.4300	35.65	34.4
I68	295569.1800	843016.3700	35.26	34.4
I69	295580.3200	843011.7900	35.80	34.7

WELL No.	N.A.D. 1983, GA. EAST NORTH	EAST	ELEVATION N.G.V.D. 1929 TOP OF CASING	GROUND
KBA-11-37	295994.0060	842501.9864	26.26	
PS-2			32.71	

ARNOLD J. JOHNS
FLORIDA REGISTERED LAND SURVEYOR NO. 4422
NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER

CONTROL

NAME	NORTH	EAST	DESCRIPTION
NLF1	295541.7554	842866.3900	FOUND NAIL
NLF3	295614.4041	842848.1181	FOUND NAIL

GENERAL NOTES

1. HORIZONTAL AND VERTICAL CONTROL POINTS ARE BASED ON CONTROL POINT FORSAKEN 2: NAD 27, GA. EAST AND TRANSLATED TO NAD 83, GA. EAST AS PROVIDED BY CONTINENTAL AERIAL SURVEY.
2. POINTS SHOWN HEREON ARE NAD 83, GA. EAST.
3. THE SPECIFIC PURPOSE OF THIS SURVEY IS TO SHOW THE HORIZONTAL AND VERTICAL LOCATION OF VARIOUS WELLS AS DIRECTED BY THE CLIENT.

REF: W.O. NO.: D - 99-170
REF: W.O. NO.: D - 98-439

W.O. NO.: D - 02-121

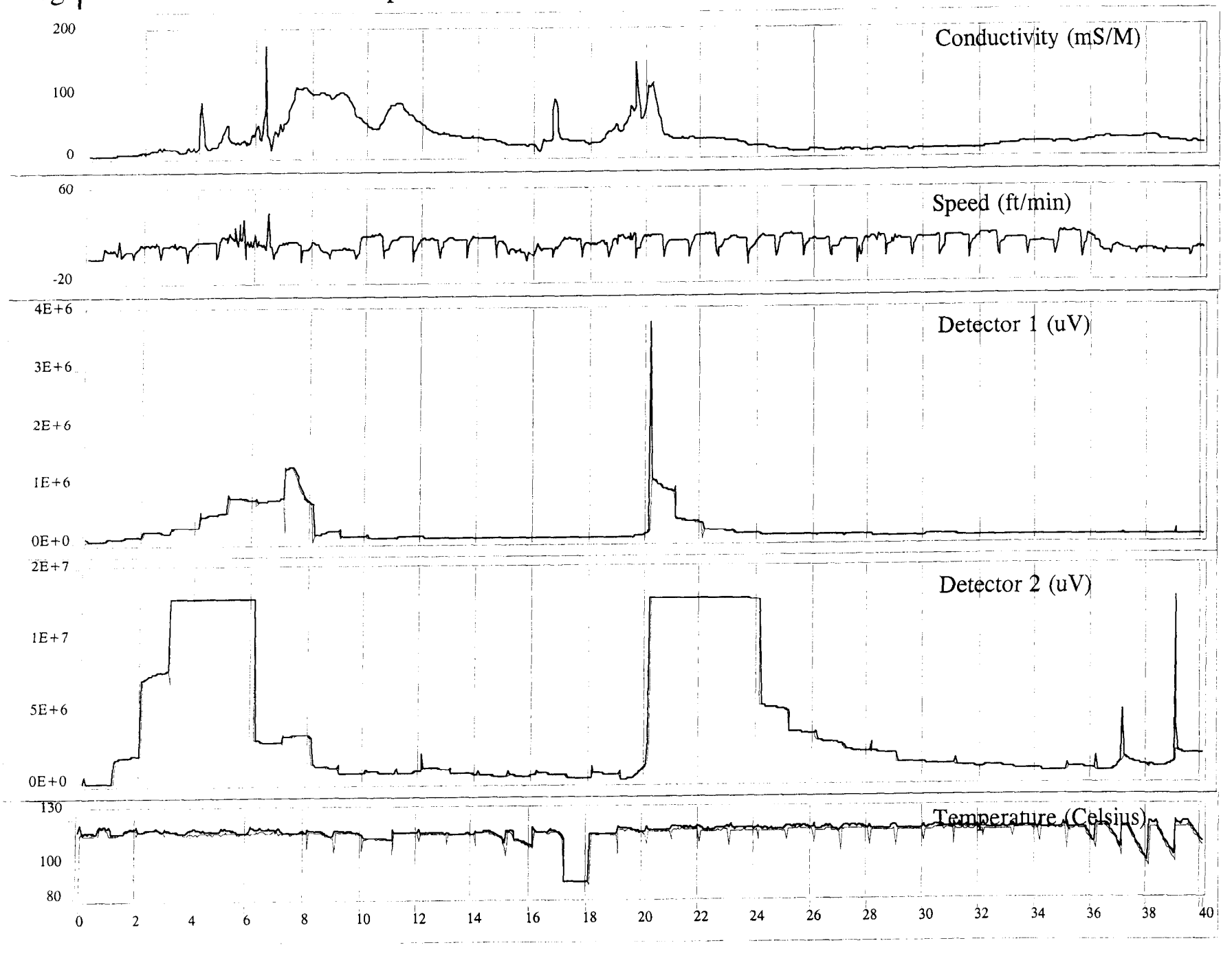
LJB RADLEY LAND SURVEYORS
5773 NORMANDY BOULEVARD,
JACKSONVILLE, FLORIDA 32205
PHONE (904) 786-6400 FAX (904) 786-1479
LICENSED BUSINESS No. 6688

W.O. NO.: 02-121	SURVEY DATE: 03/14/02	DRAFTED BY: J. WEINERT
CHECKED BY: D. JOHNSON	CAD FILE: 02121.DWG	FB 129 PG 75-76

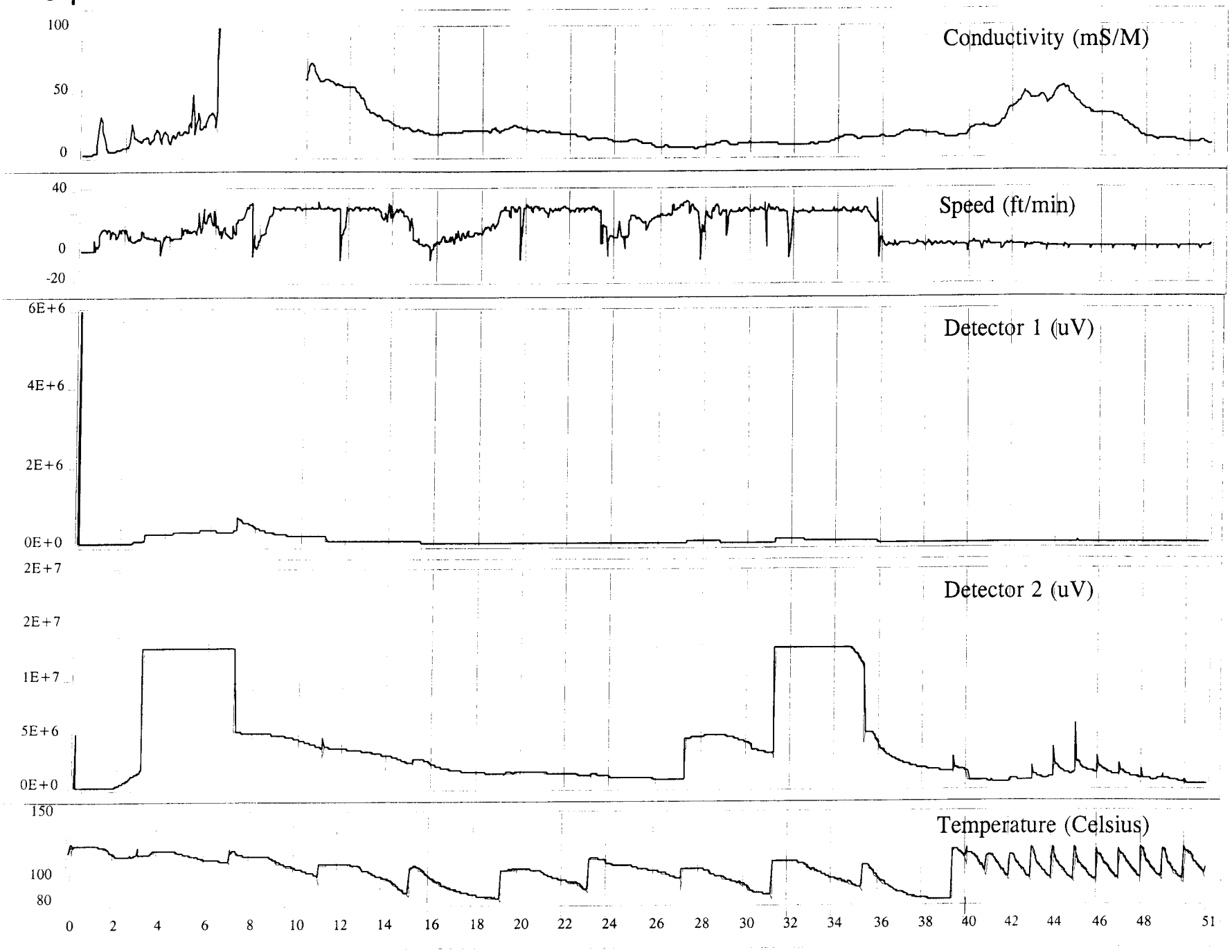
Appendix C

Membrane Interface Probe Reports

Log: C:\dirim95\LOGFILES\Sp-01.dat



Log: C:\dirim95\LOGFILES\Sp-01-r.dat



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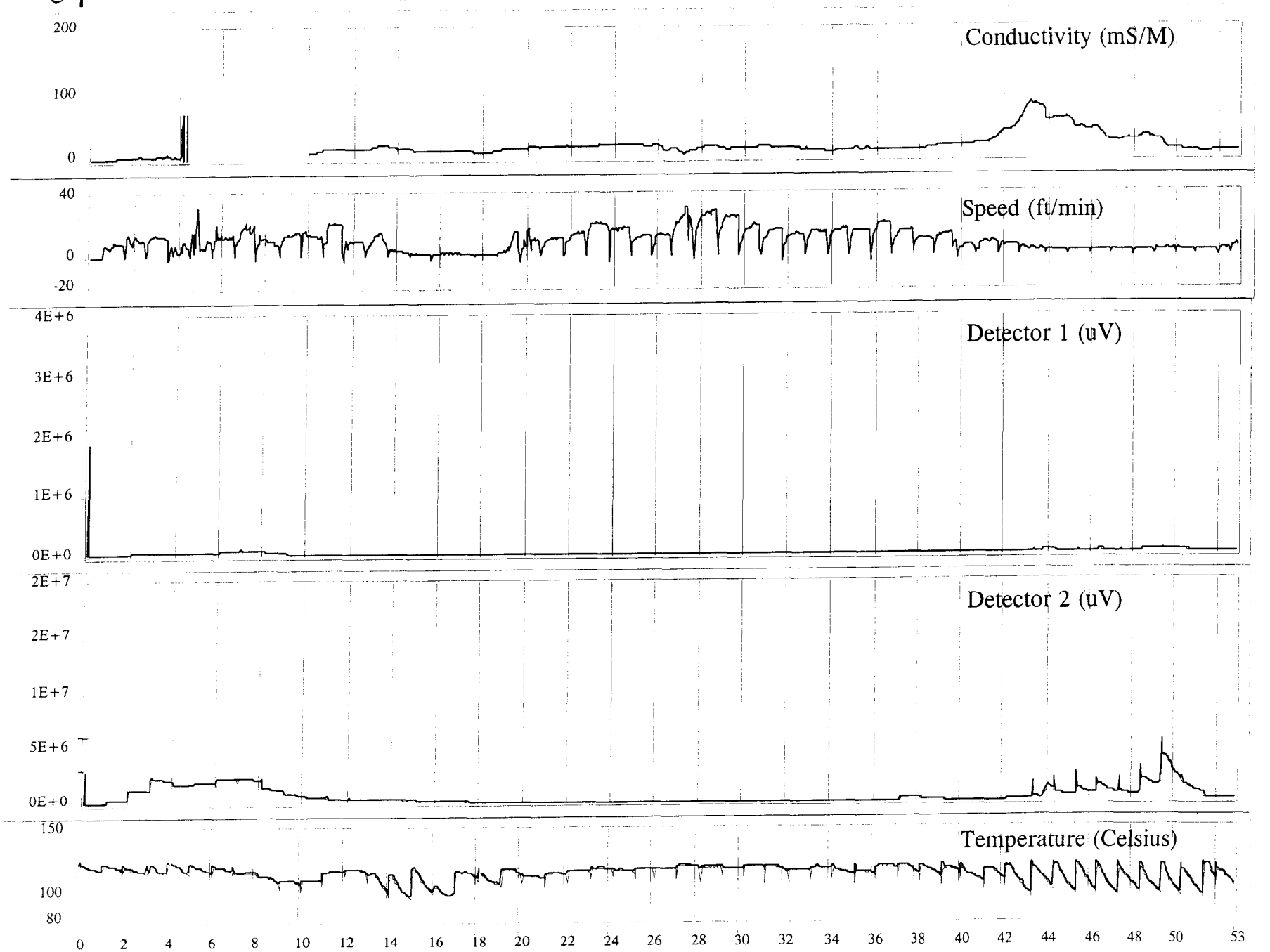

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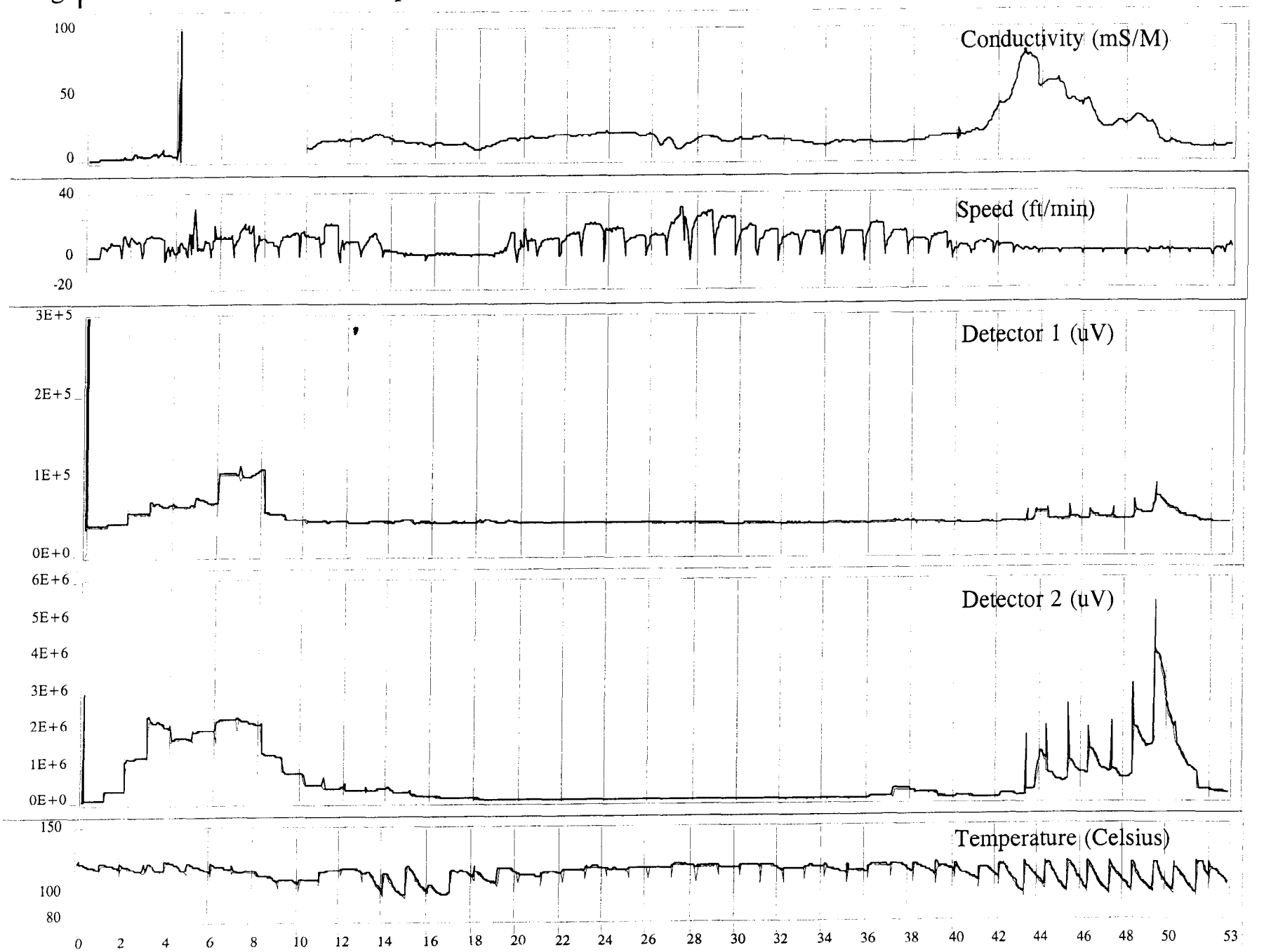

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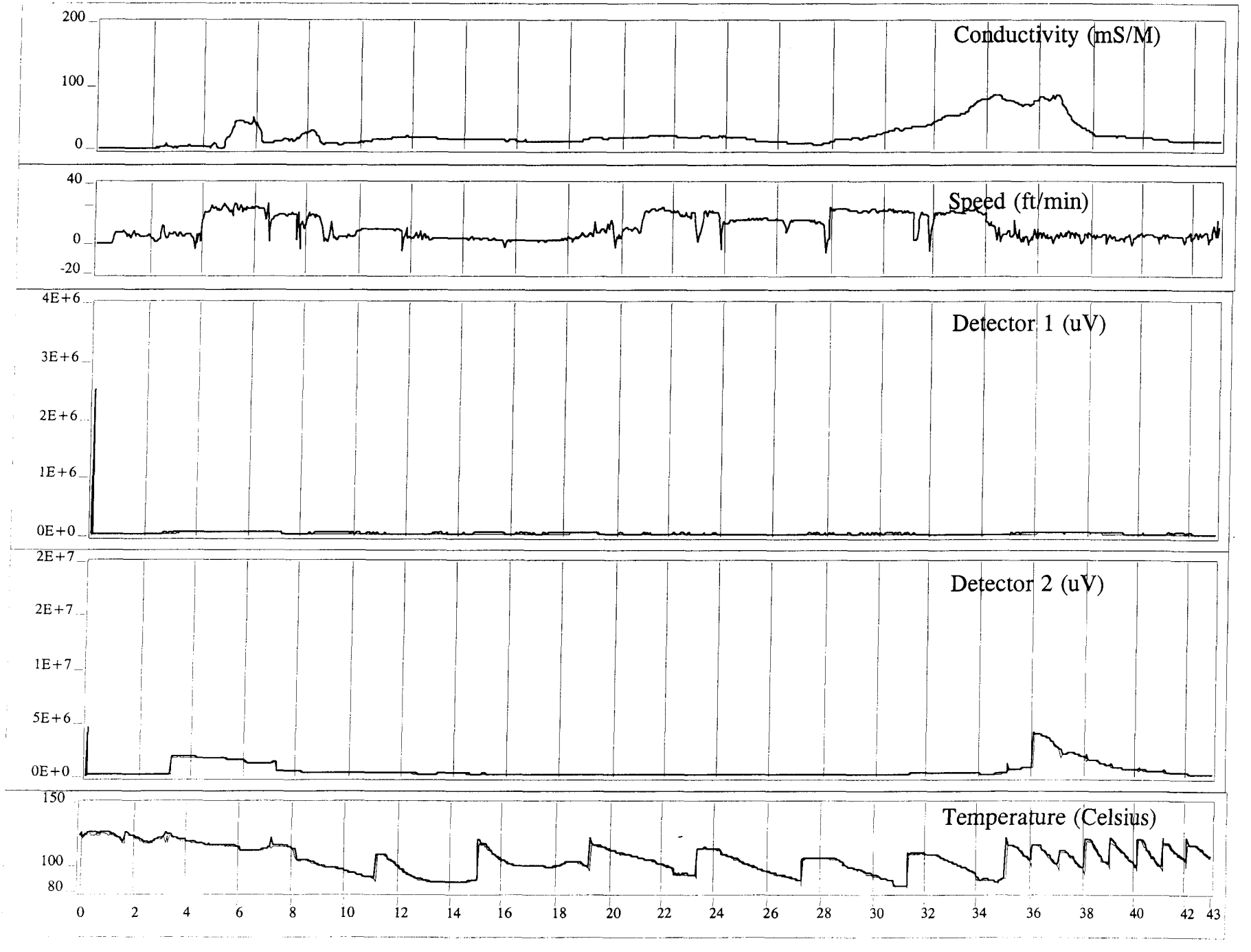

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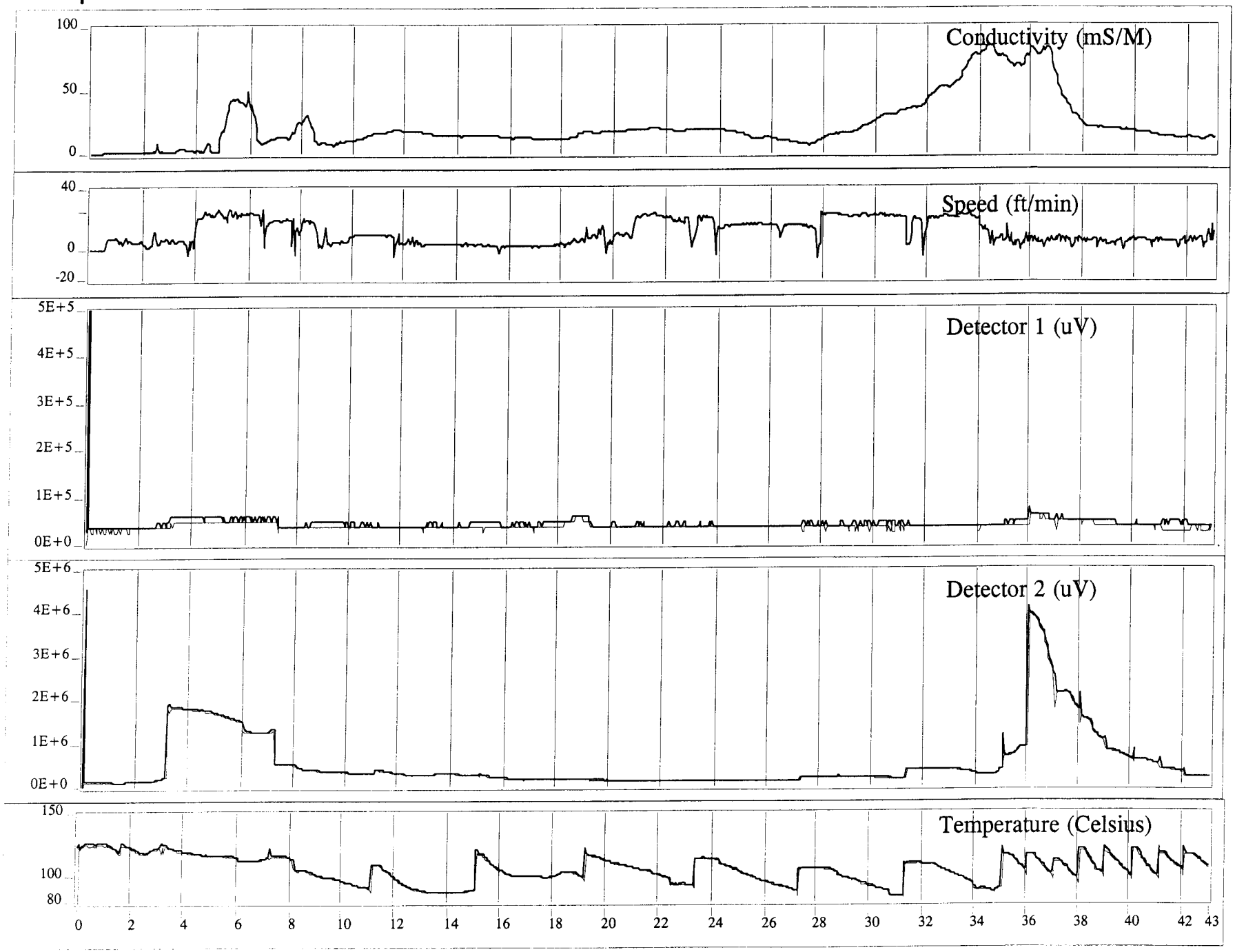

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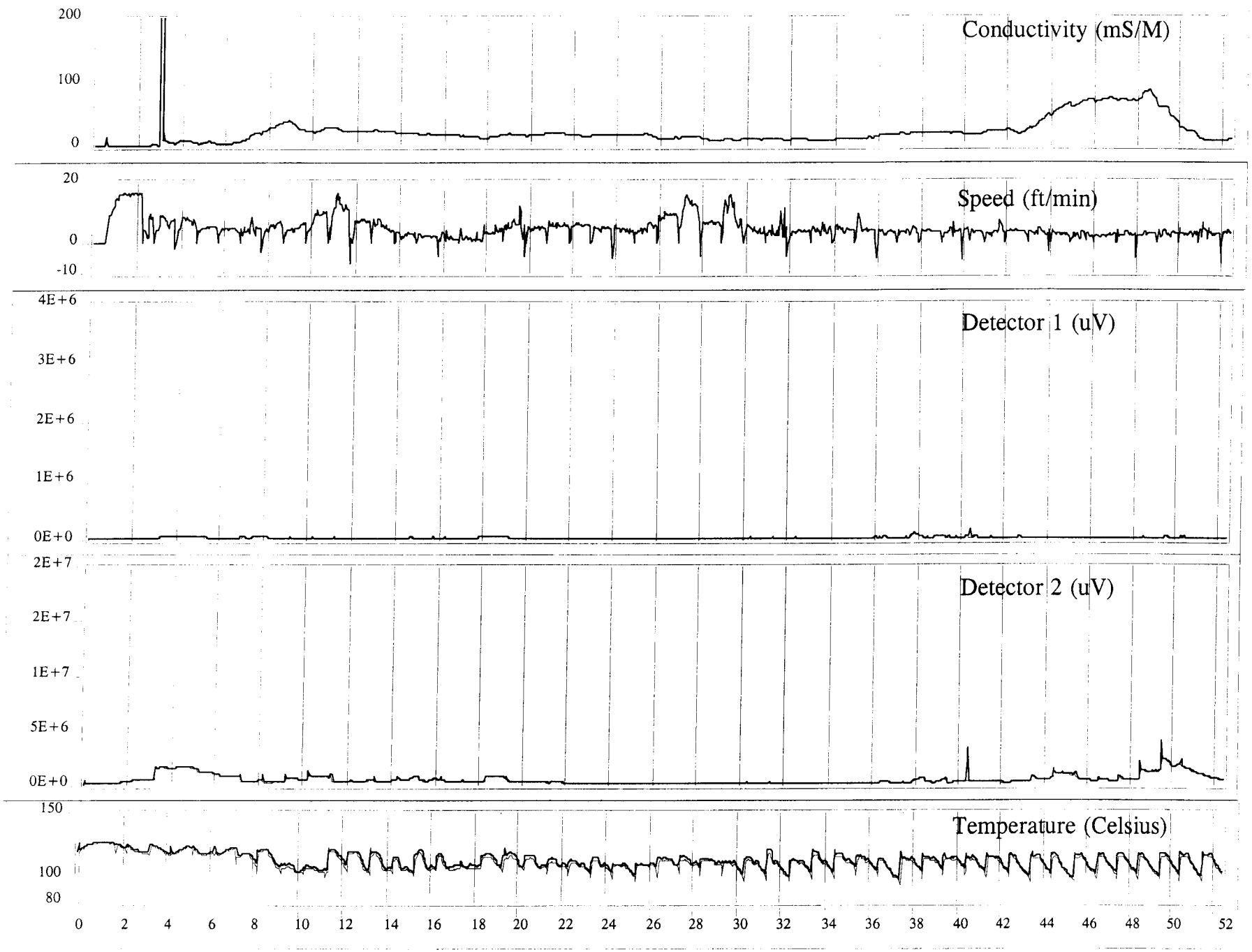

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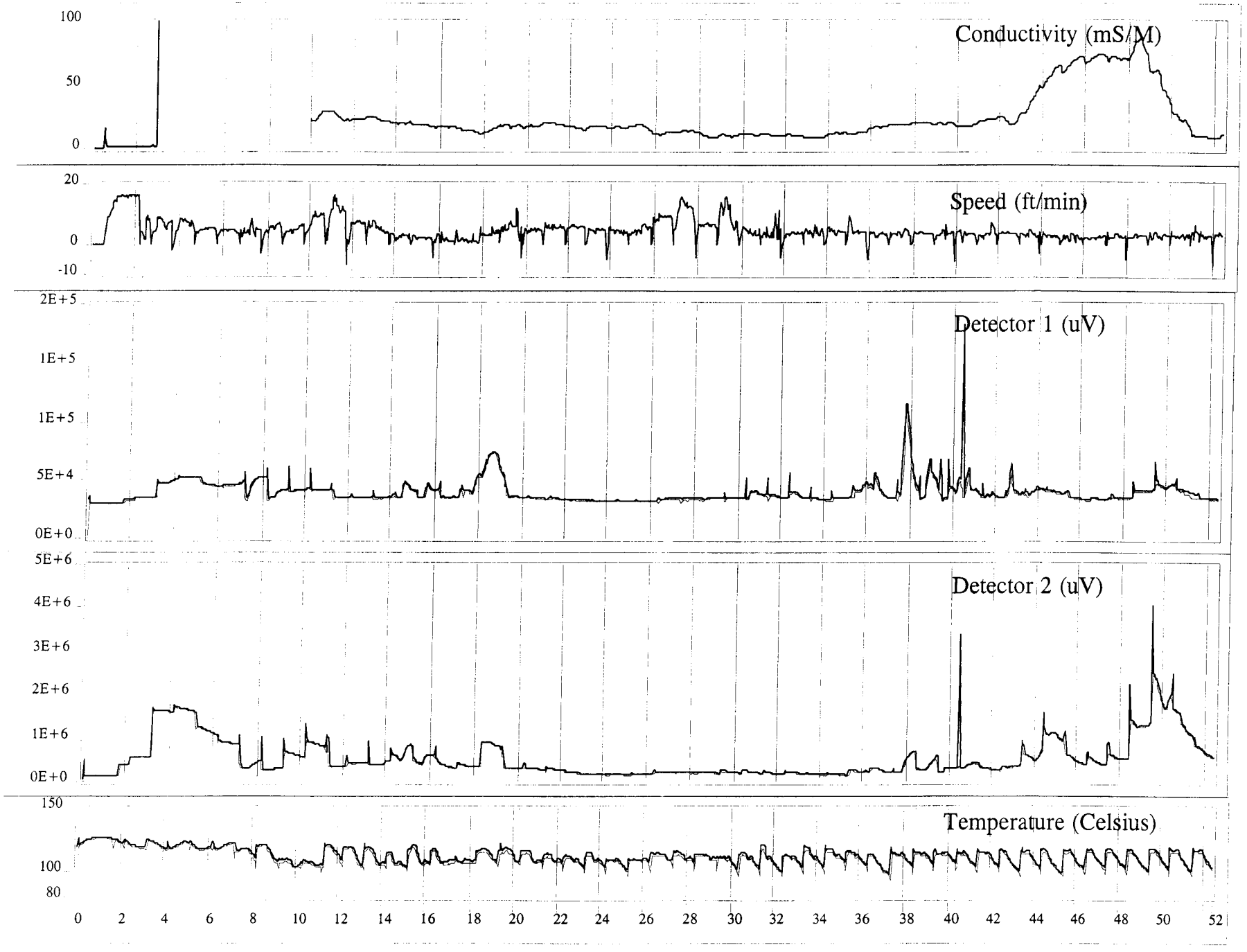

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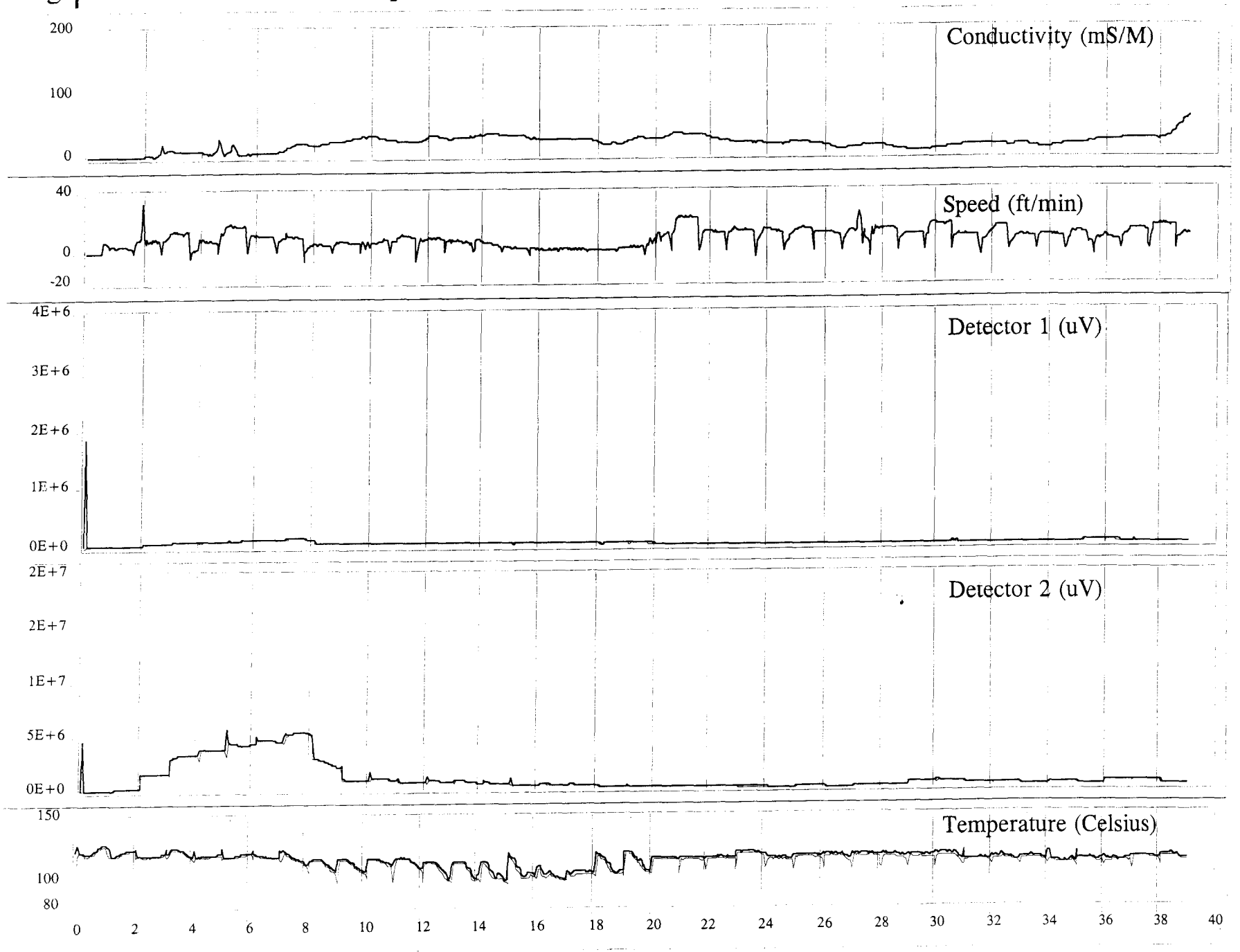

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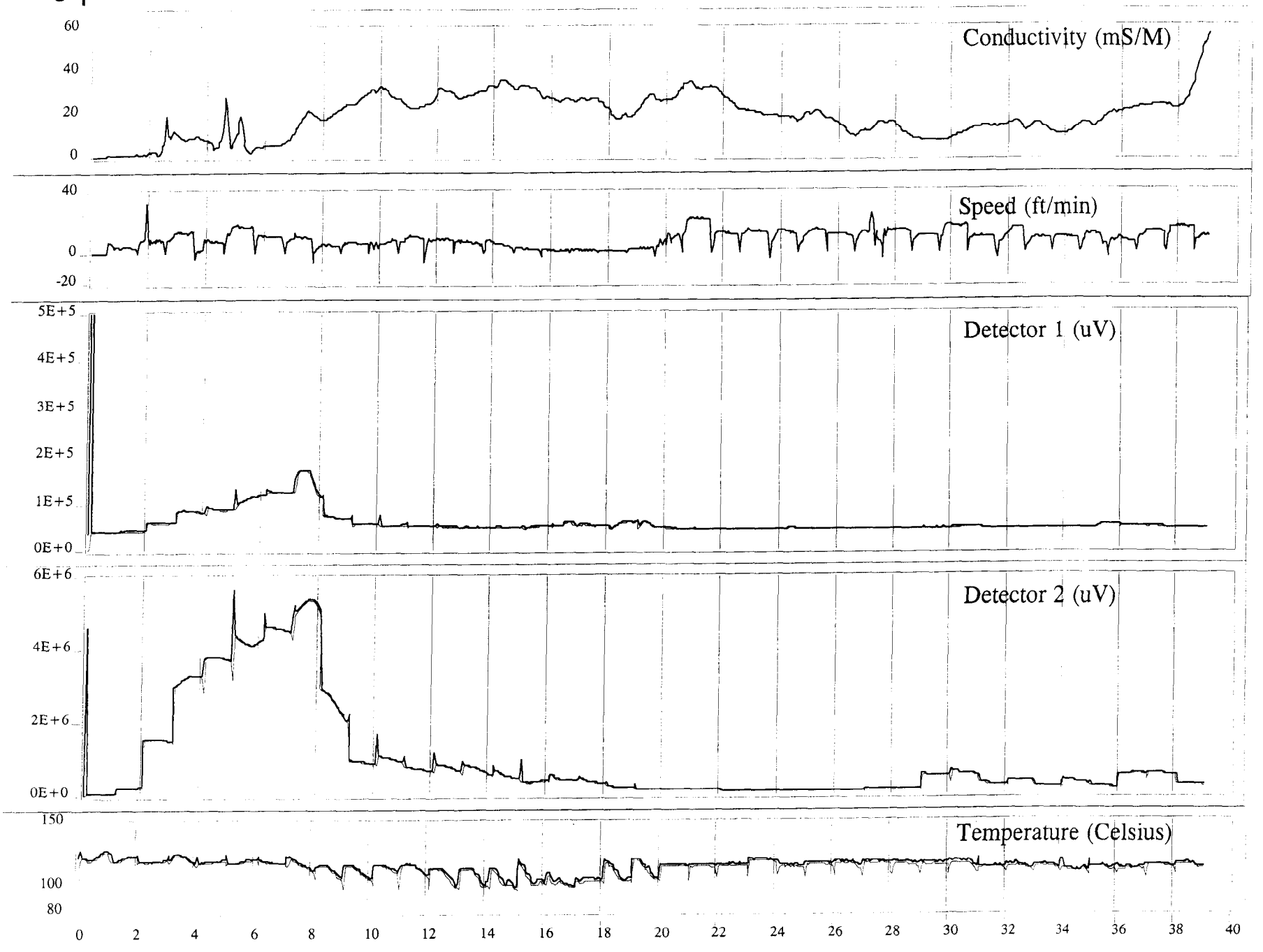

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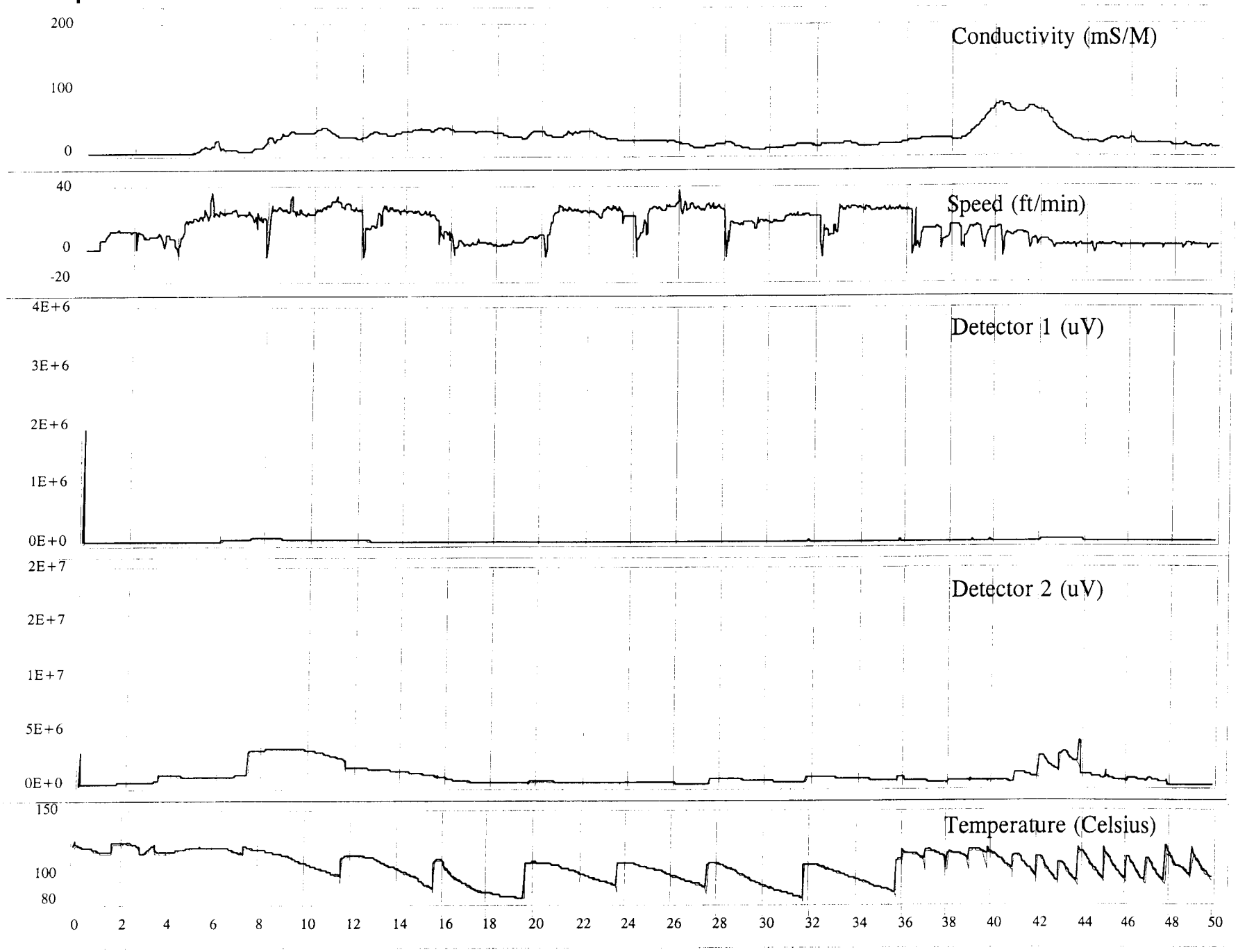

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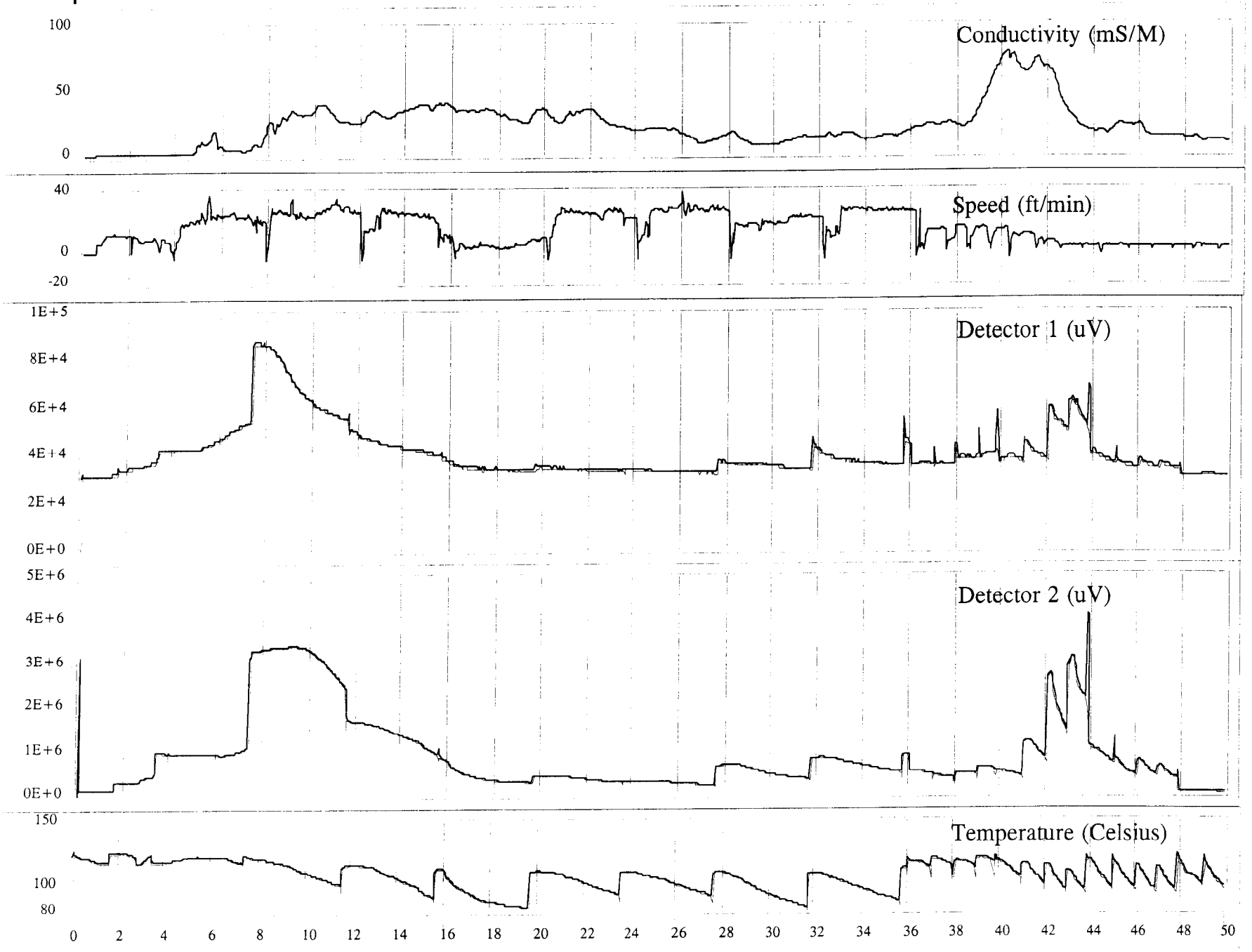

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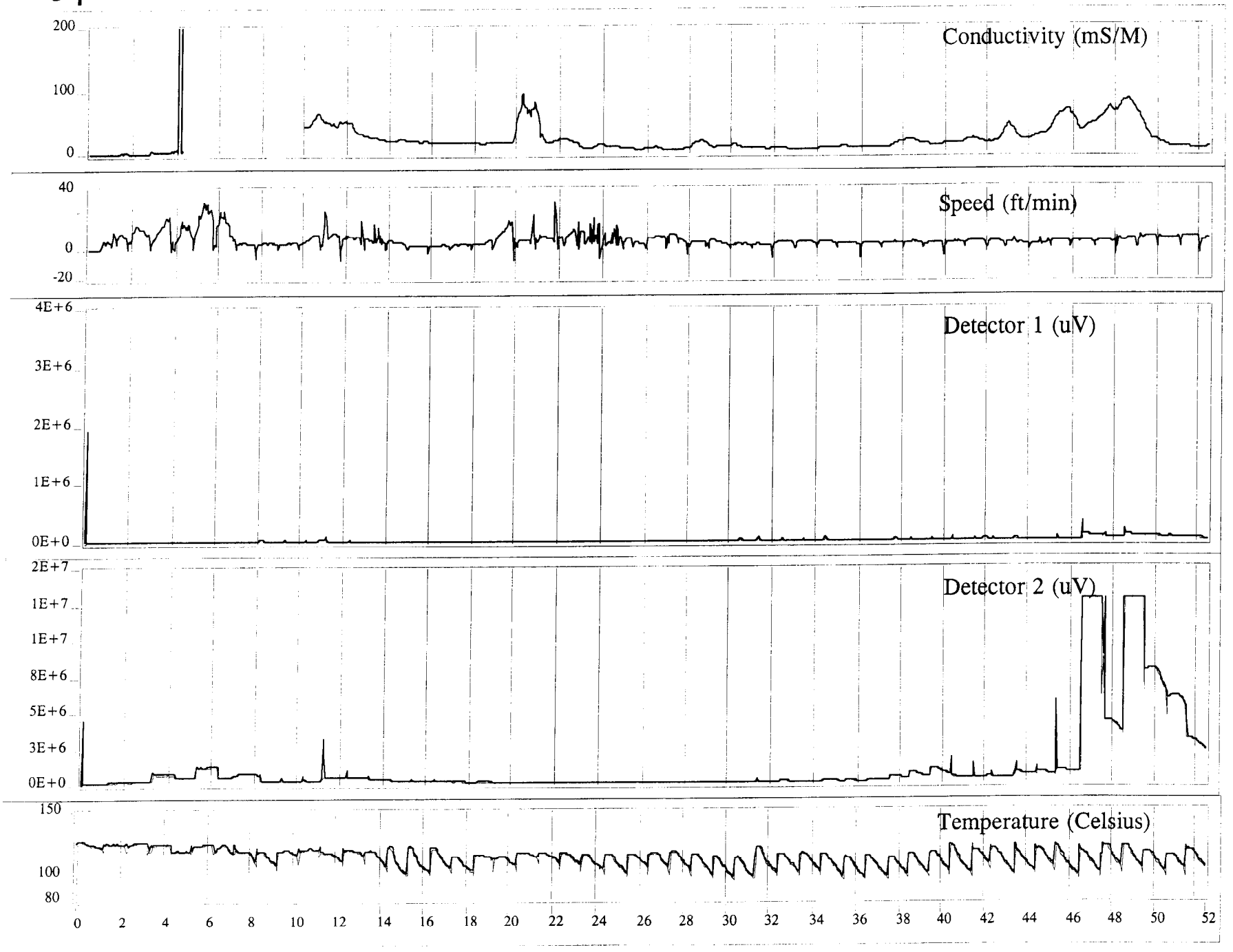

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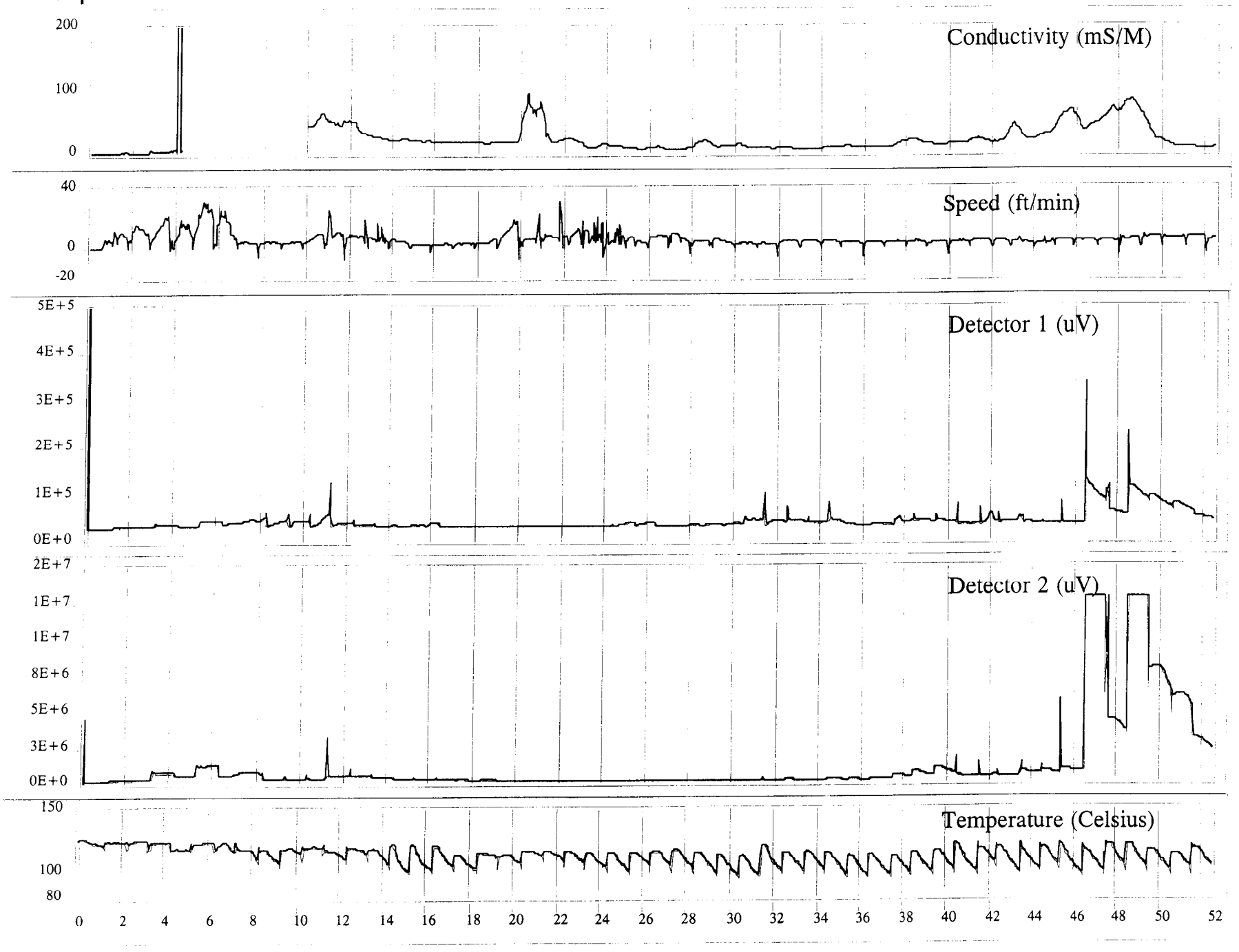

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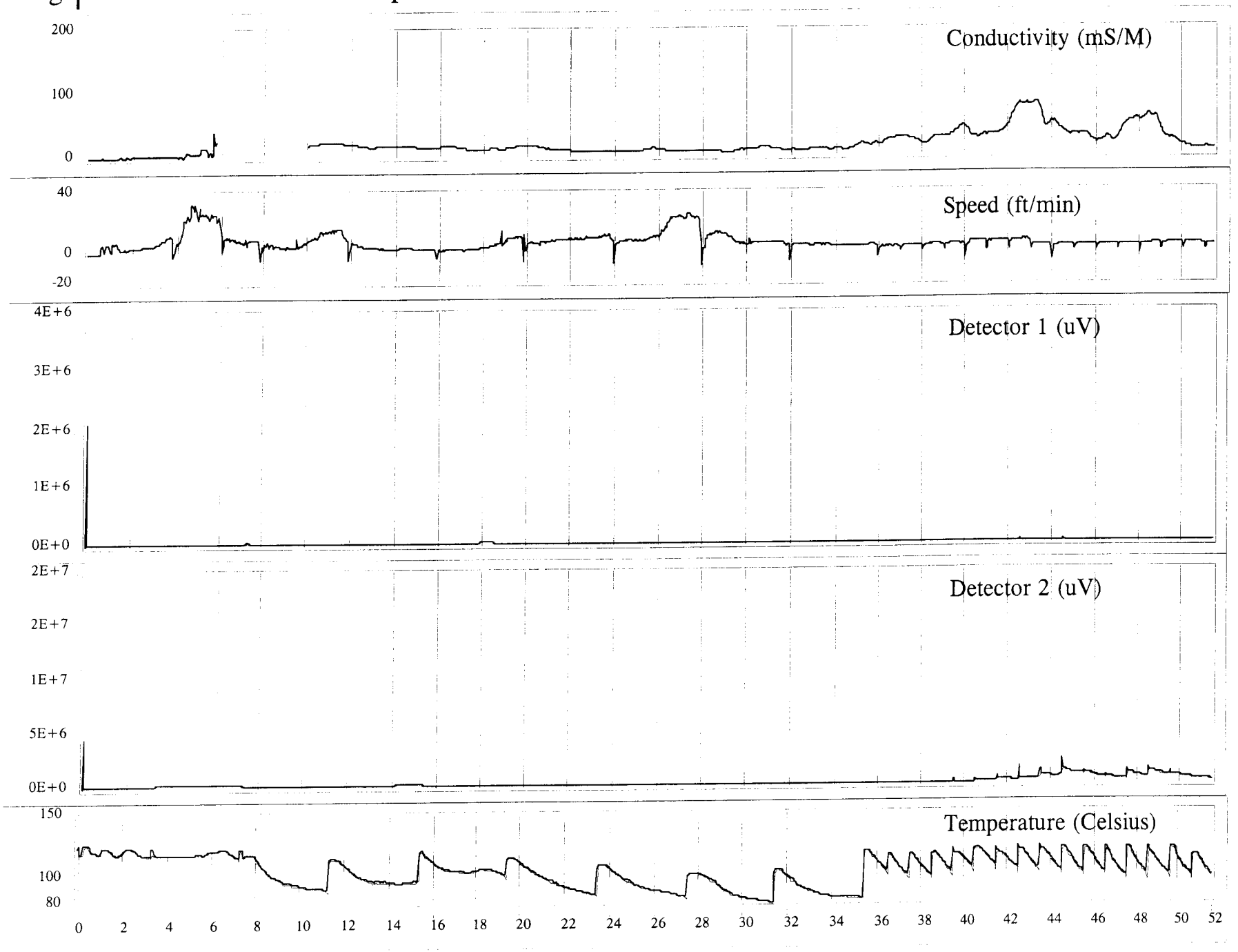

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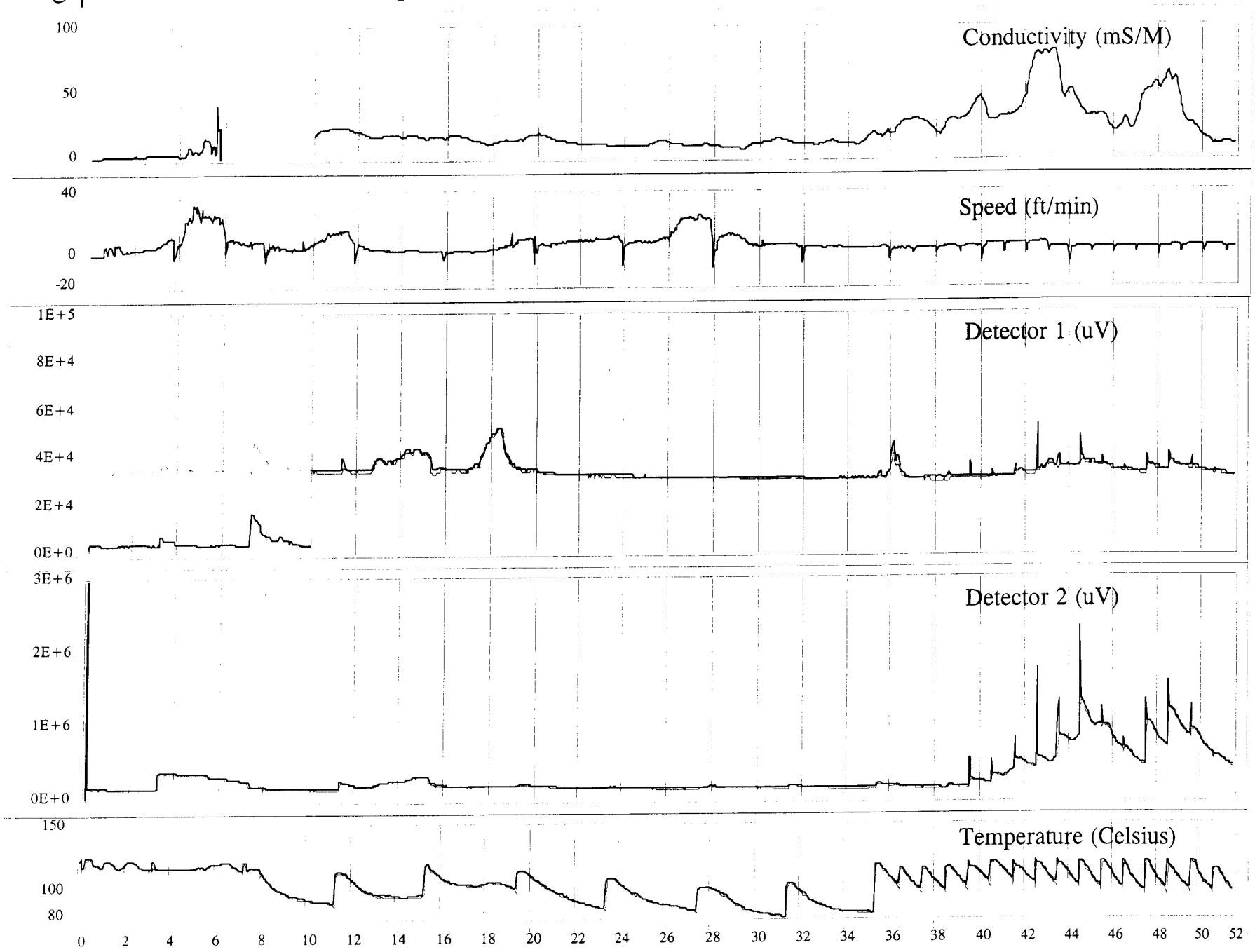

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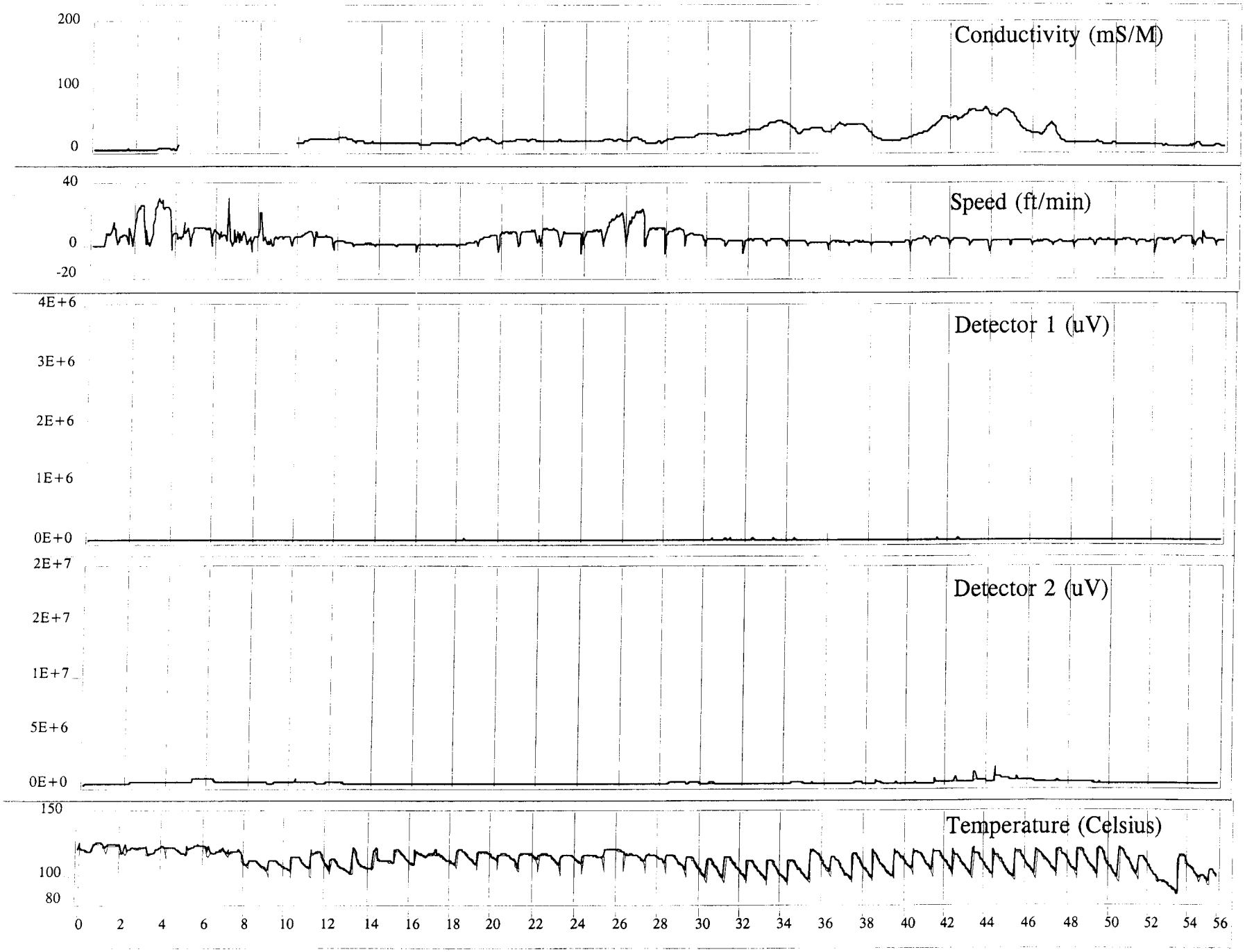

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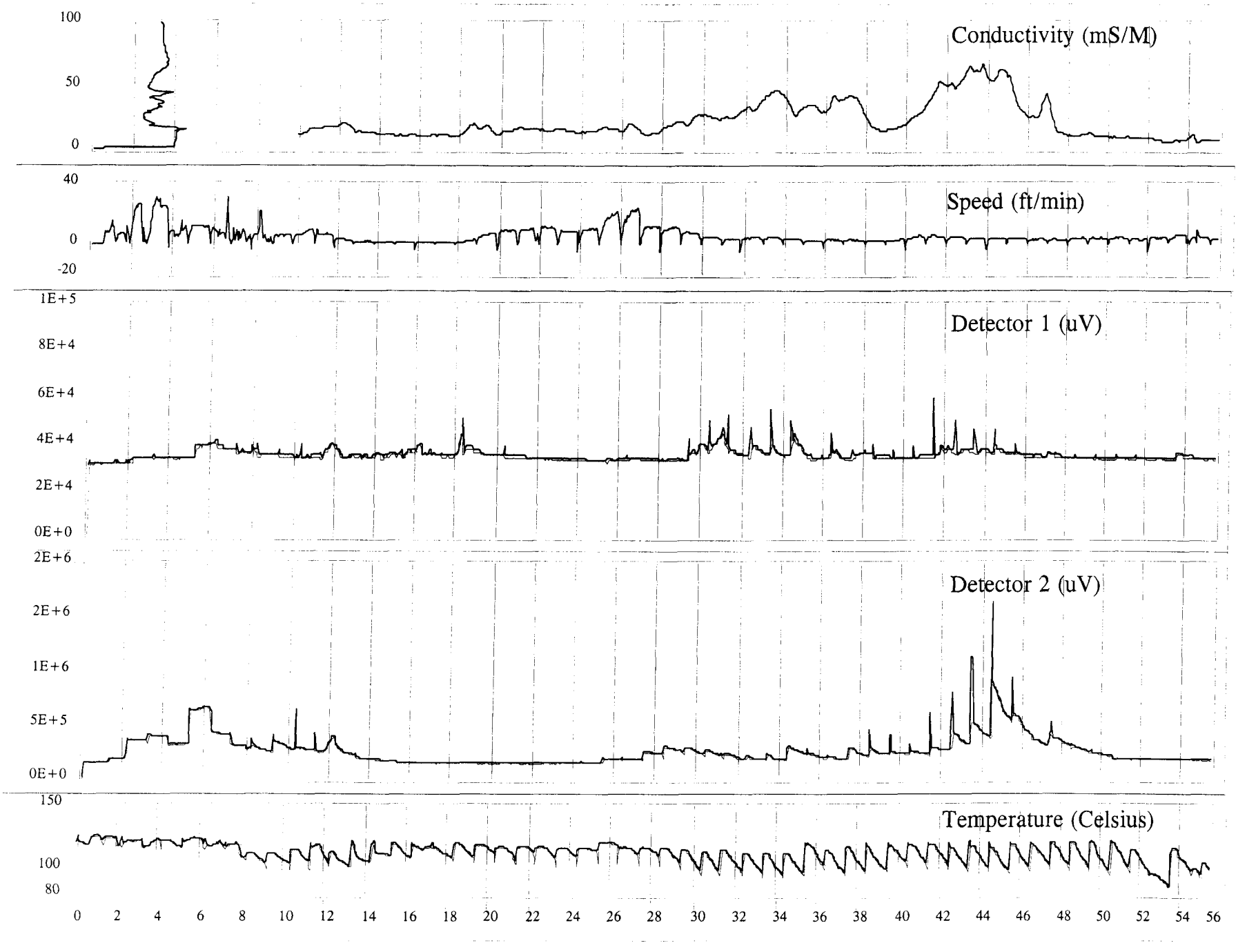

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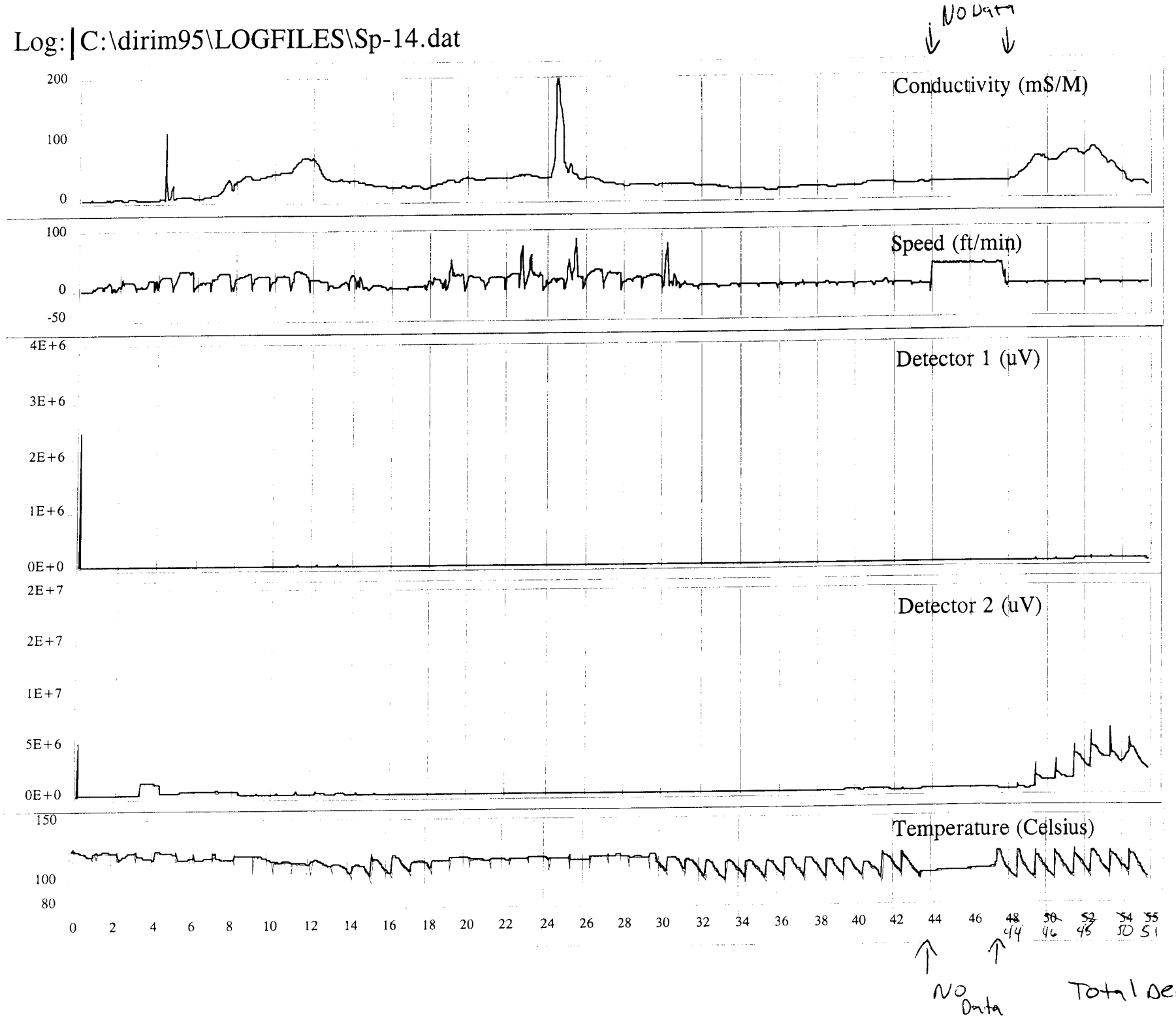

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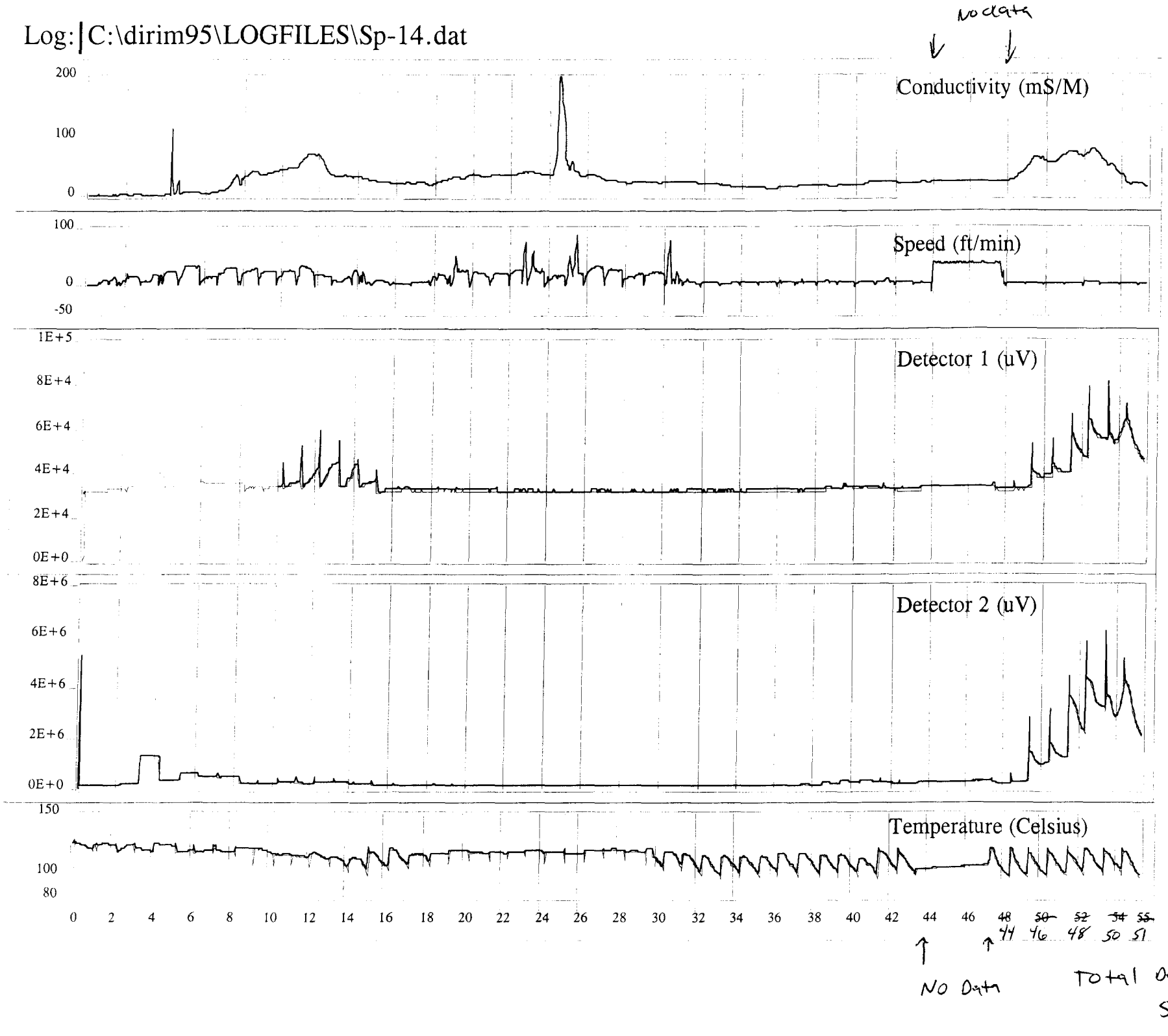

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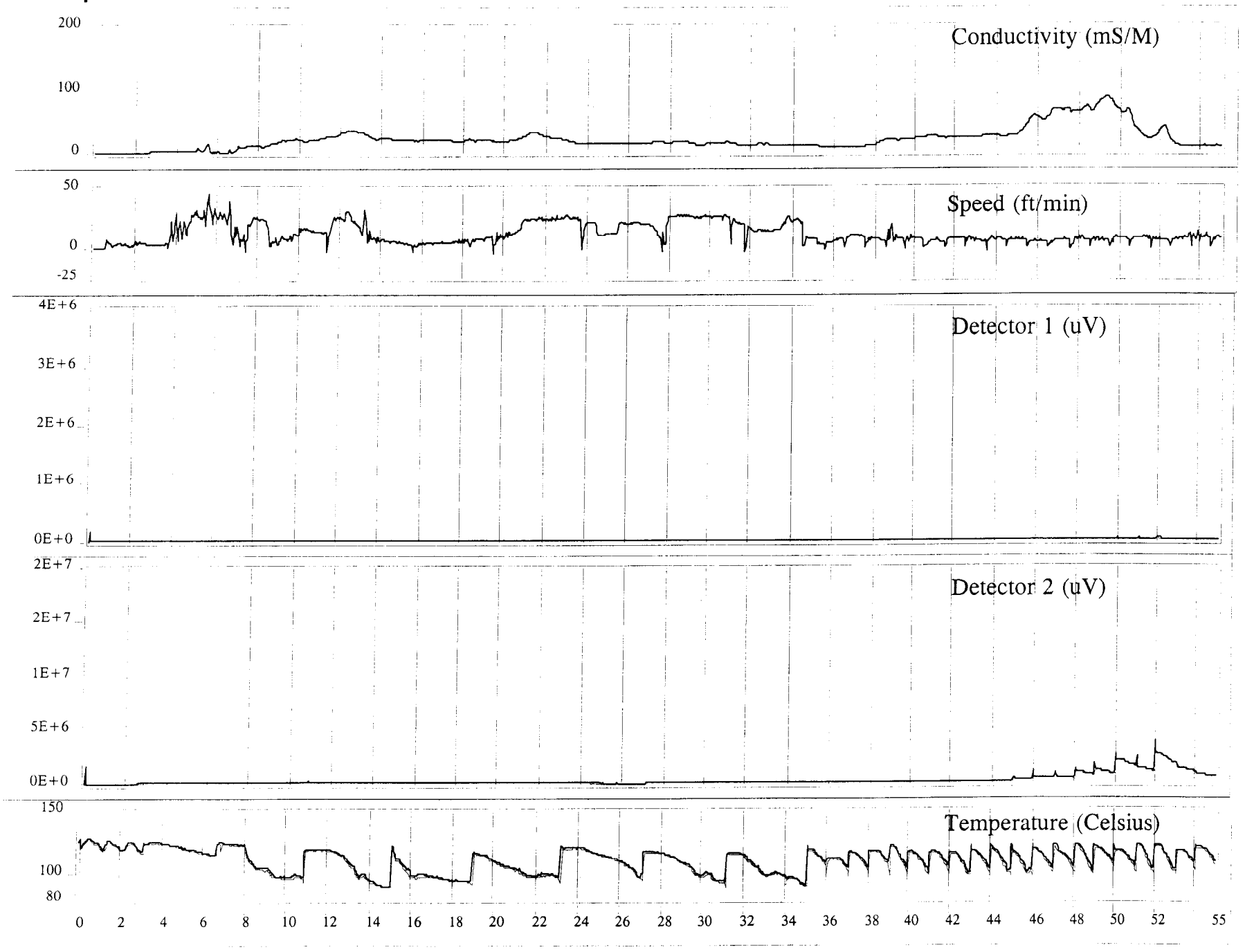

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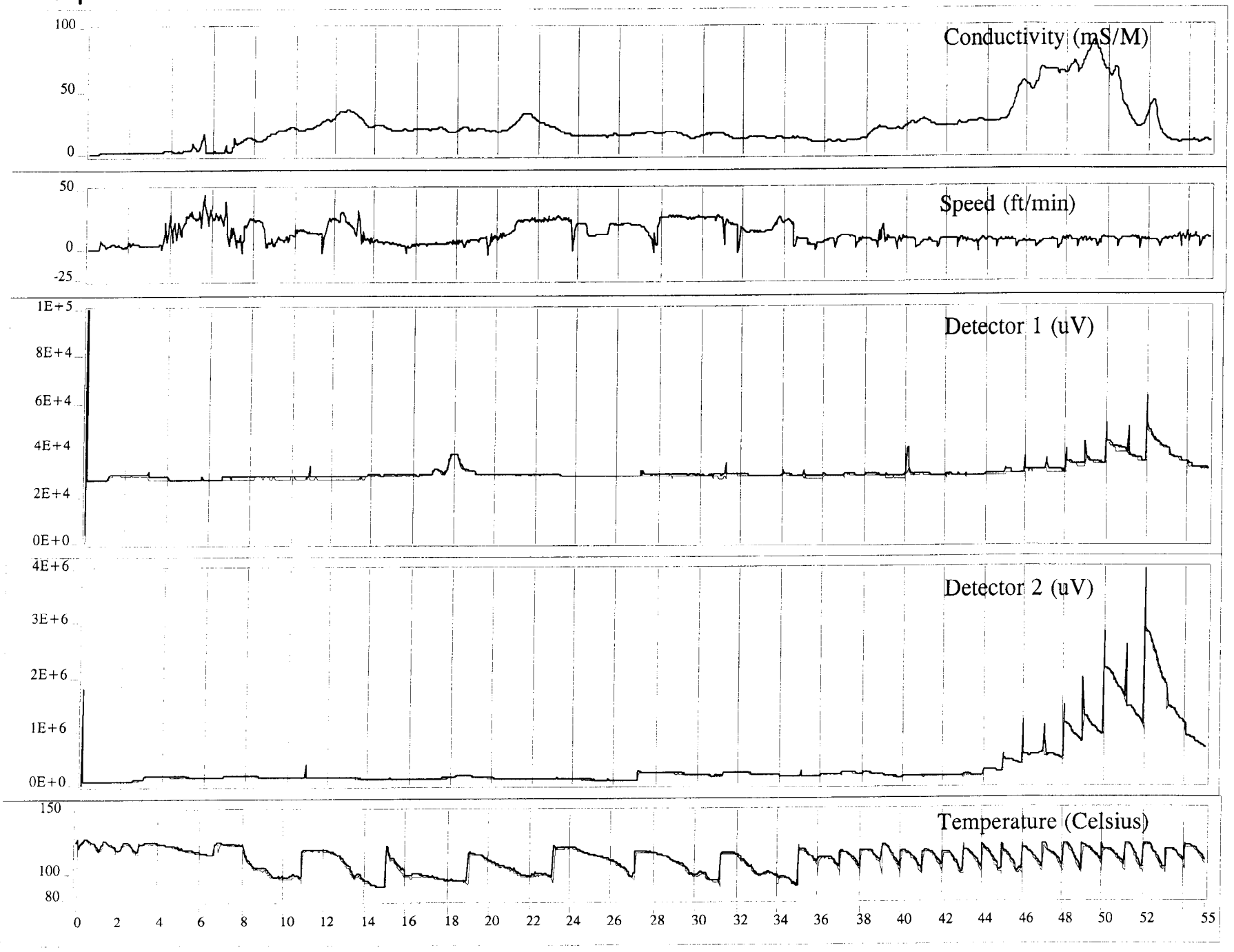

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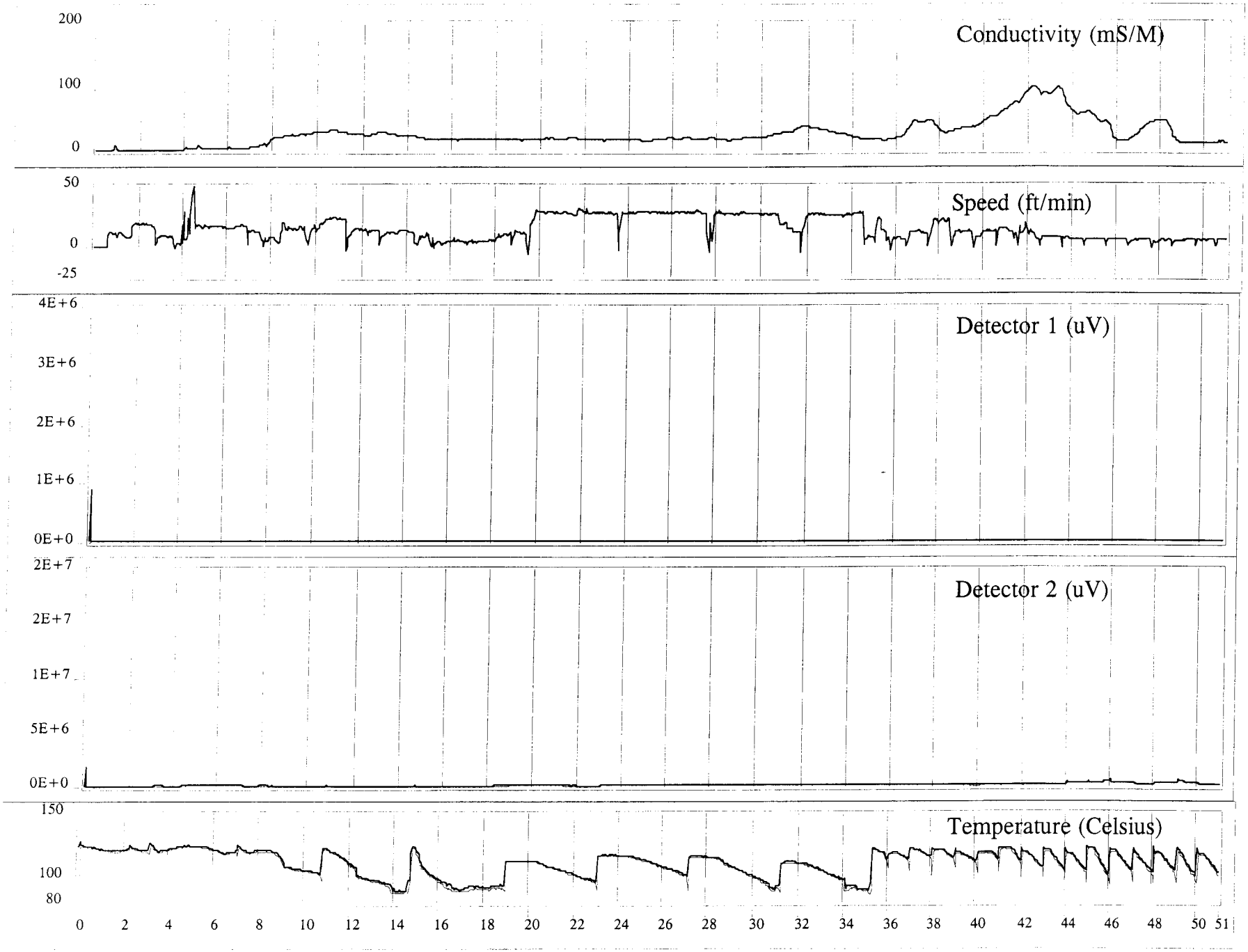

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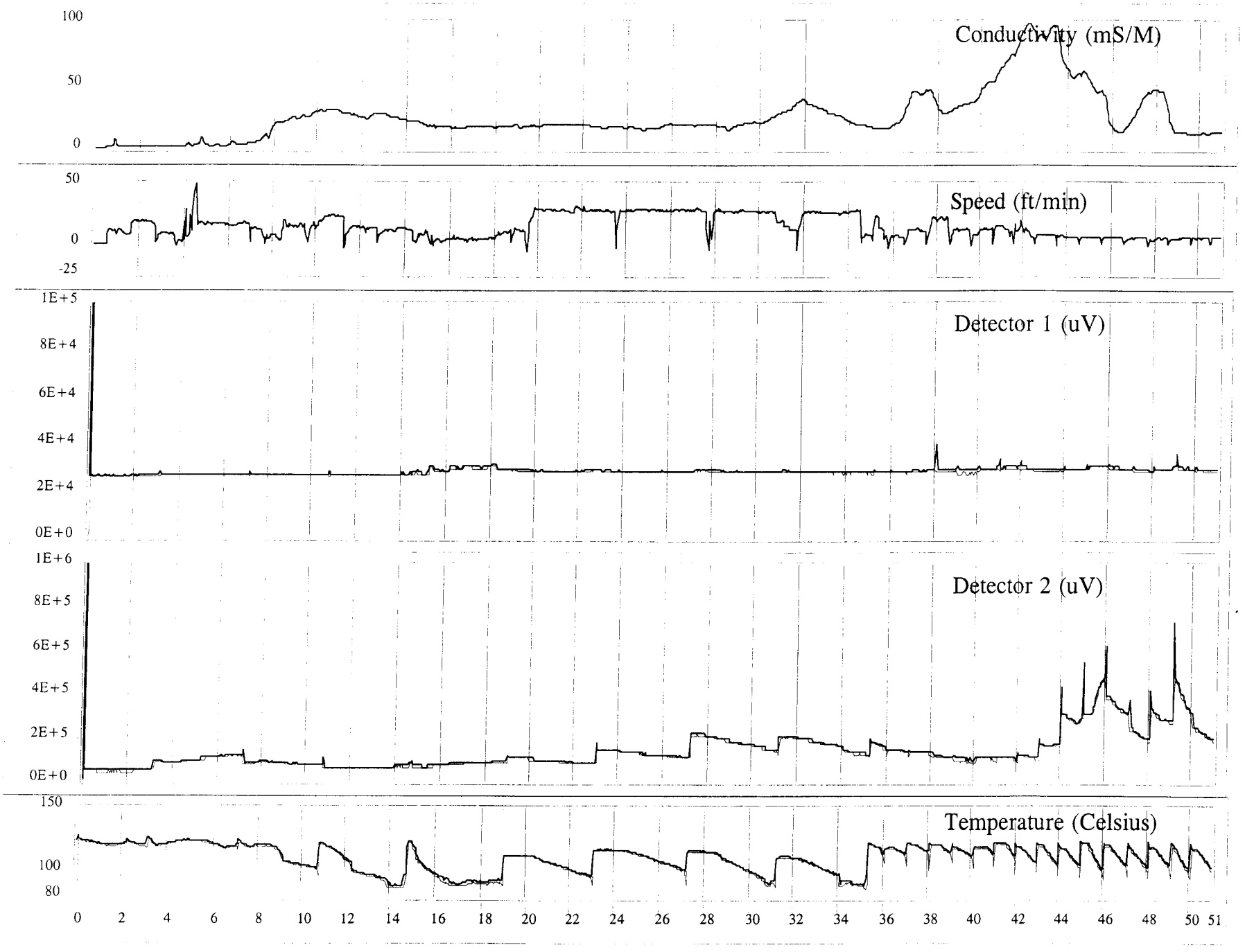

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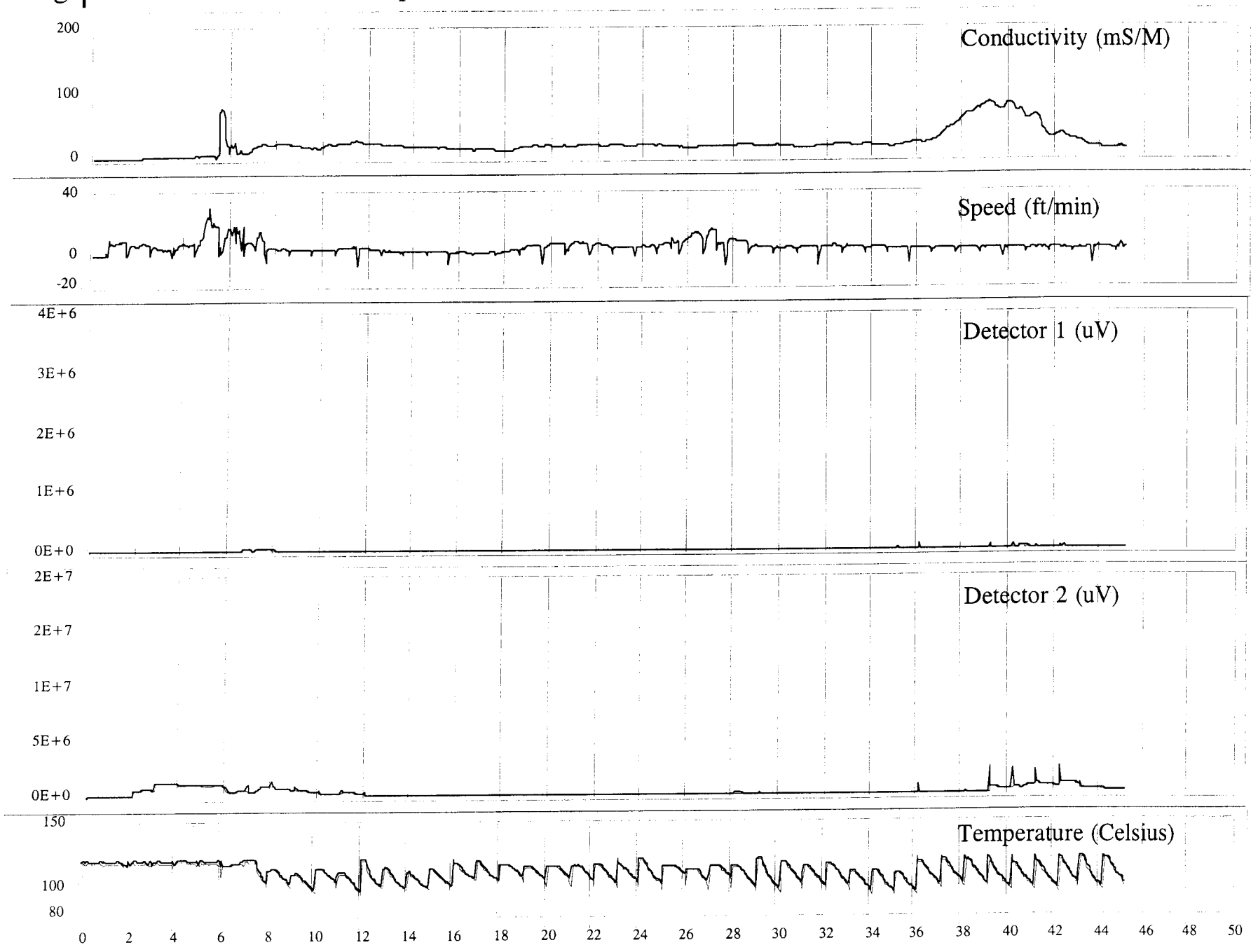

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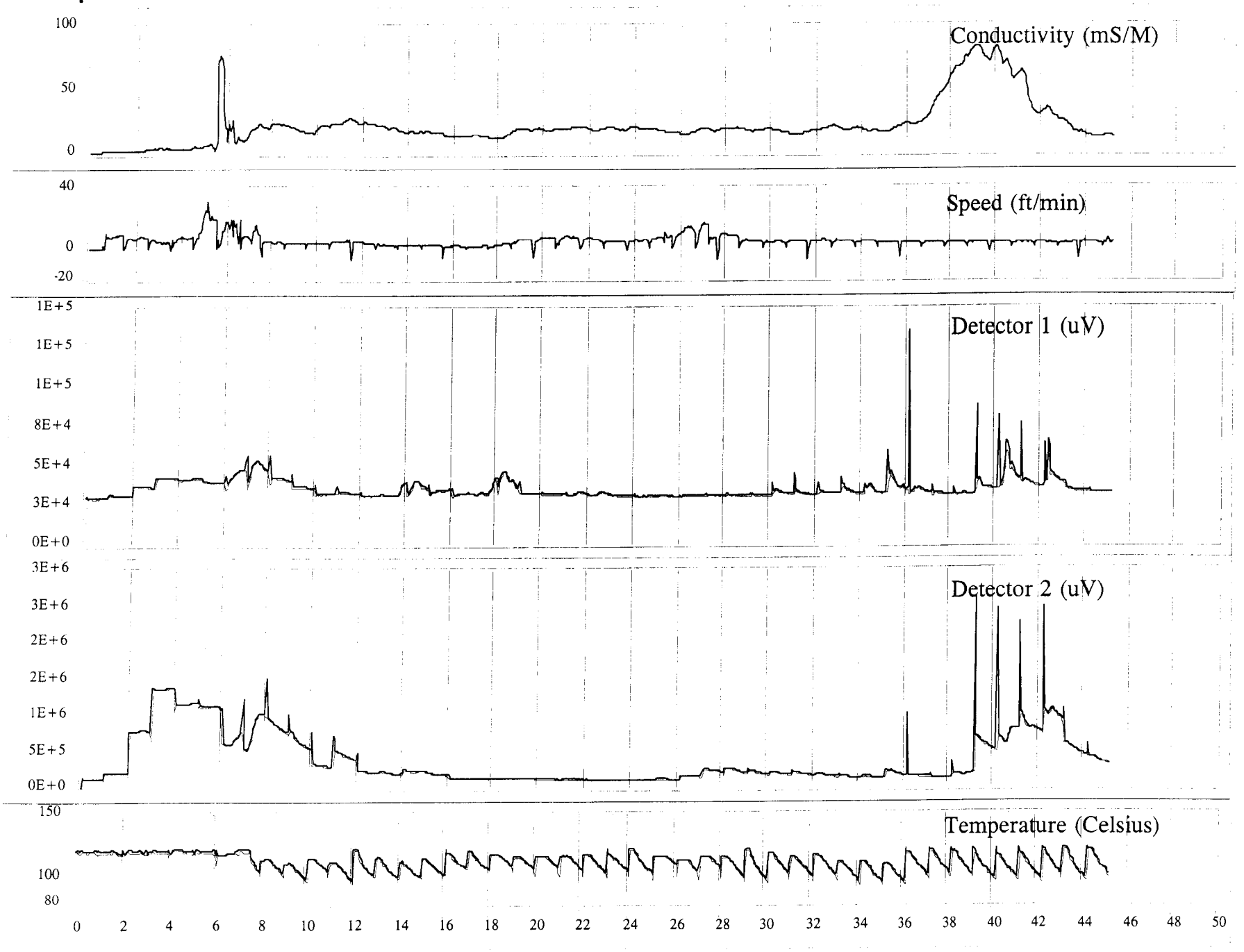

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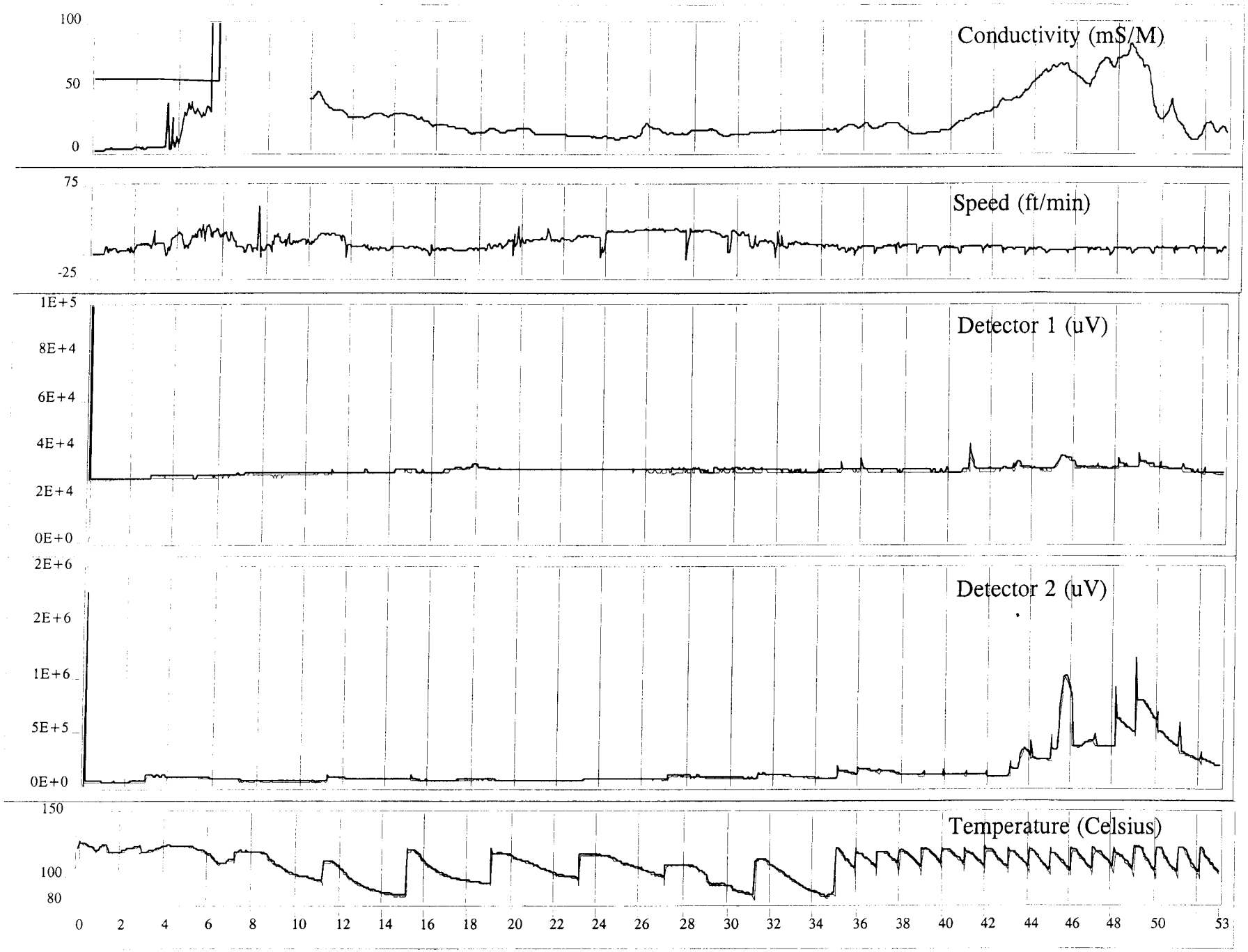

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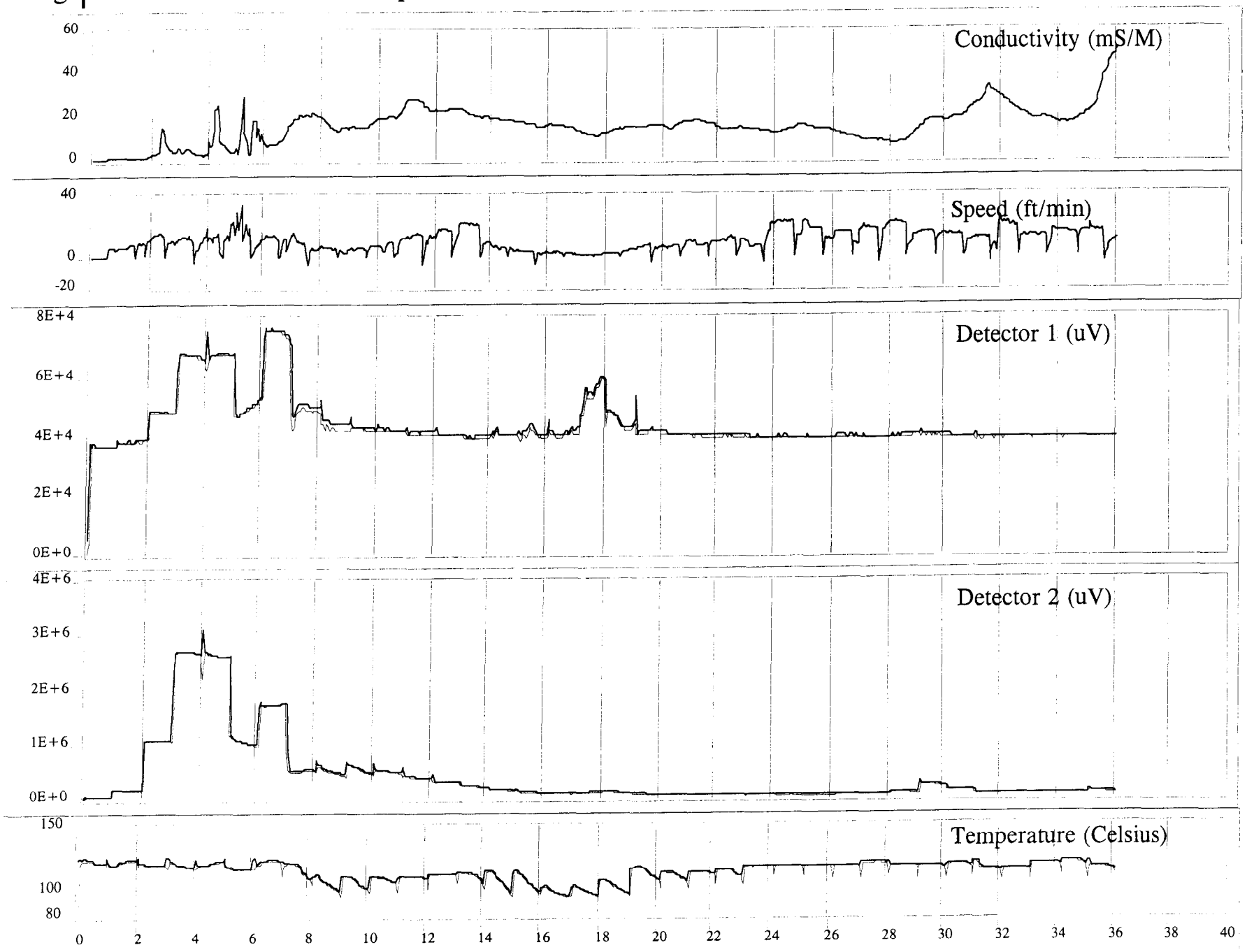

Log: C:\dirim95\LOGFILES\Sp-22-r.dat

Appendix D

Laboratory Analytical Summary Tables and Reports

Source Area Delineation No.1

Table D-1
Source Area Delineation No.1 Analytical Results
November 6 - 21, 2000

Sample Location ID	Sample Collection Interval (feet bls)	Summary of Total Chlorinated Ethenes					TCLE	Total VOCs
		VC	cis-1,2-DCE	trans-1,2-DCE	TCE	PCE		
SP-01	20 to 24	<2	17	<2	24	61	102	102
	36 to 40	<2	15	<2	19	180	214	214
	40 to 44	<2	<2	<2	19	550	569	569
	44 to 48	<2	7	<2	46	54,000	54,053	54,078
	48 to 52	<2	45	<2	4	790	839	857
	52 to 56	<2	40	<2	<2	8	48	90
	56 to 60	<2	3	<2	<2	2 J	5	27
SP-03	35 to 39	<200	<200	<200	<200	2,300	2,300	2,300
SP-07	44 to 48	<2	71	<2	<2	2 J	73	114
	48 to 52	<2	44	<2	<2	1 J	45	102
SP-08	44 to 48	<200	<200	<200	<200	9,400	9,400	9,400
	48 to 52	<20	48	<20	<20	2,900	2,948	3,019
	52 to 56	<2	27	<2	<2	4	31	61
	56 to 60	<2	13	<2	<2	1 J	14	37
SP-09	44 to 48	<200	<200	<200	<200	9,100	9,100	9,100
	48 to 52	<200	<200	<200	<200	150 J	150	150
SP-14	44 to 48	<200	<200	<200	<200	7,500	7,500	7,500
	48 to 52	<20	22	<20	<20	950	972	972
	52 to 56	<2	17	<2	<2	1 J	18	47
SP-26	44 to 48	<20	15 J	<20	<20	430	445	445
SP-27	44 to 48	<20	100	<20	<20	100	200	278
	48 to 52	<2	17	<2	<2	<2	17	42

Table D-1
Source Area Delineation No.1 Analytical Results
November 6 - 21, 2000

Sample Location ID	Sample Collection Interval (feet bls)	Summary of Total Chlorinated Ethenes					TCLE	Total VOCs
		VC	cis-1,2-DCE	trans-1,2-DCE	TCE	PCE		
SP-29	44 to 48	<200	<200	<200	<200	300	300	300
	48 to 52	<200	<200	<200	<200	520	520	520
SP-31	44 to 48	<2	25	<2	<2	<2	25	80
	48 to 52	<2	43	<2	1 J	<2	44	138
SP-32	36 to 40	<2	<2	<2	<2	<2	--	15
	41 to 45	<2	3	<2	<2	<2	3	47
	46 to 50	<2	58	<2	<2	<2	58	189

Notes:
J: J qualifier denotes the concentration is estimated.
bls: below land surface
DCE: Dichloroethene
TCE: Trichloroethene
PCE: Tetrachloroethene
TCLE: Total Chlorinated Ethenes
VOCs: Volatile Organic Compounds
MIP: Membrane Interface Probe
uV: microvolts
All concentrations reported in micrograms per liter (ug/L), unless otherwise noted.
TCLE is defined as the summation of PCE, TCE, DCE, and Vinyl Chloride.
Total VOCs is defined as the sum of all detected constituents by USEPA Method 8021B.

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1374

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-14 52'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11150010.D

Level: (low/med) LOW Date Received: 11/15/00

% Moisture: not dec. Date Analyzed: 11/15/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or ug/Kg)	UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	U
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	U
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	U
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	2	U
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

AMS SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

00-1375

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: EQUIP BLANK 1

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11150011.D

Level: (low/med) LOW Date Received: 11/15/00

% Moisture: not dec. Date Analyzed: 11/15/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	2	U
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	2	U
67-66-3	Chloroform	2	U
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	2	U
79-01-6	Trichloroethene	2	U
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	2	U
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	2	U
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	2	U
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	4	U
95-47-6	ortho-Xylene	2	U
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	2	U
75-25-2	Bromoform	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1375

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: EQUIP BLANK 1

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11150011.D

Level: (low/med) LOW Date Received: 11/15/00

% Moisture: not dec. Date Analyzed: 11/15/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or ug/Kg)	UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	U
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	U
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	U
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	2	U
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1376

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: RSP-01 52'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11160003.D

Level: (low/med) LOW Date Received: 11/16/00

% Moisture: not dec. Date Analyzed: 11/16/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or ug/Kg)	UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	1	J
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	40	
67-66-3	Chloroform	2	U
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	4	
79-01-6	Trichloroethene	2	U
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	1	J
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	8	
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	35	
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	4	U
95-47-6	ortho-Xylene	2	U
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	1	J
75-25-2	Bromoform	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1376

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: RSP-01 52'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11160003.D

Level: (low/med) LOW Date Received: 11/16/00

% Moisture: not dec. Date Analyzed: 11/16/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or ug/Kg)	UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	U
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	U
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	U
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	2	U
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1377

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: RSP-01 56'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11160004.D

Level: (low/med) LOW Date Received: 11/16/00

% Moisture: not dec. Date Analyzed: 11/16/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	5	
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	2	U
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	3	
67-66-3	Chloroform	2	U
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	1	J
79-01-6	Trichloroethene	2	U
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	16	
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	2	J
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	2	U
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	4	U
95-47-6	ortho-Xylene	2	U
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	2	U
75-25-2	Bromoform	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1377

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: RSP-01 56'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11160004.D

Level: (low/med) LOW Date Received: 11/16/00

% Moisture: not dec. Date Analyzed: 11/16/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	U
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	U
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	U
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	2	U
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

AMS SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

00-1378

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-09 44'

Sample wt/vol: 0.1 (g/ml) ML Lab File ID: 11160007.D

Level: (low/med) LOW Date Received: 11/16/00

% Moisture: not dec. Date Analyzed: 11/16/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	200	U
74-87-3	Chloromethane	200	U
75-01-4	Vinyl Chloride	200	U
74-83-9	Bromomethane	200	U
75-00-3	Chloroethane	200	U
75-69-4	Trichlorofluoromethane	200	U
75-35-4	1,1-Dichloroethene	200	U
75-09-2	Methylene Chloride	200	U
156-59-2	trans-1,2-Dichloroethene	200	U
75-34-3	1,1-Dichloroethane	200	U
594-20-7	2,2-Dichloropropane	200	U
156-60-5	cis-1,2-Dichloroethene	200	U
67-66-3	Chloroform	200	U
74-97-5	Bromochloromethane	200	U
71-55-6	1,1,1-Trichloroethane	200	U
563-58-6	1,1-Dichloropropene	200	U
56-23-5	Carbon Tetrachloride	200	U
107-06-2	1,2-Dichloroethane	200	U
71-43-2	Benzene	200	U
79-01-6	Trichloroethene	200	U
78-87-5	1,2-Dichloropropane	200	U
75-27-4	Bromodichloromethane	200	U
74-95-3	Dibromomethane	200	U
10061-01-5	cis-1,3-Dichloropropene	200	U
108-88-3	Toluene	200	U
10061-02-6	trans-1,3-Dichloropropene	200	U
79-00-5	1,1,2-Trichloroethane	200	U
142-28-9	1,3-Dichloropropane	200	U
127-18-4	Tetrachloroethene	9100	
124-48-1	Dibromochloromethane	200	U
106-93-4	1,2-Dibromoethane	200	U
108-90-7	Chlorobenzene	200	U
100-41-4	Ethylbenzene	200	U
630-20-6	1,1,1,2-Tetrachloroethane	200	U
108-38-3	meta,para-Xylene	400	U
95-47-6	ortho-Xylene	200	U
100-42-5	Styrene	200	U
98-82-8	Isopropylbenzene	200	U
75-25-2	Bromoform	200	U

1A

AMS SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

00-1378

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-09 44'

Sample wt/vol: 0.1 (g/ml) ML Lab File ID: 11160007.D

Level: (low/med) LOW Date Received: 11/16/00

% Moisture: not dec. Date Analyzed: 11/16/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	200	U
96-18-4	1,2,3-Trichloropropane	200	U
103-65-1	n-Propylbenzene	200	U
108-86-1	Bromobenzene	200	U
108-67-8	1,3,5-Trimethylbenzene	200	U
95-49-8	2-Chlorotoluene	200	U
106-43-4	4-Chlorotoluene	200	U
98-06-6	tert-Butylbenzene	200	U
95-36-3	1,2,4-Trimethylbenzene	200	U
135-98-8	sec-Butylbenzene	200	U
527-84-4	para-Isopropyltoluene	200	U
541-73-1	1,3-Dichlorobenzene	200	U
106-46-7	1,4-Dichlorobenzene	200	U
104-51-8	n-Butylbenzene	200	U
95-50-1	1,2-Dichlorobenzene	200	U
96-12-8	1,2-Dibromo-3-chloropropane	200	U
120-82-1	1,2,4-Trichlorobenzene	200	U
87-68-3	Hexachlorobutadiene	200	U
91-20-3	Naphthalene	200	U
87-61-6	1,2,3-Trichlorobenzene	200	U

1A

AMS SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

00-1379

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-09 48'

Sample wt/vol: 0.1 (g/ml) ML Lab File ID: 11160008.D

Level: (low/med) LOW Date Received: 11/16/00

% Moisture: not dec. Date Analyzed: 11/16/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or ug/Kg)	UG/L	Q
75-71-8	Dichlorodifluoromethane	200	U
74-87-3	Chloromethane	200	U
75-01-4	Vinyl Chloride	200	U
74-83-9	Bromomethane	200	U
75-00-3	Chloroethane	200	U
75-69-4	Trichlorofluoromethane	200	U
75-35-4	1,1-Dichloroethene	200	U
75-09-2	Methylene Chloride	200	U
156-59-2	trans-1,2-Dichloroethene	200	U
75-34-3	1,1-Dichloroethane	200	U
594-20-7	2,2-Dichloropropane	200	U
156-60-5	cis-1,2-Dichloroethene	200	U
67-66-3	Chloroform	200	U
74-97-5	Bromochloromethane	200	U
71-55-6	1,1,1-Trichloroethane	200	U
563-58-6	1,1-Dichloropropene	200	U
56-23-5	Carbon Tetrachloride	200	U
107-06-2	1,2-Dichloroethane	200	U
71-43-2	Benzene	200	U
79-01-6	Trichloroethene	200	U
78-87-5	1,2-Dichloropropane	200	U
75-27-4	Bromodichloromethane	200	U
74-95-3	Dibromomethane	200	U
10061-01-5	cis-1,3-Dichloropropene	200	U
108-88-3	Toluene	200	U
10061-02-6	trans-1,3-Dichloropropene	200	U
79-00-5	1,1,2-Trichloroethane	200	U
142-28-9	1,3-Dichloropropane	200	U
127-18-4	Tetrachloroethene	150	J
124-48-1	Dibromochloromethane	200	U
106-93-4	1,2-Dibromoethane	200	U
108-90-7	Chlorobenzene	200	U
100-41-4	Ethylbenzene	200	U
630-20-6	1,1,1,2-Tetrachloroethane	200	U
108-38-3	meta,para-Xylene	400	U
95-47-6	ortho-Xylene	200	U
100-42-5	Styrene	200	U
98-82-8	Isopropylbenzene	200	U
75-25-2	Bromoform	200	U

1A

AMS SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

00-1379

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-09 48'

Sample wt/vol: 0.1 (g/ml) ML Lab File ID: 11160008.D

Level: (low/med) LOW Date Received: 11/16/00

% Moisture: not dec. Date Analyzed: 11/16/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	200	U
96-18-4	1,2,3-Trichloropropane	200	U
103-65-1	n-Propylbenzene	200	U
108-86-1	Bromobenzene	200	U
108-67-8	1,3,5-Trimethylbenzene	200	U
95-49-8	2-Chlorotoluene	200	U
106-43-4	4-Chlorotoluene	200	U
98-06-6	tert-Butylbenzene	200	U
95-36-3	1,2,4-Trimethylbenzene	200	U
135-98-8	sec-Butylbenzene	200	U
527-84-4	para-Isopropyltoluene	200	U
541-73-1	1,3-Dichlorobenzene	200	U
106-46-7	1,4-Dichlorobenzene	200	U
104-51-8	n-Butylbenzene	200	U
95-50-1	1,2-Dichlorobenzene	200	U
96-12-8	1,2-Dibromo-3-chloropropane	200	U
120-82-1	1,2,4-Trichlorobenzene	200	U
87-68-3	Hexachlorobutadiene	200	U
91-20-3	Naphthalene	200	U
87-61-6	1,2,3-Trichlorobenzene	200	U

1A

AMS SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

00-1380

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-03 35'

Sample wt/vol: 0.1 (g/ml) ML Lab File ID: 11160009.D

Level: (low/med) LOW Date Received: 11/16/00

% Moisture: not dec. Date Analyzed: 11/16/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	200	U
74-87-3	Chloromethane	200	U
75-01-4	Vinyl Chloride	200	U
74-83-9	Bromomethane	200	U
75-00-3	Chloroethane	200	U
75-69-4	Trichlorofluoromethane	200	U
75-35-4	1,1-Dichloroethene	200	U
75-09-2	Methylene Chloride	200	U
156-59-2	trans-1,2-Dichloroethene	200	U
75-34-3	1,1-Dichloroethane	200	U
594-20-7	2,2-Dichloropropane	200	U
156-60-5	cis-1,2-Dichloroethene	200	U
67-66-3	Chloroform	200	U
74-97-5	Bromochloromethane	200	U
71-55-6	1,1,1-Trichloroethane	200	U
563-58-6	1,1-Dichloropropene	200	U
56-23-5	Carbon Tetrachloride	200	U
107-06-2	1,2-Dichloroethane	200	U
71-43-2	Benzene	200	U
79-01-6	Trichloroethene	200	U
78-87-5	1,2-Dichloropropane	200	U
75-27-4	Bromodichloromethane	200	U
74-95-3	Dibromomethane	200	U
10061-01-5	cis-1,3-Dichloropropene	200	U
108-88-3	Toluene	200	U
10061-02-6	trans-1,3-Dichloropropene	200	U
79-00-5	1,1,2-Trichloroethane	200	U
142-28-9	1,3-Dichloropropane	200	U
127-18-4	Tetrachloroethene	2300	
124-48-1	Dibromochloromethane	200	U
106-93-4	1,2-Dibromoethane	200	U
108-90-7	Chlorobenzene	200	U
100-41-4	Ethylbenzene	200	U
630-20-6	1,1,1,2-Tetrachloroethane	200	U
108-38-3	meta,para-Xylene	400	U
95-47-6	ortho-Xylene	200	U
100-42-5	Styrene	200	U
98-82-8	Isopropylbenzene	200	U
75-25-2	Bromoform	200	U

1A

AMS SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

00-1380

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-03 35'

Sample wt/vol: 0.1 (g/ml) ML Lab File ID: 11160009.D

Level: (low/med) LOW Date Received: 11/16/00

% Moisture: not dec. Date Analyzed: 11/16/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or ug/Kg)	UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	200	U
96-18-4	1,2,3-Trichloropropane	200	U
103-65-1	n-Propylbenzene	200	U
108-86-1	Bromobenzene	200	U
108-67-8	1,3,5-Trimethylbenzene	200	U
95-49-8	2-Chlorotoluene	200	U
106-43-4	4-Chlorotoluene	200	U
98-06-6	tert-Butylbenzene	200	U
95-36-3	1,2,4-Trimethylbenzene	200	U
135-98-8	sec-Butylbenzene	200	U
527-84-4	para-Isopropyltoluene	200	U
541-73-1	1,3-Dichlorobenzene	200	U
106-46-7	1,4-Dichlorobenzene	200	U
104-51-8	n-Butylbenzene	200	U
95-50-1	1,2-Dichlorobenzene	200	U
96-12-8	1,2-Dibromo-3-chloropropane	200	U
120-82-1	1,2,4-Trichlorobenzene	200	U
87-68-3	Hexachlorobutadiene	200	U
91-20-3	Naphthalene	200	U
87-61-6	1,2,3-Trichlorobenzene	200	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1381

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: EQ BLANK 2

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11160010.D

Level: (low/med) LOW Date Received: 11/16/00

% Moisture: not dec. Date Analyzed: 11/16/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	2	U
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	2	U
67-66-3	Chloroform	1	J
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	2	U
79-01-6	Trichloroethene	2	U
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	2	U
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	2	U
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	2	U
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	4	U
95-47-6	ortho-Xylene	2	U
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	2	U
75-25-2	Bromoform	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1381

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: EQ BLANK 2

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11160010.D

Level: (low/med) LOW Date Received: 11/16/00

% Moisture: not dec. Date Analyzed: 11/16/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or ug/Kg)	UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	U
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	U
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	U
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	2	U
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1382

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: EQ BLANK 3

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11170006.D

Level: (low/med) LOW Date Received: 11/17/00

% Moisture: not dec. Date Analyzed: 11/17/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or ug/Kg)	UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	2	U
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	2	U
67-66-3	Chloroform	1	J
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	2	U
79-01-6	Trichloroethene	2	U
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	2	U
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	2	U
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	2	U
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	4	U
95-47-6	ortho-Xylene	2	U
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	2	U
75-25-2	Bromoform	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1382

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: EQ BLANK 3

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11170006.D

Level: (low/med) LOW Date Received: 11/17/00

% Moisture: not dec. Date Analyzed: 11/17/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	U
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	U
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	U
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	2	U
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1383

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-07 44'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11170007.D

Level: (low/med) LOW Date Received: 11/17/00

% Moisture: not dec. Date Analyzed: 11/17/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	1	J
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	71	
67-66-3	Chloroform	2	U
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	2	
79-01-6	Trichloroethene	2	U
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	7	
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	2	J
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	30	
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	4	U
95-47-6	ortho-Xylene	2	U
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	1	J
75-25-2	Bromoform	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1383

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-07 44'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11170007.D

Level: (low/med) LOW Date Received: 11/17/00

% Moisture: not dec. Date Analyzed: 11/17/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	U
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	U
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	U
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	2	U
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1384

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-07 48'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11170008.D

Level: (low/med) LOW Date Received: 11/17/00

% Moisture: not dec. Date Analyzed: 11/17/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	1	J
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	44	
67-66-3	Chloroform	2	U
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	3	
79-01-6	Trichloroethene	2	U
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	6	
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	1	J
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	43	
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	4	U
95-47-6	ortho-Xylene	2	U
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	3	
75-25-2	Bromoform	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1384

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-07 48'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11170008.D

Level: (low/med) LOW Date Received: 11/17/00

% Moisture: not dec. Date Analyzed: 11/17/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or ug/Kg)	UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	U
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	U
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	U
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	1	J
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

AMS SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

00-1385

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-29 44'

Sample wt/vol: 0.1 (g/ml) ML Lab File ID: 11170009.D

Level: (low/med) LOW Date Received: 11/17/00

% Moisture: not dec. Date Analyzed: 11/17/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or ug/Kg)	UG/L	Q
75-71-8	Dichlorodifluoromethane	200	U
74-87-3	Chloromethane	200	U
75-01-4	Vinyl Chloride	200	U
74-83-9	Bromomethane	200	U
75-00-3	Chloroethane	200	U
75-69-4	Trichlorofluoromethane	200	U
75-35-4	1,1-Dichloroethene	200	U
75-09-2	Methylene Chloride	200	U
156-59-2	trans-1,2-Dichloroethene	200	U
75-34-3	1,1-Dichloroethane	200	U
594-20-7	2,2-Dichloropropane	200	U
156-60-5	cis-1,2-Dichloroethene	200	U
67-66-3	Chloroform	200	U
74-97-5	Bromochloromethane	200	U
71-55-6	1,1,1-Trichloroethane	200	U
563-58-6	1,1-Dichloropropene	200	U
56-23-5	Carbon Tetrachloride	200	U
107-06-2	1,2-Dichloroethane	200	U
71-43-2	Benzene	200	U
79-01-6	Trichloroethene	200	U
78-87-5	1,2-Dichloropropane	200	U
75-27-4	Bromodichloromethane	200	U
74-95-3	Dibromomethane	200	U
10061-01-5	cis-1,3-Dichloropropene	200	U
108-88-3	Toluene	200	U
10061-02-6	trans-1,3-Dichloropropene	200	U
79-00-5	1,1,2-Trichloroethane	200	U
142-28-9	1,3-Dichloropropane	200	U
127-18-4	Tetrachloroethene	300	
124-48-1	Dibromochloromethane	200	U
106-93-4	1,2-Dibromoethane	200	U
108-90-7	Chlorobenzene	200	U
100-41-4	Ethylbenzene	200	U
630-20-6	1,1,1,2-Tetrachloroethane	200	U
108-38-3	meta,para-Xylene	400	U
95-47-6	ortho-Xylene	200	U
100-42-5	Styrene	200	U
98-82-8	Isopropylbenzene	200	U
75-25-2	Bromoform	200	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1385

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-29 44'

Sample wt/vol: 0.1 (g/ml) ML Lab File ID: 11170009.D

Level: (low/med) LOW Date Received: 11/17/00

% Moisture: not dec. Date Analyzed: 11/17/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	200	U
96-18-4	1,2,3-Trichloropropane	200	U
103-65-1	n-Propylbenzene	200	U
108-86-1	Bromobenzene	200	U
108-67-8	1,3,5-Trimethylbenzene	200	U
95-49-8	2-Chlorotoluene	200	U
106-43-4	4-Chlorotoluene	200	U
98-06-6	tert-Butylbenzene	200	U
95-36-3	1,2,4-Trimethylbenzene	200	U
135-98-8	sec-Butylbenzene	200	U
527-84-4	para-Isopropyltoluene	200	U
541-73-1	1,3-Dichlorobenzene	200	U
106-46-7	1,4-Dichlorobenzene	200	U
104-51-8	n-Butylbenzene	200	U
95-50-1	1,2-Dichlorobenzene	200	U
96-12-8	1,2-Dibromo-3-chloropropane	200	U
120-82-1	1,2,4-Trichlorobenzene	200	U
87-68-3	Hexachlorobutadiene	200	U
91-20-3	Naphthalene	200	U
87-61-6	1,2,3-Trichlorobenzene	200	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1386

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-29 48'

Sample wt/vol: 0.1 (g/ml) ML Lab File ID: 11170010.D

Level: (low/med) LOW Date Received: 11/17/00

% Moisture: not dec. Date Analyzed: 11/17/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	200	U
74-87-3	Chloromethane	200	U
75-01-4	Vinyl Chloride	200	U
74-83-9	Bromomethane	200	U
75-00-3	Chloroethane	200	U
75-69-4	Trichlorofluoromethane	200	U
75-35-4	1,1-Dichloroethene	200	U
75-09-2	Methylene Chloride	200	U
156-59-2	trans-1,2-Dichloroethene	200	U
75-34-3	1,1-Dichloroethane	200	U
594-20-7	2,2-Dichloropropane	200	U
156-60-5	cis-1,2-Dichloroethene	200	U
67-66-3	Chloroform	200	U
74-97-5	Bromochloromethane	200	U
71-55-6	1,1,1-Trichloroethane	200	U
563-58-6	1,1-Dichloropropene	200	U
56-23-5	Carbon Tetrachloride	200	U
107-06-2	1,2-Dichloroethane	200	U
71-43-2	Benzene	200	U
79-01-6	Trichloroethene	200	U
78-87-5	1,2-Dichloropropane	200	U
75-27-4	Bromodichloromethane	200	U
74-95-3	Dibromomethane	200	U
10061-01-5	cis-1,3-Dichloropropene	200	U
108-88-3	Toluene	200	U
10061-02-6	trans-1,3-Dichloropropene	200	U
79-00-5	1,1,2-Trichloroethane	200	U
142-28-9	1,3-Dichloropropane	200	U
127-18-4	Tetrachloroethene	520	
124-48-1	Dibromochloromethane	200	U
106-93-4	1,2-Dibromoethane	200	U
108-90-7	Chlorobenzene	200	U
100-41-4	Ethylbenzene	200	U
630-20-6	1,1,1,2-Tetrachloroethane	200	U
108-38-3	meta,para-Xylene	400	U
95-47-6	ortho-Xylene	200	U
100-42-5	Styrene	200	U
98-82-8	Isopropylbenzene	200	U
75-25-2	Bromoform	200	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1386

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-29 48'

Sample wt/vol: 0.1 (g/ml) ML Lab File ID: 11170010.D

Level: (low/med) LOW Date Received: 11/17/00

% Moisture: not dec. Date Analyzed: 11/17/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or ug/Kg)	UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	200	U
96-18-4	1,2,3-Trichloropropane	200	U
103-65-1	n-Propylbenzene	200	U
108-86-1	Bromobenzene	200	U
108-67-8	1,3,5-Trimethylbenzene	200	U
95-49-8	2-Chlorotoluene	200	U
106-43-4	4-Chlorotoluene	200	U
98-06-6	tert-Butylbenzene	200	U
95-36-3	1,2,4-Trimethylbenzene	200	U
135-98-8	sec-Butylbenzene	200	U
527-84-4	para-Isopropyltoluene	200	U
541-73-1	1,3-Dichlorobenzene	200	U
106-46-7	1,4-Dichlorobenzene	200	U
104-51-8	n-Butylbenzene	200	U
95-50-1	1,2-Dichlorobenzene	200	U
96-12-8	1,2-Dibromo-3-chloropropane	200	U
120-82-1	1,2,4-Trichlorobenzene	200	U
87-68-3	Hexachlorobutadiene	200	U
91-20-3	Naphthalene	200	U
87-61-6	1,2,3-Trichlorobenzene	200	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1387

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-26 44'

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 11170012.D

Level: (low/med) LOW Date Received: 11/17/00

% Moisture: not dec. Date Analyzed: 11/17/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	20	U
74-87-3	Chloromethane	20	U
75-01-4	Vinyl Chloride	20	U
74-83-9	Bromomethane	20	U
75-00-3	Chloroethane	20	U
75-69-4	Trichlorofluoromethane	20	U
75-35-4	1,1-Dichloroethene	20	U
75-09-2	Methylene Chloride	20	U
156-59-2	trans-1,2-Dichloroethene	20	U
75-34-3	1,1-Dichloroethane	20	U
594-20-7	2,2-Dichloropropane	20	U
156-60-5	cis-1,2-Dichloroethene	15	J
67-66-3	Chloroform	20	U
74-97-5	Bromochloromethane	20	U
71-55-6	1,1,1-Trichloroethane	20	U
563-58-6	1,1-Dichloropropene	20	U
56-23-5	Carbon Tetrachloride	20	U
107-06-2	1,2-Dichloroethane	20	U
71-43-2	Benzene	20	U
79-01-6	Trichloroethene	20	U
78-87-5	1,2-Dichloropropane	20	U
75-27-4	Bromodichloromethane	20	U
74-95-3	Dibromomethane	20	U
10061-01-5	cis-1,3-Dichloropropene	20	U
108-88-3	Toluene	20	U
10061-02-6	trans-1,3-Dichloropropene	20	U
79-00-5	1,1,2-Trichloroethane	20	U
142-28-9	1,3-Dichloropropane	20	U
127-18-4	Tetrachloroethene	430	
124-48-1	Dibromochloromethane	20	U
106-93-4	1,2-Dibromoethane	20	U
108-90-7	Chlorobenzene	20	U
100-41-4	Ethylbenzene	20	U
630-20-6	1,1,1,2-Tetrachloroethane	20	U
108-38-3	meta,para-Xylene	40	U
95-47-6	ortho-Xylene	20	U
100-42-5	Styrene	20	U
98-82-8	Isopropylbenzene	20	U
75-25-2	Bromoform	20	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1387

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-26 44'

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 11170012.D

Level: (low/med) LOW Date Received: 11/17/00

% Moisture: not dec. Date Analyzed: 11/17/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	20	U
96-18-4	1,2,3-Trichloropropane	20	U
103-65-1	n-Propylbenzene	20	U
108-86-1	Bromobenzene	20	U
108-67-8	1,3,5-Trimethylbenzene	20	U
95-49-8	2-Chlorotoluene	20	U
106-43-4	4-Chlorotoluene	20	U
98-06-6	tert-Butylbenzene	20	U
95-36-3	1,2,4-Trimethylbenzene	20	U
135-98-8	sec-Butylbenzene	20	U
527-84-4	para-Isopropyltoluene	20	U
541-73-1	1,3-Dichlorobenzene	20	U
106-46-7	1,4-Dichlorobenzene	20	U
104-51-8	n-Butylbenzene	20	U
95-50-1	1,2-Dichlorobenzene	20	U
96-12-8	1,2-Dibromo-3-chloropropane	20	U
120-82-1	1,2,4-Trichlorobenzene	20	U
87-68-3	Hexachlorobutadiene	20	U
91-20-3	Naphthalene	20	U
87-61-6	1,2,3-Trichlorobenzene	20	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1388

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-27 44'

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 11200003.D

Level: (low/med) LOW Date Received: 11/20/00

% Moisture: not dec. Date Analyzed: 11/20/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
75-71-8	Dichlorodifluoromethane	20	U
74-87-3	Chloromethane	20	U
75-01-4	Vinyl Chloride	20	U
74-83-9	Bromomethane	20	U
75-00-3	Chloroethane	20	U
75-69-4	Trichlorofluoromethane	20	U
75-35-4	1,1-Dichloroethene	20	U
75-09-2	Methylene Chloride	20	U
156-59-2	trans-1,2-Dichloroethene	20	U
75-34-3	1,1-Dichloroethane	20	U
594-20-7	2,2-Dichloropropane	20	U
156-60-5	cis-1,2-Dichloroethene	100	
67-66-3	Chloroform	20	U
74-97-5	Bromochloromethane	20	U
71-55-6	1,1,1-Trichloroethane	20	U
563-58-6	1,1-Dichloropropene	20	U
56-23-5	Carbon Tetrachloride	20	U
107-06-2	1,2-Dichloroethane	20	U
71-43-2	Benzene	20	U
79-01-6	Trichloroethene	20	U
78-87-5	1,2-Dichloropropane	20	U
75-27-4	Bromodichloromethane	20	U
74-95-3	Dibromomethane	20	U
10061-01-5	cis-1,3-Dichloropropene	20	U
108-88-3	Toluene	20	U
10061-02-6	trans-1,3-Dichloropropene	20	U
79-00-5	1,1,2-Trichloroethane	20	U
142-28-9	1,3-Dichloropropane	20	U
127-18-4	Tetrachloroethene	20	U
124-48-1	Dibromochloromethane	20	U
106-93-4	1,2-Dibromoethane	20	U
108-90-7	Chlorobenzene	17	J
100-41-4	Ethylbenzene	50	
630-20-6	1,1,1,2-Tetrachloroethane	20	U
108-38-3	meta,para-Xylene	11	J
95-47-6	ortho-Xylene	20	U
100-42-5	Styrene	20	U
98-82-8	Isopropylbenzene	20	U
75-25-2	Bromoform	20	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1388

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-27 44'

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 11200003.D

Level: (low/med) LOW Date Received: 11/20/00

% Moisture: not dec. Date Analyzed: 11/20/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or ug/Kg)	UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	20	U
96-18-4	1,2,3-Trichloropropane	20	U
103-65-1	n-Propylbenzene	20	U
108-86-1	Bromobenzene	20	U
108-67-8	1,3,5-Trimethylbenzene	20	U
95-49-8	2-Chlorotoluene	20	U
106-43-4	4-Chlorotoluene	20	U
98-06-6	tert-Butylbenzene	20	U
95-36-3	1,2,4-Trimethylbenzene	20	U
135-98-8	sec-Butylbenzene	20	U
527-84-4	para-Isopropyltoluene	20	U
541-73-1	1,3-Dichlorobenzene	20	U
106-46-7	1,4-Dichlorobenzene	20	U
104-51-8	n-Butylbenzene	20	U
95-50-1	1,2-Dichlorobenzene	20	U
96-12-8	1,2-Dibromo-3-chloropropane	20	U
120-82-1	1,2,4-Trichlorobenzene	20	U
87-68-3	Hexachlorobutadiene	20	U
91-20-3	Naphthalene	20	U
87-61-6	1,2,3-Trichlorobenzene	20	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1389

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-27 48'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11200005.D

Level: (low/med) LOW Date Received: 11/20/00

% Moisture: not dec. Date Analyzed: 11/20/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	2	U
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	17	
67-66-3	Chloroform	2	U
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	3	
79-01-6	Trichloroethene	2	U
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	2	
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	2	U
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	20	
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	4	U
95-47-6	ortho-Xylene	2	U
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	2	U
75-25-2	Bromoform	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1389

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-27 48'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11200005.D

Level: (low/med) LOW Date Received: 11/20/00

% Moisture: not dec. Date Analyzed: 11/20/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	U
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	U
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	U
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	2	U
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1390

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-31 44'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11200006.D

Level: (low/med) LOW Date Received: 11/20/00

% Moisture: not dec. Date Analyzed: 11/20/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	2	U
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	25	
67-66-3	Chloroform	2	U
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	2	U
79-01-6	Trichloroethene	2	U
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	2	U
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	2	U
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	41	
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	4	U
95-47-6	ortho-Xylene	2	U
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	4	
75-25-2	Bromoform	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1390

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-31 44'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11200006.D

Level: (low/med) LOW Date Received: 11/20/00

% Moisture: not dec. Date Analyzed: 11/20/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	J
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	1	J
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	J
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	3	
87-61-6	1,2,3-Trichlorobenzene	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1391

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-31 48'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11200007.D

Level: (low/med) LOW Date Received: 11/20/00

% Moisture: not dec. Date Analyzed: 11/20/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
75-09-2	Methylene Chloride	2	U
156-59-2	trans-1,2-Dichloroethene	2	U
75-34-3	1,1-Dichloroethane	1	J
594-20-7	2,2-Dichloropropane	2	U
156-60-5	cis-1,2-Dichloroethene	43	
67-66-3	Chloroform	2	U
74-97-5	Bromochloromethane	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	2	J
79-01-6	Trichloroethene	1	J
78-87-5	1,2-Dichloropropane	2	U
75-27-4	Bromodichloromethane	2	U
74-95-3	Dibromomethane	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-88-3	Toluene	2	
10061-02-6	trans-1,3-Dichloropropene	2	U
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	2	U
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
100-41-4	Ethylbenzene	71	
630-20-6	1,1,1,2-Tetrachloroethane	2	U
108-38-3	meta,para-Xylene	4	U
95-47-6	ortho-Xylene	2	U
100-42-5	Styrene	2	U
98-82-8	Isopropylbenzene	6	
75-25-2	Bromoform	2	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

AMS SAMPLE NO.

00-1391

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Matrix: (soil/water) WATER Lab Sample ID: SP-31 48'

Sample wt/vol: 10.0 (g/ml) ML Lab File ID: 11200007.D

Level: (low/med) LOW Date Received: 11/20/00

% Moisture: not dec. Date Analyzed: 11/20/00

GC Column: VOCOL ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or ug/Kg)	UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	
108-86-1	Bromobenzene	2	U
108-67-8	1,3,5-Trimethylbenzene	3	
95-49-8	2-Chlorotoluene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-36-3	1,2,4-Trimethylbenzene	2	J
135-98-8	sec-Butylbenzene	2	U
527-84-4	para-Isopropyltoluene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
106-46-7	1,4-Dichlorobenzene	2	
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	3	
87-61-6	1,2,3-Trichlorobenzene	2	U

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Lab File ID (Standard): 11140001.D Date Analyzed: 11/14/00

Instrument ID: GC/MS Time Analyzed: 8:54

GC Column: VOCOL ID: 0.25 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT #	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR ST	917788	9.13	557061	12.40	219384	14.84
UPPER LIMIT	1835576	9.63	1114122	12.90	438768	15.34
LOWER LIMIT	458894	8.63	278531	11.90	109692	14.34
MS SAMPLE NO						
01 11140002	1001773	9.12	587433	12.39	286974	14.83
02 00-1364R	1067595	9.12	610405	12.39	301888	14.83
03 00-1365R	1170461	9.12	590730	12.39	266974	14.83
04 00-1367R	993918	9.12	567295	12.39	282215	14.82
05 00-1366R	1259098	9.12	706391	12.39	323383	14.83

IS1 = Fluorobenzene

IS2 = Chlorobenzene-d5

IS3 = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area

AREA LOWER LIMIT = - 50% of internal standard area

RT UPPER LIMIT = +0.50 minutes of internal standard RT

RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column to be used to flag values outside QC limit with an asterisk.

* Values outside of contract required QC limits

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Lab File ID (Standard): 11150001.D Date Analyzed: 11/15/00

Instrument ID: GC/MS Time Analyzed: 8:36

GC Column: VOCOL ID: 0.25 (mm) Heated Purge: (Y/N) N

		IS1 AREA #	RT #	IS2 AREA #	RT #	IS3 AREA #	RT #
	12 HOUR ST	1158089	9.12	618868	12.38	251037	14.82
	UPPER LIMIT	2316178	9.62	1237736	12.88	502074	15.32
	LOWER LIMIT	579045	8.62	309434	11.88	125519	14.32
	MS SAMPLE NO						
01	11150002	1222735	9.12	651105	12.38	317645	14.82
02	00-1368	1328872	9.12	646418	12.38	361373	14.82
03	00-1369	1265700	9.12	661572	12.38	325731	14.82
04	00-1370	1208696	9.11	647159	12.38	306984	14.82
05	00-1371	1136378	9.11	649933	12.38	330798	14.82
06	00-1370R	1178953	9.12	680194	12.38	313400	14.82
07	00-1372	1257418	9.12	702704	12.39	336270	14.82
08	00-1373	1203883	9.12	678246	12.38	341511	14.82
09	00-1374	1216425	9.12	630661	12.38	335860	14.82
10	00-1375	1197066	9.12	691102	12.38	330861	14.82

IS1 = Fluorobenzene

IS2 = Chlorobenzene-d5

IS3 = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area

AREA LOWER LIMIT = - 50% of internal standard area

RT UPPER LIMIT = +0.50 minutes of internal standard RT

RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column to be used to flag values outside QC limit with an asterisk.

* Values outside of contract required QC limits

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Lab File ID (Standard): 11160001.D Date Analyzed: 11/16/00

Instrument ID: GC/MS Time Analyzed: 7:52

GC Column: VOCOL ID: 0.25 (mm) Heated Purge: (Y/N) N

		IS1 AREA #	RT #	IS2 AREA #	RT #	IS3 AREA #	RT #
	12 HOUR ST	1267494	9.13	643980	12.39	272420	14.83
	UPPER LIMIT	2534988	9.63	1287960	12.89	544840	15.33
	LOWER LIMIT	633747	8.63	321990	11.89	136210	14.33
	MS SAMPLE NO						
01	11160002	1198892	9.12	649911	12.38	323501	14.82
02	00-1376	1217134	9.12	574806	12.39	319939	14.82
03	00-1377	1210330	9.12	686404	12.38	332015	14.82
04	00-1377MS	1071250	9.12	542260	12.38	328747	14.82
05	00-1377MSD	1067579	9.12	539189	12.38	315305	14.83
06	00-1378	1139720	9.13	635341	12.40	308355	14.84
07	00-1379	1156573	9.12	652264	12.39	316347	14.83
08	00-1380	1219193	9.13	683956	12.39	335047	14.83
09	00-1381	1193901	9.12	670241	12.39	328133	14.83
10	11170002	1150729	9.13	656401	12.40	312315	14.84

IS1 = Fluorobenzene
IS2 = Chlorobenzene-d5
IS3 = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column to be used to flag values outside QC limit with an asterisk.
* Values outside of contract required QC limits

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Lab File ID (Standard): 11170003.D Date Analyzed: 11/17/00

Instrument ID: GC/MS Time Analyzed: 8:34

GC Column: VOCOL ID: 0.25 (mm) Heated Purge: (Y/N) N

		IS1 AREA #	RT #	IS2 AREA #	RT #	IS3 AREA #	RT #
	12 HOUR ST	1018332	9.13	613664	12.40	263589	14.83
	UPPER LIMIT	2036664	9.63	1227328	12.90	527178	15.33
	LOWER LIMIT	509166	8.63	306832	11.90	131795	14.33
	MS SAMPLE NO						
01	00-1382	1146823	9.12	644610	12.39	310038	14.83
02	00-1383	1204916	9.12	597291	12.39	326088	14.83
03	00-1384	1187239	9.12	560296	12.40	334002	14.83
04	00-1385	1188208	9.13	668925	12.40	304805	14.84
05	00-1386	1123584	9.13	646786	12.40	307253	14.83
06	00-1387	1132147	9.13	654500	12.39	314419	14.83

IS1 = Fluorobenzene

IS2 = Chlorobenzene-d5

IS3 = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area

AREA LOWER LIMIT = - 50% of internal standard area

RT UPPER LIMIT = +0.50 minutes of internal standard RT

RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column to be used to flag values outside QC limit with an asterisk.

* Values outside of contract required QC limits

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Lab File ID (Standard): 11200001.D Date Analyzed: 11/20/00

Instrument ID: GC/MS Time Analyzed: 9:33

GC Column: VOCOL ID: 0.25 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT #	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR ST	1136810	9.11	607040	12.37	259861	14.81
UPPER LIMIT	2273620	9.61	1214080	12.87	519722	15.31
LOWER LIMIT	568405	8.61	303520	11.87	129931	14.31
MS SAMPLE NO						
01 11200002	1118303	9.10	605676	12.37	315835	14.80
02 00-1388	1190940	9.11	633833	12.37	327269	14.81
03 00-1389	1199732	9.10	601548	12.37	328205	14.81
04 00-1390	1142766	9.11	436261	12.38	305385	14.82
05 00-1391	1077291	9.11	466497	12.38	286334	14.81

IS1 = Fluorobenzene
IS2 = Chlorobenzene-d5
IS3 = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column to be used to flag values outside QC limit with an asterisk.
* Values outside of contract required QC limits

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: AMS, Inc. FL QAP: 909159

Collected: 11/13/00 Client: CH2M Location: Kings Project: Landfill

Lab File ID (Standard): 11210002.D Date Analyzed: 11/21/00

Instrument ID: GC/MS Time Analyzed: 8:45

GC Column: VOCOL ID: 0.25 (mm) Heated Purge: (Y/N) N

		IS1 AREA #	RT #	IS2 AREA #	RT #	IS3 AREA #	RT #
	12 HOUR ST	956922	9.10	589146	12.36	258133	14.80
	UPPER LIMIT	1913844	9.60	1178292	12.86	516266	15.30
	LOWER LIMIT	478461	8.60	294573	11.86	129067	14.30
	MS SAMPLE NO						
01	11210003	1109465	9.10	599823	12.36	319386	14.80
02	00-1391MS	923597	9.10	346674	12.37	272865	14.80
03	00-1391MSD	1207473	9.09	407949	12.36	327671	14.80
04	00-1392	1158101	9.09	595117	12.36	334449	14.80
05	00-1393	1160027	9.09	574723	12.36	347329	14.80
06	00-1394	1152616	9.09	443334	12.37	327907	14.80
07	00-1395	1112712	9.09	614307	12.36	317515	14.80

IS1 = Fluorobenzene
IS2 = Chlorobenzene-d5
IS3 = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column to be used to flag values outside QC limit with an asterisk.
* Values outside of contract required QC limits

Analytical Mobile Services, Inc.

18 Timber Marsh Lane
Hilton Head Island, SC 29926
Telephone: (843) 342-2177

Chain of Custody

Project Name: KINGS BAY LANDFILL					Relinquished by:				Date/Time: 11-13-00 1700
Sample Collector(s): MIKE HALIL					Received by:				Date/Time: 11-13-00 1700
Sample ID	Date	Time	Description	No.	Matrix	Analysis	Prog Area	Sample Preserv	Remarks (Sub-contracted analyses, specific instructions, etc.)
SP-01 20'	11-13	1630	GROUNDWATER	2	W	8260B	—	4°C	
SP-01 36'	↓	↓	↓	↓	↓	↓	↓	↓	
SP-01 40'	↓	↓	↓	↓	↓	↓	↓	↓	
SP-01 44'	↓	↓	↓	↓	↓	↓	↓	↓	
SP-01 48'	↓	↓	↓	↓	↓	↓	↓	↓	

Analytical Mobile Services, Inc.

18 Timber Marsh Lane
Hilton Head Island, SC 29926
Telephone: (843) 342-2177

Chain of Custody

Project Name: KINGS BAY LANDFILL					Relinquished by:				Date/Time: 11-15-00 1700
Sample Collector(s): MIKE HALIL					Received by:				Date/Time: 11-15-00 1700
Sample ID	Date	Time	Description	No.	Matrix	Analysis	Prog Area	Sample Preserv	Remarks (Sub-contracted analyses, specific instructions, etc.)
SP-08 44'	11-15	1130	GROUNDWATER	2	W	8260B	—	4°C	
SP-08 48'	↓	↓	↓	↓	↓	↓	↓	↓	
SP-08 52'	↓	↓	↓	↓	↓	↓	↓	↓	
SP-08 56'	↓	↓	↓	↓	↓	↓	↓	↓	
SP-14 48'	↓	1600	↓	↓	↓	↓	↓	↓	
SP-14 52'	↓	↓	↓	↓	↓	↓	↓	↓	
SP-14 44'	↓	↓	↓	↓	↓	↓	↓	↓	
EQ BLANK 1	11-15	1600	GROUNDWATER	2	W	8260B	—	4°C	

Analytical Mobile Services, Inc.

18 Timber Marsh Lane
Hilton Head Island, SC 29926
Telephone: (843) 342-2177

Chain of Custody

Project Name: KINGS BAY LANDFILL					Relinquished by:				Date/Time: 11-16-00 1700
Sample Collector(s): MIKE HALL					Received by:				Date/Time: 11-16-00 1700
Sample ID	Date	Time	Description	No.	Matrix	Analysis	Prog Area	Sample Preserv	Remarks (Sub-contracted analyses, specific instructions, etc.)
EQ BLANK 2	11-16	1130	GROUNDWATER	2	W	8260B	—	4°C	
RSP-01 52'	↓	↓	↓	↓	↓	↓	↓	↓	
RSP-01 56'	↓	↓	↓	↓	↓	↓	↓	↓	
SP-09 44'	↓	1630	↓	↓	↓	↓	↓	↓	
SP-09 48'	↓	↓	↓	↓	↓	↓	↓	↓	
SP-03 35'	↓	↓	↓	↓	↓	↓	↓	↓	

Analytical Mobile Services, Inc.

18 Timber Marsh Lane
Hilton Head Island, SC 29926
Telephone: (843) 342-2177

Chain of Custody

Project Name: Kings Bay Landfill					Relinquished by:				Date/Time: 11-17-00 1700
Sample Collector(s): Mike Haul					Received by:				Date/Time: 11-17-00 1700
Sample ID	Date	Time	Description	No.	Matrix	Analysis	Prog Area	Sample Preserv	Remarks (Sub-contracted analyses, specific instructions, etc.)
SP-07 44'	11-17	1100	Groundwater	2	W	8260B	—	4°C	
SP-07 48'	↓	↓	↓	↓	↓	↓	↓	↓	
SP-29 44'	↓	1300	↓	↓	↓	↓	↓	↓	
SP-29 48'	↓	↓	↓	↓	↓	↓	↓	↓	
SP-26 44'	↓	1500	↓	↓	↓	↓	↓	↓	
Eq. Blank 3	11-17	1500	Groundwater	↓	↓	↓	↓	↓	

Analytical Mobile Services, Inc.

18 Timber Marsh Lane
Hilton Head Island, SC 29926
Telephone: (843) 342-2177

Chain of Custody

Project Name: KINGS BAY LANDFILL					Relinquished by:				Date/Time: 11-20-00 1700
Sample Collector(s): MIKE HALIC					Received by:				Date/Time: 11-20-00 1700
Sample ID	Date	Time	Description	No.	Matrix	Analysis	Prog Area	Sample Preserv	Remarks (Sub-contracted analyses, specific instructions, etc.)
SP-27 44'	11-20	1200	GROUNDWATER	2	W	8260B	—	4°C	
SP-27 48'	↓	↓	↓	↓	↓	↓	↓	↓	
SP-31 44'	↓	1530	↓	↓	↓	↓	↓	↓	
SP-31 48'	↓	↓	↓	↓	↓	↓	↓	↓	

Analytical Mobile Services, Inc.

18 Timber Marsh Lane
Hilton Head Island, SC 29926
Telephone: (843) 342-2177

Chain of Custody

Project Name: KINGS BAY LANDFILL					Relinquished by:				Date/Time: 11-21-00 1200
Sample Collector(s): MIKE HALL					Received by:				Date/Time: 11-21-00 1200
Sample ID	Date	Time	Description	No.	Matrix	Analysis	Prog Area	Sample Preserv	Remarks (Sub-contracted analyses, specific instructions, etc.)
SP-32 36'	11-21	1030	GROUNDWATER	2	W	8260B	—	4°C	
SP-32 41'	↓	↓	↓	↓	↓	↓	↓	↓	
SP-32 46'	↓	↓	↓	↓	↓	↓	↓	↓	
EQ BLANK 4	↓	↓	↓	↓	↓	↓	↓	↓	

Source Area Delineation No.2

NSB-Kings Bay

PREPARED FOR:	CTO 47 Completion Sampling Data Quality Assessment Report.
PREPARED BY:	Christelle Newsome/ Quality Assurance Chemist/CH2M Hill Constructors
COPIES:	Mike Hali1 / JA Jones;Jeff Marks/JA Jones; Project File
DATE:	August 19, 2002
SUBJECT:	Final Data Quality Assessment for Samples Collected January 2001

This memorandum summarizes the findings of the data quality assessment for samples taken in Janauary 2001 and analyzed by Severn Trent Laboratories of Pensacola.

Data for the analyses were reviewed for adherence to the specified analytical protocols in accordance with CCI Sampling Analysis Plan. All organic analysis results have been validated or qualified according to general guidance provided in the " National Functional Guidelines for Organic Data Review," EPA 540/OR-99/008, October 99. Additionally, the data were evaluated for adherence to the Department of Defense (DOD) Quality Systems Manual-Version 1 Final. (Based on NELAP Voted Revision 12-1July 1999)

The findings of this quality assurance report are based upon the comprehensive review of the following results and detailed review summaries reported according to the CCI Level B (CLP data deliverables format): chain of custody documentation, holding times, laboratory method blank analyses, laboratory control sasmple, surrogate compound and matrix spike compound recoveries and electronic data deliverables.

The analyses were performed acceptably, but require several qualifying statements. It is recommended that the analytical data be used only with the qualifying statements provided below. Any aspects of the data, which are not discussed in this report, should be considered qualitatively and quantitatively valid as reported, based on the deliverables reviewed. A summary presenting analyses reviewed is listed in Attachement I of this report. Result summary reports presenting the validated and qualified results are presented in Attachment II.

GENERAL DATA QUALIFIERS

As required by U.S. EPA protocols, all compounds which were qualitatively identified at concentrations below their respective reporting limits (RL) but above the method detection limit (MDL) have been qualified with "J" qualifiers on the data summary tables to indicate that they are quantitative estimates.

ORGANIC DATA QUALIFIERS

The positive results reported for cis-1, 2-dichloroethene in sample 047-SITE11-SP37-36-GW-1112001, tetrachloroethene and xylene (total) in sample 047-SITE11-SP36-48-GW-1112001, 1,1,2 trichloroehtane in samples 047-SITE-SP36-44-GW-1112001 and 047SITE11-SP37-40-GW1112001

and xylene (total) in samples 047-SITE11-SP36-44-GW-1112001, and 047-SITE-SP37-44-GW-1112001 should be considered qualitatively invalid due to the level at which these analytes were present in the laboratory method. U.S. EPA protocol requires positive results for uncommon contaminants that are less than or equal to five times the laboratory method and/or field blank contamination to be considered as qualitatively invalid. This has been indicated by placing a "U" qualifier next to the reported result on data summary report for this sample.

The positive results and/or detection limits for sample 1,1dichloroethene, cis-1,2-dichloroethene, ethylbenzene, total xylene in sample 047-SITE11-SP34-36-GW-192001 should be considered quantitative estimates and may be higher than reported. The associated matrix spike recoveries were outside the established quality control (QC) limit for these analytes in these samples. The recoveries for 1,1dichloroethene, cis-1,2-dichloroethene, ethylbenzene and total xylene indicate the possible presence of matrix interferences in samples of similar matrix. This has been indicated by placing "J" qualifiers next to the positive results and/or detection limits for 1,1dichloroethene, cis-1,2-dichloroethene, ethylbenzene and total xylene in sample 047-SITE11-SP34-36-GW-192001 on the data summary reports. The possibility of elevated detection limits should be noted when assessing this sample for these constiuents for the qualitative absence of 1,1dichloroethene, cis-1,2-dichloroethene, ethylbenzene and total xylene.

Sample samples 047-SITE11-SP36-40GW-1112001 and 047-SITE11-36-GW-1102001 their blind field sample duplicates 047-SITE11-DUP2-GW-1102001 and 047-SITE11-DUP1-GW-1112001 respectively were submitted to the laboratory to evaluate sampling and analytical precision for those compounds determined to be confidently detected. All compounds met CCI's blind duplicate precision criteria of 20% relative percent difference (RPD) for volatile organic compounds in an aqueous matrix except trichloroethene in sample 047-SITE11-SP36-40GW-1112001 and its duplicate. The RPD was not calculated for the compounds that were detected both samples.

The lack of precision for trichloroethene in the samples mentioned may be due to the lack of heterogeneity of the duplicate samples. This lack of precision is anticipated, however, as the results approach the limit of detection. The positive results for these compounds in the samples mention above should be considered quantitative estimates. This has been indicated by placing a "J" qualifier next to the reported positive result on the data summary reports for these samples.

The samples 047-SITE11-DUP2-40GW-1112001, 047-SITE11-SP38-44-GW-1112001, 047-SITE11-SP35-36-GW-1112001 were analyzed and/or re-analyzed at dilutions. These dilutions were required to prevent saturation of the instrument and to allow quantitation of the compounds within the linear range of the calibration curve. Positive results for these compounds in the samples have been reported from the diluted analyses. All other results and quantitation limits have been reported on the sample report summary from the initial analysis. However, higher quantitation limits have resulted for specific volatile organic compounds, which were not detected, in these samples. This should be noted when assessing these samples for the qualitative absence of specific volatile organic compounds.

SUMMARY

The organic chemistry analyses were performed acceptably, but required qualifying statements. This analytical quality assurance memorandum has identified the aspects of the data, which required qualification. These qualifiers are noted on the attached data summary reports. A support documentation package has been prepared for this quality assurance review and is filed with the Contract Task Order 47project file.

ATTACHMENT I

Sample Analyses Summary

Sample Number	Date Sampled	Lab Sample ID	Analyses Required
047-Site11-EQ3-1112001	01/11/2001	01267-1	[1]
047-Site11-EQ4-1112001	01/12/2001	01267-10	[1]
047-Site11-SP38-36-GW-1112001	01/12/2001	01267-11	[1]
047-Site11-SP38-40-GW-1112001	01/12/2001	01267-12	[1]
047-Site11-SP38-44-GW-1112001	01/12/2001	01267-13	[1]
047-Site11-SP38-48-GW-1112001	01/12/2001	01267-14	[1]
047-Site11-SP35-36-GW-1112001	01/12/2001	01267-15	[1]
047-Site11-SP35-40-GW-1112001	01/12/2001	01267-16	[1]
047-Site11-SP35-44-GW-1112001	01/12/2001	01267-17	[1]
047-Site11-SP35-48-GW-1112001	01/12/2001	01267-18	[1]
047-Site11-SP36-36-GW-1112001	01/12/2001	01267-19	[1]
047-Site11-SP41-40-GW-1112001	01/11/2001	01267-2	[1]
047-Site11-SP36-40-GW-1112001	01/12/2001	01267-20	[1]
047-Site11-SP36-44-GW-1112001	01/12/2001	01267-21	[1]
047-Site11-SP36-48-GW-1112001	01/12/2001	01267-22	[1]
047-Site11-SP37-36-GW-1112001	01/12/2001	01267-23	[1]
047-Site11-SP37-40-GW-1112001	01/12/2001	01267-24	[1]
047-Site11-SP37-44-GW-1112001	01/12/2001	01267-25	[1]
047-Site11-SP37-48-GW-1112001	01/12/2001	01267-26	[1]
047-Site11-SP42-36-GW-1112001	01/12/2001	01267-27	[1]
047-Site11-SP42-40-GW-1112001	01/12/2001	01267-28	[1]
047-Site11-SP42-44-GW-1112001	01/12/2001	01267-29	[1]
047-Site11-SP41-44-GW-1112001	01/11/2001	01267-3	[1]
047-Site11-SP42-48-GW-1112001	01/12/2001	01267-30	[1]
047-Site11-SP39-36-GW-1112001	01/12/2001	01267-31	[1]
047-Site11-SP39-40-GW-1112001	01/12/2001	01267-32	[1]
047-Site11-SP39-44-GW-1112001	01/12/2001	01267-33	[1]
047-Site11-SP39-48-GW-1112001	01/12/2001	01267-34	[1]
Trip Blank	01/12/2001	01267-35	[1]
047-Site11-SP41-48-GW-1112001	01/11/2001	01267-4	[1]
047-Site11-SP40-36-GW-1112001	01/11/2001	01267-5	[1]
047-Site11-SP40-40-GW-1112001	01/11/2001	01267-6	[1]
047-Site11-SP40-44-GW-1112001	01/11/2001	01267-7	[1]
047-Site11-SP40-48-GW-1112001	01/11/2001	01267-8	[1]
047-Site11-DUP2-GW-1112001	01/12/2001	01267-9	[1]
047-I60P-0207-01	02/07/2001	02164-1	[1]
047-I60NP-0207-01	02/07/2001	02164-2	[1]
047-TB-0207-01	02/07/2001	02164-3	[1]

Analyses Code:
[1]-GC Volatiles by Method 8021

ATTACHMENT II

Data Summary Reports

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122
Page 1

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-1	047-SITE11-SP34-36-GW-192001	01-09-01/08:00
01194-2	047-SITE11-SP34-40-GW-192001	01-09-01/09:15
01194-3	047-SITE11-SP34-44-GW-192001	01-09-01/13:20
01194-4	047-SITE11-SP34-48-GW-192001	01-09-01/14:45
01194-5	047-SITE11-SP41-36-GW-1102001	01-10-01/08:00

PARAMETER	01194-1	01194-2	01194-3	01194-4	01194-5
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	33U	33U	33U	2.8	3.3U
1,1-Dichloroethane, ug/l	49U	49U	49U	1.0~~J7~~ J	4.9U
1,1-Dichloroethene, ug/l	93U	93U	93U	0.93U J	9.3U
cis-1,2-Dichloroethene, ug/l	900	200	77~~J7~~ J	46	4.7U
trans-1,2-Dichloroethene, ug/l	64U	64U	64U	0.64U	6.4U
Ethylbenzene, ug/l	43U	11	43U	26 J	4.3U
Tetrachloroethene, ug/l	5300	5100	11000	43	1500
Toluene, ug/l	51U	1.6	51U	0.6~~J7~~ J	5.1U
1,1,1-Trichloroethane, ug/l	46U	46U	46U	0.46U	4.6U
1,1,2-Trichloroethane, ug/l	67U	67U	67U	0.67U	6.7U
Trichloroethene, ug/l	430	31U	31U	0.5~~J7~~ J	11
Vinyl chloride, ug/l	39U	39U	39U	3.7	3.9U
Xylenes, Total, ug/l	38U	0.4~~J7~~ J	38U	0.38U J	3.8U
Surrogate - 4-Bromofluorobenzene (PID), ug/l	100 %	103 %	103 %	102 %	103 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	98 %	100 %	103 %	103 %	103 %
Dilution Factor	100	1,100	100	1	10

9/13/02

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122
Page 2

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-1	047-SITE11-SP34-36-GW-192001	01-09-01/08:00
01194-2	047-SITE11-SP34-40-GW-192001	01-09-01/09:15
01194-3	047-SITE11-SP34-44-GW-192001	01-09-01/13:20
01194-4	047-SITE11-SP34-48-GW-192001	01-09-01/14:45
01194-5	047-SITE11-SP41-36-GW-1102001	01-10-01/08:00

PARAMETER	01194-1	01194-2	01194-3	01194-4	01194-5
Prep Time	00:00	00:00	00:00	---	---
Analysis Date	01.15.01	01.16.01	01.16.01	01.17.01	01.16.01
Analysis Time	16:50	15:29	23:52	13:30	17:21
Batch ID	LUW004	LUW005	LUW005	LUW006	LUW005
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

9/13/02

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122
Page 3

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
* 01194-6	047-SITE11-DUP1-GW-1102001	01-10-01/08:00
01194-7	047-SITE11-EQ1-192001	01-09-01/14:00
01194-8	047-SITE11-EQ2-192001	01-10-01/08:00

PARAMETER	01194-6	01194-7	* 01194-8
Aromatic and Halogenated Volatiles (8021)			
Benzene, ug/l	3.3U	0.33U	0.33U
1,1-Dichloroethane, ug/l	4.9U	0.49U	0.49U
1,1-Dichloroethene, ug/l	9.3U	0.93U	0.93U
cis-1,2-Dichloroethene, ug/l	4.7U	0.47U	0.47U
trans-1,2-Dichloroethene, ug/l	6.4U	0.64U	0.64U
Ethylbenzene, ug/l	4.3U	0.43U	0.43U
Tetrachloroethene, ug/l	1400	1.2U	1.2U
Toluene, ug/l	5.1U	0.51U	0.51U
1,1,1-Trichloroethane, ug/l	4.6U	0.46U	0.46U
1,1,2-Trichloroethane, ug/l	6.7U	0.67U	0.67U
Trichloroethene, ug/l	11	0.31U	0.31U
Vinyl chloride, ug/l	3.9U	0.39U	0.39U
Xylenes, Total, ug/l	3.8U	0.38U	0.38U
Surrogate - 4-Bromofluorobenzene (PID), ug/l	103 %	101 %	102 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	103 %	103 %	105 %
Dilution Factor	10	1	1
Analysis Date	01.16.01	01.15.01	01.16.01
Analysis Time	18:17	22:26	19:13
Batch ID	LUW005	LUW004	LUW005
Prep Method	5030	5030	5030
Analyst	SA	SA	SA

* blind field duplicate of SP-41-36-GW-1102001

9/8/02

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-1	047-SITE11-EQ3-1112001	01-11-01/13:00
01267-2	047-SITE11-SP41-40-GW-1112001	01-11-01/12:00
01267-3	047-SITE11-SP41-44-GW-1112001	01-11-01/13:00
01267-4	047-SITE11-SP41-48-GW-1112001	01-11-01/14:00
01267-5	047-SITE11-SP40-36-GW-1112001	01-11-01/12:05

PARAMETER	01267-1	01267-2	01267-3	01267-4	01267-5
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	0.334	1.8	3.7~~JT~~ J	3.3U	3.3U
1,1-Dichloroethane, ug/l	0.49U	4.4	4.9U	4.9U	4.9U
1,1-Dichloroethene, ug/l	0.93U	0.93U	9.3U	9.3U	9.3U
cis-1,2-Dichloroethene, ug/l	0.47U	26	4.7U	4.7U	4.7U
trans-1,2-Dichloroethene, ug/l	0.64U	0.64U	6.4U	6.4U	6.4U
Ethylbenzene, ug/l	0.43U	9.6	0.72~~JT~~ J	4.3U	4.3U
Tetrachloroethene, ug/l	1.2U	73	1500	1200	200
Toluene, ug/l	0.51U	0.58~~JT~~ J	5.1U	5.1U	5.1U
1,1,1-Trichloroethane, ug/l	0.46U	0.46U	4.6U	4.6U	4.6U
1,1,2-Trichloroethane, ug/l	0.67U	0.67U	6.7U	6.7U	6.7U
Trichloroethene, ug/l	0.31U	0.76~~JT~~ J	16	13	3.1U
Vinyl chloride, ug/l	0.39U	2.7	3.9U	3.9U	3.9U
Xylenes, Total, ug/l	0.38U	0.40~~JT~~ J	0.38U	3.8U	3.8U
Surrogate - 4-Bromofluorobenzene (PID), ug/l	103 %	102 %	103 %	102 %	104 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	105 %	101 %	103 %	102 %	104 %
Dilution Factor	1	1	1,10	10	10
Analysis Date	01.16.01	01.16.01	01.17.01	01.17.01	11.07.01
Analysis Time	22:56	12:27	17:07	18:03	01:44
Batch ID	LUW005	LUW005	LUW006	LUW006	LUW005
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

8/13/02

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-6	047-SITE11-SP40-40-GW-1112001	01-11-01/12:45
01267-7	047-SITE11-SP40-44-GW-1112001	01-11-01/13:30
01267-8	047-SITE11-SP40-48-GW-1112001	01-11-01/14:15
*01267-9	047-SITE11-DUP2-GW-1112001	01-12-01
01267-10	047-SITE11-EQ4-1112001	01-12-01/12:00

PARAMETER	01267-6	01267-7	01267-8	01267-9	01267-10
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	2.0	2.0	2.6	3.3U	0.52~~J7~~ J
1,1-Dichloroethane, ug/l	0.49U	4.7	2.0	4.9U	0.49U
1,1-Dichloroethene, ug/l	0.93U	0.93U	0.93U	9.3U	0.93U
cis-1,2-Dichloroethene, ug/l	0.47U	71	85	24	0.47U
trans-1,2-Dichloroethene, ug/l	0.64U	0.64U	0.73J7	6.4U	0.64U
Ethylbenzene, ug/l	0.43U	12	83	4.3U	0.43U
Tetrachloroethene, ug/l	11	2.8~~F~~ J	1.6~~F~~ J	1400	1.3~~F~~ J
Toluene, ug/l	0.83~~J7~~ J	0.51U	5.8	5.1U	1.0~~F~~ J
1,1,1-Trichloroethane, ug/l	0.46U	0.46U	0.46U	4.6U	0.46U
1,1,2-Trichloroethane, ug/l	0.67U	0.67U	0.67U	6.7U	0.67U
Trichloroethene, ug/l	0.31U	0.31U	1.3	8.0~~J7~~ J	0.31U
Vinyl chloride, ug/l	0.39U	3.4	3.6	3.9U	0.39U
Xylenes, Total, ug/l	0.38U	0.38U	150	3.8U	0.38U
Surrogate - 4-Bromofluorobenzene (PID), ug/l	103 %	102 %	101 %	102 %	101 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	104 %	104 %	103 %	102 % dup	103 %
Dilution Factor	1	1	1	10	1
Analysis Date	01.17.01	01.17.01	01.17.01	01.18.01	01.18.01
Analysis Time	02:40	03:36	18:59	06:10	07:06
Batch ID	LUW005	LUW005	LUW006	LUW006	LUW006
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

- blind field duplicate of SP-~~41-36~~ or 36 - 40 GW-11¢2001

8/13/02 AL

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-11	047-SITE11-SP38-36-GW-1112001	01-12-01/07:35
01267-12	047-SITE11-SP38-40-GW-1112001	01-12-01/08:30
01267-13	047-SITE11-SP38-44-GW-1112001	01-12-01/09:30
01267-14	047-SITE11-SP38-48-GW-1112001	01-12-01/10:10
01267-15	047-SITE11-SP35-36-GW-1112001	01-12-01/07:40

PARAMETER	01267-11	01267-12	01267-13	01267-14	01267-15
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	1.4	0.83 ~~J7~~ J	33U	33U	0.33U
1,1-Dichloroethane, ug/l	0.49U	0.49U	49U	49U	0.49U
1,1-Dichloroethene, ug/l	0.93U	0.93U	93U	93U	0.93U
cis-1,2-Dichloroethene, ug/l	6.5	2.9	47U	47U	62
trans-1,2-Dichloroethene, ug/l	0.64U	0.64U	64U	64U	8.4
Ethylbenzene, ug/l	0.43U	0.43U	43U	43U	0.43U
Tetrachloroethene, ug/l	130	90	15000	5100	56
Toluene, ug/l	0.51U	1.0 ~~F~~ J	51U	51U	0.51U
1,1,1-Trichloroethane, ug/l	0.46U	0.46U	46U	46U	0.46U
1,1,2-Trichloroethane, ug/l	0.67U	0.67U	67U	67U	0.67U
Trichloroethene, ug/l	7.0	1.8	31U	31U	22
Vinyl chloride, ug/l	0.39U	0.39U	39U	39U	53
Xylenes, Total, ug/l	0.38U	0.38U	38U	38U	0.38U
Surrogate - 4-Bromofluorobenzene (PID), ug/l	100 %	99 %	102 %	102 %	102 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	99 %	101 %	103 %	106 %	102 %
Dilution Factor	1	1	100	100	1
Analysis Date	01.17.01	01.19.01	01.18.01	01.18.01	01.18.01
Analysis Time	06:24	13:42	20:44	21:40	02:26
Batch ID	LUW005	LUW008	LUW007	LUW007	LUW006
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

8/13/02

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-16	047-SITE11-SP35-40-GW-1112001	01-12-01/09:10
01267-17	047-SITE11-SP35-44-GW-1112001	01-12-01/09:35
01267-18	047-SITE11-SP35-48-GW-1112001	01-12-01/10:10
01267-19	047-SITE11-SP36-36-GW-1112001	01-12-01/11:00
01267-20	047-SITE11-SP36-40-GW-1112001	01-12-01/11:30

PARAMETER	01267-16	01267-17	01267-18	01267-19	01267-20
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	3.7	11U	3.3U	3.1	3.3U
1,1-Dichloroethane, ug/l	4.9U	9.5U	4.9U	0.49U	4.9U
1,1-Dichloroethene, ug/l	9.3U	17U	9.3U	0.93U	9.3U
cis-1,2-Dichloroethene, ug/l	37	150	0.47U	0.47U	24
trans-1,2-Dichloroethene, ug/l	6.4U	12U	0.64U	0.64U	6.4U
Ethylbenzene, ug/l	2.2	20U	11	0.43U	8.3~~J7~~ J
- Tetrachloroethene, ug/l	1300	22000	460	90	1700
Toluene, ug/l	5.1U	11U	5.1U	0.54J7	5.1U
1,1,1-Trichloroethane, ug/l	4.6U	16U	4.6U	0.46U	4.6U
1,1,2-Trichloroethane, ug/l	6.7U	18U	6.7U	0.67U	6.7U
Trichloroethene, ug/l	33	55	25	0.38~~J7~~ J	10 J
Vinyl chloride, ug/l	3.9U	24U	3.9U	0.39U	3.9U
Xylenes, Total, ug/l	0.38U	16U	3.8U	0.38U	3.8U
Surrogate - 4-Bromofluorobenzene (PID), ug/l	116 %	105 %	102 %	100 %	117 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	104 %	102 %	100 %	102 %	116 %
Dilution Factor	1,10	50	10	1	10
Analysis Date	01.18.01	01.18.01	01.19.01	01.19.01	01.19.01
Analysis Time	17:01	16:41	01:24	02:20	17:23
Batch ID	LUW007	PHW009	LUW007	LUW007	LUW008
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	CP	SA	SA	SA

8/13/02

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-21	047-SITE11-SP36-44-GW-1112001	01-12-01/13:15
01267-22	047-SITE11-SP36-48-GW-1112001	01-12-01/12:40
01267-23	047-SITE11-SP37-36-GW-1112001	01-12-01/11:00
01267-24	047-SITE11-SP37-40-GW-1112001	01-12-01/11:50
01267-25	047-SITE11-SP37-44-GW-1112001	01-12-01/12:30

PARAMETER	01267-21	01267-22	01267-23	01267-24	01267-25
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	3.0	6.1	0.89~~J7~~ J	2.2	1.5
1,1-Dichloroethane, ug/l	22	0.36J7	0.56~~J7~~ J	23	0.19U
1,1-Dichloroethene, ug/l	0.33U	0.33U	0.33U	0.33U	0.33U
cis-1,2-Dichloroethene, ug/l	340	14	~~0.58J7 J~~ 1.44	180	17
trans-1,2-Dichloroethene, ug/l	1.8	0.23U	0.23U	0.60~~J7~~ J	0.23U
Ethylbenzene, ug/l	21	13	3.9	12	12
Tetrachloroethene, ug/l	14	~~0.42J7 J~~ 1.24	6.0	3.5	3.7
Toluene, ug/l	2.4~~F~~ J	0.53~~J7~~ J	0.22~~J7~~ J	1.5~~F~~ J	0.67~~J7~~ J
1,1,1-Trichloroethane, ug/l	0.31U	0.31U	0.31U	0.31U	0.31U
1,1,2-Trichloroethane, ug/l	.364 ~~0.96J7 J~~	0.36U	0.36U	~~0.52J7 J~~ .364	0.36U
Trichloroethene, ug/l	1.1	0.22U	0.22U	0.47~~J7~~ J	0.22U
Vinyl chloride, ug/l	5.2	2.9	1.2	5.1	1.3
Xylenes, Total, ug/l	~~2.0J7 J~~ .314	~~0.43J7 J~~ .314	0.31U	~~0.91J7 J~~ .314	0.31U
Surrogate - 4-Bromofluorobenzene (PID), ug/l	104 %	108 %	106 %	105 %	108 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	97 %	108 %	104 %	97 %	108 %
Dilution Factor	1,10	1	1	1	1
Analysis Date	01.18.01	01.18.01	01.18.01	01.19.01	01.19.01
Analysis Time	20:01	21:08	22:14	01:34	18:46
Batch ID	PHW007	PHW009	PHW009	PHW009	PHW010
Prep Method	5030	5030	5030	5030	5030
Analyst	CP	CP	CP	CP	CP

8/13/02

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-26	047-SITE11-SP37-48-GW-1112001	01-12-01/13:00
01267-27	047-SITE11-SP42-36-GW-1112001	01-12-01/13:00
01267-28	047-SITE11-SP42-40-GW-1112001	01-12-01/13:30
01267-29	047-SITE11-SP42-44-GW-1112001	01-12-01/14:00
01267-30	047-SITE11-SP42-48-GW-1112001	01-12-01/14:45

PARAMETER	01267-26	01267-27	01267-28	01267-29	01267-30
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	4.0	0.21U	2.1U	2.3	1.6
1,1-Dichloroethane, ug/l	0.34~~J7~~ J	0.19U	1.9U	4.1	1.4
1,1-Dichloroethene, ug/l	0.33U	0.33U	3.3U	0.93U	0.93U
cis-1,2-Dichloroethene, ug/l	11	0.33~~J7~~ J	1.4U	62	69
trans-1,2-Dichloroethene, ug/l	0.23U	0.23U	2.3U	0.64U8	0.64U
Ethylbenzene, ug/l	13	0.39U	4.2~~J7~~ J	56	85
Tetrachloroethene, ug/l	3.8	0.51~~J7~~ J	2400	3.4	1.2U
Toluene, ug/l	0.55~~J7~~ J	0.22~~J7~~ J	2.4~~J7~~ J	0.52~~J7~~ J	2.3~~F~~ J
1,1,1-Trichloroethane, ug/l	0.31U	0.31U	3.1U	0.46U	0.46U
1,1,2-Trichloroethane, ug/l	0.36U	1.5~~F~~ J	3.6U	0.67U	0.67U
Trichloroethene, ug/l	0.31~~J7~~ J	0.22U	14	0.44~~J7~~ J	0.81~~J7~~ J
Vinyl chloride, ug/l	3.2	0.48U	4.8U	2.8	2.5
Xylenes, Total, ug/l	0.46~~J7~~ J	0.53~~J7~~ J	4.7~~J7~~ J	0.38U	180
Surrogate - 4-Bromofluorobenzene (PID), ug/l	104 %	104 %	108 %	102 %	79 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	106 %	101 %	107 %	107 %	84 %
Dilution Factor	1	1	10,100	1	1
Analysis Date	01.19.01	01.19.01	01.19.01	01.19.01	01.19.01
Analysis Time	19:53	02:07	06:00	04:11	05:07
Batch ID	PHW010	PHW010	PHW009	LUW007	LUW007
Prep Method	5030	5030	5030	5030	5030
Analyst	CP	CP	CP	SA	SA

8/13/02

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-31	047-SITE11-SP39-36-GW-1112001	01-12-01/13:40
01267-32	047-SITE11-SP39-40-GW-1112001	01-12-01/14:00
01267-33	047-SITE11-SP39-44-GW-1112001	01-12-01/14:35
01267-34	047-SITE11-SP39-48-GW-1112001	01-12-01/15:15

PARAMETER	01267-31	01267-32	01267-33	01267-34
Aromatic and Halogenated Volatiles (8021)				
Benzene, ug/l	3.3U	3.3U	0.85~~J7~~ J	2.1U
1,1-Dichloroethane, ug/l	4.9U	4.9U	3.4	1.9U
1,1-Dichloroethene, ug/l	9.3U	9.3U	0.33U	3.3U
cis-1,2-Dichloroethene, ug/l	4.7U	4.7U	8.5	1.4U
trans-1,2-Dichloroethene, ug/l	6.4U	6.4U	0.23U	2.3U
Ethylbenzene, ug/l	4.3U	4.3U	7.2	6.9~~J7~~ J
Tetrachloroethene, ug/l	1800	2900	190	680
Toluene, ug/l	5.1U	5.1U	0.55J7	2.1U
1,1,1-Trichloroethane, ug/l	4.6U	4.6U	0.31U	3.1U
1,1,2-Trichloroethane, ug/l	6.7U	6.7U	1.2~~F~~ J	3.6U
Trichloroethene, ug/l	4.3~~J7~~ J	5.6~~J7~~ J	0.22U	2.2U
Vinyl chloride, ug/l	3.9U	3.9U	0.55~~J7~~ J	4.8U
Xylenes, Total, ug/l	3.8U	3.8U	0.63~~J7~~ J	3.1U
Surrogate - 4-Bromofluorobenzene (PID), ug/l	101 %	100 %	103 %	105 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	102 %	102 %	98 %	104 %
Dilution Factor	10	10,100	1	10
Analysis Date	01.19.01	01.19.01	01.22.01	01.22.01
Analysis Time	18:19	19:14	14:36	19:03
Batch ID	LUW009	LUW008	PHW011	PHW011
Prep Method	5030	5030	5030	5030
Analyst	SA	SA	CP	SA

8/13/02

SEVERN TRENT SERVICES
STL Pensacola

LOG NO: C1-02164
Received: 08 FEB 01
Reported: 16 FEB 01

Mr. Mike Halil
CH2M Hill
115 Perimeter Center Place NE 700
Atlanta, GA 30346

Requisition: 160027

Project: CTO-0047, NAVSUB KINGS BAY, GA
Sampled By: Client
Code: 135810216

REPORT OF RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
02164-1	047-I60P-0207-01	02-07-01/11:00
02164-2	047-I60NP-0207-01	02-07-01/10:30

PARAMETER	02164-1	02164-2
Aromatic and Halogenated Volatiles (8021)		
Benzene, ug/l	0.28~~J7~~ J	0.31~~J7~~ J
1,1-Dichloroethane, ug/l	0.19U	0.19U
1,1-Dichloroethene, ug/l	0.41~~J7~~ J	0.54~~J7~~ J
cis-1,2-Dichloroethene, ug/l	6.0	6.5
trans-1,2-Dichloroethene, ug/l	0.23U	0.23U
Ethylbenzene, ug/l	0.39U	0.39U
Tetrachloroethene, ug/l	130	170
Toluene, ug/l	0.26~~J7~~ J	0.45~~J7~~ J
1,1,1-Trichloroethane, ug/l	0.31U	0.31U
1,1,2-Trichloroethane, ug/l	0.36U	0.93~~J7~~ J
Trichloroethene, ug/l	17	17
Vinyl chloride, ug/l	0.48U	0.48U
Xylenes, Total, ug/l	0.31U	0.31U
Surrogate - 4-Bromofluorobenzene (PID), ug/l	107 %	105 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	104 %	96 %
Dilution Factor	1	1
Analysis Date	02.14.01	02.14.01
Batch ID	PHW022	PHW022
Prep Method	5030	5030
Analyst	DK	DK

8/13/02

GPL LABORATORIES, LLLP

Summary of Analytical Results

Client ID 047-I81	**Prep Method:**	**Analytical Method: SW9060**
GPL ID: 109127-001-01-1/2	**Prep Date:**	**Date Analyzed: 10/02/01**
Matrix: Soil	**Prep Time:**	**Time Analyzed 07:30**
Date Collected: 09/24/01	**Prep Batch 0**	**Analysis Batch 12100**
Date Received: 09/25/01		

Parameter	Result	Rep Limit	Units	Qualifier	D.F.
Total Organic Carbon	705	119	mg/kg		1

9/13/02

GPL LABORATORIES, LLLP

Summary of Analytical Results

Client ID 047-I81	**Prep Method:**	**Analytical Method: SM5310M**
GPL ID: 109127-001-01-1/2	**Prep Date:**	**Date Analyzed: 10/02/01**
Matrix: Soil	**Prep Time:**	**Time Analyzed 07:30**
Date Collected: 09/24/01	**Prep Batch**	**Analysis Batch 12102**
Date Received: 09/25/01		

Parameter	Result	Rep Limit	Units	Qualifier	D.F.
Fraction Organic Carbon	64.7	1	%		1

9/13/02 OY

GPL LABORATORIES, LLLP

Summary of Analytical Results

Client ID 047-I81	**Prep Method:**	**Analytical Method: CLP_SOLIDS**
GPL ID: 109127-001-01-1/2	**Prep Date:**	**Date Analyzed: 09/27/01**
Matrix: Soil	**Prep Time:**	**Time Analyzed 15:00**
Date Collected: 09/24/01	**Prep Batch**	**Analysis Batch 12007**
Date Received: 09/25/01		

Parameter	Result	Rep Limit	Units	Qualifier	D.F.
Percent Solids	79.3	0	%		1

9/13/02
OK

Attachment III

Raw Data

Table D-2
Source Area Delineation No.2 Analytical Results
January 8 - 12, 2001

Sample Location ID	Sample Collection Interval (feet bls)	Summary of Total Chlorinated Ethenes					TCLE	Total VOCs
		VC	cis-1,2-DCE	trans-1,2-DCE	TCE	PCE		
SP-34	36 to 40	<39	900	<64	430	5,300	6,630.0	6,630.0
	40 to 44	<39	200	<64	<31	5,100	5,300.0	53.1
	44 to 48	<39	77 J	<64	<31	11,000	11,077.0	11,077.0
	48 to 52	3.7	46	<0.64	0.5 J	43	93.2	123.6
SP-35	36 to 40	53	62	8.4	22	56	201.4	201.4
	40 to 44	<3.9	37	<6.4	33	1,300	1,370.0	1,375.9
	44 to 48	<24	150	<12	55	22,000	22,205.0	22,205.0
	48 to 52	<3.9	<0.47	<0.64	25	460	485.0	496.0
SP-36	36 to 40	<0.39	<0.47	<0.63	0.38 J	90	90.4	94.0
	40 to 44	<3.9	24	<6.4	10	1,700	1,734.0	1,742.3
	44 to 48	5.2	340	1.8	1.1	14	362.1	413.5
	48 to 52	2.9	14	<0.23	<0.22	0.42 J	17.3	37.7
SP-37	36 to 40	1.2	0.58 J	<0.23	<0.22	6	7.8	13.4
	40 to 44	5.1	180	0.6 J	0.47 J	3.5	189.7	229.8
	44 to 48	1.3	17	<0.23	<0.22	3.7	22.0	36.2
	48 to 52	3.2	11	<0.23	0.31 J	3.8	18.3	36.7
SP-38	36 to 40	<0.39	6.5	<0.64	7	130	143.5	144.9
	40 to 44	<0.39	2.9	<0.64	1.8	90	94.7	96.5
	44 to 48	<39	<47	<64	<31	15,000	15,000.0	15,000.0
	48 to 52	<39	<47	<64	<31	5,100	5,100.0	5,100.0

Table D-2
Source Area Delineation No.2 Analytical Results
January 8 - 12, 2001

Sample Location ID	Sample Collection Interval (feet bls)	Summary of Total Chlorinated Ethenes					TCLE	Total VOCs
		VC	cis-1,2-DCE	trans-1,2-DCE	TCE	PCE		
SP-39	36 to 40	<3.9	<4.7	<6.4	4.3 J	1,800	1,804.3	1,804.3
	40 to 44	<3.9	<4.7	<6.4	5.6 J	2,900	2,905.6	2,905.6
	44 to 48	0.55 J	8.5	<0.23	<0.22	190	199.1	212.9
	48 to 52	<4.8	<1.4	<2.3	<2.2	680	680.0	686.9
SP-40	36 to 40	<3.9	<4.7	<6.4	<3.1	200	200.0	200.0
	40 to 44	<0.39	<0.47	<0.64	<0.31	11	11.0	13.8
	44 to 48	3.4	71	<0.64	<0.31	2.8	77.2	95.9
	48 to 52	3.6	85	0.73 J	1.3	1.6	92.2	333.0
SP-41	36 to 40	<3.9	<4.7	<6.4	11	1,500	1,511.0	1,511.0
	40 to 44	2.7	26	<0.64	0.76 J	73	102.5	119.2
	44 to 48	<3.9	<4.7	<6.4	16	1,500	1,516.0	1,520.4
	48 to 52	<3.9	<4.7	<6.4	13	1,200	1,213.0	1,213.0
SP-42	36 to 40	<0.48	0.33 J	<0.23	<0.22	0.51 J	0.8	2.6
	40 to 44	<4.8	<1.4	<2.3	14	2,400	2,414.0	2,425.3
	44 to 48	2.8	62	<0.64	0.44 J	3.4	68.6	131.6
	48 to 52	2.5	69	<0.64	0.81 J	<1.2	72.3	342.6

Notes:
J: J qualifier denotes the concentration is estimated.
bls: below land surface
DCE: Dichloroethene
TCE: Trichloroethene
PCE: Tetrachloroethene
TCLE: Total Chlorinated Ethenes
VOCs: Volatile Organic Compounds
All concentrations reported in micrograms per liter (ug/L)
TCLE is defined as the summation of PCE, TCE, DCE, and Vinyl Chloride.
Total VOCs is defined as the sum of all detected constituents by USEPA Method 8021B.

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-1	047-SITE11-SP34-36-GW-192001	01-09-01/08:00
01194-2	047-SITE11-SP34-40-GW-192001	01-09-01/09:15
01194-3	047-SITE11-SP34-44-GW-192001	01-09-01/13:20
01194-4	047-SITE11-SP34-48-GW-192001	01-09-01/14:45
01194-5	047-SITE11-SP41-36-GW-1102001	01-10-01/08:00

PARAMETER	01194-1	01194-2	01194-3	01194-4	01194-5
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	33U	33U	33U	2.8	3.3U
1,1-Dichloroethane, ug/l	49U	49U	49U	1.0J7	4.9U
1,1-Dichloroethene, ug/l	93U	93U	93U	0.93U	9.3U
cis-1,2-Dichloroethene, ug/l	900	200	77J7	46	4.7U
trans-1,2-Dichloroethene, ug/l	64U	64U	64U	0.64U	6.4U
Ethylbenzene, ug/l	43U	11	43U	26	4.3U
Tetrachloroethene, ug/l	5300	5100	11000	43	1500
Toluene, ug/l	51U	1.6	51U	0.6J7	5.1U
1,1,1-Trichloroethane, ug/l	46U	46U	46U	0.46U	4.6U
1,1,2-Trichloroethane, ug/l	67U	67U	67U	0.67U	6.7U
Trichloroethene, ug/l	430	31U	31U	0.5J7	11
Vinyl chloride, ug/l	39U	39U	39U	3.7	3.9U
Xylenes, Total, ug/l	38U	0.4J7	38U	0.38U	3.8U
Surrogate - 4-Bromofluorobenzene (PID), ug/l	100 %	103 %	103 %	102 %	103 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	98 %	100 %	103 %	103 %	103 %
Dilution Factor	100	1,100	100	1	10

SEVERN TRENT SERVICES

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Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-1	047-SITE11-SP34-36-GW-192001	01-09-01/08:00
01194-2	047-SITE11-SP34-40-GW-192001	01-09-01/09:15
01194-3	047-SITE11-SP34-44-GW-192001	01-09-01/13:20
01194-4	047-SITE11-SP34-48-GW-192001	01-09-01/14:45
01194-5	047-SITE11-SP41-36-GW-1102001	01-10-01/08:00

PARAMETER	01194-1	01194-2	01194-3	01194-4	01194-5
Prep Time	00:00	00:00	00:00	---	---
Analysis Date	01.15.01	01.16.01	01.16.01	01.17.01	01.16.01
Analysis Time	16:50	15:29	23:52	13:30	17:21
Batch ID	LUW004	LUW005	LUW005	LUW006	LUW005
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-6	047-SITE11-DUP1-GW-1102001	01-10-01/08:00
01194-7	047-SITE11-EQ1-192001	01-09-01/14:00
01194-8	047-SITE11-EQ2-192001	01-10-01/08:00

PARAMETER	01194-6	01194-7	01194-8
Aromatic and Halogenated Volatiles (8021)			
Benzene, ug/l	3.3U	0.33U	0.33U
1,1-Dichloroethane, ug/l	4.9U	0.49U	0.49U
1,1-Dichloroethene, ug/l	9.3U	0.93U	0.93U
cis-1,2-Dichloroethene, ug/l	4.7U	0.47U	0.47U
trans-1,2-Dichloroethene, ug/l	6.4U	0.64U	0.64U
Ethylbenzene, ug/l	4.3U	0.43U	0.43U
Tetrachloroethene, ug/l	1400	1.2U	1.2U
Toluene, ug/l	5.1U	0.51U	0.51U
1,1,1-Trichloroethane, ug/l	4.6U	0.46U	0.46U
1,1,2-Trichloroethane, ug/l	6.7U	0.67U	0.67U
Trichloroethene, ug/l	11	0.31U	0.31U
Vinyl chloride, ug/l	3.9U	0.39U	0.39U
Xylenes, Total, ug/l	3.8U	0.38U	0.38U
Surrogate - 4-Bromofluorobenzene (PID), ug/l	103 %	101 %	102 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	103 %	103 %	105 %
Dilution Factor	10	1	1
Analysis Date	01.16.01	01.15.01	01.16.01
Analysis Time	18:17	22:26	19:13
Batch ID	LUW005	LUW004	LUW005
Prep Method	5030	5030	5030
Analyst	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-9	Trip Blank	01-10-01

PARAMETER	01194-9
Aromatic and Halogenated Volatiles (8021)	
Benzene, ug/l	0.33U
1,1-Dichloroethane, ug/l	0.49U
1,1-Dichloroethene, ug/l	0.93U
cis-1,2-Dichloroethene, ug/l	0.47U
trans-1,2-Dichloroethene, ug/l	0.64U
Ethylbenzene, ug/l	0.43U
Tetrachloroethene, ug/l	1.2U
Toluene, ug/l	0.51U
1,1,1-Trichloroethane, ug/l	0.46U
1,1,2-Trichloroethane, ug/l	0.67U
Trichloroethene, ug/l	0.31U
Vinyl chloride, ug/l	0.39U
Xylenes, Total, ug/l	0.38U
Surrogate - 4-Bromofluorobenzene (PID), ug/l	103 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	102 %
Dilution Factor	1
Analysis Date	01.16.01
Analysis Time	22:01
Batch ID	LUW005
Prep Method	5030
Analyst	SA

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-10	Method Blank	
01194-11	Lab Control Standard True Value	
01194-12	Lab Control Standard Result	
01194-13	Lab Control Standard % Recovery	
01194-14	LCS Accuracy Control Limit (%R)	

PARAMETER	01194-10	01194-11	01194-12	01194-13	01194-14
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	0.33U	50	47	94 %	78-120
1,1-Dichloroethane, ug/l	0.49U	50	41	82 %	74-131
1,1-Dichloroethene, ug/l	0.93U	50	46	92 %	56-145
cis-1,2-Dichloroethene, ug/l	0.47U	50	42	84 %	70-120
trans-1,2-Dichloroethene, ug/l	0.64U	50	49	98 %	71-120
Ethylbenzene, ug/l	0.43U	50	48	96 %	72-145
Tetrachloroethene, ug/l	1.2U	50	44	88 %	65-134
Toluene, ug/l	0.51U	50	47	94 %	77-122
1,1,1-Trichloroethane, ug/l	0.46U	50	41	82 %	55-130
1,1,2-Trichloroethane, ug/l	0.67U	50	38	76 %	61-136
Trichloroethene, ug/l	0.31U	50	45	90 %	74-122
Vinyl chloride, ug/l	0.5J7	50	40	80 %	4-126
Xylenes, Total, ug/l	0.38U	150	140	93 %	76-128
Surrogate - 4-Bromofluorobenzene (PID), ug/l	96 %	50	48.2	96 %	70-130
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	95 %	50	43.5	87 %	70-130
Dilution Factor	1	1	1	1	1
Analysis Date	01.15.01	01.15.01	01.15.01	01.15.01	01.15.01
Analysis Time	12:41	13:37	13:37	13:37	13:37
Batch ID	LUW004	LUW004	LUW004	LUW004	LUW004
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-15	Matrix Spike True Value	
01194-16	Matrix Spike Result	
01194-17	Matrix Spike % Recovery	
01194-18	MSD True Value	
01194-19	Matrix Spike Duplicate Result	

PARAMETER	01194-15	01194-16	01194-17	01194-18	01194-19
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	5000	5336	107 %	5000	5406
1,1-Dichloroethane, ug/l	5000	4728	95 %	5000	4605
1,1-Dichloroethene, ug/l	5000	5690	114 %	5000	5540
cis-1,2-Dichloroethene, ug/l	5000	5517	92 %	5000	5625
trans-1,2-Dichloroethene, ug/l	5000	5671	113 %	5000	5720
Ethylbenzene, ug/l	5000	5454	109 %	5000	5557
Tetrachloroethene, ug/l	5000	8859	72 %	5000	8762
Toluene, ug/l	5000	5311	106 %	5000	5407
1,1,1-Trichloroethane, ug/l	5000	5026	101 %	5000	4690
1,1,2-Trichloroethane, ug/l	5000	4172	83 %	5000	3981
Trichloroethene, ug/l	5000	5615	104 %	5000	5668
Vinyl chloride, ug/l	5000	4913	98 %	5000	4784
Xylenes, Total, ug/l	15000	15803	105 %	15000	16121
Surrogate - 4-Bromofluorobenzene (PID), ug/l	50	48.5	97 %	50	48.6
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	50	46.2	92 %	50	43.7
Dilution Factor	100	100	100	100	1

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-15	Matrix Spike True Value	
01194-16	Matrix Spike Result	
01194-17	Matrix Spike % Recovery	
01194-18	MSD True Value	
01194-19	Matrix Spike Duplicate Result	

PARAMETER	01194-15	01194-16	01194-17	01194-18	01194-19
Prep Time	00:00	---	---	---	---
Analysis Date	01.15.01	01.15.01	01.15.01	01.15.01	01.15.01
Analysis Time	17:46	---	---	---	00:00
Batch ID	LUW004	LUW004	LUW004	LUW004	LUW004
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-20	Matrix Spike Duplicate % Recovery	
01194-21	MS Accuracy Advisory Limit (%R)	
01194-22	Precision (%RPD) MS/MSD	
01194-23	MS Precision Advisory Limit (%RPD)	

PARAMETER	01194-20	01194-21	01194-22	01194-23
Aromatic and Halogenated Volatiles (8021)				
Benzene, ug/l	108 %	79-126	1	12
1,1-Dichloroethane, ug/l	92 %	68-141	3	24
1,1-Dichloroethene, ug/l	111 %	48-151	3	30
cis-1,2-Dichloroethene, ug/l	94 %	76-121	2	10
trans-1,2-Dichloroethene, ug/l	114 %	69-128	1	13
Ethylbenzene, ug/l	111 %	76-138	2	11
Tetrachloroethene, ug/l	70 %	59-147	3	31
Toluene, ug/l	108 %	79-125	2	10
1,1,1-Trichloroethane, ug/l	94 %	49-139	7	26
1,1,2-Trichloroethane, ug/l	80 %	71-137	5	26
Trichloroethene, ug/l	105 %	63-130	1	13
Vinyl chloride, ug/l	96 %	6-135	3	24
Xylenes, Total, ug/l	107 %	72-132	2	15
Surrogate - 4-Bromofluorobenzene (PID), ug/l	97 %	70-130	0	12
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	87 %	70-130	6	21
Dilution Factor	100	100	100	100
Analysis Date	01.15.01	01.15.01	01.15.01	01.15.01
Analysis Time	---	---	00:00	---
Batch ID	LUW004	LUW004	LUW004	LUW004
Prep Method	5030	5030	5030	5030
Analyst	SA	SA	SA	SA

These test results meet all the requirements of NELAC. All questions regarding this test report should be directed to the STL Project Manager who signed this test report.

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-24	Method Blank	
01194-25	Lab Control Standard True Value	
01194-26	Lab Control Standard Result	
01194-27	Lab Control Standard % Recovery	
01194-28	LCS Accuracy Control Limit (%R)	

PARAMETER	01194-24	01194-25	01194-26	01194-27	01194-28
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	0.33U	50	48	96 %	78-120
1,1-Dichloroethane, ug/l	0.49U	50	44	88 %	74-131
1,1-Dichloroethene, ug/l	0.93U	50	46	92 %	56-145
cis-1,2-Dichloroethene, ug/l	0.47U	50	43	86 %	70-120
trans-1,2-Dichloroethene, ug/l	0.64U	50	49	98 %	71-120
Ethylbenzene, ug/l	0.43U	50	48	96 %	72-145
Tetrachloroethene, ug/l	1.2U	50	45	90 %	65-134
Toluene, ug/l	0.51U	50	47	94 %	77-122
1,1,1-Trichloroethane, ug/l	0.46U	50	45	90 %	55-130
1,1,2-Trichloroethane, ug/l	0.67U	50	43	86 %	61-136
Trichloroethene, ug/l	0.31U	50	46	92 %	74-122
Vinyl chloride, ug/l	0.39U	50	43	86 %	4-126
Xylenes, Total, ug/l	0.38U	150	142	95 %	76-128
Surrogate - 4-Bromofluorobenzene (PID), ug/l	97 %	50	49.3	99 %	70-130
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	97 %	50	49.2	98 %	70-130
Dilution Factor	1	1	1	1	1
Analysis Date	01.16.01	01.16.01	01.16.01	01.16.01	01.16.01
Batch ID	LUW005	LUW005	LUW005	LUW005	LUW005
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-29	Matrix Spike True Value	
01194-30	Matrix Spike Result	
01194-31	Matrix Spike % Recovery	
01194-32	MSD True Value	
01194-33	Matrix Spike Duplicate Result	

PARAMETER	01194-29	01194-30	01194-31	01194-32	01194-33
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	50	58	107 %	50	57
1,1-Dichloroethane, ug/l	50	53	97 %	50	52
1,1-Dichloroethene, ug/l	50	58	116 %	50	59
cis-1,2-Dichloroethene, ug/l	50	64	77 %	50	65
trans-1,2-Dichloroethene, ug/l	50	59	117 %	50	59
Ethylbenzene, ug/l	50	64	109 %	50	65
Tetrachloroethene, ug/l	50	143	139 %	50	140
Toluene, ug/l	50	54	107 %	50	55
1,1,1-Trichloroethane, ug/l	50	54	108 %	50	52
1,1,2-Trichloroethane, ug/l	50	44	88 %	50	42
Trichloroethene, ug/l	50	55	108 %	50	55
Vinyl chloride, ug/l	50	48	91 %	50	48
Xylenes, Total, ug/l	150	162	108 %	150	165
Surrogate - 4-Bromofluorobenzene (PID), ug/l	50	50.1	100 %	50	48.8
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	50	48.6	97 %	50	45.3
Dilution Factor	1	1	1	1	1
Analysis Date	01.16.01	01.16.01	01.16.01	01.16.01	01.16.01
Batch ID	LUW055	LUW005	LUW005	LUW005	LUW005
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-34	Matrix Spike Duplicate % Recovery	
01194-35	MS Accuracy Advisory Limit (%R)	
01194-36	Precision (%RPD) MS/MSD	
01194-37	MS Precision Advisory Limit (%RPD)	

PARAMETER	01194-34	01194-35	01194-36	01194-37
Aromatic and Halogenated Volatiles (8021)				
Benzene, ug/l	110 %	79-126	2	12
1,1-Dichloroethane, ug/l	95 %	68-141	2	24
1,1-Dichloroethene, ug/l	117 %	51-156	2	19
cis-1,2-Dichloroethene, ug/l	78 %	76-121	1	10
trans-1,2-Dichloroethene, ug/l	119 %	69-128	2	13
Ethylbenzene, ug/l	110 %	76-138	2	11
Tetrachloroethene, ug/l	133 %	59-147	4	31
Toluene, ug/l	110 %	79-125	2	10
1,1,1-Trichloroethane, ug/l	105 %	49-139	3	26
1,1,2-Trichloroethane, ug/l	84 %	71-137	5	26
Trichloroethene, ug/l	109 %	73-129	2	13
Vinyl chloride, ug/l	92 %	6-135	0	24
Xylenes, Total, ug/l	110 %	72-132	2	15
Surrogate - 4-Bromofluorobenzene (PID), ug/l	98 %	70-130	2	12
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	91 %	70-130	6	21
Dilution Factor	1	1	1	1
Analysis Date	01.16.01	01.16.01	01.16.01	01.16.01
Batch ID	LUW005	LUW005	LUW005	LUW005
Prep Method	5030	5030	5030	5030
Analyst	SA	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-38	Method Blank	
01194-39	Lab Control Standard True Value	
01194-40	Lab Control Standard Result	
01194-41	Lab Control Standard % Recovery	
01194-42	LCS Accuracy Control Limit (%R)	

PARAMETER	01194-38	01194-39	01194-40	01194-41	01194-42
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	0.33U	50	45	90 %	78-120
1,1-Dichloroethane, ug/l	0.49U	50	41	82 %	74-131
1,1-Dichloroethene, ug/l	0.93U	50	47	94 %	56-145
cis-1,2-Dichloroethene, ug/l	0.47U	50	40	80 %	70-120
trans-1,2-Dichloroethene, ug/l	0.64U	50	48	96 %	71-120
Ethylbenzene, ug/l	0.43U	50	47	94 %	72-145
Tetrachloroethene, ug/l	2.1F	50	45	90 %	65-134
Toluene, ug/l	0.51U	50	45	90 %	77-122
1,1,1-Trichloroethane, ug/l	0.46U	50	43	86 %	55-130
1,1,2-Trichloroethane, ug/l	0.67U	50	36	72 %	61-136
Trichloroethene, ug/l	0.31U	50	44	88 %	74-122
Vinyl chloride, ug/l	0.39U	50	40	80 %	4-126
Xylenes, Total, ug/l	0.38U	150	137	91 %	77-125
Surrogate - 4-Bromofluorobenzene (PID), ug/l	101 %	50	48.8	98 %	70-130
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	100 %	50	46.1	92 %	70-130
Dilution Factor	1	1	1	1	1
Analysis Date	01.17.01	01.17.01	01.17.01	01.17.01	01.17.01
Batch ID	LUW006	LUW006	LUW006	LUW006	LUW006
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-43	Matrix Spike Value	
01194-44	Matrix Spike Result	
01194-45	Matrix Spike % Recovery	
01194-46	MSD True Value	
01194-47	Matrix Spike Duplicate Result	

PARAMETER	01194-43	01194-44	01194-45	01194-46	01194-47
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	50	50	94 %	50	50
1,1-Dichloroethane, ug/l	50	46	88 %	50	48
1,1-Dichloroethene, ug/l	50	81	161 %M2	50	81
cis-1,2-Dichloroethene, ug/l	50	111	52 %M2	50	110
trans-1,2-Dichloroethene, ug/l	50	52	102 %	50	51
Ethylbenzene, ug/l	50	85	6 %M2	50	84
Tetrachloroethene, ug/l	50	49	95 %	50	48
Toluene, ug/l	50	53	93 %	50	52
1,1,1-Trichloroethane, ug/l	50	47	94 %	50	48
1,1,2-Trichloroethane, ug/l	50	38	76 %	50	40
Trichloroethene, ug/l	50	48	94 %	50	48
Vinyl chloride, ug/l	50	44	80 %	50	44
Xylenes, Total, ug/l	150	230	56 %M2	150	227
Surrogate - 4-Bromofluorobenzene (PID), ug/l	50	47.3	95 %	50	47.7
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	50	46.0	92 %	50	47.6
Dilution Factor	1	1	1	1	1
Analysis Date	01.17.01	01.17.01	01.17.01	01.17.01	01.17.01
Batch ID	LUW006	LUW006	LUW006	LUW006	LUS006
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01194
Received: 11 JAN 01
Reported: 22 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 173810122

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01194-48	Matrix Spike Duplicate % Recovery	
01194-49	MS Accuracy Advisory Limit (%R)	
01194-50	Precision (%RPD) MS/MSD	
01194-51	MS Precision Advisory Limit (%RPD)	

PARAMETER	01194-48	01194-49	01194-50	01194-51
Aromatic and Halogenated Volatiles (8021)				
Benzene, ug/l	94 %	79-126	0	12
1,1-Dichloroethane, ug/l	91 %	68-141	3	24
1,1-Dichloroethene, ug/l	162 %M2	51-156	0	19
cis-1,2-Dichloroethene, ug/l	50 %M2	76-121	5	10
trans-1,2-Dichloroethene, ug/l	101 %M2	69-128	1	13
Ethylbenzene, ug/l	3 %M2	76-138	64M2	11
Tetrachloroethene, ug/l	93 %	59-147	2	31
Toluene, ug/l	93 %	79-125	0	10
1,1,1-Trichloroethane, ug/l	96 %	49-139	3	26
1,1,2-Trichloroethane, ug/l	80 %	71-137	5	26
Trichloroethene, ug/l	94 %	73-129	0	13
Vinyl chloride, ug/l	80 %	6-135	1	24
Xylenes, Total, ug/l	54 %M2	72-132	4	15
Surrogate - 4-Bromofluorobenzene (PID), ug/l	95 %	70-130	0	5
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	95 %	70-130	3	3
Dilution Factor	1	1	1	1
Analysis Date	01.17.01	01.17.01	01.17.01	01.17.01
Batch ID	LUW006	LUW006	LUW006	LUW006
Prep Method	5030	5030	5030	5030
Analyst	SA	SA	SA	SA

Rick Hayes, Project Manager

Final Page Of Report

STL PENSACOLA
STATE CERTIFICATIONS

labama Department of Environmental Management, Laboratory ID No. 40150 (Drinking Water by Reciprocity with FL)

Arizona Department of Health Services, Lab ID No. AZ0589 (Hazardous Waste & Wastewater)

Arkansas Department of Pollution Control and Ecology, (No Laboratory ID No. assigned by state) (Environmental)

State of California, Department of Health Services, Laboratory ID No. 2338 (Hazardous Waste and Wastewater)

State of Connecticut, Department of Health Services, Connecticut Lab Approval No. PH-0697 (Drinking Water, Hazardous Waste and Wastewater)

Delaware Health & Social Services, Division of Public Health, Laboratory ID No. FL094 (Drinking Water by Reciprocity with FL)

Florida DOH Laboratory ID No. E81010 (Drinking Water, Hazardous Waste and Wastewater)

Florida, Radioactive Materials License No. G0733-1

Foreign Soil Permit, Permit No. S-37599

Kansas Department of Health & Environment, Laboratory ID No. E10253 (Wastewater and Hazardous Waste)

Commonwealth of Kentucky, Natural Resources and Environmental Protection Cabinet, Laboratory ID No. 90043 (Drinking Water)

State of Louisiana, DHH, Office of Public Health Division of Laboratories, Laboratory ID No. LA000017 (Drinking Water)

Louisiana Department of Environmental Quality, Environmental Laboratory Accreditation Program, Agency Interest ID 30748 (Environmental - Accreditation Pending)

te of Maryland, DH&MH Laboratory ID No. 233 (Drinking Water by Reciprocity with Florida)

Commonwealth of Massachusetts, DEP, Laboratory ID No. M-FL094 (Hazardous Waste and Wastewater)

State of Michigan, Bureau of E&OccH, Laboratory ID No.9912 (Drinking Water by Reciprocity with Florida)

New Hampshire DES ELAP, Laboratory ID No. 250599A (Wastewater)

State of New Jersey, Department of Environmental Protection & Energy, Laboratory ID No. 49006 (Wastewate and Hazardous Waster)

New York State, Department of Health, Laboratory ID No. 11503 (Wastewater and Solids/Hazardous Waste)

North Carolina Department of Environment & Natural Resources, Laboratory ID No. 314 (Hazardous Waste and Wastewater)

North Dakota DH&Consol Labs, Laboratory ID No. R-108 (Drinking Water, Wastewater and Hazardous Waste by Reciprocity with Florida)

State of Oklahoma, Oklahoma Department of Environmental Quality, Laboratory ID No. 9810 (Hazardous Waste and Wastewater)

Commonwealth of Pennsylvania, Department of Environmental Resources, Laboratory ID No. 68-467 (Drinking Water)

South Carolina DH&EC, Laboratory ID No. 96026 (Wastewater by Reciprocity with FL and Solids/Hazardous Waste by Reciprocity with CA)

Tennessee Department of Health & Environment, Laboratory ID No. 02907 (Drinking Water)

Virginia Department of General Services, Laboratory ID No. 00008 (Drinking Water by Reciprocity with FL)

State of Washington, Department of Ecology, Laboratory ID No. C282 (Hazardous Waste and Wastewater)

West Virginia Division of Environmental Protection, Office of Water Resources, Laboratory ID No. 136 (Hazardous Waste and Wastewater by ciprocity with FL)

American Industrial Hygiene Association (AIHA) Accredited Laboratory, Laboratory ID No. 100704

SEVERN TRENT SERVICES

Data Qualifiers for Final Report

STL-Pensacola Inorganic/Organic

STL Pensacola

B1	The analyte was detected in the associated method blank (sample itself is flagged even though sample is ND).
B2	The analyte was detected in the sample(s) and in the associated method blank analyzed on the day samples were extruded; however, this analyte was not detected in the blank analyzed with the samples.
B3	The analyte was found in the associated blank as well as in the associated sample(s) (qualifier is applied to the sample, notto the blank).
B4	Sample results were corrected due to contaminants in Fractionation Blank
D	Diluted out (surrogate or spike due to sample dilution)
E	Compound concentration exceeds the upper calibration range of the instrument.
F	The reported value is < STL-Pensacola RL and > the STL-Pensacola MDL; therefore, the quantitation is estimation (The STL-PN RL is at or above lowest calibration standard in the initial calibration curve).
G	Sample and/or duplicate result is at or below 5 X (times) the STL Reporting Limit and the absolute difference between the sample and duplicate result is at or below the STL reporting limit; therefore, the results are "in control".
H1	Sample and/or duplicate is below 5 X (times) the STL Reporting Limit and the absolute difference between the results exceeds the STL Reporting Limit; therefore, the results are "out of control"
H2	Sample and duplicate (or MS and MSD) RPD is above control limit.
J (description)	The analyte was positively identified, the quantitation may be an estimation
J4	(For positive results)Temperature limits exceeded (≤2°C or ≥ 6°C), non-reportable for NDPES compliance monitoring.
J6	(For positive results) LCS or Surrogate %R is > upper control limit (UCL), results may be biased high
J7	The reported value is > the laboratory MDL and < lowest calibration standard; therefore, the quantitation is an estimation (this qualifier should only be used when the STL-PN RL is below the lowest calibration standard in the initial calibration).
J8	Matrix spike and post spike recoveries are outside control limits. See out of Control Events/Corrective Action Form.
J9	(For positive results) LCS or Surrogate %R is < lower control limit (LCL), results may be biased low
M1	A matrix effect was present ([1]sample, MS or MSD was analyzed twice to confirm surrogate/spike failure, [2]sample and/or MS/MSD chromatogram(s) had interfering peaks, [3]sample result was > 4 X spike added, [4]metals serial dilution was performed, or [5]metals post spike is < 40% R)
'2	The MS and/or MSD %R or RPD was outside upper or lower control limits; not necessarily due to matrix effect.
J/C	Not Calculable; Sample spiked is > 4X spike concentration (may also use this flag in place of negative numbers)
NH	Sample and duplicate results are "out of control". The sample is nonhomogeneous.
NoMS	Not enough sample provided to prepare and/or analyze a method-required matrix spike (MS) and/or duplicate (MSD)
Q	The analytical (post digestion) spike is reported due to the percent recovery being outside limits on the matrix (pre-digestion) spike.
R (description)	The data may be unusable due to deficiencies in the ability to analyze the sample and meet QC criteria
R1	(For nondetects) Temperature limits exceeded (≤2°C or ≥ 6°C); non-reportable for NDPES compliance monitoring
R2	Improper preservation, no preservative present or insufficient amounts of preservative in sample upon receipt, non-reportable for NDPES compliance monitoring
R3	Improper preservation, incorrect preservative present in sample upon receipt, non-reportable for NPDES compliance
R4	Holding time exceeded, non-reportable for NDPES compliance monitoring.
R5	Collection requirements not met, improper container used for sample
R6	LCS or surrogate %R is < LCL and analyte is not detected or surrogate %R is < 10% for detects/nondetects.
R7	Internal standard area outside –50% to +100% of calibration verification standard.
R8	Initial calibration or any calibration verification exceeds acceptance criteria.
R9	Not filtered and preserved at time of collection.
R10	Headspace >1/4" in diameter in volatile vials, non-reportable for NPDES compliance monitoring
R11	Samples were filtered and preserved within 4 hours of collection.
R12	Analysis performed outside the 12-hour tune or not within tune criteria.
S1	The Method of Standard Additions (MSA) has been performed on this sample.
S2	Incorrect sample amount was submitted to the laboratory for analysis
S3 (Flashpoint)	This method is not designed for solids and the results may not be accepted by any regulator for such purposes.
T	Second-column or detector confirmation exceeded the SW-846 criteria of 40% RPD for this compound.
TIC	The compound is not within the initial calibration curve. It is searched for qualitatively or as a Tentatively Identified Compound.
U	The reported value is ≤ Laboratory MDL (value for result will be the MDL, never below the MDL)
W	Post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is less than 50% spike absorbance.
@	Adjusted reporting limit due to sample composition, not due to overcal (dilution prior to digestion and/or analysis).
#	Elevated reporting limit due to insufficient sample size
1 pt	The compound has been quantitated against a one point calibration.
(Metals & Wet Chem)	Elevated reporting limit due to matrix interference (dilution prior to digestion and/or analysis)

STL Pensacola
PROJECT SAMPLE INSPECTION FORM

SEVERN TRENT SERVICES

Lab Order #: C101194 Date Received: 1/11/01

1. Was there a Chain of Custody? (Yes) No♣
2. Was Chain of Custody properly filled out and relinquished? (Yes) No♣
3. Were samples received cold? (Criteria: 2° - 6°C: STL-SOP) (Yes) No♣ N/A
4. Were all samples properly labeled and identified? (Yes) No♣
5. Did samples require splitting or compositing♦? Yes♣ (No)
   Req By: PM Client Other♦
6. Were samples received in proper containers for analysis requested? (Yes) No♣
7. Were all sample containers received intact? (Yes) No♣
8. Were samples checked for preservative? *(Check pH of all H_2O requiring preservative (STL-PN SOP 917) except VOA vials that require zero headspace)*+ Yes No♣ (N/A)
9. Is there sufficient volume for analysis requested? (Yes) No♣ N/A *(Can)*
10. Were samples received within Holding Time? (REFER TO STL-SOP 1040) (Yes) No♣
11. Is Headspace visible > ¼" in diameter in VOA vials?* If any headspace is evident, comment in out-of-control section. Yes♣ No (N/A)
12. If sent, were matrix spike bottles returned? Yes No♣ (N/A)
13. Was Project Manager notified of problems? (initials:_____) Yes No♣ (N/A)

Airbill Number(s): 8225 0085 4686

Shipped By: FedEx

Cooler Number(s): 691 M

Shipping Charges: N/A

Cooler Weight(s): 30#

Cooler Temp(s) (°C): 3°C
CCK3
(LIST THERMOMETER NUMBER(S) FOR VERIFICATION)

Out of Control Events and Inspection Comments:

(USE BACK OF PSIF FOR ADDITIONAL NOTES AND COMMENTS)

Inspected By: MHS **Date:** 1/11/01 **Logged By:** [illegible] **Date:** 1/11/01

♣ *Note all Out-of-Control and/or questionable events on Comment Section of this form. For holding times, the analytical department will flag immediate hold time samples(pH, Dissolved O_2, Residual CL) as out of hold time, therefore, these samples will not be documented on this PSIF.*

♦ *If Other, note who requested the splitting or compositing of samples on the Comment Section of this form. All volatile samples requested to be split or composited must be done in the Volatile Lab. Document: "Volatile sample values may be compromised due to sample splitting (compositing)"*

\+ *All preservatives for the State of North Carolina, the State of New York, and other requested samples are to be recorded on the sheet provided to record pH results (STL-SOP 938, section 2.2.9).*

* *According to EPA, ¼" of headspace is allowed in 40 ml vials requiring volatile analysis, however, STL makes it policy to record any headspace as out-of-control (STL-SOP 938, section 2.2.12).*

Severn Trent Laboratories
3355 McLemore Drive • Pensacola, FL 32514
Tel: (850) 474-1001- • Fax (850) 474-4789

itted To Your Success

CHAIN OF CUSTODY

LAB ACCESSION # C101194

T 1 - Bottle Shipment Information

CLIENT: CCI/JAJONES

CLIENT PROJECT NUMBER: 047

QUANTITY OF SAMPLE CONTAINERS SHIPPED	PRESERVATIVE							PLASTIC CONTAINERS							GLASS CONTAINERS									NOTES
	H_2SO_4	HNO3	HCL	Zn Acetate	$Na_2S_2O_3$	Unpreserved	NaOH	8 oz.	16 oz.	32 oz.	½ gallon	1 gallon	Whirl-pak	100-ML Cup	120 ml (A)	1 liter (A)	1 liter (C)	40 ml Vial	4 oz. wm	8 oz. wm	16 oz. wm	32 oz. wm	D.I. Trip Blank	
16			X																					
2																		X						
																		X					X	

Relinquished By:	Time	Date	Received By:	Time	Date
Scott A Sloan	1300	1/10/01			

PART 2 - Sample/Project Information

SAMPLE MATRIX CODES

DW DRINKING WATER — AI AIR — SW SURFACE WATER
WW WASTEWATER — SO SOIL — SL SLUDGE
GW GROUNDWATER — OI OIL — ST STORMWATER

PARAMETERS AND PRESERVATIVES REQUESTED

SAMPLE I.D.	SAMPLE DATE	SAMPLE TIME	MATRIX	RIH C 1010	8021 B												TOTAL # OF BOTTLES
047-Site11-Sp34-36-GW-192001	1/9/01	0800	GW	X	X											1	2
047-Site11-Sp34-40-GW-192001	1/9/01	0915	GW	X	X											2	2
047-Site11-Sp34-44-GW-192001	1/9/01	1320	GW	X	X											3	2
047-Site11-Sp34-48-GW-192001	1/9/01	1445	GW	X	X											4	2
047-Site11-EQ1-192001	1/9/01	~~0800~~ 1400		X	X											7 5	2
047-Site11-Sp41-36-GW-110201	1/10/01	0800	GW	X	X											5 6	2
047-Site11-EQ2-192001	1/10/01	0800		X	X											8 7	2
047-Site11-Dup1-GW-110201	1/10/01	0800	GW	X	X											6 8	2
TRIP Blank				X	X											9 9	2
Temp Blank																MG	1

Total Number of Bottles/Containers: 114119

Relinquished By	Date	Time	Received By	Date	Time
Scott A Sloan	1300	1/10/01	Mark Swafford	1/11/01	0902

Client CCI/JAJONES			Purchase Order Number
Address 6219 Authority Ave			Project Number CTO-047
City Jacksonville FL	State FL	Zip 32221	Project Name SITE 11 KINGS BAY
Phone Number (904) 777-4812	Fax Number (904) 777-4262		Project Location KINGS BAY SUB-BASE
Project Manager MIKE MALIK			Sampled By SCOTT A SLOAN

TURNAROUND TIMES	check below	SPECIAL INSTRUCTIONS
Standard - 14-21 days		
RUSH (must be approved in advance)		
8 hours - 2x standard price		
3-7 days - 1.5x standard price	X	
TCLP - 1 week rush 1.5x standard price		
QC Level none I II III IV (circle one)		Copies of report needed _____

FORM # 12694 — WHITE — LAB — CANARY — REPORT — PINK — CLIENT

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-1	047-SITE11-EQ3-1112001	01-11-01/13:00
01267-2	047-SITE11-SP41-40-GW-1112001	01-11-01/12:00
01267-3	047-SITE11-SP41-44-GW-1112001	01-11-01/13:00
01267-4	047-SITE11-SP41-48-GW-1112001	01-11-01/14:00
01267-5	047-SITE11-SP40-36-GW-1112001	01-11-01/12:05

PARAMETER	01267-1	01267-2	01267-3	01267-4	01267-5
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	0.334	1.8	3.7J7	3.3U	3.3U
1,1-Dichloroethane, ug/l	0.49U	4.4	4.9U	4.9U	4.9U
1,1-Dichloroethene, ug/l	0.93U	0.93U	9.3U	9.3U	9.3U
cis-1,2-Dichloroethene, ug/l	0.47U	26	4.7U	4.7U	4.7U
trans-1,2-Dichloroethene, ug/l	0.64U	0.64U	6.4U	6.4U	6.4U
Ethylbenzene, ug/l	0.43U	9.6	0.72J7	4.3U	4.3U
Tetrachloroethene, ug/l	1.2U	73	1500	1200	200
Toluene, ug/l	0.51U	0.58J7	5.1U	5.1U	5.1U
1,1,1-Trichloroethane, ug/l	0.46U	0.46U	4.6U	4.6U	4.6U
1,1,2-Trichloroethane, ug/l	0.67U	0.67U	6.7U	6.7U	6.7U
Trichloroethene, ug/l	0.31U	0.76J7	16	13	3.1U
Vinyl chloride, ug/l	0.39U	2.7	3.9U	3.9U	3.9U
Xylenes, Total, ug/l	0.38U	0.40J7	0.38U	3.8U	3.8U
Surrogate - 4-Bromofluorobenzene (PID), ug/l	103 %	102 %	103 %	102 %	104 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	105 %	101 %	103 %	102 %	104 %
Dilution Factor	1	1	1,10	10	10
Analysis Date	01.16.01	01.16.01	01.17.01	01.17.01	11.07.01
Analysis Time	22:56	12:27	17:07	18:03	01:44
Batch ID	LUW005	LUW005	LUW006	LUW006	LUW005
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C1-01267
Received: 15 JAN 01
Reported: 25 JAN 01

Mr. Mike Halil
CCI/JA Jones Env. Svcs.
6219 Authority Avenue
Jacksonville, FL 32215

Requisition: CT0-047

Project: SITE 11 KINGS BAY SUB BASE
Sampled By: Client
Code: 171810126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
01267-6	047-SITE11-SP40-40-GW-1112001	01-11-01/12:45
01267-7	047-SITE11-SP40-44-GW-1112001	01-11-01/13:30
01267-8	047-SITE11-SP40-48-GW-1112001	01-11-01/14:15
01267-9	047-SITE11-DUP2-GW-1112001	01-12-01
01267-10	047-SITE11-EQ4-1112001	01-12-01/12:00

PARAMETER	01267-6	01267-7	01267-8	01267-9	01267-10
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	2.0	2.0	2.6	3.3U	0.52J7
1,1-Dichloroethane, ug/l	0.49U	4.7	2.0	4.9U	0.49U
1,1-Dichloroethene, ug/l	0.93U	0.93U	0.93U	9.3U	0.93U
cis-1,2-Dichloroethene, ug/l	0.47U	71	85	24	0.47U
trans-1,2-Dichloroethene, ug/l	0.64U	0.64U	0.73J7	6.4U	0.64U
Ethylbenzene, ug/l	0.43U	12	83	4.3U	0.43U
Tetrachloroethene, ug/l	11	2.8F	1.6F	1400	1.3F
Toluene, ug/l	0.83J7	0.51U	5.8	5.1U	1.0F
1,1,1-Trichloroethane, ug/l	0.46U	0.46U	0.46U	4.6U	0.46U
1,1,2-Trichloroethane, ug/l	0.67U	0.67U	0.67U	6.7U	0.67U
Trichloroethene, ug/l	0.31U	0.31U	1.3	8.0J7	0.31U
Vinyl chloride, ug/l	0.39U	3.4	3.6	3.9U	0.39U
Xylenes, Total, ug/l	0.38U	0.38U	150	3.8U	0.38U
Surrogate - 4-Bromofluorobenzene (PID), ug/l	103 %	102 %	101 %	102 %	101 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	104 %	104 %	103 %	102 %	103 %
Dilution Factor	1	1	1	10	1
Analysis Date	01.17.01	01.17.01	01.17.01	01.18.01	01.18.01
Analysis Time	02:40	03:36	18:59	06:10	07:06
Batch ID	LUW005	LUW005	LUW006	LUW006	LUW006
Prep Method	5030	5030	5030	5030	5030
Analyst	SA	SA	SA	SA	SA

SEVERN TRENT SERVICES
STL Pensacola

LOG NO: C1-02164
Received: 08 FEB 01
Reported: 16 FEB 01

Mr. Mike Halil
CH2M Hill
115 Perimeter Center Place NE 700
Atlanta, GA 30346

Requisition: 160027

Project: CTO-0047, NAVSUB KINGS BAY, GA
Sampled By: Client
Code: 135810216

REPORT OF RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
02164-1	047-I60P-0207-01	02-07-01/11:00
02164-2	047-I60NP-0207-01	02-07-01/10:30

PARAMETER	02164-1	02164-2
Aromatic and Halogenated Volatiles (8021)		
Benzene, ug/l	0.28J7	0.31J7
1,1-Dichloroethane, ug/l	0.19U	0.19U
1,1-Dichloroethene, ug/l	0.41J7	0.54J7
cis-1,2-Dichloroethene, ug/l	6.0	6.5
trans-1,2-Dichloroethene, ug/l	0.23U	0.23U
Ethylbenzene, ug/l	0.39U	0.39U
Tetrachloroethene, ug/l	130	170
Toluene, ug/l	0.26J7	0.45J7
1,1,1-Trichloroethane, ug/l	0.31U	0.31U
1,1,2-Trichloroethane, ug/l	0.36U	0.93J7
Trichloroethene, ug/l	17	17
Vinyl chloride, ug/l	0.48U	0.48U
Xylenes, Total, ug/l	0.31U	0.31U
Surrogate - 4-Bromofluorobenzene (PID), ug/l	107 %	105 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	104 %	96 %
Dilution Factor	1	1
Analysis Date	02.14.01	02.14.01
Batch ID	PHW022	PHW022
Prep Method	5030	5030
Analyst	DK	DK

SEVERN TRENT SERVICES
STL Pensacola

LOG NO: C1-02164
Received: 08 FEB 01
Reported: 16 FEB 01

Mr. Mike Halil
CH2M Hill
115 Perimeter Center Place NE 700
Atlanta, GA 30346

Requisition: 160027

Project: CTO-0047, NAVSUB KINGS BAY, GA
Sampled By: Client
Code: 135810216

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
02164-3	Trip Blank	02-07-01

PARAMETER	02164-3
Aromatic and Halogenated Volatiles (8021)	
Benzene, ug/l	0.21U
1,1-Dichloroethane, ug/l	0.19U
1,1-Dichloroethene, ug/l	0.33U
cis-1,2-Dichloroethene, ug/l	0.14U
trans-1,2-Dichloroethene, ug/l	0.23U
Ethylbenzene, ug/l	0.39U
Tetrachloroethene, ug/l	0.37U
Toluene, ug/l	0.21U
1,1,1-Trichloroethane, ug/l	0.31U
1,1,2-Trichloroethane, ug/l	0.36U
Trichloroethene, ug/l	0.22U
Vinyl chloride, ug/l	0.48U
Xylenes, Total, ug/l	0.31U
Surrogate - 4-Bromofluorobenzene (PID), ug/l	115 %
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	118 %
Dilution Factor	1
Analysis Date	02.14.01
Batch ID	PHW022
Prep Method	5030
Analyst	DK

SEVERN TRENT SERVICES
STL Pensacola

LOG NO: C1-02164
Received: 08 FEB 01
Reported: 16 FEB 01

Mr. Mike Halil
CH2M Hill
115 Perimeter Center Place NE 700
Atlanta, GA 30346

Requisition: 160027

Project: CTO-0047, NAVSUB KINGS BAY, GA
Sampled By: Client
Code: 135810216
Page 5

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
02164-14	Matrix Spike Duplicate % Recovery	
02164-15	MS Accuracy Advisory Limit (%R)	
02164-16	Precision (%RPD) MS/MSD	
02164-17	MS Precision Advisory Limit (%RPD)	

PARAMETER	02164-14	02164-15	02164-16	02164-17
Aromatic and Halogenated Volatiles (8021)				
Benzene, ug/l	105 %	79-126	17M2	12
1,1-Dichloroethane, ug/l	100 %	68-141	18	24
1,1-Dichloroethene, ug/l	110 %	51-156	16	19
cis-1,2-Dichloroethene, ug/l	88 %	76-121	37M1	10
trans-1,2-Dichloroethene, ug/l	100 %	69-128	33M2	13
Ethylbenzene, ug/l	11 %	76-138	3	11
Tetrachloroethene, ug/l	112 %	59-147	151M1	31
Toluene, ug/l	110 %	79-125	7	10
1,1,1-Trichloroethane, ug/l	91 %	49-139	24	26
1,1,2-Trichloroethane, ug/l	111 %	71-137	28M2	26
Trichloroethene, ug/l	101 %	73-129	25M1	13
Vinyl chloride, ug/l	76 %	6-135	3	24
Xylenes, Total, ug/l	110 %	72-132	0	15
Surrogate - 4-Bromofluorobenzene (PID), ug/l	99 %	75-118	1	12
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	93 %	76-125	4	21
Dilution Factor	1	---	1	1
Analysis Date	02.14.01	---	02.14.01	02.14.01
Batch ID	PHW022	---	PHW022	PHW022
Prep Method	5030	5030	5030	5030
Analyst	DK	---	DK	DK

These test results meet all the requirements of NELAC. All questions regarding this test report should be directed to the STL Project Manager who signed this test report.

Rick Hayes, Project Manager

SEVERN TRENT SERVICES
STL Pensacola

LOG NO: C1-02164
Received: 08 FEB 01
Reported: 16 FEB 01

Mr. Mike Halil
CH2M Hill
115 Perimeter Center Place NE 700
Atlanta, GA 30346

Requisition: 160027

Project: CTO-0047, NAVSUB KINGS BAY, GA
Sampled By: Client
Code: 135810216
Page 4

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
02164-9	Matrix Spike True Value	
02164-10	Matrix Spike Result	
02164-11	Matrix Spike % Recovery	
02164-12	Matrix Spike Duplicate True Value	
02164-13	Matrix Spike Duplicate Result	

PARAMETER	02164-9	02164-10	02164-11	02164-12	02164-13
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	50	44	88 %	50	53
1,1-Dichloroethane, ug/l	50	42	83 %	50	50
1,1-Dichloroethene, ug/l	50	47	93 %	50	55
cis-1,2-Dichloroethene, ug/l	50	36	61 %M1	50	50
trans-1,2-Dichloroethene, ug/l	50	36	72 %	50	50
Ethylbenzene, ug/l	50	54	108 %	50	56
Tetrachloroethene, ug/l	50	142	16 %M1	50	190
Toluene, ug/l	50	52	103 %	50	56
1,1,1-Trichloroethane, ug/l	50	36	71 %	50	45
1,1,2-Trichloroethane, ug/l	50	42	84 %	50	55
Trichloroethene, ug/l	50	56	78 %	50	67
Vinyl chloride, ug/l	50	37	73 %	50	38
Xylenes, Total, ug/l	150	165	110 %	150	166
Surrogate - 4-Bromofluorobenzene (PID), ug/l	50	50.0	100 %	50	49.7
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	50	48.6	97 %	50	46.5
Dilution Factor	1	1	1	1	1
Analysis Date	02.14.01	02.14.01	02.14.01	02.14.01	02.14.01
Batch ID	PHW022	PHW022	PHW022	PHW022	PHW022
Prep Method	5030	5030	5030	5030	5030
Analyst	DK	DK	DK	DK	DK

SEVERN TRENT SERVICES
STL Pensacola

LOG NO: C1-02164
Received: 08 FEB 01
Reported: 16 FEB 01

Mr. Mike Halil
CH2M Hill
115 Perimeter Center Place NE 700
Atlanta, GA 30346

Requisition: 160027

Project: CTO-0047, NAVSUB KINGS BAY, GA
Sampled By: Client
Code: 135810216
Page 3

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
02164-4	Method Blank	
02164-5	Laboratory Control Standard True Value	
02164-6	Lab Control Standard Result	
02164-7	Lab Control Standard % Recovery	
02164-8	LCS Accuracy Control Limit (%R)	

PARAMETER	02164-4	02164-5	02164-6	02164-7	02164-8
Aromatic and Halogenated Volatiles (8021)					
Benzene, ug/l	0.21U	50	51	102 %	78-120
1,1-Dichloroethane, ug/l	0.19U	50	53	106 %	74-131
1,1-Dichloroethene, ug/l	0.33U	50	52	104 %	56-145
cis-1,2-Dichloroethene, ug/l	0.14U	50	44	88 %	70-120
trans-1,2-Dichloroethene, ug/l	0.23U	50	48	96 %	71-120
Ethylbenzene, ug/l	0.39U	50	54	108 %	72-145
Tetrachloroethene, ug/l	0.37U	50	53	106 %	65-134
Toluene, ug/l	0.21U	50	55	110 %	77-122
1,1,1-Trichloroethane, ug/l	0.31U	50	48	96 %	55-130
1,1,2-Trichloroethane, ug/l	0.36U	50	53	106 %	61-136
Trichloroethene, ug/l	0.22U	50	51	102 %	74-122
Vinyl chloride, ug/l	0.48U	50	39	78 %	4-126
Xylenes, Total, ug/l	0.31U	150	161	107 %	77-125
Surrogate - 4-Bromofluorobenzene (PID), ug/l	109 %	50	50.5	101 %	75-118
Surrogate - 4-Bromofluorobenzene (ELCD), ug/l	111 %	50	49.3	99 %	76-125
Dilution Factor	1	1	1	1	---
Analysis Date	02.14.01	02.14.01	02.14.01	02.14.01	---
Batch ID	PHW022	PHW022	PHW022	PHW022	---
Prep Method	5030	5030	5030	5030	5030
Analyst	DK	DK	DK	DK	---

Vegetable Oil Injection

Analytical Report For 109127

for

CH2M Hill Constructors, Inc.

Project Manager: Mike Halil

Project Name : NBS Kings Bay, GA

October 5, 2001

GPL

Laboratories

GPL Laboratories, LLLP Certifies that the test results meet all requirements of the NELAC Standards unless otherwise noted.

Reviewed by,
Project Manager

Approved by,
Laboratory Director

202 Perry Parkway Gaithersburg, MD 20877 Phone (301) 926-6802 Fax: (301) 840-1209
www.gplab.com

TOTAL # OF PAGES : 9

GPL

Laboratories

CASE NARRATIVE FOR GPL #109127

CLIENT: CH2M HILL CONSTRUCTORS INC
PROJECT/SITE: NBS KINGS BAY GA
WORK ORDER(S): 109127
REVIEW DATE: 10/05/01

The Case Narrative, Chain of Custody, Sample Receipt Checklist, and the cover page of the Analytical Report are integral parts of GPL Laboratories' report package. If you did not receive all of these documents please contact GPL immediately.

Sample Receipt

One soil sample was received on 09/25/01. The sample was delivered by Federal Express. The sample was received intact. Sample receipt conditions and temperatures are documented on the Sample Receipt Checklist.

Sample Analysis

Samples were prepared and analyzed by GPL using the analytical methodologies indicated on the Analytical Report of Analysis.

General Chemistry

1. The sample was analyzed for Total Organic Carbon by SW846 method 9060 after Lloyd Kahn preparation.
2. The sample was also analyzed for Fraction of Organic Carbon by Standard Methods 5310M. The FOC was calculated by dividing the Organic Carbon result by the Total Carbon Result.
3. Duplicate analysis was performed on this sample for both TOC and FOC.
4. Matrix spike analysis for TOC was shared with GPL work order 109107.
5. All QC criteria were met.

Project Manager

Lab Director

Summary of Analytical Results

Client ID 047-I81
GPL ID: 109127-001-01-1/2
Matrix: Soil
Date Collected: 09/24/01
Date Received: 09/25/01

Prep Method:
Prep Date:
Prep Time:
Prep Batch 0

Analytical Method: SW9060
Date Analyzed: 10/02/01
Time Analyzed 07:30
Analysis Batch 12100

Parameter	Result	Rep Limit	Units	Qualifier	D.F.
Total Organic Carbon	705	119	mg/kg		1

GPL LABORATORIES, LLLP

Summary of Analytical Results

Client ID 047-I81	Prep Method:	Analytical Method: SM5310M
GPL ID: 109127-001-01-1/2	Prep Date:	Date Analyzed: 10/02/01
Matrix: Soil	Prep Time:	Time Analyzed 07:30
Date Collected: 09/24/01	Prep Batch	Analysis Batch 12102
Date Received: 09/25/01		

Parameter	Result	Rep Limit	Units	Qualifier	D.F.
Fraction Organic Carbon	64.7	1	%		1

Summary of Analytical Results

Client ID 047-I81	Prep Method:	Analytical Method: CLP_SOLIDS
GPL ID: 109127-001-01-1/2	Prep Date:	Date Analyzed: 09/27/01
Matrix: Soil	Prep Time:	Time Analyzed 15:00
Date Collected: 09/24/01	Prep Batch	Analysis Batch 12007
Date Received: 09/25/01		

Parameter	Result	Rep Limit	Units	Qualifier	D.F.
Percent Solids	79.3	0	%		1

GPL LABORATORIES, LLP
ANALYTICAL RESULTS

Project Name : NBS Kings Bay, GA

Date Printe October 5, 2001

GPL ID	Client ID
109127-001-01-1/2	047-I81
109127-001-01-1/2	047-I81
109127-001-01-1/2	047-I81

GPL LABORATORIES, LLLP

Qualifier Definitions

U = Indicates that the compound was analyzed for but not detected at or above the reporting limit

Organics:

B = Indicates that the analyte was found in the associated blank as well as in the sample

D = Indicates that the analyte was reported from a diluted analysis

E = Indicates that the concentration detected exceeded the calibration range of the instrument

J = Value is less than the reporting limits but greater than the MDL

P = Indicates that there is greater than 25% difference for detected pesticide/Aroclor results between the two GC columns

Metals:

B = Indicates that the reported value was less than the reporting limit but greater than or equal to the IDL/MDL

E = Indicates that reported value is estimated because of the possible presence of interference (i.e., the serial dilution not within control limits)

H = Indicates that the element was found in the associated blank as well as in the sample and the value is greater than or equal to the reporting limit

N = Spiked sample recovery not within control limits

• = Duplicate analysis not within control limits

10/30/00
I:USER/G_SECURE/LOGFORMS/QUALDEF.DOC
Form:Gen-004

GPL LABORATORIES, LLLP

202 Perry Parkway
Gaithersburg, MD 20877
(301) 926-6802
Fax (301) 840-1209

Contract #/Billing Reference: PO# 2887

Project: CTO 0047 SITE 11 NSB KINGS BAY
Client: CCI / JA JONES
Send Results To: MIKE HALIL
Address: 6219 AUTHORITY AVE
JACKSONVILLE, FL 32221
Phone: 904/777-4812

Sample ID#	Date Sampled	Time Sampled	Sample Matrix	Sampler's Initials	9060 FOC/TOC										CLIENT COMMENTS
Turnaround Time					7Day										
# of Containers					2										
Container Type					8oz										
Preservative Used					ICE										
Type of Analysis															Lab Cooler No.
047-IS1	9-24-01	15:00	SOIL	[illegible]	X										

Relinquished By:	Date/Time	Received By:	Relinquished By:	Received for Laboratory By:	Date/Time
[illegible] Ramey	9-24 / 16:30			[illegible]	9/25/01 / 10:00 A

Relinquished By:	Date/Time	Received By:	Date/Time	Shipper:	Airbill No.:

Relinquished By:	Date/Time	Received By:	Lab Comments:	Temp:
				2.02

G.P. W.O. 109127

8

GPL Laboratories, LLLP

Figure 1
SAMPLE RECEIPT CHECKLIST

W.O. No: 109127

Client Name: CCI / JA Jones

Date Received: 09/10/01

Time Received: 9:45 Am

Received By: [illegible]

Carrier Name: ~~UPS~~ Fed Ex

Prepared (Logged In) By: 109/25/01 (Initials Date)

Project: CTO 0047 SITE 11 NSB Kings BAY

Site:

VOA Holding Blank I.D. No:

	YES	NO
Airbill/Manifest Present?	✓	
No. 730337028308		
Shipping Container in Good Condition?	✓	
Custody Seals Present on Shipping Container?	✓	
Condition: Broken ____		
Intact-not dated or signed ____		
Intact-dated and signed ✓		
Usage of Tamper Evident Type	✓	
Chain-of-Custody Present?	✓	
Chain-of-Custody Agrees with Sample Labels?	✓	
Chain-of-Custody Signed?	✓	
Packing Present in Shipping Container?	✓	
Type of Packing Bubble wrap		
Custody seals on Sample Bottles?		✓
Condition: Good ____ Broken ____		
Total Number of Sample Bottles 2		
Total Number of Samples 1		
Samples Intact?	✓	
Sufficient Sample Volume for Indicated Test?	✓	

	YES	NO
Trip Blanks: No. of Sets ____		✓
Field Blanks: No. of Sets ____		✓
Equip. Blank: No. of Sets ____		✓
Field Duplicate: No. of Sets ____		✓
MS/MSD: No of Sets ____		✓
VOA Vials Have Zero Headspace?		✓
Preservatives Added to Sample?		✓
pH Check Required?		✓
Performed By? ____		
Ice Present in Shipping Container?	✓	

Container #	Temp.	Container #	Temp.
#1	2.0°C		

09/25/01

Project Manager Contacted?
Name: Lauren Perrin
Date Contacted: 09/25/01

Any NO response must be detailed in the comments section below. If items are not applicable to particular samples or contracts, they should be marked N/A/

COMMENTS:

Checklist Completed By: [illegible]

Date: 09/25/01

SOP No: F.2V11

ANALYSIS DATA PACKAGE

GENERAL CHEMISTRY

A. QC Summary

B. Sample Data

C. Standards Data

D. Raw QC Data

GPL Laboratories, LLLP

A. QC Summary

1. **Matrix Spike/ Matrix Spike Duplicate Summary**

2. **Laboratory Control Standard Summary** (where applicable)

GPL Laboratories, LLLP

Form 3 MD/MS

SOIL GENERAL CHEMISTRY DUPLICATE/MATRIX SPIKE RECOVERY

Lab Name: GPL Laboratories, LLLC Client: CH2M Hill Constructors, Inc.

GPL Work-Order: 109127

Analyte	Method	Sample ID	Sample Conc. (mg/Kg)	Duplicate Conc. (mg/Kg)	RPD	RPD Limit
TOC	SW9060	047-181	705	676	4.2	15%
FOC	SM5310M	047-181	64.7%	62.6%	3.3	15%

RPD - 0 out of 2 outside control limits

Analyte	Method	Sample ID	Sample Conc. (mg/Kg)	AS# Conc. (mg/Kg)	Spike Added (mg/Kg)	AS % Recov.	AS Recovery Limits
TOC	SW9060	109107*	4570	8750	3890	107	85 - 115%

Recovery - 0 out of 1 outside control limits
*Indicates shared QC

B. Sample Data

GPL Laboratories, LLLP

	Description	A	Sample Id	ST	Method	Results	RL Raw	R	Raw	Multiplie	Reporti	Raw	nFinal	Sort	spk	%	Raw Final
1																	
2																	
3																	
4	Fraction Organic Carbon	AN	109127-001-01	SMP /	SM5310M	64.7	1.0000	✓	64.7000	1.00000000	PER	PER	64.7000	0	0.0000	0.00	64.7000
5	Fraction Organic Carbon	AN	109127-001-01	MD / S	SM5310M	62.6	1.0000	✓	62.6000	1.00000000	PER	PER	62.6000	0	0.0000	0.00	62.6000

	Description	A	Sample Id	ST	Method	Results	RL Raw	R	Raw	Multiplie	Reporti	Raw	nFinal	Sort	spk	%	Raw Final
1																	
2																	
3																	
4	Total Organic Carbon	AN	ICV	ICV / (	SW9060	955	100.0000	☑	955.3000	1.00000000	MGL	MGL	955.0000	0	1000.0000	0.00	955.3000
5	Total Organic Carbon	AN	ICB	ICB / E	SW9060	0	100.0000	☑	0.0000	1.00000000	MGL	MGL	0.0000	0	0.0000	0.00	0.0000
6	Total Organic Carbon	AN	109127-001-01	SMP /	SW9060	705	100.0000	☑	591.4000	1.19171580	MGKG	MGKG	705.0000	0	0.0000	0.00	704.7807
7	Total Organic Carbon	AN	109127-001-01	MD / S	SW9060	676	100.0000	☑	403.5000	1.67473690	MGKG	MGKG	676.0000	0	0.0000	0.00	675.7563
8	Total Organic Carbon	AN	109107-004-03	SMP /	SW9060	568	100.0000	☑	521.6000	1.08874350	MGKG	MGKG	568.0000	0	0.0000	0.00	567.8886
9	Total Organic Carbon	AN	109107-005-05	SMP /	SW9060	4570	100.0000	☑	1409.0000	3.24175380	MGKG	MGKG	4570.0000	0	0.0000	0.00	4567.6311
10	Total Organic Carbon	AN	109107-005-05	MD / S	SW9060	4360	100.0000	☑	986.2000	4.42057330	MGKG	MGKG	4360.0000	0	0.0000	0.00	4359.5694
11	Total Organic Carbon	AN	109107-005-05	MS / S	SW9060	8750	100.0000	☑	2250.0000	3.89010450	MGKG	MGKG	8750.0000	0	3890.0000	117.42	8752.7351
12	Total Organic Carbon	AN	CCV1	CCV / '	SW9060	312	100.0000	☑	311.8000	1.00000000	MGL	MGL	312.0000	0	300.0000	0.00	311.8000
13	Total Organic Carbon	AN	CCB1	CCB /	SW9060	0	100.0000	☑	0.0000	1.00000000	MGL	MGL	0.0000	0	0.0000	0.00	0.0000
14	Total Organic Carbon	AN	109107-006-03	SMP /	SW9060	5930	100.0000	☑	1176.0000	5.04496320	MGKG	MGKG	5930.0000	0	0.0000	0.00	5932.8767
15	Total Organic Carbon	AN	109116-003-02	SMP /	SW9060	28700	100.0000	☑	2320.0000	2.35597570	MGKG	MGKG	28700.0000	0	0.0000	0.00	28665.8636
16	Total Organic Carbon	AN	CCV2	CCV / '	SW9060	3020	100.0000	☑	3022.0000	1.00000000	MGL	MGL	3020.0000	0	3000.0000	0.00	3022.0000
17	Total Organic Carbon	AN	CCB2	CCB /	SW9060	0	100.0000	☑	0.0000	1.00000000	MGL	MGL	0.0000	0	0.0000	0.00	0.0000

	Description	A	Sample Id	Flag	V	Rpd	Rpd	N	mdl	S	Retention	LCL	UCL	Mois	Final	Final MDL	Valid.Comments	Anal	Prep
1																			
2																			
3																			
4	Total Organic Carbon	AN:	ICV						100.0000						100.000	100.000		1.000	
5	Total Organic Carbon	AN:	ICB						100.0000						100.000	100.000		1.000	
6	Total Organic Carbon	AN:	109127-001-01						100.0000					20.65	119.172	119.172		0.946	
7	Total Organic Carbon	AN:	109127-001-01			200			100.0000					20.65	167.474	167.474		1.329	
8	Total Organic Carbon	AN:	109107-004-03						100.0000					13.35	108.874	108.874		0.943	
9	Total Organic Carbon	AN:	109107-005-05						100.0000					17.74	324.175	324.175		2.667	
10	Total Organic Carbon	AN:	109107-005-05			200			100.0000					17.74	442.057	442.057		3.636	
11	Total Organic Carbon	AN:	109107-005-05						100.0000					17.74	389.010	389.010		3.200	
12	Total Organic Carbon	AN:	CCV1						100.0000						100.000	100.000		1.000	
13	Total Organic Carbon	AN:	CCB1						100.0000						100.000	100.000		1.000	
14	Total Organic Carbon	AN:	109107-006-03						100.0000					30.45	504.496	504.496		3.509	
15	Total Organic Carbon	AN:	109116-003-02						100.0000					28.06	1235.598	1235.598		8.889	
16	Total Organic Carbon	AN:	CCV2						100.0000						100.000	100.000		1.000	
17	Total Organic Carbon	AN:	CCB2						100.0000						100.000	100.000		1.000	

Method Title: Total Organic Carbon
Method Reference: MCAWW 415.1 / Lloyd Kahn / 9060
FOC = SM5310M

Analyst: V. Zusman
Date: 10-2-01 7:30am
Reviewed By / Date: _____

GP ID	Client ID	Sample Vol/Wt.	% solids ~~D.F.~~	Instrument Reading	Conc.	Final Results mg/L / mg/Kg
#7965-1000	ICV	40ul	–	~~1016~~ 994.7	~~979.4~~ 955.3	~~979 mg/L~~ 955 mg/L @10/2/01
Blank	ICB	↓	–	8.203	0	<100 mg/L
Total C 109127-001	047-I81	8.1mg	79.3	306.4	174.8	1090
-001 dup	↓	5.2mg	↓	250.3	111	1080
Organic C -001		42.3mg		673.8	591.4	705
-001 dup		30.1mg		508.1	403.5	676
109099-001	CBPSD-002-0001-SD	1.7mg	82.7	1953	2042	58,100
-002	CBPSD-008-0001-SD	7.9mg	77.1	981.2	939.98	6170
109107-004	PX-S11-SD02-0901	42.4mg	86.7	612.3	521.6	568
-005	PX-S11-SD04-0901	15.0mg	82.3	1395	1409	4570
-005 dup	↓	11.0mg	↓	1022	986.2	4360
-005 MS	↓ +1000 mg/L (40ul)	12.5mg		2136	2250	8750
#7965-~~150~~ 300 @10/2/01	CCV1	40ul	–	427.3	311.8	312 mg/L
Blank	CCB1	↓	–	23.71	0	<100 mg/L
109107-006	PX-S11-SD dup-0901	11.4mg	69.5	1189	1176	5940
109116-003	LS07-SD212-011	4.5mg	71.9	2198	2320	28,700
#14896-3000	CCV2	40ul	–	2817	3022	3020 mg/L
Blank	CCB2	↓	–	50.95	0	<100 mg/L

FOC
64.7%
62.6%

Calculation:
Water Final Results = (instrument reading vs.cal.curve) x dilution factor
Soil Final Results = (instrument reading vs.cal. Curve) x 0.040ml) / Sample weight (g) x % solids
(If not detected, report < 100 mg/L)

C. Standard Data

1. Initial Calibration Data
2. Continuing Calibration Data

GPL Laboratories, LLLP

General Chemistry Form 2

TOTAL ORGANIC CARBON CONTINUING CALIBRATION CHECK STANDARD RECOVERY

Lab Name: GPL Laboratories, LLLC

Client: CH2M Hill

Work-Order # 109127

STD Solution ID: #7965/14896

Standard ID	Solution ID	Control Std True Value (mg/L)	Standard Concentration (mg/L)	Standard %Recovery	Recovery Control Limits
ICV	7965	1000	955	95.5	90 - 110%

Standard ID	Solution ID	Control Std True Value (mg/L)	Standard Concentration (mg/L)	Standard %Recovery	Recovery Control Limits
CCV1	7965	300	312	104.0	90 - 110%

Method Title: Total Organic Carbon
Method Reference: MCAWW 415.1 / Lloyd Kahn / 9060

Analyst: V. Zyskowski
Date: 8-13-01
Reviewed by / Date: _____

Instrument/Apparatus: Dohrman DC-80

Calibration:

A. 1000ppm Stock Standard Solution ID: #7965
B. 4000ppm Working Standard Solution: 0.851g KHC8H404 + 1ml HN03/100ml #15145 ~~#14145~~ 08-13-01
C. 10ppm Working Standard Solution
D. Calibration Concentration Ranges

Vol. (ul)	Operating Range (ppm)	Std Conc (ppm)
40	100 - 4000	2000
200	10 - 800	400
1000	0.1 - 160	10

Calibration Curve:

Std. Conc. mg/L	ml Stock Solution	F.V. ml	Instrument Reading
0	—	20	33.78
100	0.50	20	158.5
500	2.50	20	601.2
1000	5.00	20	1245
2000	10.0	20	2027
3000	15.0	20	2826
4000	20.0	20	3522
		20	

Corr. Coeff: (≥ 0.9950) 0.9953
y-Intercept: -172.702
Slope: 1.1340

Corr. Coeff: (≥ 0.9950) N/A
y-Intercept: N/A
Slope: N/A

08-13-01

QC Analysis

QC ID: #7965 / #15145 (1:2)
T.V.: 1000 ug / 2000 mg/L ~~#14145~~ 08-13-01

Acceptance Range: 85-115%
Found Value:
ICV 1000 mg/L 1070 mg/L
% Recovery:
ICV 107 %

CCV1 2000 mg/L 2160 mg/L CCV2 _____
CCV1 108 % CCV2 _____

Matrix Spike Analysis:

Spike Acceptance Range: 15%
Sample ID #1 _____ Sample ID #2 _____
Sample Value #1 17,500 mg/kg Sample Value #2: ___
Spike Sample Value #1 25,300 mg/kg #2: _____
Spike Amount: 8000 mg/kg
% Recovery #1 92.5 % #2: _____

Duplicate Analysis

Dup Acceptance Range: 15%
Sample ID #1 / #2 _____ / _____
Init. Samp. Value #1 / #2 17,500 mg/kg / 17,500 mg/kg
Dup. Samp. Value #1 / #2 18,100 mg/kg / 15,700 mg/kg
RPD #1 / #2 3.4 % / 10.8 %

Comments:

Method Title: Total Organic Carbon
Method Reference: MCAWW 415.1 / Lloyd Kahn / 9060

Analyst: V. Zaunegg
Date: 10-2-01
Reviewed by / Date: _____

Instrument/Apparatus: Dohrman DC-80

Calibration:

A. 1000ppm Stock Standard Solution ID: #7965
B. 4000ppm Working Standard Solution: 0.851g KHC8H404 + 1ml HN03/100ml #14896
C. 10ppm Working Standard Solution
D. Calibration Concentration Ranges

Vol. (ul)	Operating Range (ppm)	Std Conc (ppm)
40	100 - 4000	2000
200	10 - 800	400
1000	0.1 - 160	10

Calibration Curve: calibrated 8-13-01

Std. Conc. mg/L	ml Stock Solution	F.V. ml	Instrument Reading
		20	
		20	
		20	
		20	
		20	
		20	
		20	
		20	

Corr. Coeff: (≥ 0.9950) 0.9953
y-Intercept: -172.702
Slope: 1.1340

Corr. Coeff: (≥ 0.9950) NA
y-Intercept: NA
Slope: NA

QC Analysis

QC ID: #7965 / #14896
T.V.: varied

Acceptance Range: 90-110%
Found Value: (TV)
ICV (1000) 955 mg/L
% Recovery:
ICV 95.5%

(300) CCV1 312 mg/L (3000) CCV2 3020 mg/L

CCV1 104% CCV2 101%

Matrix Spike Analysis:

Spike Acceptance Range: 25%
Sample ID #1 109107-005 Sample ID #2 _____
Sample Value #1 4570 mg/L Sample Value #2: ____
Spike Sample Value #1 8750 mg/L #2: _____
Spike Amount: 1000 mg/L = 3890 mg/L
% Recovery #1 107% #2: _____

Duplicate Analysis

Dup Acceptance Range: 15%
Sample ID #1 / #2 109127 001 / 109107 005
Init. Samp. Value #1 / #2 64.7% / 4570 mg/L
Dup. Samp. Value #1 / #2 61.4% / 4360 mg/L
RPD #1 / #2 3.3% / 4.7%
POC

Comments:

D. Raw QC Data
(as applicable)

1. **Extraction Logsheet**

2. **Instrument Print outs**

3. **Percent Solids**

GPL Laboratories, LLLP

SELFTEST
NO ERRORS TOC soil 10-2-01 v2

1 TOC 2176 2000 std ✓

2 TOC 994.7 ICV

3 TOC 8.203 ±CB

4 TOC 306.4 109127 001 TC

5 TOC 250.3 001dup ↓

6 TOC 673.8 001 TOC

7 TOC 508.1 -001 dup

8 TOC 1953 109089-001

9 TOC 981.2 -002

10201

10 TOC 612.3 109107-004

11 TOC 1395 -005

12 TOC 1022 -005 dup

13 TOC 2136 -005 ms

~~14 TOC 227.3 292~~

15 TOC 427.3 CCV1

16 TOC 23.71 CCB1

17 TOC 1189 109107-006

18 TOC 2198 109116-003

19 TOC 2817 CCV2

20 TOC 50.95 CCB2

	Description	A	Sample Id	ST	Method	Results	RL Raw	R	Raw	Multiplie	Reporti	Raw	nFinal	Sort	spk	%	Raw Final
1																	
2																	
3																	
4	Percent Solids	AN	109127-001-01	SMP /	CLP_SOLID	79.3			79.3468	1.00000000	PER	PER	79.3000	0	0.0000	0.00	79.3468

001015

	Sample Id	Clas	Method	Q	Anal Date	Tech	SEQ No.	Multip	M	Prep	R	Client	A	B	C	Calculate	Meth	Col	Col	C	Perce	Last QC Sample
1																						
2																						
3																						
4	109127-001-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	047-I81	0.97030	10.13500	8.24220	79.3468	1.0000			1		
5	109143-001-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.98810	10.18920	8.28300	79.2829	1.0000			1		
6	109143-002-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.98190	10.47970	8.33720	77.4421	1.0000			1		
7	109143-003-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.96900	10.25240	8.43880	80.4641	1.0000			1		
8	109143-004-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.96970	10.40870	7.35780	67.6777	1.0000			1		
9	109143-005-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.97310	10.74250	8.21720	74.1509	1.0000			1		
10	109143-006-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.98310	10.10020	8.32300	80.5070	1.0000			1		
11	109143-006-01-1MD		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.97210	10.09880	8.51980	82.6991	1.0000			1		
12	109143-007-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.96370	10.51050	8.36440	77.5202	1.0000			1		
13	109143-008-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.98790	10.05260	7.91630	76.4328	1.0000			1		
14	109143-009-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.98710	10.39070	7.62440	70.5825	1.0000			1		
15	109143-010-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.96850	10.08040	6.41070	59.7263	1.0000			1		
16	109143-011-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.97780	10.29730	8.02400	75.6071	1.0000			1		
17	109143-012-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.96710	10.77720	7.99820	71.6721	1.0000			1		
18	109143-013-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.98470	10.38240	7.52160	69.5585	1.0000			1		
19	109143-014-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.96890	10.56760	8.73930	80.9526	1.0000			1		
20	109143-015-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.97160	10.80930	7.80040	69.4146	1.0000			1		
21	109143-016-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.96860	10.39160	7.85930	73.1264	1.0000			1		
22	109143-017-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.96450	10.33550	7.21530	66.7037	1.0000			1		
23	109143-018-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.97660	10.16310	7.40390	69.9646	1.0000			1		
24	109143-019-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.96620	10.20190	8.62430	82.9185	1.0000			1		
25	109143-020-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.98480	10.09950	7.40740	70.4642	1.0000			1		
26	109143-021-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.96460	10.65300	8.72560	80.1061	1.0000			1		
27	109143-022-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.98650	10.71980	6.85100	60.2519	1.0000			1		
28	109143-023-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.96900	10.43050	7.98010	74.1014	1.0000			1		
29	109143-024-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.98220	10.33490	7.68110	71.6253	1.0000			1		
30	109143-024-01-1MD		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.98590	10.36610	8.11250	75.9749	1.0000			1		
31	109143-025-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.96830	10.46710	7.64630	70.3036	1.0000			1		
32	109143-026-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.97500	10.79280	8.81820	79.8876	1.0000			1		
33	109143-027-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.98520	10.31370	7.12810	65.8509	1.0000			1		
34	109143-028-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.96740	10.34400	8.73800	82.8723	1.0000			1		
35	109143-029-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.98280	10.13130	7.68650	73.2765	1.0000			1		
36	109143-030-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.98000	10.83580	8.88930	80.2502	1.0000			1		
37	109143-031-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.98250	10.12450	8.23620	79.3448	1.0000			1		
38	109143-032-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.98880	10.29010	7.81040	73.3403	1.0000			1		
39	109143-033-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.98880	10.17080	8.51000	81.9124	1.0000			1		
40	109143-034-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.97290	10.78070	9.03280	82.1785	1.0000			1		
41	109143-035-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.97730	10.02810	8.92400	87.8011	1.0000			1		
42	109143-036-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.98520	10.28400	7.58980	71.0264	1.0000			1		
43	109143-036-01-1MD		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.97650	10.48780	7.46310	68.1989	1.0000			1		
44	109143-037-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.97510	10.28970	7.54900	70.5763	1.0000			1		
45	109143-037-01-1MD		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.97860	10.28000	8.25430	78.2216	1.0000			1		
46	109143-038-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.96870	10.36330	8.10660	75.9788	1.0000			1		
47	109143-039-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.96950	10.11570	8.07800	77.7208	1.0000			1		
48	109143-040-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.98700	10.29520	8.07320	76.1286	1.0000			1		
49	109143-041-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.98480	10.30300	8.04900	75.8108	1.0000			1		
50	109143-042-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.97270	10.39490	8.46010	79.4655	1.0000			1		
51	109143-042-01-1MD		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.97270	10.35270	8.42510	79.4499	1.0000			1		
52	109143-043-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.96770	10.80670	8.93800	81.0072	1.0000			1		
53	109143-044-01-1SMP		CLP_SOLIDS		09-27-01 15:00	1300-06	120070000000	S			Y	OU5-CS/	0.96500	10.82120	9.14190	82.9620	1.0000			1		

9104040016

PERCENT SOLIDS DETERMINATION LOG

Method Title: %Solids
Method Reference: OLMO4.1 / ASTM D2216

Analyst: R.S
Reviewed By / Date: 10/01/01 YB
(seq# 12007)

Analytical Balance ID: Mettler AE 240
Drying Oven Temp Maintained at 103-105C:
Time In (Oven): 3:00pm Temp 103°C Date: 9-27-01
Time Out (Oven): 6:00AM Temp 104.6°C Date: 9-28-01
Dessicator Temp: 20°C Dessicator % Humidity (<20%): 17%

W.O.#	Frac.	Client ID	Weight of Dish	Weight of wet Sample + Dish	Weight of dry Sample +Dish	DUP RPD <15%
109127	001	047-I81	0.9703	10.1350	8.2422	
109143	001	005-CSA-8-4446Tins (320/140)	0.9881	10.1892	8.2830	
	002	005-CSA-8-4446Tins (340-120)	0.9819	10.4797	8.3372	
	003	005-CSA-8-4446Tins (300-140)	0.9690	10.2524	8.4388	
	004	005-CSA-8-4446Tins (320-120)	0.9697	10.4087	7.3578	
	005	005-CSA-8-4446Tins (308-120)	0.9731	10.7425	8.2172	
	006	005-CSA-8-4446Tins (300-140)	0.9831	10.1002	8.3230	
	DUP	DUP	0.9721	10.0988	8.5198	0.8
	007	005-CSA-8-4446Tins (340/140)	0.9637	10.5105	8.3644	
	008	005-CSA-8-4446Tins (280/120)	0.9879	10.0526	7.9163	
	009	005-CSA-8-4446Tins (320/160)	0.9871	10.3907	7.6244	
	010	005-CSA-8-4446Tins (300-200)	0.9685	10.0804	6.4107	
	011	005-CSA-8-4446Tins (320/160)	0.9778	10.2973	8.0240	
	012	005-CSA-8-4446Tins (320/160)	0.9671	10.7772	7.9982	
	013	005-CSA-8-4446Tins (280/220)	0.9847	10.3824	7.5216	
	014	005-CSA-8-4446Tins (300-180)	0.9689	10.5676	8.7393	
	015	005-CSA-8-4446Tins (300-240)	0.9716	10.8093	7.8004	
	016	005-CSA-8-4446Tins (280/180)	0.9686	10.3916	7.8593	
	017	005-CSA-8-4446Tins (300-220)	0.9645	10.3355	7.2153	
	018	005-CSA-8-4446Tins (260/200)	0.9766	10.1631	7.4039	
	019	005-CSA-8-4446Tins (240/200)	0.9662	10.2019	8.6243	
	020	005-CSA-8-4446Tins (260/220)	0.9648	10.0995	7.4074	
	021	005-CSA-8-4446Tins (240/200)	0.9646	10.6530	8.7256	
	022	005-CSA-8-4446Tins (260/160)	0.9665	10.7198	6.8510	
	023	005-CSA-8-4446Tins (240/200)	0.9690	10.4305	7.9801	
	024	005-CSA-8-4446Tins (280/160)	0.9822	10.3349	7.6811	
	DUP	DUP	0.9859	10.3661	8.1125	0.7
	025	005-CSA-8-4446Tins (280/140)	0.9683	10.4671	7.6463	
	026	005-CSA-8-4446Tins (280/200)	0.9750	10.7928	8.8182	

Comments:

001017

	Description	A	Sample Id	ST	Method	Results	RL Raw	R	Raw	Multiplier	Reporti	Raw Unt	nFinal	Sort	spk	%	Raw Final
1																	
2																	
3																	
4	Percent Solids	AN	109127-001-0	SMP /	CLP_SOLI	79.3		K	79.3468	.00000000	PER	PER	79.3000	0	0.0000	0.00	79.3468
5	Percent Solids	AN	109143-001-0	SMP /	CLP_SOLI	79.3		K	79.2829	.00000000	PER	PER	79.3000	0	0.0000	0.00	79.2829
6	Percent Solids	AN	109143-002-0	SMP /	CLP_SOLI	77.4		K	77.4421	.00000000	PER	PER	77.4000	0	0.0000	0.00	77.4421
7	Percent Solids	AN	109143-003-0	SMP /	CLP_SOLI	80.5		K	80.4641	.00000000	PER	PER	80.5000	0	0.0000	0.00	80.4641
8	Percent Solids	AN	109143-004-0	SMP /	CLP_SOLI	67.7		K	67.6777	.00000000	PER	PER	67.7000	0	0.0000	0.00	67.6777
9	Percent Solids	AN	109143-005-0	SMP /	CLP_SOLI	74.2		K	74.1509	.00000000	PER	PER	74.2000	0	0.0000	0.00	74.1509
10	Percent Solids	AN	109143-006-0	SMP /	CLP_SOLI	80.5		K	80.5070	.00000000	PER	PER	80.5000	0	0.0000	0.00	80.5070
11	Percent Solids	AN	109143-006-0	MD /	CLP_SOLI	82.7		K	82.6991	.00000000	PER	PER	82.7000	0	0.0000	0.00	82.6991
12	Percent Solids	AN	109143-007-0	SMP /	CLP_SOLI	77.5		K	77.5202	.00000000	PER	PER	77.5000	0	0.0000	0.00	77.5202
13	Percent Solids	AN	109143-008-0	SMP /	CLP_SOLI	76.4		K	76.4328	.00000000	PER	PER	76.4000	0	0.0000	0.00	76.4328
14	Percent Solids	AN	109143-009-0	SMP /	CLP_SOLI	70.6		K	70.5825	.00000000	PER	PER	70.6000	0	0.0000	0.00	70.5825
15	Percent Solids	AN	109143-010-0	SMP /	CLP_SOLI	59.7		K	59.7263	.00000000	PER	PER	59.7000	0	0.0000	0.00	59.7263
16	Percent Solids	AN	109143-011-0	SMP /	CLP_SOLI	75.6		K	75.6071	.00000000	PER	PER	75.6000	0	0.0000	0.00	75.6071
17	Percent Solids	AN	109143-012-0	SMP /	CLP_SOLI	71.7		K	71.6721	.00000000	PER	PER	71.7000	0	0.0000	0.00	71.6721
18	Percent Solids	AN	109143-013-0	SMP /	CLP_SOLI	69.6		K	69.5585	.00000000	PER	PER	69.6000	0	0.0000	0.00	69.5585
19	Percent Solids	AN	109143-014-0	SMP /	CLP_SOLI	81		K	80.9526	.00000000	PER	PER	81.0000	0	0.0000	0.00	80.9526
20	Percent Solids	AN	109143-015-0	SMP /	CLP_SOLI	69.4		K	69.4146	.00000000	PER	PER	69.4000	0	0.0000	0.00	69.4146
21	Percent Solids	AN	109143-016-0	SMP /	CLP_SOLI	73.1		K	73.1264	.00000000	PER	PER	73.1000	0	0.0000	0.00	73.1264
22	Percent Solids	AN	109143-017-0	SMP /	CLP_SOLI	66.7		K	66.7037	.00000000	PER	PER	66.7000	0	0.0000	0.00	66.7037
23	Percent Solids	AN	109143-018-0	SMP /	CLP_SOLI	70		K	69.9646	.00000000	PER	PER	70.0000	0	0.0000	0.00	69.9646
24	Percent Solids	AN	109143-019-0	SMP /	CLP_SOLI	82.9		K	82.9185	.00000000	PER	PER	82.9000	0	0.0000	0.00	82.9185
25	Percent Solids	AN	109143-020-0	SMP /	CLP_SOLI	70.5		K	70.4642	.00000000	PER	PER	70.5000	0	0.0000	0.00	70.4642
26	Percent Solids	AN	109143-021-0	SMP /	CLP_SOLI	80.1		K	80.1061	.00000000	PER	PER	80.1000	0	0.0000	0.00	80.1061
27	Percent Solids	AN	109143-022-0	SMP /	CLP_SOLI	60.3		K	60.2519	.00000000	PER	PER	60.3000	0	0.0000	0.00	60.2519
28	Percent Solids	AN	109143-023-0	SMP /	CLP_SOLI	74.1		K	74.1014	.00000000	PER	PER	74.1000	0	0.0000	0.00	74.1014
29	Percent Solids	AN	109143-024-0	SMP /	CLP_SOLI	71.6		K	71.6253	.00000000	PER	PER	71.6000	0	0.0000	0.00	71.6253
30	Percent Solids	AN	109143-024-0	MD /	CLP_SOLI	76		K	75.9749	.00000000	PER	PER	76.0000	0	0.0000	0.00	75.9749
31	Percent Solids	AN	109143-025-0	SMP /	CLP_SOLI	70.3		K	70.3036	.00000000	PER	PER	70.3000	0	0.0000	0.00	70.3036
32	Percent Solids	AN	109143-026-0	SMP /	CLP_SOLI	79.9		K	79.8876	.00000000	PER	PER	79.9000	0	0.0000	0.00	79.8876
33	Percent Solids	AN	109143-027-0	SMP /	CLP_SOLI	65.9		K	65.8509	.00000000	PER	PER	65.9000	0	0.0000	0.00	65.8509
34	Percent Solids	AN	109143-028-0	SMP /	CLP_SOLI	82.9		K	82.8723	.00000000	PER	PER	82.9000	0	0.0000	0.00	82.8723
35	Percent Solids	AN	109143-029-0	SMP /	CLP_SOLI	73.3		K	73.2765	.00000000	PER	PER	73.3000	0	0.0000	0.00	73.2765
36	Percent Solids	AN	109143-030-0	SMP /	CLP_SOLI	80.3		K	80.2502	.00000000	PER	PER	80.3000	0	0.0000	0.00	80.2502
37	Percent Solids	AN	109143-031-0	SMP /	CLP_SOLI	79.3		K	79.3448	.00000000	PER	PER	79.3000	0	0.0000	0.00	79.3448
38	Percent Solids	AN	109143-032-0	SMP /	CLP_SOLI	73.3		K	73.3403	.00000000	PER	PER	73.3000	0	0.0000	0.00	73.3403
39	Percent Solids	AN	109143-033-0	SMP /	CLP_SOLI	81.9		K	81.9124	.00000000	PER	PER	81.9000	0	0.0000	0.00	81.9124
40	Percent Solids	AN	109143-034-0	SMP /	CLP_SOLI	82.2		K	82.1785	.00000000	PER	PER	82.2000	0	0.0000	0.00	82.1785
41	Percent Solids	AN	109143-035-0	SMP /	CLP_SOLI	87.8		K	87.8011	.00000000	PER	PER	87.8000	0	0.0000	0.00	87.8011
42	Percent Solids	AN	109143-036-0	SMP /	CLP_SOLI	71		K	71.0264	.00000000	PER	PER	71.0000	0	0.0000	0.00	71.0264
43	Percent Solids	AN	109143-036-0	MD /	CLP_SOLI	68.2		K	68.1989	.00000000	PER	PER	68.2000	0	0.0000	0.00	68.1989
44	Percent Solids	AN	109143-037-0	SMP /	CLP_SOLI	70.6		K	70.5763	.00000000	PER	PER	70.6000	0	0.0000	0.00	70.5763
45	Percent Solids	AN	109143-037-0	MD /	CLP_SOLI	78.2		K	78.2216	.00000000	PER	PER	78.2000	0	0.0000	0.00	78.2216
46	Percent Solids	AN	109143-038-0	SMP /	CLP_SOLI	76		K	75.9788	.00000000	PER	PER	76.0000	0	0.0000	0.00	75.9788

001018

MB 10/01/01

	Sample Id	Clas	Method	Q	Anal Date	Tech	SEQ No.	Multipl	M	Prep	R	Client	A	B	C	Calculate	Meas					
1																						
2																						
3																						
4	109127-001-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	047-I81	0.97030	10.13500	8.24220	79.3468	1.0000			1		
5	109143-001-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.98810	10.18920	8.28300	79.2829	1.0000			1		
6	109143-002-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.98190	10.47970	8.33720	77.4421	1.0000			1		
7	109143-003-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.96900	10.25240	8.43880	80.4641	1.0000			1		
8	109143-004-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.96970	10.40870	7.35780	67.6777	1.0000			1		
9	109143-005-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.97310	10.74250	8.21720	74.1509	1.0000			1		
10	109143-006-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.98310	10.10020	8.32300	80.5070	1.0000			1		
11	109143-006-01-	MD	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.97210	10.09880	8.51980	82.6991	1.0000			1		
12	109143-007-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.96370	10.51050	8.36440	77.5202	1.0000			1		
13	109143-008-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.98790	10.05260	7.91630	76.4328	1.0000			1		
14	109143-009-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.98710	10.39070	7.62440	70.5825	1.0000			1		
15	109143-010-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.96850	10.08040	6.41070	59.7263	1.0000			1		
16	109143-011-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.97780	10.29730	8.02400	75.6071	1.0000			1		
17	109143-012-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.96710	10.77720	7.99820	71.6721	1.0000			1		
18	109143-013-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.98470	10.38240	7.52160	69.5585	1.0000			1		
19	109143-014-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.96890	10.56760	8.73930	80.9526	1.0000			1		
20	109143-015-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.97160	10.80930	7.80040	69.4146	1.0000			1		
21	109143-016-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.96860	10.39160	7.85930	73.1264	1.0000			1		
22	109143-017-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.96450	10.33550	7.21530	66.7037	1.0000			1		
23	109143-018-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.97660	10.16310	7.40390	69.9646	1.0000			1		
24	109143-019-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.96620	10.20190	8.62430	82.9185	1.0000			1		
25	109143-020-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.98480	10.09950	7.40740	70.4642	1.0000			1		
26	109143-021-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.96460	10.65300	8.72560	80.1061	1.0000			1		
27	109143-022-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.98650	10.71980	6.85100	60.2519	1.0000			1		
28	109143-023-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.96900	10.43050	7.98010	74.1014	1.0000			1		
29	109143-024-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.98220	10.33490	7.68110	71.6253	1.0000			1		
30	109143-024-01-	MD	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.98590	10.36610	8.11250	75.9749	1.0000			1		
31	109143-025-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.96830	10.46710	7.64630	70.3036	1.0000			1		
32	109143-026-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.97500	10.79280	8.81820	79.8876	1.0000			1		
33	109143-027-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.98520	10.31370	7.12810	65.8509	1.0000			1		
34	109143-028-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.96740	10.34400	8.73800	82.8723	1.0000			1		
35	109143-029-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.98280	10.13130	7.68850	73.2765	1.0000			1		
36	109143-030-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.98000	10.83580	8.88930	80.2502	1.0000			1		
37	109143-031-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.98250	10.12450	8.23620	79.3448	1.0000			1		
38	109143-032-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.98880	10.29010	7.81040	73.3403	1.0000			1		
39	109143-033-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.98880	10.17080	8.51000	81.9124	1.0000			1		
40	109143-034-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.97290	10.78070	9.03280	82.1785	1.0000			1		
41	109143-035-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.97730	10.02810	8.92400	87.8011	1.0000			1		
42	109143-036-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.98520	10.28400	7.58980	71.0264	1.0000			1		
43	109143-036-01-	MD	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.97650	10.48780	7.46310	68.1989	1.0000			1		
44	109143-037-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.97510	10.28970	7.54900	70.5763	1.0000			1		
45	109143-037-01-	MD	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.97860	10.28000	8.25430	78.2216	1.0000			1		
46	109143-038-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.96870	10.36330	8.10660	75.9788	1.0000			1		
47	109143-039-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.96950	10.11570	8.07800	77.7208	1.0000			1		
48	109143-040-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.98700	10.29520	8.07320	76.1286	1.0000			1		
49	109143-041-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.98480	10.30300	8.04900	75.8108	1.0000			1		
50	109143-042-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.97270	10.39490	8.46010	79.4655	1.0000			1		
51	109143-042-01-	MD	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.97270	10.35270	8.42510	79.4499	1.0000			1		
52	109143-043-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.96770	10.80670	8.93800	81.0072	1.0000			1		
53	109143-044-01-	SMP	CLP_SOLIDS		09-27-01 15:00	1300-06	12007	000000	S		Y	OU5-C	0.96500	10.82120	9.14190	82.9620	1.0000			1		

VR 10/01/01

PERCENT SOLIDS DETERMINATION LOG

Method Title: %Solids
Method Reference: OLMO4.1 / ASTM D2216

Analyst: R.S
Reviewed By / Date: 10/01/01 YB
(Seq# 12007)

Analytical Balance ID: Mettler AE 240
Drying Oven Temp Maintained at 103-105C:
Time In (Oven): 3:00pm Temp 103°C Date: 9-27-01
Time Out (Oven): 6:00Am Temp 104.6°C Date: 9-28-01
Dessicator Temp: 20°C Dessicator % Humidity (<20%): 17%

W.O.#	Frac.	Client ID	Weight of Dish	Weight of wet Sample + Dish	Weight of dry Sample +Dish	DUP RPD <15%
109127	001	047-I81	0.9703	10.1350	8.2422	
109143	001	005-CSA-8-4446Tins-(320/140)	0.9881	10.1892	8.2830	
	002	005-CSA-8-4446Tins-	0.9819	10.4797	8.3372	
	003	005-CSA-8-4446Tins-(340-120)	0.9690	10.2524	8.4388	
	004	005-CSA-8-4446Tins-(300-140)	0.9697	10.4087	7.3578	
	005	005-CSA-8-4446Tins-(320-120)	0.9731	10.7425	8.2172	
	006	005-CSA-8-4446Tins-(300-120)	0.9831	10.1002	8.3230	
	DUP	DUP 2	0.9721	10.0988	8.5198	0.8
	007	005-CSA-8-4446Tins	0.9637	10.5105	8.3644	
	008	005-CSA-8-4446Tins-(340/140)	0.9879	10.0526	7.9163	
	009	005-CSA-8-4446Tins-(280/120)	0.9871	10.3907	7.6244	
	010	005-CSA-8-4446Tins-(320/160)	0.9685	10.0804	6.4107	
	011	005-CSA-8-4446Tins-(300-120)	0.9778	10.2973	8.0240	
	012	005-CSA-8-4446Tins-(320/160)	0.9671	10.7772	7.9982	
	013	005-CSA-8-4446Tins-(340/120)	0.9849	10.3824	7.5216	
	014	005-CSA-8-4446Tins-(280/220)	0.9689	10.5676	8.7393	
	015	005-CSA-8-4446Tins-(300-180)	0.9716	10.8093	7.8004	
	016	005-CSA-8-4446Tins-(350-120)	0.9686	10.3916	7.8593	
	017	005-CSA-8-4446Tins-(280/180)	0.9645	10.3355	7.2153	
	018	005-CSA-8-4446Tins-(300-220)	0.9766	10.1631	7.4039	
	019	005-CSA-8-4446Tins-(260/200)	0.9662	10.2019	8.6243	
	020	005-CSA-8-4446Tins-	0.9848	10.0995	7.4074	
	021	005-CSA-8-4446Tins-(260/220)	0.9646	10.6530	8.7256	
	022	005-CSA-8-4446Tins-(240/280)	0.9865	10.7198	6.8510	
	023	005-CSA-8-4446Tins-(260/160)	0.9690	10.4305	7.9801	
	024	005-CSA-8-4446Tins-(240/200)	0.9822	10.3349	7.6811	
	DUP	DUP	0.9859	10.3661	8.1125	0.7
	025	005-CSA-8-4446Tins	0.9683	10.4671	7.6463	
	026	005-CSA-8-4446Tins-(280/140)	0.9750	10.7928	8.8182	

Comments: (280/200)

Ellis & Associates, Inc.

SUMMARY OF LABORATORY TEST RESULTS

Project: Soil Bulk Density
Client: J. A. Jones Environmental
Project No.: 01-1363 (Site II 160027)

Boring/ Sample No.	Sample Depth (ft.)	Bulk Wet Density, pcf	Bulk Dry Density, pcf	Natural Moisture Content %	Atterberg Limits			Pocket Pen. (tsf)
					Liquid Limit %	Plastic Limit %	Plasticity Index	
I-84		113.2	91.8	23.3				
I-85		111.8	90.7	23.3				

Appendix E

Geo-Cleanse International, Inc. Phase IV Field Summary Report

Geo-Cleanse International, Inc.

Phase IV Field Summary Report
Geo-Cleanse® Treatment Program

Naval Submarine Base Kings Bay
Kings Bay, Georgia

Prepared for:
CH2M Hill Constructors, Inc.
115 Perimeter Center Place, N.E.
Suite 700
Atlanta, GA 30346

May 8, 2002

Geo-Cleanse International, Inc
4 Mark Road, Suite C
Kenilworth, NJ 07033
Tel (908) 206-1250
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information@geocleanse.com
www.geocleanse.com

TABLE OF CONTENTS

Section **Page**

1. Introduction 2
2. Fenton's Reagent Treatment 3
   - 2.1. Injector Installation 3
   - 2.2. Injection Methodology 3
   - 2.3. Field Monitoring 4
   - 2.4. pH Adjustment 4
3. Vegetable Oil Injection 5
   - 3.1. Injector Installation 5
   - 3.2. Material 5
   - 3.3. Injection Methodology 5
   - 3.4. Demobilization 6

List of Figures

2-1 Fenton's Reagent Injector Location Map

3-1 Vegetable Oil Temporary Injector Location Map

3-2 Schematic Vegetable Oil Injection Apparatus

List of Tables

2-1 Peroxide Injection Log

2-2 Catalyst Injection Log

3-1 Vegetable Oil injection Log

Appendices

A Boring Logs

B Groundwater Monitoring Logs

C Off-Gas Monitoring Logs

D Vegetable Oil Certificate of Analysis

1. Introduction

Geo-Cleanse International, Inc. (GCI), on behalf of CH2M Hill Constructors, Inc. (CH2M Hill) and J.A. Jones Environmental Services Company (J.A. Jones), was contracted to perform an in-situ chemical oxidation treatment and vegetable oil injection to address residual volatile organic compounds (VOCs) in groundwater at Site 11, Naval Submarine Base (NSB) Kings Bay, Kings Bay, Georgia. The contracted tasks were performed under CH2M Hill's Response Action Contract No. N62467-98-D-0995, Contract Task Order No. 0047 with the Department of the Navy, Southern Division, Naval Facilities Engineering Command. This report summarizes the field activities performed by GCI during the period of performance September 2001 through January 2002 to complete the assigned tasks.

2. Fenton's Reagent Treatment

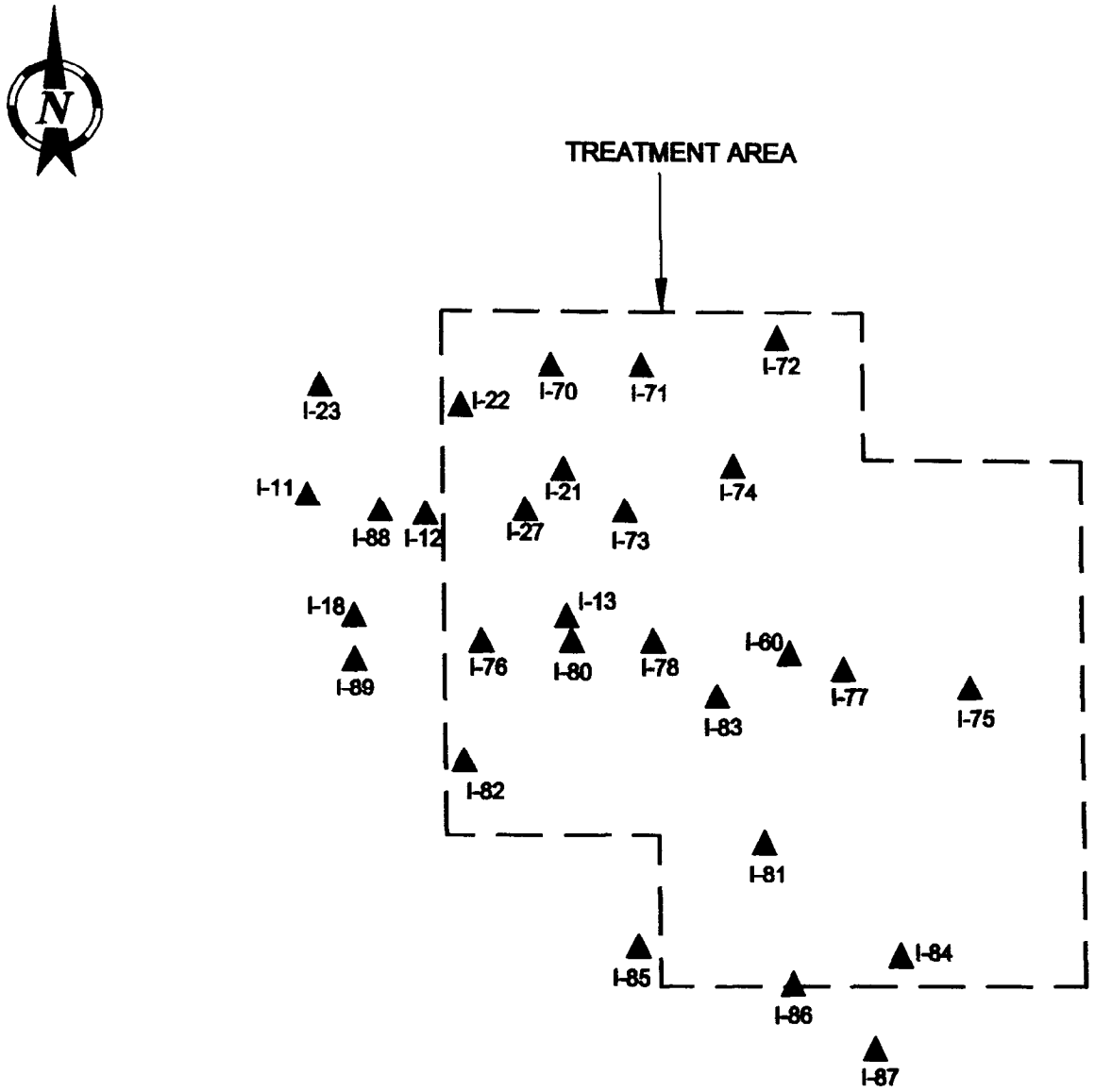
2.1. Injector Installation

Based upon delineation data provided by J.A. Jones, a treatment zone was targeted in the depth interval from approximately 40 to 50 feet below grade surrounding previously installed and treated injector I-60. A total of 20 new injectors (identified as IW-70 through IW-89) were installed at the site via direct-push technology (Figure 2-1). CH2M Hill Constructors and J.A. Jones directly contracted Zebra Drilling to complete the injector installation, which in turn subcontracted to TransAmerica Drilling & Testing Inc. (Jacksonville, Florida). TransAmerica used a Geoprobe 66DT track-mounted unit to install the injectors to a depth of 48 feet below grade. The injectors were screened from 45 to 48 feet below grade.

The following materials and procedure were used for the installation of the injectors. The injectors were constructed with stainless steel, 0.010-slot screens with Schedule 80 black steel riser pipe and couplings. The screen was 1.25 inches in diameter and 3 ft in length. The riser pipe was ¾ inch diameter. The injectors were installed by advancing a 3.25-inch outside diameter / 2.5-inch inside diameter casing with a disposable tip to depth. The injector was then placed inside the casing, the casing was packed with filter sand extending 1 ft above the top of the screen. The casing was systematically extracted as completion materials were added to ensure that materials did not bridge within the drive casing. Next, a 1-ft layer of fine (20/60 grade) sand was added to prohibit grout infiltration of the filter pack sand. The injectors were then sealed to grade with a cement/bentonite grout mix and completed as stick ups. Injector boring logs are included as Appendix A.

2.2. Injection Methodology

The Fenton's Reagent injection program was performed in two phases: a primary injection conducted from October 22 to November 1, 2001, and a polishing phase performed from November 12-14, 2001. Typical injection rates ranged from 0.4 to 1.5 gallons per minute, and the total volume of fluids injected at the site was approximately 23,585 gallons (approximately 12,220 gallons of catalyst and 11,365 gallons of 50% peroxide). At no time during the injection was the concentration of peroxide injected greater than 25%. A summary of total catalyst and peroxide injection volumes for each individual injector is as shown in Tables 2-1 and 2-2.



SCALE 1" = 20'

20' 10' 0 10' 20'

LEGEND	
I-18 ▲	INJECTION WELL LOCATION

FIGURE 2-1	FENTON'S REAGENT INJECTOR LOCATION MAP
NSB KINGS BAY, GEORGIA	DATE: 03/06/02
	DESIGNED: AP
Geo-Cleanse® INTERNATIONAL, INC.	CHECKED: DB
	APPROVED: DB
	DRAWN:AP
SOURCE: CH2MHILL	

Table: 2-1 Peroxide Injection Log

CH2M-Hill Constructors/J.A. Jones — **Kings Bay NSB**

Injection Day	1	2	3	4	5	6	7	8	9	10	11	Actual
Station ID	10/23/2001	10/24/2001	10/25/2001	10/26/2001	10/29/2001	10/30/2001	10/31/2001	11/1/2001	11/12/2001	11/13/2001	11/14/2001	Station Injected
I-70						165	24			65		254
I-71				25		105		68	81			279
I-72	331						139		28			497
I-73					231							231
I-74					282	104		25				412
I-75	331					164				198	71	764
I-76				397			215		9			621
I-77		409						269		91		769
I-78				101		247	345				2	695
I-79				287					121	58		465
I-80					432			84		2		518
I-81					275	60	43			4		383
I-82				9		32	16		38		3	98
I-83			412					130			7	549
I-84			412			143		45		553	88	1240
I-85				400			235	24			1	660
I-86		409				158				122		688
I-87	331				91		81	168	23		239	933
I-88			412				36	18		50	148	664
I-89		409				231					2	642
												0
Total/Day	**992**	**1227**	**1236**	**1219**	**1311**	**1408**	**1134**	**832**	**301**	**1143**	**562**	**11365**

Table: 2-2 Catalyst Injection Log

CH2M-Hill Constructors/J.A. Jones Kings Bay NSB

	Injection Pt.	10/23/2001	10/24/2001	10/25/2001	10/26/2001	10/29/2001	10/30/2001	10/31/2001	11/1/2001	11/12/2001	11/13/2001	11/14/2001	
1	I-70						177	26			74		277
2	I-71				23		105		68	81			278
3	I-72	363						161		55			579
4	I-73					231							231
5	I-74					300	96		25				421
6	I-75	363					176				219	71	829
7	I-76				389			228		37			654
8	I-77		423						269		103		795
9	I-78				98		247	365				19	730
10	I-79				294					152	60		505
11	I-80					454			98		11		563
12	I-81					301	60	48			28		437
13	I-82				27		42	18		65		3	155
14	I-83			413					144			12	569
15	I-84			413			143		45		578	129	1308
16	I-85				418			259	35			11	723
17	I-86		423				170				146		739
18	I-87	363				91		85	180	121		239	1078
19	I-88			413				53	18		50	171	706
20	I-89		423				217					4	643
21													0
	Total/Day	**1089**	**1268**	**1240**	**1250**	**1376**	**1433**	**1243**	**883**	**511**	**1267**	**659**	**12220**

2.3. Field Monitoring

GCI collected groundwater samples for field analytical tests on a daily basis during the injection program. The samples were collected from wells located adjacent to where Fenton's reagent injection was being performed. The field parameters performed were pH, total iron, chloride, alkalinity, hydrogen peroxide and PID headspace. These analytical parameters were used as a screening tool to assist GCI personnel with the injection program. The field data are individually tabulated in Appendix B.

GCI also performed off-gas measurements from adjacent injectors during the injection program. Due to mounding groundwater caused by the injection and chemical oxidation reactions, limited readings were obtained. Collected data are individually tabulated in Appendix C.

2.4. pH Adjustment

Following the Fenton's reagent injection, groundwater pH across the site was less than 5.0 pH units. An injection of potassium hydroxide was conducted because the Fenton's reagent treatment (which resulted in site-wide pH less than approximately 5) was to be followed by vegetable oil injection to enhance natural degradation of residual contaminants (which typically occurs at pH only above 5). The potassium hydroxide injection was conducted between December 10-11, 2001. The potassium hydroxide solution was weak (pH = 9.0), but sufficient to overcome the groundwater pH. A total of 5,500 gallons of potassium hydroxide solution were injected. Upon completion of the hydroxide injection, groundwater samples were collected from across the site and analyzed for pH. The results indicated a range of pH from 5.0 to 7.5.

3. Vegetable Oil Injection

Following the Fenton's reagent injection, GCI performed a vegetable oil injection during the period December 12, 2001 through January 23, 2002, as a final polishing step for the site.

3.1. Injector Installation

GCI contracted Precision Sampling (Oviedo, FL) to install 39 temporary well points to a depth of 48 feet below grade. Precision Sampling utilized their proprietary Vibra-Push SD 500-foot pound DPT rig with two inch drive rods, retractable screen and disposable drive points for this site. The location of each injection point is shown in Figure 3-1.

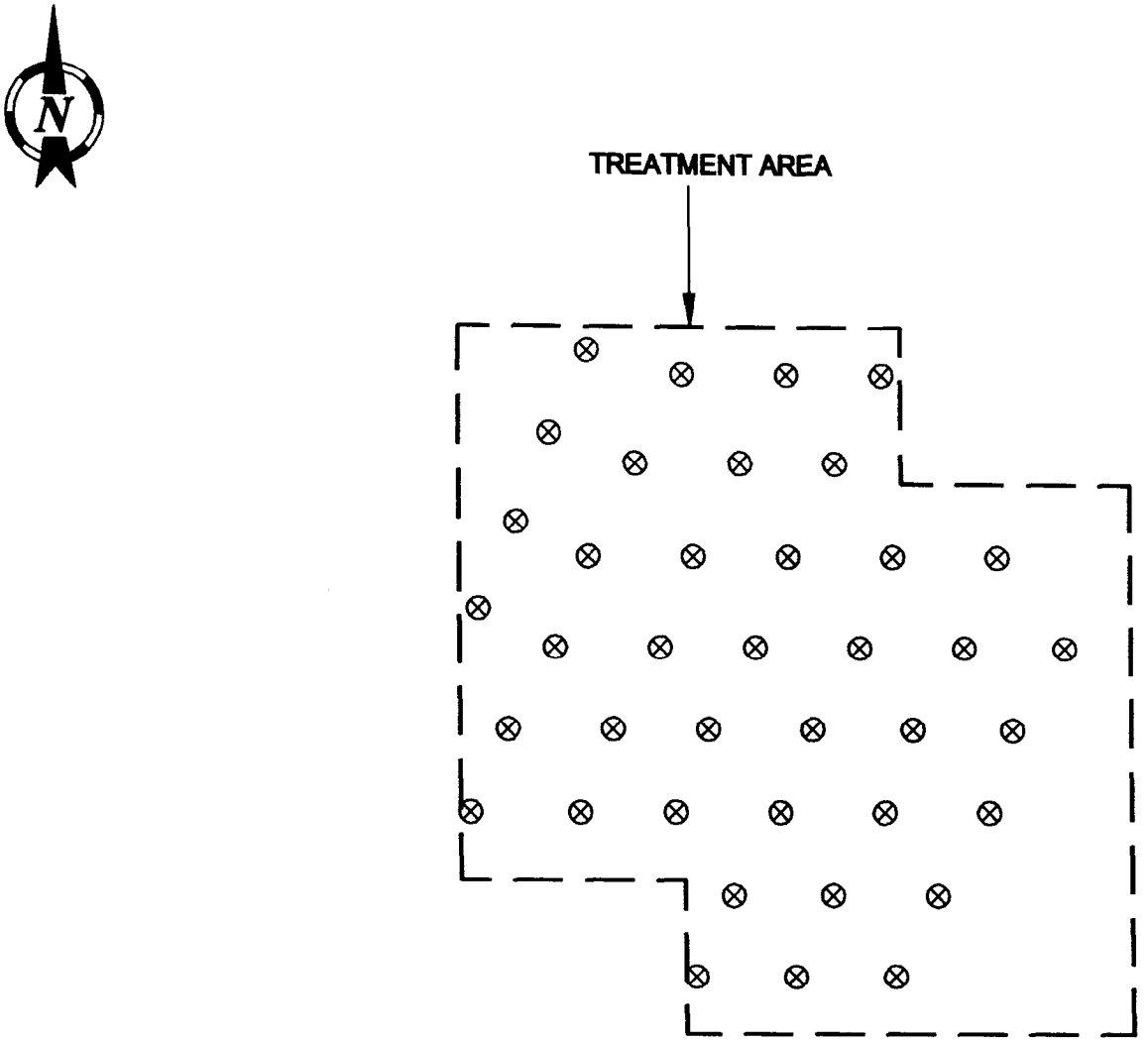
3.2. Material

The specific type of vegetable oil utilized was soybean oil manufactured by Cargill Foods, Gainesville, Georgia. The soybean oil contained 7.5% (by weight) lecithin to act as an emulsifier and enhance mixing with water. A copy of Cargill's certificate of analysis is included as Appendix D.

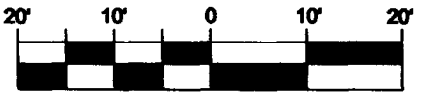
3.3. Injection Methodology

GCI injected a total of 25,208 gallons of emulsified soybean oil containing approximately 35% oil with lecithin, 65% water, and 100 mg/L iodide (as sodium bromide, to be utilized as a tracer) to 39 temporary injection points and 3 stationary injectors. The total injectate volume included 8,839-gallons of soybean oil with lecithin and 16,369-gallons of water. The breakdown per individual injector is as shown in Table: 3-1.

The injection equipment was modified during the program by request of Mr. Cliff Casey (U.S. Navy Facilities Engineering Command, Southwest Division) in order to improve mixing and injection under changing conditions at the site. The original setup included one 400-gallon poly tank, two centrifugal pumps, three flow meters, one 24-inch static mixer, and valve systems and hosing. The first modification was to increase the velocity fluids into the static mixer, and replace the static mixer to a 12-inch stainless steel unit with additional tightly-spaced vanes. The centrifugal pumps were also replaced with diaphragm pumps to increase fluid velocity and overcome static water head in the injection points. The second modification, due primarily to colder seasonal temperatures, was to heat the soybean and water to a temperature greater than 70°F, utilizing separate poly tanks for oil, water, and the oil/water emulsion. This modification was intended to inhibit separation of the oil and



SCALE 1" = 20'



LEGEND	
⊗	VEGETABLE OIL INJECTION LOCATION

FIGURE 3-1	VEGETABLE OIL TEMPORARY INJECTOR LOCATION MAP
NSB KINGS BAY, GEORGIA	DATE: 03/08/02
	DESIGNED: AP
Geo-Cleanse® INTERNATIONAL, INC.	CHECKED: DB
	APPROVED: DB
	DRAWN: AP
SOURCE: CH2MHILL	

Table: 3-1 Vegetable Oil Injection Log

CH2M Hill Constructors/J.A. Jones

Kings Bay NSB

Location	Date	Time Start Injection	Time Finish Injection	Amt. Vegetable Oil/Lecithin Injected (gal.)	Amt. Bromide Water Injected (gal.)	Conc. Sodium Bromide Water (mg/l)	Injection Intervals feet (bgs)
IP-1	1/9/02	8:52	11:40	228	422	100	28-48
IP-2	1/9/02	14:00	15:43	228	422	100	28-48
IP-3	1/10/02	8:15	10:35	228	422	100	28-48
IP-4	1/10/02	12:26	14:10	228	422	100	28-48
IP-5	12/20/01	14:13	15:40	228	422	100	28-48
IP-6	1/8/02	11:40	15:02	228	422	100	28-48
IP-7	1/15/02	9:00	10:20	228	422	100	28-48
IP-8	1/14/02	12:00	13:12	228	422	100	28-48
IP-9	1/11/02	14:50	17:15	228	422	100	28-48
IP-10	12/17/01	12:15	13:30	228	422	100	28-48
IP-11	12/18/01	12:43	13:58	228	422	100	28-48
IP-12	1/7/02	15:42	17:24	228	422	100	28-48
IP-13	1/14/02	9:08	10:28	228	422	100	28-48
IP-14	1/12/02	8:55	11:17	228	422	100	28-48
IP-15	12/17/01	8:45	9:58	183	341	100	28-48
IP-16	12/18/01	8:24	9:39	228	422	100	28-47
IP-17	1/11/02	8:06	10:00	228	422	100	28-48
IP-18	12/15/01	14:05	15:18	228	422	100	28-48
IP-19	1/12/02	13:37	15:10	228	422	100	28-48
IP-20	1/15/02	12:28	13:57	228	422	100	28-48
IP-21	12/12/01	14:00	15:01	182	338	100	28-44
IP-22	12/13/01	7:33	10:15	210	390	100	28-48
IP-23	12/14-15-01	11:35	8:22	210	390	100	28-48
IP-24	12/15/01	10:19	11:32	215	399	100	28-48
IP-25	1/16/02	9:50	10:38	228	422	100	28-48
IP-26	1/17/02	12:13	13:45	228	422	100	28-48
IP-27	12/14/01	9:22	11:24	210	390	100	28-48
IP-28	12/13/01	12:20	13:36	210	390	100	28-48
IP-29	12/13/01	15:40	16:40	210	390	100	28-44
IP-30	1/16/02	12:20	13:25	228	422	100	28-44
IP-31	1/15/02	15:45	17:26	228	422	100	28-48
IP-32	1/16/02	14:55	16:23	228	422	100	28-48
IP-33	1/17/02	15:56	16:42	231	429	100	28-44
IP-34	1/18/02	9:04	10:12	228	422	100	28-48
IP-35	1/21/02	12:15	14:06	228	422	100	28-48
IP-36	1/17/02	9:10	10:38	228	422	100	28-48
IP-37	1/18/02	11:35	13:05	228	422	100	28-48
IP-38	1/21/02	15:50	17:37	228	422	100	28-48
IP-39	1/18/02	14:47	16:09	228	422	100	
I-73	12/18/01	16:48		46	84	100	
I-75	12/17/01	14:35	14:49	46	84	100	
I-84	12/17/01	15:10	15:36	46	84	100	
			Totals (gal)	**8839**	**16369**		
			Total Volume Oil and Water (gal)		**25208**		

Note: Vegetable oil contained 7.5% by weight lecithin

the oil/water mix, and to eliminate air introduction to the solution to be introduced to the mix. Immersion heaters were installed to heat the materials. The modified system included: three 400-gallon poly tanks, three double diaphragm pumps, three flow meters, a 12-inch static mixer, four immersion heaters, two generators, air compressor for the diaphragm pumps, a tent enclosure for better temperature maintenance, and necessary valving and hosing to distribute the oil/water mix to the injection locations. A schematic of the injection equipment is included as Figure 3-2.

3.4. Demobilization

GCI demobilized from the site upon completion of the vegetable oil injection. Demobilization included removal of all equipment and supplies utilized in the Fenton's reagent injection, pH adjustment, and vegetable oil injection programs. The injectors utilized for Fenton's reagent were left in place at the request of CH2M Hill and J.A. Jones. The temporary injection points utilized for vegetable oil injection were abandoned immediately after injection at each location, with a Portland cement grout.

Appendix A: Boring Logs

Geo-Cleanse International, Inc. • 4 Mark Road, Suite C • Kenilworth, NJ 07033
Telephone (908) 206-1250 • Fax (908) 206-1251 • E-mail info@geocleanse.com

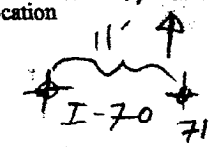
Soil Boring Log

Project: NSB Kings Bay Phase IV
Location: Kings Bay, Georgia
Page 1 **of** 1
Date: 9/29

Consultant / Rep(s): JA Jones / Greg Rapley
GCI Rep(s): Matt Sweet / Chris Prescott
Drilling Contractor: Trans America / Zebra
Driller / Helper: Mark / Rick / Brad
Drill Rig / Method: 66DT GeoProbe

Well No.:
Boring No.:
Injector No.: I-70
PID Type:
PID Lamp:

Approx. Location



Depth (feet)	Sample Interval	Recovery (Inches)	Sample ID #	Blows per 6"	PID (ppm)	Moisture Content	Depth of Change	Soil Description	Remarks	Well Construct
								No sampling DP Geoprobe	Grout to Grade	
									Seal 39' Sand	
									Filter Sand 48'	

Screen Slot Size: 60 gauge
Screen Maker: Simmons
Screen Length: 3'
Screen Diameter: 1 1/4"
Riser Pipe Material: Sch 80 Black Fe
Riser Pipe Diameter: 3/4"

Filter Sand Brand: Standard
Filter Sand Size: 20/30
Bentonite Pellet Brand: Standard
Bentonite Pellet Size: 30/65
Bentonite Gel Brand: Uyo-Ben Xtra
Portland Brand and Type: Quikrete type I

16 15 4/30

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Soil Boring Log

Project: NSB Kings Bay Phase IV
Location: Kings Bay, Georgia

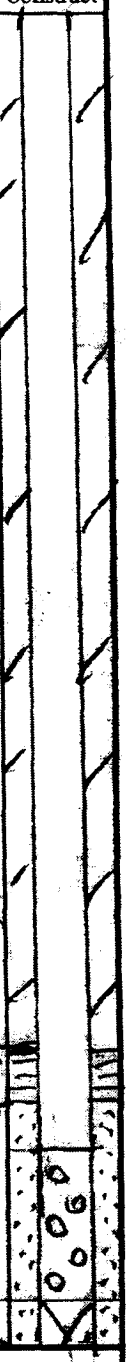
Date: 9/27

Consultant / Rep(s): JA Jones Grey Ramey
GCI Rep(s): Matt Sucet / Chris Prescott
Drilling Contractor: Trans America / Zebra
Driller / Helper: Mark / Rick / Brad
Drill Rig / Method: 66DT GeoProbe

Well No.:
Boring No.:
Injector No.: I-71
PID Type:
PID Lamp:

Approx. Location 15' I-71 I-72

Depth (feet)	Sample Interval	Recovery (Inches)	Sample ID #	Blows per 6"	PID (ppm)	Moisture Content	Depth of Change	Soil Description	Remarks	Well Construct
								No sampling DPT		
									Grout to Grade	
									Seal 40' Sand	
									Filter Sand	
									48'	



Screen Slot Size: 60 gauge
Screen Maker: Simmons
Screen Length: 5'
Screen Diameter: 1 1/4"
Riser Pipe Material: Sch 80 Black Iron
Riser Pipe Diameter: 3/4"

Filter Sand Brand: Standard Sand
Filter Sand Size: 20/30
~~Bentonite Pellet Brand:~~ Standard Sand
~~Bentonite Pellet Size:~~ 30/65
Bentonite Gel Brand: Wyo-Ben Xtra High Yield
Portland Brand and Type: Quikrete type 1

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Soil Boring Log

Project: NSB Kings Bay Phase IV
Location: Kings Bay, Georgia

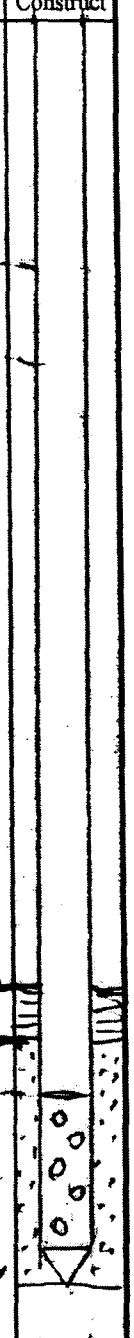
Date: 9/27

Consultant / Rep(s): J.A. Jones / Greg Ramey
GCI Rep(s): Matt Sweet / Chris Prescott
Drilling Contractor: Trans America / Zebra
Driller / Helper: Mark / Rick / Brad
Drill Rig / Method: 66DT Geoprobe

Well No.:
Boring No.:
Injector No.: I-72
PID Type:
PID Lamp:

Approx. Location: I 72

Depth (feet)	Sample Interval	Recovery (Inches)	Sample ID #	Blows per 6"	PID (ppm)	Moisture Content	Depth of Change	Soil Description	Remarks	Well Construct
									Seal 39' Sand 42' #1 Filter Sand 48'	



Screen Slot Size: 60 Gauge
Screen Maker: Simmons
Screen Length: 3'
Screen Diameter: 1 1/4"
Riser Pipe Material: S80 Black Iron
Riser Pipe Diameter: 5/4"

Filter Sand Brand: Standard
Filter Sand Size: 20/30
~~**Bentonite Pellet Brand:**~~ Seal Sand Standard
~~**Bentonite Pellet Size:**~~ 30/65
Bentonite Gel Brand: Wyo-Ben Xtra High yield
Portland Brand and Type: Quikrete type 1

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Soil Boring Log

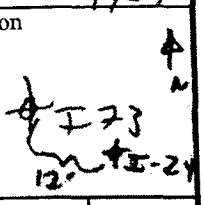
Project: NSB Kings Bay Phase IV
Location: Kings Bay, Georgia

Date: 9/27

Consultant / Rep(s): JA Jones / Greg Ramey
GCI Rep(s): Matt Sweet
Drilling Contractor: Trans America / Zebra
Driller / Helper: Mark / Rick / Brad
Drill Rig / Method: 66DT GeoProbe

Well No.:
Boring No.:
Injector No.: I-73
PID Type:
PID Lamp:

Approx. Location



Depth (feet)	Sample Interval	Recovery (Inches)	Sample ID #	Blows per 6"	PID (ppm)	Moisture Content	Depth of Change	Soil Description	Remarks	Well Construct
								no sampling DPT GeoProbe 3/4"	riser	
								seal sand	41' difficult pulling casing	
								Filter Sand	48'	

Screen Slot Size: 60 Slot
Screen Maker: Simmons
Screen Length: 3'
Screen Diameter: 1/4"
Riser Pipe Material: S80 black Iron
Riser Pipe Diameter: 3/4"

Filter Sand Brand: Standard
Filter Sand Size: 20/30
Seal Sand ~~**Bentonite Pellet Brand:**~~ Standard
~~**Bentonite Pellet Size:**~~ 30/65
Bentonite Gel Brand: W&O-Ben Xpra
Portland Brand and Type: Quikrete type I

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Soil Boring Log

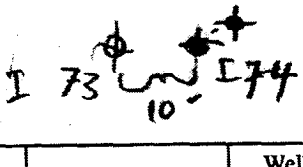
Project: NSB Kings Bay Phase IV
Location: Kings Bay, Georgia

Date: 7/27

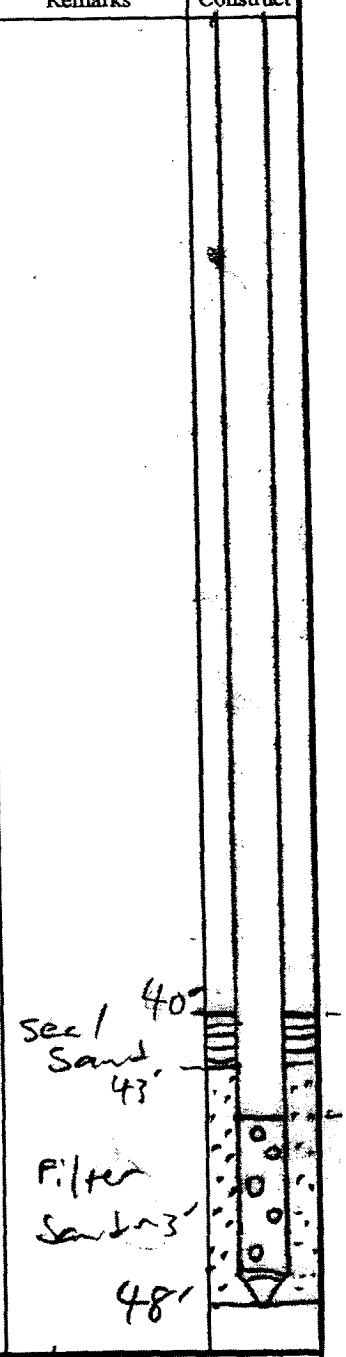
Consultant / Rep(s): JA Jones / Greg Ramey
GCI Rep(s): Matt Sweet / Chris Prescott
Drilling Contractor: Trans America / Zebra
Driller / Helper: Mark / Rick / Brad
Drill Rig / Method: 66 DT Geoprobe

Well No.:
Boring No.:
Injector No.: I-74
PID Type:
PID Lamp:

Approx. Location



Depth (feet)	Sample Interval	Recovery (Inches)	Sample ID #	Blows per 6"	PID (ppm)	Moisture Content	Depth of Change	Soil Description	Remarks	Well Construct
								refusal @ 12' hole moved 5' to NE		



Screen Slot Size: 60 gauge
Screen Maker: Simmons
Screen Length: 3'
Screen Diameter: 1 1/4"
Riser Pipe Material: S 80 Black Iron
Riser Diameter: 2 1/4"

Filter Sand Brand: Standard
Filter Sand Size: 20/30
~~**Bentonite Pellet Brand:**~~ Seal Sand Standard
~~**Bentonite Pellet Size:**~~ 30/65
Bentonite Gel Brand: Wyo-Ben
Portland Brand and Type: Quikrete type 1

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Soil Boring Log

Project: NSB Kings Bay Phase IV
Location: Kings Bay, Georgia

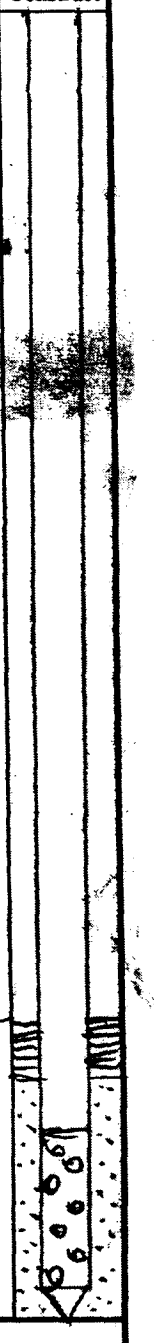
Date: 10/e

Consultant / Rep(s): JA Jones / Greg Berry
GCI Rep(s): Matt Sweet
Drilling Contractor: Zebra / TransAmerica
Driller / Helper: Rick / Brad Mark / Shane
Drill Rig / Method: 6604 Geoprobe

Well No.:
Boring No.:
Injector No.: I-75
PID Type:
PID Lamp:

Approx. Location
N
I-75

Depth (feet)	Sample Interval	Recovery (Inches)	Sample ID #	Blows per 6"	PID (ppm)	Moisture Content	Depth of Change	Soil Description	Remarks	Well Construct
								No Sampling DPT		
									39'	
									48'	



Screen Slot Size: 60 gauge
Screen Maker: Simtong
Screen Length: 3'
Screen Diameter: 1 1/4"
Riser Pipe Material: Sch 80 Blk Fe
Riser Pipe Diameter: 3/4"

Filter Sand Brand: Standard
Filter Sand Size: 20/30
~~Bentonite Pellet Brand~~: Standard
~~Bentonite Pellet Size~~: Seal Sac 30/65
Bentonite Gel Brand: Wyoben Xtra Yield
Portland Brand and Type:

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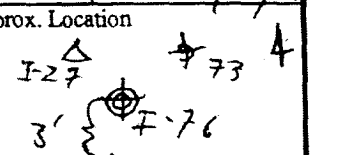
Soil Boring Log

Project: NSB Kings Bay Phase IV
Location: Kings Bay, Georgia
Page 1 **of** 1
Date: 9/26/01

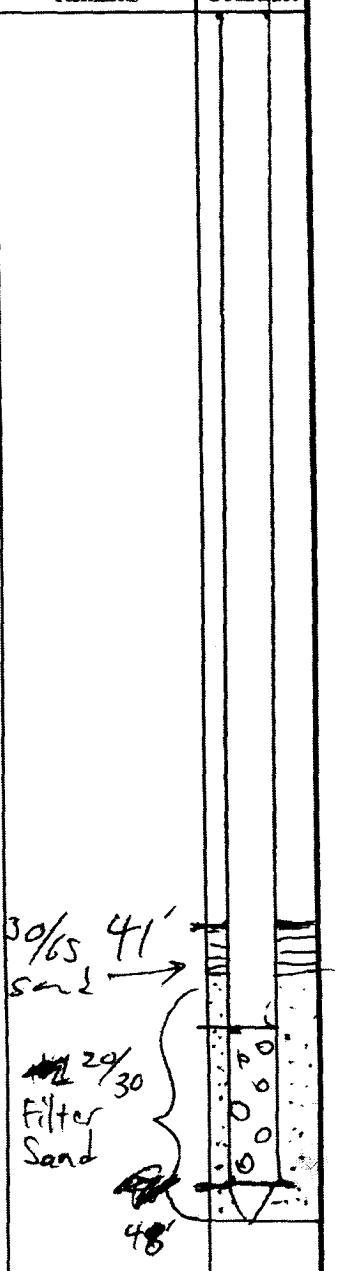
Consultant / Rep(s): JA Jones / Mike Hall
GCI Rep(s): J Dan Bryant / Matt Sweet
Drilling Contractor: Zebra / Trans Ameriska
Driller / Helper: Mark / Rick / Brad
Drill Rig / Method:

Well No.:
Boring No.:
Injector No.: I-76
PID Type:
PID Lamp:

Approx. Location



Depth (feet)	Sample Interval	Recovery (Inches)	Sample ID #	Blows per 6"	PID (ppm)	Moisture Content	Depth of Change	Soil Description	Remarks	Well Construct
								no sampling DPT		



Screen Slot Size: 60 gauge
Screen Maker: Simmons
Screen Length: 3'
Screen Diameter: 1 1/4"
Riser Pipe Material: Black Iron Sch 80
Riser Pipe Diameter: 3/4"

Filter Sand Brand: Standard Sand & Silica
Filter Sand Size: 20/30
Sealant Sand: Standard Sand & Silica
~~**Bentonite Pellet Brand:**~~
~~**Bentonite Pellet Size:**~~ 30/65
Bentonite Gel Brand: Wyo Ben Xtra High Yield
Portland Brand and Type: Quikcrete Type I

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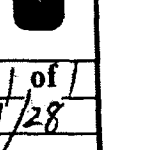
Soil Boring Log

Project: NSB Kings Bay Phase IV
Location: Kings Bay, Georgia

Page 1 **of** 1
Date: 9/28

Consultant / Rep(s): JA Jones
GCI Rep(s): Matt Sweet / Chris Prescott
Drilling Contractor: Zebra / Trans America
Driller / Helper: Mark / Rick / Brad
Drill Rig / Method: 66DT Geoprobe

Well No.:
Boring No.:
Injector No.: I-77
PID Type:
PID Lamp:

Approx. Location


Depth (feet)	Sample Interval	Recovery (Inches)	Sample ID #	Blows per 6"	PID (ppm)	Moisture Content	Depth of Change	Soil Description	Remarks	Well Construct
									Seal Sand 39'	
									Filter Sand	
									48'	

Screen Slot Size: 60 Gauge
Screen Maker: Simmons
Screen Length: 3'
Screen Diameter: 1 1/4"
Riser Pipe Material: Sch 80 Blck Fe

Filter Sand Brand: Standard
Filter Sand Size: 20/80
~~Bentonite Pellet Brand~~: Standard Sealsand
~~Bentonite Pellet Size~~: 30/65
Bentonite Gel Brand: Wyo-Ben Xtra ↑ yield
Portland Brand and Type: Quikrete type I

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Soil Boring Log

Project: NSB Kings Bay Phase IV
Location: Kings Bay, Georgia

Date: 9/26/01

Consultant / Rep(s): J.A. Jones / Mike Hall
GCI Rep(s): Dan Bryant / Matt Sweet
Drilling Contractor: Zebra / TransAmerican
Driller / Helper: Mark Santarelli / Rick Vining / Brad Carlson
Drill Rig / Method: Geoprobe 66DT / DPT

Well No.:
Boring No.:
Injector No.: I-78
PID Type:
PID Lamp:

Approx. Location ↑N
I-24 Δ
I-25 Δ ▲ I-78 Δ I-60

Depth (feet)	Sample Interval	Recovery (Inches)	Sample ID #	Blows per 6"	PID (ppm)	Moisture Content	Depth of Change	Soil Description	Remarks	Well Construct
								DPT / No samples		
									2 bags Portland with WYOBEN powder	
										Grout to Grade
									41' Top of seal sand	41
									Filter Sand	43 / 45
										TD = 48

Screen Slot Size: 60-gauze
Screen Maker: Simmons
Screen Length: 3'
Screen Diameter: 1/4"
Riser Pipe Material: Black iron Sched 80
Riser Pipe Diameter: 3/4"

Filter Sand Brand: Standard Sand + Silica
Filter Sand Size: 20/30
~~Bentonite Pellet~~ Seal Sand Brand: Standard Sand + Silica
~~Bentonite Pellet~~ Seal Sand Size: 30/65
Bentonite Gel Brand: WYOBen Xtra High Yield
Portland Brand and Type: Quikrete type I

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Soil Boring Log

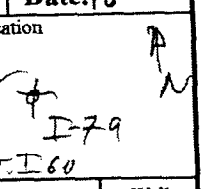
Project: NSB Kings Bay Phase IV
Location: Kings Bay, Georgia

Date: 10

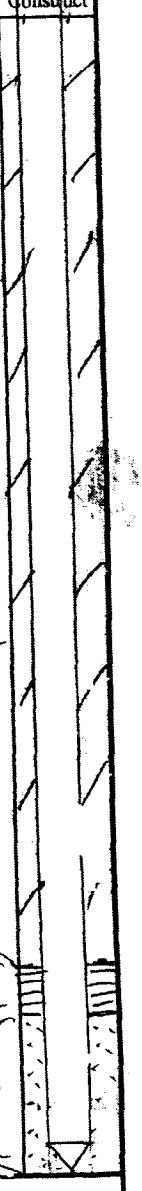
Consultant / Rep(s): JA Jones / Greg Raney
GCI Rep(s): Matt Sweet
Drilling Contractor:
Driller / Helper:
Drill Rig / Method:

Well No.:
Boring No.:
Injector No.: I-79
PID Type:
PID Lamp:

Approx. Location



Depth (feet)	Sample Interval	Recovery (Inches)	Sample ID #	Blows per 6"	PID (ppm)	Moisture Content	Depth of Change	Soil Description	Remarks	Well Construct
								No samples DPT	Grout to Grade	
									Seal Sand	
									Filter Sand 48'	



Screen Slot Size: 60 gauge
Screen Maker: Simplex
Screen Length: 3'
Screen Diameter: 1 1/4"
Riser Pipe Material: Sch 80 Blk Fe
Riser Pipe Diameter: 3/4"

Filter Sand Brand: Standard
Filter Sand Size: 20/30
Bentonite Pellet Brand: Standard
Bentonite Pellet Size: 30/65
Bentonite Gel Brand: Wyo-Ben Xtra Yield
Portland Brand and Type: Quikrete type I

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Soil Boring Log

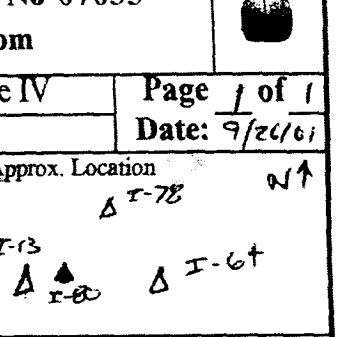
Project: NSB Kings Bay Phase IV
Location: Kings Bay, Georgia

Date: 9/26/01

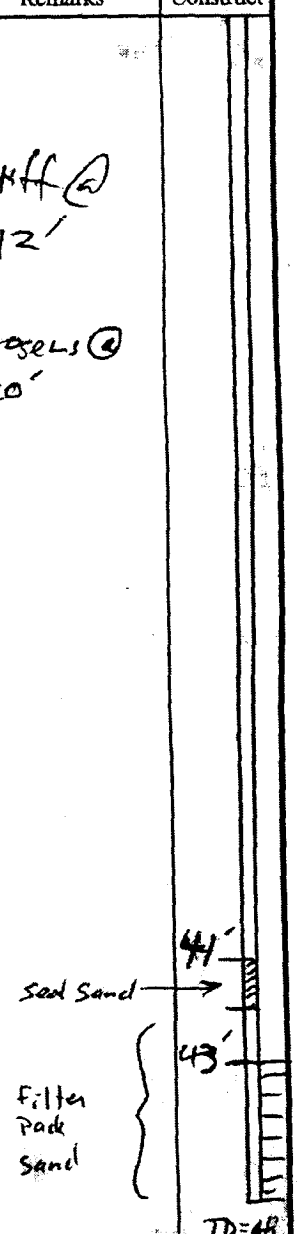
Consultant / Rep(s): J.A. Jones / Mike Halil
GCI Rep(s): Dan Bryant / Matt Sweet
Drilling Contractor: Zebra / TransAmerican
Driller / Helper: Mark Santarell / Rick Vining / Brad Carlson
Drill Rig / Method: Geoprobe 66DT / DPT

Well No.:
Boring No.:
Injector No.: I-80
PID Type:
PID Lamp:

Approx. Location



Depth (feet)	Sample Interval	Recovery (Inches)	Sample ID #	Blows per 6"	PID (ppm)	Moisture Content	Depth of Change	Soil Description	Remarks	Well Construct
								DPT / No samples Initial hole was abandoned due to refusal @ 19'	Stiff @ 12' loosens @ 20'	



Screen Slot Size: 60-gauze
Screen Maker: Simmons
Screen Length: 3'
Screen Diameter: 1¼"
Riser Pipe Material: Black iron Schd 80
Riser Pipe Diameter: 3/4"

Filter Sand Brand: Standard Sand + Silica
Filter Sand Size: 20/30
~~Bentonite Pellet~~ Seal Sand Brand: Standard Sand + Silica
~~Bentonite Pellet~~ Seal Sand Size: 30/65
Bentonite Gel Brand: Wyo-Ben Extra High Yield
Portland Brand and Type: Quikrete Type 1

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Soil Boring Log

Project: NSB Kings Bay Phase IV
Location: Kings Bay, Georgia

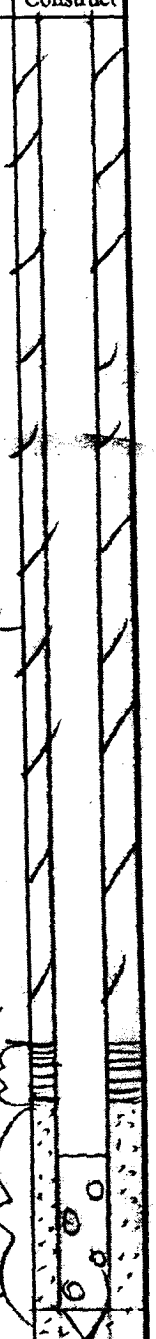
Date: 9/28

Consultant / Rep(s): JA Jones / Greg Ramey
GCI Rep(s): Matt - Sweet / Chris Prescott
Drilling Contractor: Zebra / Trans America
Driller / Helper: Mark / Rick / Brad
Drill Rig / Method: 66 DT

Well No.:
Boring No.:
Injector No.: I-81
PID Type:
PID Lamp:

Approx. Location: 20' So I-77 ↑ I-81

Depth (feet)	Sample Interval	Recovery (Inches)	Sample ID #	Blows per 6"	PID (ppm)	Moisture Content	Depth of Change	Soil Description	Remarks	Well Construct
								No Samples		
									Grout to Grade	
									Seal Sand 39'	
									Filter Sand 48'	



Screen Slot Size: 60 Gauge
Screen Maker: Simmons
Screen Length: 3'
Screen Diameter: 1 1/4"
Riser Pipe Material: Sch 80 Black Fe

Filter Sand Brand: Standard
Filter Sand Size: 20/30
~~**Bentonite Pellet Brand:**~~ Seal Sand Standard
~~**Bentonite Pellet Size:**~~ 30/65
Bentonite Gel Brand: Wyo Ben Xtra Yield
Portland Brand and Type: Quikrete Type 1

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Soil Boring Log

Project: NSB Kings Bay Phase IV
Location: Kings Bay, Georgia

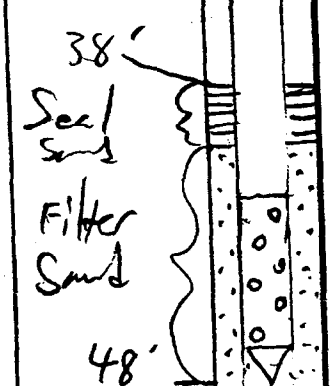
Date: 10/1

Consultant / Rep(s): JA Jones
GCI Rep(s): Matt Sweet
Drilling Contractor: Zebra / Trans American
Driller / Helper: Mark / Shawn Eric / Brad
Drill Rig / Method: 66DT Geo Probe

Well No.:
Boring No.:
Injector No.: I-82
PID Type:
PID Lamp:

Approx. Location

Depth (feet)	Sample Interval	Recovery (Inches)	Sample ID #	Blows per 6"	PID (ppm)	Moisture Content	Depth of Change	Soil Description	Remarks	Well Construct



Screen Slot Size: 60 gauge
Screen Maker: Simmons
Screen Length: 3'
Screen Diameter: 1 1/4"
Riser Pipe Material: Sch 80 Blk Fe
Riser Pipe Diameter: 3/4"

Filter Sand Brand: Standard
Filter Sand Size: 20/30
Bentonite Pellet Brand: Standard
Bentonite Pellet Size: 30/65
Bentonite Gel Brand: Wyo-Ben Xtra Yield
Portland Brand and Type: Quikrete type I

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Soil Boring Log

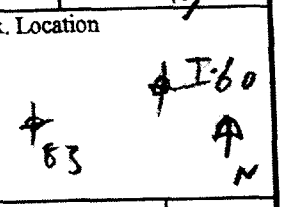
Project: NSB Kings Bay Phase IV
Location: Kings Bay, Georgia

Date: 10/

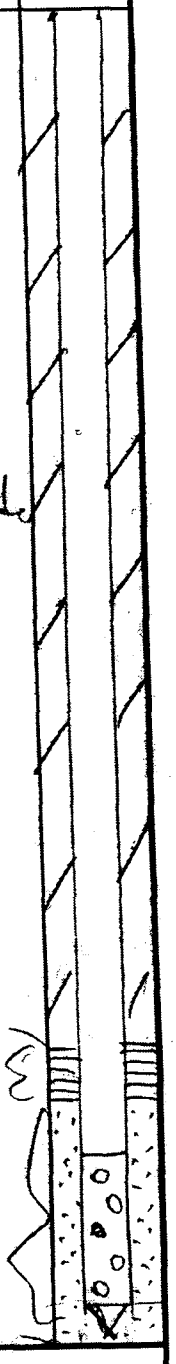
Consultant / Rep(s): JA Jones
GCI Rep(s): Matt Sweet
Drilling Contractor: Zebra / Trans America
Driller / Helper: Rick / Brad Merle / Shane
Drill Rig / Method: 66 DT Geoprobe

Well No.:
Boring No.:
Injector No.: I-83
PID Type:
PID Lamp:

Approx. Location



Depth (feet)	Sample Interval	Recovery (Inches)	Sample ID #	Blows per 6"	PID (ppm)	Moisture Content	Depth of Change	Soil Description	Remarks	Well Construct
								No samples DPT	Grout to Grade	



Screen Slot Size: 60 gauge
Screen Maker: Simmons
Screen Length: 3'
Screen Diameter: 1¼"
Riser Pipe Material: Sch 80 B/K Fe

Filter Sand Brand: Standard
Filter Sand Size: 20/30
Bentonite Pellet Brand: Standard
Bentonite Pellet Size: 30/65
Bentonite Gel Brand: Seal Sand
Portland Brand and Type: Bulk Bentonite Gel Bean Xtra Yield / Bulk Portland Type I

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Soil Boring Log

Project: NSB Kings Bay Phase IV
Location: Kings Bay, Georgia

Date: 10/1

Consultant / Rep(s): JA Jones / Greg Raney
GCI Rep(s): Matt Sweet
Drilling Contractor: Zebron TransAmerica
Driller / Helper: Mark / / Rick / Brad
Drill Rig / Method: 66DT GeoProbe

Well No.:
Boring No.:
Injector No.: I-84
PID Type:
PID Lamp:

Approx. Location
N
I-84

Depth (feet)	Sample Interval	Recovery (Inches)	Sample ID #	Blows per 6"	PID (ppm)	Moisture Content	Depth of Change	Soil Description	Remarks	Well Construct
								No sampling		
									slow between 25 → 48'	
									40'	
									48'	

Screen Slot Size: 60 gauge
Screen Maker: Simmons
Screen Length: 3'
Screen Diameter: 1 1/4"
Riser Pipe Material: Sch 80 Black Fe
Riser Pipe Diameter: 3/4"

Filter Sand Brand: Standard
Filter Sand Size: 20/30
~~**Bentonite Pellet Brand:**~~ Standard
~~**Bentonite Pellet Size:**~~ Seal Sand 30/65
Bentonite Gel Brand: W/o Ben Xtra ↑ Yield
Portland Brand and Type: Quikrete Type I

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Soil Boring Log

Project: NSB Kings Bay Phase IV
Location: Kings Bay, Georgia

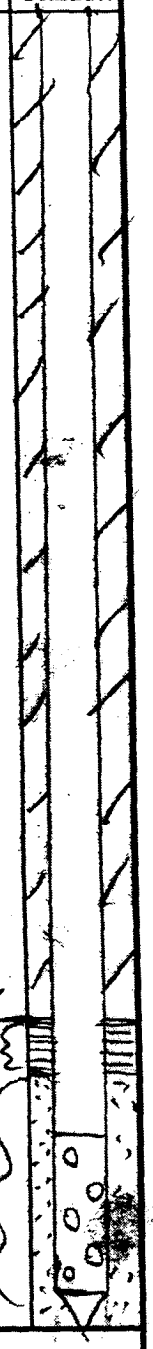
Page 1 **of** 1
Date: 7/28

Consultant / Rep(s): JA Jones / Greg Ramey
GCI Rep(s): Matt Sweet / Chris Prescott
Drilling Contractor: Zebra / Trans America
Driller / Helper: Mark / Rick / Brad
Drill Rig / Method: 66DT GeoProbe

Well No.:
Boring No.:
Injector No.: I-85
PID Type:
PID Lamp:

Approx. Location
20'
I-85
I-81

Depth (feet)	Sample Interval	Recovery (Inches)	Sample ID #	Blows per 6"	PID (ppm)	Moisture Content	Depth of Change	Soil Description	Remarks	Well Construct
									Grout to Grade	
									38' Seal Sand	
									Filter Sand 48'	



Screen Slot Size: 60 Gauge
Screen Maker: Simmons
Screen Length: 3'
Screen Diameter: 1 1/4"
Riser Pipe Material: Sch 80 Black Fe
Riser Pipe Diameter: 3/4"

Filter Sand Brand: Standard
Filter Sand Size: 20/30
~~Bentonite Pellet Brand:~~ Ben/Sand Standard
~~Bentonite Pellet Size:~~ 30/65
Bentonite Gel Brand: Wyo-Ben Xtra Yield
Portland Brand and Type: Quikrete type I

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Telephone (908) 206-1250 • Fax (908) 206-1251 • E-mail info@geocleanse.com

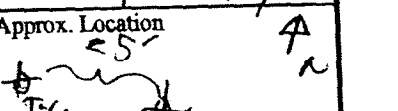
Soil Boring Log

Project: NSB Kings Bay Phase IV
Location: Kings Bay, Georgia

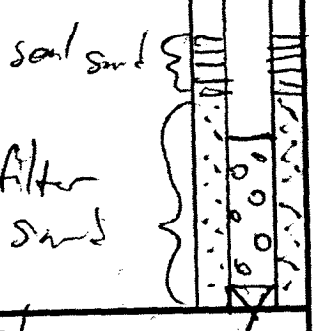
Date: 10/1

Consultant / Rep(s): JA Jones / Grey Ramey
GCI Rep(s): Matt Swift
Drilling Contractor: Zebra Trans America
Driller / Helper: Mark / Don Rick / Brad
Drill Rig / Method: 66 DT GeoProbe

Well No.:
Boring No.:
Injector No.: I-86
PID Type:
PID Lamp:

Approx. Location


Depth (feet)	Sample Interval	Recovery (Inches)	Sample ID #	Blows per 6"	PID (ppm)	Moisture Content	Depth of Change	Soil Description	Remarks	Well Construct
								No sampling DPT		



Screen Slot Size: 60 gauge
Screen Maker: Simmons
Screen Length: 3'
Screen Diameter: 1 1/4"
Riser Pipe Material: Sch 80 Blk Fe
Diameter: 1 1/4"

Filter Sand Brand: Standard
Filter Sand Size: 20/30
~~Bentonite Pellet Brand~~ Seal Sand: Standard
~~Bentonite Pellet Size~~: 30/65
Bentonite Gel Brand: Wyo Ben Xtra Yield
Portland Brand and Type: Dukrete type I

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Soil Boring Log

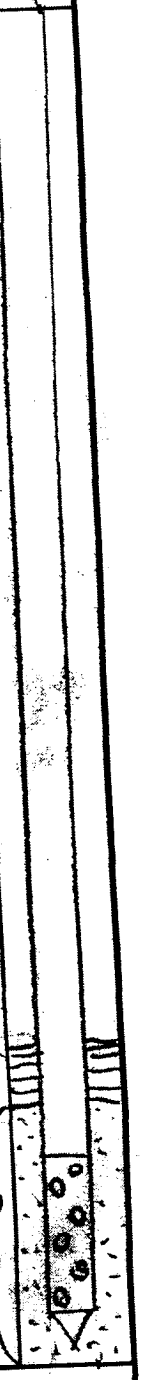
Project: NSB Kings Bay Phase IV
Location: Kings Bay, Georgia
Date: 10/1

Consultant / Rep(s): J A Jones / Greg Raney
GCI Rep(s): Matt Sweet
Drilling Contractor: Zebra / Trans America
Driller / Helper: Mark / Sean Eric / Brad
Drill Rig / Method: 66 DT Geoprobe

Well No.:
Boring No.:
Injector No.: I-87
PID Type:
PID Lamp:

Approx. Location
35' I-60 N
I-87

Depth (feet)	Sample Interval	Recovery (Inches)	Sample ID #	Blows per 6"	PID (ppm)	Moisture Content	Depth of Change	Soil Description	Remarks	Well Construct
									39' Seal Sand Filter Sand 48'	



Screen Slot Size:	60 gauge	Filter Sand Brand:	Standard
Screen Maker:	Simmons	Filter Sand Size:	20/30
Screen Length:	3'	~~Bentonite Pellet Brand:~~ Seal Sand	Standard
Screen Diameter:	1 1/4"	~~Bentonite Pellet Size:~~	30/65
Riser Pipe Material:	Sch 80 Blk Fe	Bentonite Gel Brand:	Wyo-Ben Xtra Yield
Riser Pipe Diameter:	2/4"	Portland Brand and Type:	Quikrete Type I

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Soil Boring Log

Project: NSB Kings Bay Phase IV
Location: Kings Bay, Georgia

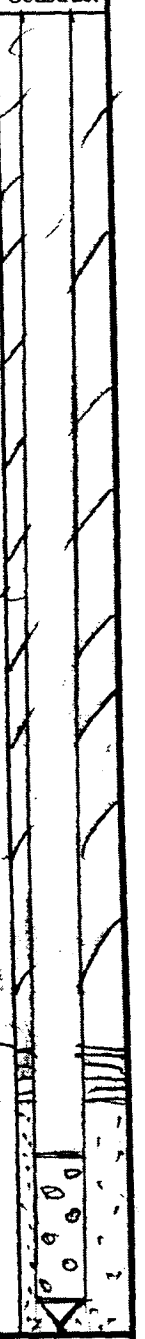
Date: 10/2

Consultant / Rep(s): JA Jones Greg Ramey
GCI Rep(s): Matt Sweet
Drilling Contractor: Zebron / Trans America
Driller / Helper: Rick/Brad Mark/Shawn
Drill Rig / Method: 66DT Geoprobe

Well No.:
Boring No.:
Injector No.: I-88
PID Type:
PID Lamp:

Approx. Location: I-88 ↑ N; I-89

Depth (feet)	Sample Interval	Recovery (Inches)	Sample ID #	Blows per 6"	PID (ppm)	Moisture Content	Depth of Change	Soil Description	Remarks	Well Construct
								No Samples DPT	Grout to Grade	
									39'	
									Filter Sand 48'	



Screen Slot Size: 60 Gauge
Screen Maker: Simmons
Screen Length: 3'
Screen Diameter: 1¼"
Riser Pipe Material: Sch 40 B/E Fe
Riser Pipe Diameter: 3/4"

Filter Sand Brand: Standard
Filter Sand Size: 20/50
~~Bentonite Pellet Brand:~~ Standard Sil Sand
~~Bentonite Pellet Size:~~ 30/65
Bentonite Gel Brand: Wyo-Ben Xpre ↑ Yield
Portland Brand and Type: Quikrete type I

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Soil Boring Log

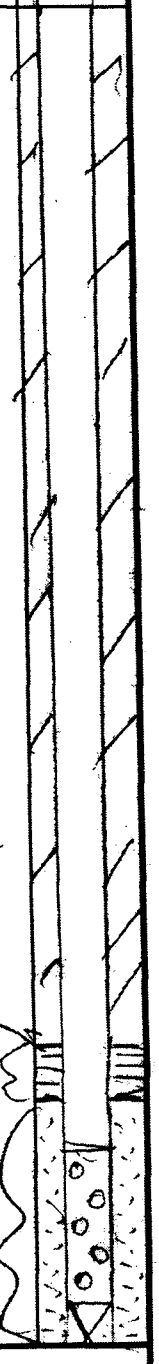
Project: NSB Kings Bay Phase IV
Location: Kings Bay, Georgia
Page 1 **of** 1
Date: 10/2

Consultant / Rep(s): JA Jones / Greg Raney
GCI Rep(s): Matt Sweet
Drilling Contractor: Zebra / Tony Arnold
Driller / Helper: Rick / Brad / Mark / Shane
Drill Rig / Method: 6SDT Geoprobe

Well No.:
Boring No.:
Injector No.: I-89
PID Type:
PID Lamp:

Approx. Location
I-88
I-89
N

Depth (feet)	Sample Interval	Recovery (Inches)	Sample ID #	Blows per 6"	PID (ppm)	Moisture Content	Depth of Change	Soil Description	Remarks	Well Construct
								No Samples DPT		
									Grout to Grade	
									38' Seal Sand	
									Filter Sand 48'	



Screen Slot Size: 60 gauge
Screen Maker: Simmons
Screen Length: 3'
Screen Diameter: 1¼"
Riser Pipe Material: Sch 80 Blk Fe

Filter Sand Brand: Standard
Filter Sand Size: 20/50
~~Bentonite Pellet Brand:~~ Seal Sand Standard
~~Bentonite Pellet Size:~~ 30/65
Bentonite Gel Brand: Wyo-Ben X Kra Yield
Portland Brand and Type: Quikrete type I

Appendix B: Groundwater Monitoring Logs

CH2M-Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Groundwater Quality Data: I-60

Date	Time	pH	Iron (Fe)	Chloride (Cl)	Alkalinity (Alk)	Peroxide (H2O2)	Headspace
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	PID (ppm)
10/23/01	11:15	5	125	200	<50	7.5	0
11/1/01	7:45	5	>250	Inf	Inf.	20	1

NA = Not Analyzed
NS = Not Sampled
Inf. = Interference

CH2M-Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Groundwater Quality Data: I-63

Date	Time	pH	Iron (Fe)	Chloride (Cl)	Alkalinity (Alk)	Peroxide (H2O2)	Headspace
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	PID (ppm)
10/24/01	8:30	5.5	20	9	225	0	0

NA = Not Analyzed
NS = Not Sampled

CH2M-Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Groundwater Quality Data: I-64

Date	Time	pH	Iron (Fe)	Chloride (Cl)	Alkalinity (Alk)	Peroxide (H2O2)	Headspace
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	PID (ppm)
10/25/01	7:45	5.5	50	4	125	0	0

NA = Not Analyzed
NS = Not Sampled

CH2M-Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Groundwater Quality Data: I-70

Date	Time	pH	Iron (Fe)	Chloride (Cl)	Alkalinity (Alk)	Peroxide (H2O2)	Headspace
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	PID (ppm)
10/29/01	8:00	5	150	5	<50	2.5	8
11/7/01	10:20	3.5	NA	NA	NA	10	16

NA = Not Analyzed
NS = Not Sampled

CH2M-Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Groundwater Quality Data: I-71

Date	Time	pH	Iron (Fe)	Chloride (Cl)	Alkalinity (Alk)	Peroxide (H2O2)	Headspace
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	PID (ppm)
10/29/01	8:00	4.5	250	7	<50	2.5	4
10/31/01	8:15	3.5	>250	Inf.	<50	15	17
11/1/01	7:45	4	>250	Inf.	<50	7.5	5
11/7/01	10:10	3.5	NA	NA	NA	2.5	13.3
11/14/01	7:00	3.5	200	7	<50	5	4

NA = Not Analyzed
NS = Not Sampled
Inf. = Interference

CH2M-Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Groundwater Quality Data: I-72

Date	Time	pH	Iron (Fe)	Chloride (Cl)	Alkalinity (Alk)	Peroxide (H2O2)	Headspace
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	PID (ppm)
10/22/01	16:30	5.5	20	25	NA	NA	0
10/29/01	8:00	3.5	>250	Inf.	<50	15	5
11/7/01	9:35	3.5	NA	NA	NA	2.5	20.1

NA = Not Analyzed
NS = Not Sampled
Inf. = Interference

CH2M-Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Groundwater Quality Data: I-73

Date	Time	pH	Iron (Fe)	Chloride (Cl)	Alkalinity (Alk)	Peroxide (H2O2)	Headspace
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	PID (ppm)
10/25/01	7:45	4.5	75	7	<50	0	34
10/26/01	7:45	4.5	75	10	<50	7.5	13
10/29/01	8:00	4	>250	2.6	<50	0	8
10/30/01	8:30	4	>250	4	<50	5	6
11/7/01	10:35	4	NA	NA	NA	15	8
11/13/01	7:30	4	>250	<2	<50	5	14

NA = Not Analyzed
NS = Not Sampled

CH2M-Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Groundwater Quality Data: I-74

Date	Time	pH	Iron (Fe)	Chloride (Cl)	Alkalinity (Alk)	Peroxide (H2O2)	Headspace
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	PID (ppm)
10/23/01	11:15	5.5	5	10	<50	7.5	0
11/7/01	10:00	4	NA	NA	NA	2.5	20.1
11/13/01	7:30	4	>250	<2	<50	7.5	7

NA = Not Analyzed
NS = Not Sampled

CH2M-Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Groundwater Quality Data: I-75

Date	Time	pH	Iron (Fe)	Chloride (Cl)	Alkalinity (Alk)	Peroxide (H2O2)	Headspace
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	PID (ppm)
10/22/01	16:30	5.5	20	<25	NA	NA	0
10/26/01	7:45	3.5	200	Inf.	<50	20	3
10/29/01	8:00	3.5	150	Inf.	<50	7.5	0
11/7/01	8:57	4	NA	NA	NA	5	16
11/14/01	7:00	3.5	200	4	<50	5	2

NA = Not Analyzed
NS = Not Sampled
Inf. = Interference

CH2M-Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Groundwater Quality Data: I-76

Date	Time	pH	Iron (Fe)	Chloride (Cl)	Alkalinity (Alk)	Peroxide (H2O2)	Headspace
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	PID (ppm)
10/24/01	8:30	4.5	75	10	<50	0	67
10/25/01	7:45	4.5	50	8	<50	0	91
10/26/01	7:45	4.5	50	20	<50	7.5	19
10/29/01	8:00	4	>250	Inf	<50	7.5	4
10/30/01	8:30	4	>250	Inf.	<50	7.5	9
10/31/01	8:15	4	>250	Inf.	<50	7.5	14
11/1/01	7:45	3.5	125	>20	<50	5	3
11/7/01	13:00	4	NA	NA	NA	2.5	5
11/14/01	7:00	3.5	125	<2	<50	7.5	2

NA = Not Analyzed
NS = Not Sampled
Inf. = Interference

CH2M-Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Groundwater Quality Data: I-77

Date	Time	pH	Iron (Fe)	Chloride (Cl)	Alkalinity (Alk)	Peroxide (H2O2)	Headspace
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	PID (ppm)
10/23/01	11:15	5	7.5	10	175	7.5	0
11/7/01	9:05	3.5	NA	NA	NA	2.5	11.2

NA = Not Analyzed
NS = Not Sampled

CH2M-Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Groundwater Quality Data: I-78

Date	Time	pH	Iron (Fe)	Chloride (Cl)	Alkalinity (Alk)	Peroxide (H2O2)	Headspace
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	PID (ppm)
10/24/01	8:30	5.5	200	12	175	0	22
10/26/01	7:45	4.5	100	4	<50	7.5	20
10/29/01	8:00	4	>250	Inf.	<50	7.5	2
10/30/01	8:30	4	>250	Inf.	<50	7.5	9
11/7/01	10:54	3.5	NA	NA	NA	7.5	8
11/13/01	7:30	4	>250	<2	<50	5	3

NA = Not Analyzed
NS = Not Sampled
Inf. = Interference

CH2M-Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Groundwater Quality Data: I-79

Date	Time	pH	Iron (Fe)	Chloride (Cl)	Alkalinity (Alk)	Peroxide (H2O2)	Headspace
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	PID (ppm)
10/24/01	8:30	5	125	10	<50	0	4
11/7/01	9:22	4	NA	NA	NA	2.5	21
11/13/01	7:30	3.5	100	>20	<50	2.5	5
11/14/01	7:00	3.5	200	10	<50	2.5	4

NA = Not Analyzed
NS = Not Sampled

CH2M-Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Groundwater Quality Data: I-80

Date	Time	pH	Iron (Fe)	Chloride (Cl)	Alkalinity (Alk)	Peroxide (H2O2)	Headspace
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	PID (ppm)
10/25/01	7:45	4.5	75	8	<50	0	85
10/26/01	7:45	5	75	8	<50	7.5	65
11/7/01	11:30	4	NA	NA	NA	7.5	6

NA = Not Analyzed
NS = Not Sampled

CH2M-Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Groundwater Quality Data: I-81

Date	Time	pH	Iron (Fe)	Chloride (Cl)	Alkalinity (Alk)	Peroxide (H2O2)	Headspace
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	PID (ppm)
10/26/01	7:45	5	35	20	50	5	3
11/7/01	8:22	4	NA	NA	NA	2.5	11
11/13/01	7:30	4	>250	<2	<50	5	7

NA = Not Analyzed
NS = Not Sampled

CH2M-Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Groundwater Quality Data: I-82

Date	Time	pH	Iron (Fe)	Chloride (Cl)	Alkalinity (Alk)	Peroxide (H2O2)	Headspace
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	PID (ppm)
10/25/01	7:45	5.5	75	10	125	2.5	16.8
10/26/01	9:00	4	175	Inf.	<50	15	5
10/29/01	8:00	4	>250	14	<50	2.5	5
11/1/01	7:45	3.5	>250	Inf.	<50	5	7
11/7/01	13:15	4	NA	NA	NA	2.5	17

NA = Not Analyzed
NS = Not Sampled
Inf. = Interference

CH2M-Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Groundwater Quality Data: I-83

Date	Time	pH	Iron (Fe)	Chloride (Cl)	Alkalinity (Alk)	Peroxide (H2O2)	Headspace
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	PID (ppm)
10/30/01	8:30	4	>250	Inf.	<50	7.5	5
11/7/01	9:15	3.5	NA	NA	NA	5	17.4

NA = Not Analyzed
NS = Not Sampled

CH2M-Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Groundwater Quality Data: I-84

Date	Time	pH	Iron (Fe)	Chloride (Cl)	Alkalinity (Alk)	Peroxide (H2O2)	Headspace
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	PID (ppm)
10/24/01	8:30	5	15	12	90	0	0
10/29/01	8:00	3.5	>250	<2	<50	7.5	5
11/7/01	8:30	4	NA	NA	NA	2.5	17

NA = Not Analyzed
NS = Not Sampled

CH2M-Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Groundwater Quality Data: I-85

Date	Time	pH	Iron (Fe)	Chloride (Cl)	Alkalinity (Alk)	Peroxide (H2O2)	Headspace
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	PID (ppm)
10/25/01	7:45	5.5	10	5	125	0	6
10/30/01	8:30	4	>250	Inf	<50	15	6
11/7/01	8:15	3.5	NA	NA	NA	10	4
11/13/01	7:30	4	>250	<2	<50	2.5	4

NA = Not Analyzed
NS = Not Sampled

CH2M-Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Groundwater Quality Data: I-86

Date	Time	pH	Iron (Fe)	Chloride (Cl)	Alkalinity (Alk)	Peroxide (H2O2)	Headspace
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	PID (ppm)
10/23/01	11:15	5.5	0	<25	125	5	0
10/31/01	8:15	3.5	>250	Inf.	<50	7.5	12
11/7/01	8:20	4	NA	NA	NA	2.5	17

NA = Not Analyzed
NS = Not Sampled
Inf. = Interference

CH2M-Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Groundwater Quality Data: I-87

Date	Time	pH	Iron (Fe)	Chloride (Cl)	Alkalinity (Alk)	Peroxide (H2O2)	Headspace
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	PID (ppm)
10/22/01	16:30	5.5	7.5	<25	NA	NA	0
11/7/01	8:44	3.5	NA	NA	NA	2.5	34
11/14/01	7:00	3.5	125	<2	<50	5	3

NA = Not Analyzed
NS = Not Sampled

CH2M-Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Groundwater Quality Data: I-88

Date	Time	pH	Iron (Fe)	Chloride (Cl)	Alkalinity (Alk)	Peroxide (H2O2)	Headspace
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	PID (ppm)
10/23/01	11:15	5	75	10	<50	7.5	0
10/29/01	8:00	3.5	>250	Inf.	<50	7.5	26
10/30/01	8:30	4	>250	Inf.	<50	7.5	7
11/7/01	13:30	3.5	NA	NA	NA	7.5	12

NA = Not Analyzed
NS = Not Sampled
Inf. = Interference

CH2M-Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Groundwater Quality Data: I-89

Date	Time	pH	Iron (Fe)	Chloride (Cl)	Alkalinity (Alk)	Peroxide (H2O2)	Headspace
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	PID (ppm)
10/22/01	16:30	5	75 - 100	<25	NA	NA	0
10/29/01	8:00	3.5	>250	Inf.	<50	5	9
10/30/01	8:30	4	175	Inf.	<50	2.5	5
10/31/01	8:15	3.5	100	>20	<50	7.5	11
11/7/01	13:48	3.5	NA	NA	NA	2.5	2

NA = Not Analyzed
NS = Not Sampled
Inf. = Interference

CH2M-Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Groundwater Quality Data: I-60

Date	Time	pH	Iron (Fe)	Chloride (Cl)	Alkalinity (Alk)	Peroxide (H2O2)	Headspace
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	PID (ppm)
10/23/01	11:15	5	125	200	<50	7.5	0
11/1/01	7:45	5	>250	Inf	Inf.	20	1

NA = Not Analyzed
NS = Not Sampled
Inf. = Interference

Appendix C: Off-Gas Monitoring Logs

CH2M Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Off-Gas Data: I-60

Date	Time	Carbon Dioxide	Oxygen	PID	LEL
		(%)	(%)	(ppm)	(%)
10/24/01	15:00	0	20.9	0	0
10/25/01	10:30	0	20.9	0	0
10/25/01	14:30	0	20.9	0	0

NS = Not Sampled

CH2M Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Off-Gas Data: I-71

Date	Time	Carbon Dioxide	Oxygen	PID	LEL
		(%)	(%)	(ppm)	(%)
10/24/01	15:00	0	20.9	0	0
10/25/01	10:30	2.5	24.3	2.5	0
10/25/01	14:30	0.1	20.9	0	0
10/26/01	10:00	0	20.9	0	0

NS = Not Sampled

CH2M Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Off-Gas Data: I-72

Date	Time	Carbon Dioxide	Oxygen	PID	LEL
		(%)	(%)	(ppm)	(%)
10/24/01	15:00	8.1	>30	0	0
10/25/01	10:30	0.7	20.6	0	0
10/25/01	14:24	0	20.6	0	0
10/26/01	10:00	0.4	20.9	0	0

NS = Not Sampled

CH2M Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Off-Gas Data: I-73

Date	Time	Carbon Dioxide	Oxygen	PID	LEL
		(%)	(%)	(ppm)	(%)
10/25/01	10:30	0	20.9	0	0
10/25/01	14:30	0	20.3	0	0

NS = Not Sampled

CH2M Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Off-Gas Data: I-74

Date	Time	Carbon Dioxide (%)	Oxygen (%)	PID (ppm)	LEL (%)
10/24/01	15:00	0.9	21.9	0	0

NS = Not Sampled

CH2M Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Off-Gas Data: I-75

Date	Time	Carbon Dioxide	Oxygen	PID	LEL
		(%)	(%)	(ppm)	(%)
10/24/01	15:00	0.2	21.2	0	0
10/25/01	10:30	0	20.9	0	0
10/25/01	14:30	0	20.9	0	0
10/26/01	10:00	0	20.9	0	0

NS = Not Sampled

CH2M Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Off-Gas Data: I-76

Date	Time	Carbon Dioxide (%)	Oxygen (%)	PID (ppm)	LEL (%)
10/24/01	15:00	0	20.9	0	0
10/25/01	10:30	0	20.9	0	0
10/25/01	14:30	0	20.9	0	0

NS = Not Sampled

CH2M Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Off-Gas Data: I-77

Date	Time	Carbon Dioxide	Oxygen	PID	LEL
		(%)	(%)	(ppm)	(%)
10/25/01	10:30	0.5	21.1	0	0
10/25/01	14:30	0.2	20.8	0	0
10/26/01	0:00	0	20.9	0	0

NS = Not Sampled

CH2M Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Off-Gas Data: I-78

Date	Time	Carbon Dioxide	Oxygen	PID	LEL
		(%)	(%)	(ppm)	(%)
10/24/01	15:00	0	20.9	0	0

NS = Not Sampled

CH2M Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Off-Gas Data: I-79

Date	Time	Carbon Dioxide	Oxygen	PID	LEL
		(%)	(%)	(ppm)	(%)
10/24/01	15:00	0	20.9	0	0
10/25/01	10:30	1.4	>30	6.4	0

NS = Not Sampled

CH2M Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Off-Gas Data: I-80

Date	Time	Carbon Dioxide	Oxygen	PID	LEL
		(%)	(%)	(ppm)	(%)
10/24/01	15:00	0	19.3	0	0
10/25/01	10:30	0	20.9	0	0
10/25/01	14:30	0	20.9	0	0

NS = Not Sampled

CH2M Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Off-Gas Data: I-82

Date	Time	Carbon Dioxide	Oxygen	PID	LEL
		(%)	(%)	(ppm)	(%)
10/24/01	15:00	0	20.9	0	0
10/25/01	14:30	0	20.9	0	0

NS = Not Sampled

CH2M Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Off-Gas Data: I-83

Date	Time	Carbon Dioxide	Oxygen	PID	LEL
		(%)	(%)	(ppm)	(%)
10/24/01	15:00	0	20.9	0	0

NS = Not Sampled

CH2M Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Off-Gas Data: I-85

Date	Time	Carbon Dioxide	Oxygen	PID	LEL
		(%)	(%)	(ppm)	(%)
10/25/01	10:30	0	20.9	0	0
10/25/01	14:30	0	20.9	0	0

NS = Not Sampled

CH2M Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Off-Gas Data: I-88

Date	Time	Carbon Dioxide (%)	Oxygen (%)	PID (ppm)	LEL (%)
10/24/01	15:00	0	20.9	0	0

NS = Not Sampled

CH2M Hill Constructors/J.A. Jones

Kings Bay Naval Sub Base
Kings Bay, Georgia

Off-Gas Data: I-89

Date	Time	Carbon Dioxide (%)	Oxygen (%)	PID (ppm)	LEL (%)
10/25/01	10:30	0	20.3	0	0
10/25/01	14:30	0.2	20.2	0	0

NS = Not Sampled

Appendix D: Vegetable Oil Certificate of Analysis

CERTIFICATE OF ANALYSIS

GEO CLEANSE INTERNATIONAL
Attn: C/O THE OLD CAMDEN LANDFILL
NAVY LODGE BUILDING #0158
1290 USS JACKSON ROAD
KINGS BAY, GA 31547

CARGILL FOODS

Vegetable Oils

Lot/Run No.: 23626

Load Date: 12/08/2001
Load Order No.: 188928

Cargill Product: 100GCIS0LEC SOYBEAN OIL TECHNICAL GRADE W/ 7.5%
Shipment ID: TRK 6507
Purchase Order No.: 0
Load Weight: 47,810 **Load Temperature:** 92
Seal Numbers: GG017445.GG017064.065

QUALITY

STATISTICAL ANALYSIS
From 12/06/2001 **To** 12/08/2001
SHIPMENT COUNT: 0

Test Name	SPECIFICATIONS Min	Max	This Shipment		Average	Minimum	Maximum	Std.Dev.
COLOR-RED		3.0	1.9	R	0.000	0.000	0.000	0.000
FFA		2.00	0.949	%	0.000	0.000	0.000	0.000
FILTER	7		8		0.000	0.000	0.000	0.000
MOISTURE		0.500	0.022*	%	0.000	0.000	0.000	0.000
IV	122.0	138.0	131.5*		0.000	0.000	0.000	0.000

ADDITIVES: 7.5% LECITHIN
Additional Comments:

OILS

* Denotes results taken from finish storage analysis

ISSUED BY

REVIEWED BY

Appendix F

Underground Injection Control Permits

Georgia Department Natural Resources
205 Butler Street, S.E., East Floyd Tower, Atlanta, Georgia 30334
Lonice C. Barrett, Commissioner
Harold F. Reheis, Director
Environmental Protection Division
(404) 656-4713

August 21, 2001

Mr. John R. Garner
Environmental Division
Dept. of Navy
Naval Submarine Base
1063 USS Tennessee Ave.
Kings Bay, GA 31547-2606

RE: Revised Underground Injection Control Permit #089, Kings Bay Submarine Base Site 11, Old Camden County Landfill, Kings Bay, Georgia.

Dear Mr. Garner:

Enclosed is the third revised Underground Injection Control (UIC) Permit #089 for the Kings Bay Submarine Base Site 11, Old Camden Co. Landfill, located at Kings Bay, Georgia. The initial revised permit was issued on November 3, 1999 for the injection of hydrogen peroxide, ferrous sulfate, calcium phosphate, dilute phosphoric acid, and dilute sulfuric acid through fifty three (53) injection points. This revised UIC permit allows the U.S. Navy to utilize injection of hydrogen peroxide, ferrous sulfate, calcium phosphate, dilute phosphoric acid, dilute sulfuric acid, vegetable oil, and lecithin through twenty five (25) additional wells and the fifty three (53) previously installed wells, and the injection of vegetable oil and lecithin through thirty nine (39) temporary soil borings. This permit is issued to assist the U.S. Navy with the remediation of soil and ground-water contaminated with chlorinated solvents at this site for up to five (5) years. This permit brings the total injection points to one hundred and seventeen (117). The UIC permit states two (2) standard conditions and seven (7) additional conditions in the attachment.

If you have any questions about the permit please contact Bijan Rahbar, UIC Coordinator, at (404) 656-3214.

Sincerely,

Harold F. Reheis

Harold F. Reheis
Director

Enclosure

cc: File UIC Permit #089
L. Rogers, EPD-CR
B. Hendricks, EPD-HWMB
S. Ross, CH2MHILL

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

INJECTION WELL OPERATING PERMIT

PERMIT NUMBER: #089 **DATE ISSUED: August 21, 2001**

FACILITY DATA: **INJECTION WELL TYPE: CLASS V (type 5X26)**

FACILITY: Naval Submarine Base
Site 11, Old Camden Co. Landfill
Kings Bay, GA
Camden County

OPERATOR: Dept. of Navy*
Naval Submarine Base
1063 USS Tennessee Ave.
Kings Bay, GA 31547-2606

LOCATION: Lat: 30° 48' 40.2" N
Long: 81° 34' 18.4" W

EPD ID # GA17009001
HWMB Permit# HW-014(S)(2)

In accordance with the provisions of the Georgia Rules for Underground Injection Control, Chapter 391-3-6-.13, as amended 2001, this permit is issued for the operation of the herein described injection system. Unless appealed, this permit is effective thirty (30) days after its issuance and is conditioned upon the following:

1) The Permittee's continued compliance with the Georgia Rules for Underground Injection Control, Chapter 391-3-6-.13, the Georgia Rules for Water Quality Control (Revised) and the Georgia Rules for Safe Drinking Water (Revised); and

2) The Permittee's continued compliance with the Permittee's approved injection operation plan which is part of the approved Corrective Action Plan for this site, along with provisions of officially approved plan amendments, if any.

Additional conditions 1 through 7 are attached hereto.

This permit is issued in accordance with the initial application received July 24, 1998, and revised applications received October 1, 1998, June 2, 1999, September 1, 1999, October 29, 1999 July 10, 2001, and August 14, 2001. The revised injection operation plan was approved on August 21, 2001, and is based on the statements and supporting data entered herein or attached thereto, all of which are filed with the Environmental Protection Division of the Georgia Department of Natural Resources and hereby made a part of this permit.

This permit is subject to revocation for noncompliance with aforementioned conditions.

This permit expires on **August 21, 2006,** unless previously terminated.

Harold F. Reheis

Harold F. Reheis, Director, Environmental Protection Division
Georgia Department of Natural Resources

* CH2MHILL, as consultant to Kings Bay Submarine Base, may be contacted regarding technical questions at (904) 777-4812.

INJECTION WELL OPERATING PERMIT
ADDITIONAL CONDITIONS

1. Permit Conditions.

   a. This permit is not transferable until any new operator shall agree in writing to these additional permit conditions. Any new operator also shall provide the Environmental Protection Division (Division) with appropriate documentation that they have adequate financial assurances to plug all existing Class V wells.

   b. If the U.S. Navy (Operator) wishes to continue an activity regulated by this permit after the expiration of the permit, the Operator must apply for and obtain a new permit.

   c. The Operator shall report any instances of noncompliance with permit conditions to the Division in writing within five (5) working days of such noncompliance and shall take all reasonable steps to minimize the impact on the environment resulting from noncompliance with this permit and the Georgia Rules for Underground Injection Control.

   d. The Operator shall notify the Division of any proposed changes to the performance of the water injection system in writing at least thirty (30) days prior to the change.

   e. All reports submitted to the Division shall be signed and stamped by a Georgia Registered Professional Engineer or Professional Geologist.

   f. All analyses shall be performed by a laboratory approved or accredited by EPD in accordance with the Georgia Rules for Commercial Laboratory Accreditation, Chapter 391-3-26.

2. System Parameters.

   a. This permit is issued to the Operator for the purpose of operating an injection system consisting of hydrogen peroxide, ferrous sulfate, calcium phosphate, dilute phosphoric acid, dilute sulfuric acid, vegetable oil, and lecithin at the above referenced site to aid in remediation of soil and ground water contaminated with chlorinated solvents.

   b. Number of Class V injection wells: seventy eight (78) injection wells and thirty nine (39) injection soil borings for a total of one hundred and seventeen (117) injection points.

   c. Injected fluid: Hydrogen peroxide and ferrous sulfate solution buffered with phosphoric acid, sulfuric acid, calcium phosphate, vegetable oil, and lecithin as needed. Soil borings will be injected with vegetable oil and lecithin only.

   d. Maximum injection rate per well: 1.0 gallons of liquid/min. (gpm)/well
      Maximum total injection rate: 117.0 gpm

   e. Maximum total injection volume per well: 1,440 gallons of liquid/day/well
      Maximum total injection volume: 168, 480 g/day

   f. Maximum daily average injection pressure (at well head): 40 psig.

3. Monitoring and Reporting Requirements.

a. The Operator shall report to the Underground Injection Control Program of the Division the number and exact location of all Class V injection wells it installs or plugs on a quarterly basis. The reports are to be submitted to the UIC Program in accordance with the reporting schedule stipulated by the Hazardous Waste Management Branch.

b. The Operator shall submit to the Division for its approval, a detailed schematic diagram and location map on any Class V injection well that is different in construction from the specifications contained in the UIC permit application, no later than 45 days prior to installation of the injection well. The Operator cannot install such a well until it receives approval from the Division.

c. The Operator shall submit to the UIC Program one (1) copy of any report regarding this site which the Operator is required to submit to the Hazardous Waste Management Branch, or any other program within the Division.

d. The Operator shall submit to the UIC Program an annual report which will contain the following information.

1. Status of the injection system operation;

2. Results of any ground-water sampling and analyses;

3. Results of any soil sampling and analyses;

4. An evaluation of the plume movement through the ground-water, if any;

5. Comparisons of analyses to determine any changes in pollutant concentrations.

The annual reports will be provided to the UIC Program in accordance with the schedule stipulated by the Hazardous Waste Management Branch.

4. Emergency Situations.

a. The Operator is to immediately notify the Division of any emergency situation that affects the injection system and describe the remedial activity that the Operator is utilizing to correct the situation.

b. The Operator is to immediately notify the Division when the emergency situation ceases to exist.

5. The Operator shall grant the Division permission to enter the facility property to conduct inspections of the injection system.

6. The Operator shall maintain a copy of this permit at the facility site.

7. The Operator shall, upon termination of the injection of hydrogen peroxide, ferrous sulfate, calcium phosphate, dilute phosphoric acid, dilute sulfuric acid, vegetable oil, and lecithin through Class V injection wells at this site, properly plug and abandon all Class V wells constructed on this site in accordance with EPD's *Manual for Groundwater Monitoring* (September 1991) and notify the division within thirty (30) days of such termination and abandonment.

Georgia Department Natural Resources
205 Jesse Hill Jr. Drive, S.E., East Floyd Tower, Atlanta, Georgia 30334
Lonice C. Barrett, Commissioner
Harold F. Reheis, Director
Environmental Protection Division
(404) 656-4713

December 21, 2001

Mr. John R. Garner
Environmental Division
Dept. of Navy
Naval Submarine Base
1063 USS Tennessee Ave.
Kings Bay, GA 31547-2606

RE: Underground Injection Control Permit #089-B, Kings Bay Submarine Base Site 11, Old Camden County Landfill, Kings Bay, Georgia.

Dear Mr. Garner:

Enclosed is the Underground Injection Control (UIC) Permit #089-B for the Kings Bay Submarine Base Site 11, Old Camden Co. Landfill, located at Kings Bay, Georgia. This UIC permit allows the U.S. Navy to utilize injection of potassium hydroxide, sodium hydroxide tracer and Oil Red 26 tracer through twenty (20) injection wells. This permit is issued to assist the U.S. Navy with the remediation of soil and ground water contaminated with chlorinated solvents at this site for up to five (5) years. The UIC permit states two (2) standard conditions and seven (7) additional conditions in the attachment.

If you have any questions about the permit please contact Bijan Rahbar, UIC Coordinator, at (404) 656-3214.

Sincerely,

Harold F. Reheis

Harold F. Reheis
Director

Enclosure

cc: File UIC Permit #089
L. Rogers, EPD-CR
B. Hendricks, EPD-HWMB
S. Ross, CH2MHILL

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

INJECTION WELL OPERATING PERMIT

PERMIT NUMBER: #089-B **DATE ISSUED: December 21, 2001**

FACILITY DATA: **INJECTION WELL TYPE: CLASS V (type 5X26)**

FACILITY: Naval Submarine Base
Site 11, Old Camden Co. Landfill
Kings Bay, GA
Camden County

OPERATOR: Dept. of Navy*
Naval Submarine Base
1063 USS Tennessee Ave.
Kings Bay, GA 31547-2606

LOCATION: Lat: 30° 48' 40.2" N
Long: 81° 34' 18.4" W

EPD ID # GA17009001
HWMB Permit# HW-014(S)(2)

In accordance with the provisions of the Georgia Rules for Underground Injection Control, Chapter 391-3-6-.13, as amended 2001, this permit is issued for the operation of the herein described injection system. Unless appealed, this permit is effective thirty (30) days after its issuance and is conditioned upon the following:

1) The Permittee's continued compliance with the Georgia Rules for Underground Injection Control, Chapter 391-3-6-.13, the Georgia Rules for Water Quality Control (Revised) and the Georgia Rules for Safe Drinking Water (Revised); and

2) The Permittee's continued compliance with the Permittee's approved injection operation plan which is part of the approved Corrective Action Plan for this site, along with provisions of officially approved plan amendments, if any.

Additional conditions 1 through 7 are attached hereto.

This permit is issued in accordance with the application received on November 26, 2001. The injection operation plan was approved on December 21, 2001, and is based on the statements and supporting data entered herein or attached thereto, all of which are filed with the Environmental Protection Division of the Georgia Department of Natural Resources and hereby made a part of this permit.

This permit is subject to revocation for noncompliance with aforementioned conditions.

This permit expires on **December 21, 2006,** unless previously terminated.

Harold F. Reheis, Director, Environmental Protection Division
Georgia Department of Natural Resources

* CH2MHILL, as consultant to Kings Bay Submarine Base, may be contacted regarding technical questions at (904) 777-4812.

INJECTION WELL OPERATING PERMIT
ADDITIONAL CONDITIONS

1. Permit Conditions.

   a. This permit is not transferable until any new operator shall agree in writing to these additional permit conditions. Any new operator also shall provide the Environmental Protection Division (Division) with appropriate documentation that they have adequate financial assurances to plug all existing Class V wells.

   b. If the U.S. Navy (Operator) wishes to continue an activity regulated by this permit after the expiration of the permit, the Operator must apply for and obtain a new permit.

   c. The Operator shall report any instances of noncompliance with permit conditions to the Division in writing within five (5) working days of such noncompliance and shall take all reasonable steps to minimize the impact on the environment resulting from noncompliance with this permit and the Georgia Rules for Underground Injection Control.

   d. The Operator shall notify the Division of any proposed changes to the performance of the water injection system in writing at least thirty (30) days prior to the change.

   e. All reports submitted to the Division shall be signed and stamped by a Georgia Registered Professional Engineer or Professional Geologist.

   f. All analyses shall be performed by a laboratory approved or accredited by EPD in accordance with the Georgia Rules for Commercial Laboratory Accreditation, Chapter 391-3-26.

2. System Parameters.

   a. This permit is issued to the Operator for the purpose of operating an injection system consisting of potassium hydroxide, sodium hydroxide tracer and Oil Red 26 tracer at the above referenced site to aid in remediation of soil and ground water contaminated with chlorinated solvents.

   b. Number of Class V injection wells: twenty (20) injection wells.

   c. Injected fluid: Potassium hydroxide, sodium hydroxide and Oil Red 26 tracer.

   d. Maximum injection rate per well: 3.0 gallons of liquid/min. (gpm)/well
      Maximum total injection rate: 60.0 gpm

   e. Maximum total injection volume per well: 4,320 gallons of liquid/day/well
      Maximum total injection volume: 86,400 g/day

   f. Maximum daily average injection pressure (at well head): 40 psig.

3. Monitoring and Reporting Requirements.

   a. The Operator shall report to the Underground Injection Control Program of the Division the number and exact location of all Class V injection wells it installs or plugs on a quarterly basis. The reports are to be submitted to the UIC Program in accordance with the reporting schedule stipulated by the Hazardous Waste Management Branch.

   b. The Operator shall submit to the Division for its approval, a detailed schematic diagram and location map on any Class V injection well that is different in construction from the specifications contained in the UIC permit application, no later than 45 days prior to installation of the injection well. The Operator cannot install such a well until it receives approval from the Division.

   c. The Operator shall submit to the UIC Program one (1) copy of any report regarding this site which the Operator is required to submit to the Hazardous Waste Management Branch, or any other program within the Division.

   d. The Operator shall submit to the UIC Program an annual report which will contain the following information.

      1. Status of the injection system operation;

      2. Results of any ground-water sampling and analyses;

      3. Results of any soil sampling and analyses;

      4. An evaluation of the plume movement through the ground-water, if any;

      5. Comparisons of analyses to determine any changes in pollutant concentrations.

      The annual reports will be provided to the UIC Program in accordance with the schedule stipulated by the Hazardous Waste Management Branch.

4. Emergency Situations.

   a. The Operator is to immediately notify the Division of any emergency situation that affects the injection system and describe the remedial activity that the Operator is utilizing to correct the situation.

   b. The Operator is to immediately notify the Division when the emergency situation ceases to exist.

5. The Operator shall grant the Division permission to enter the facility property to conduct inspections of the injection system.

6. The Operator shall maintain a copy of this permit at the facility site.

7. The Operator shall, upon termination of the injection of potassium hydroxide, sodium hydroxide tracer and Oil Red 26 tracer through twenty (20) Class V injection wells at this site, properly plug and abandon all Class V wells constructed on this site in accordance with EPD's *Manual for Groundwater Monitoring* (September 1991) and notify the division within thirty (30) days of such termination and abandonment.