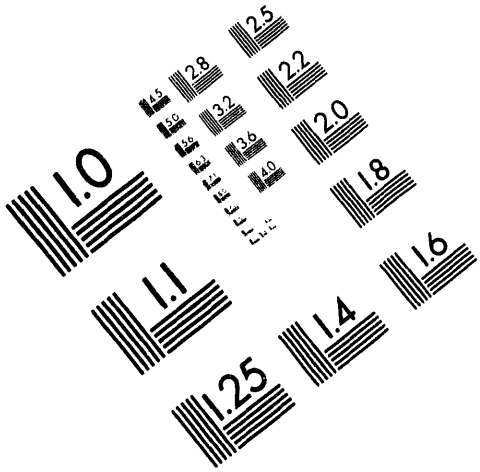

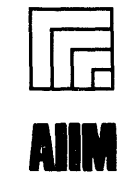

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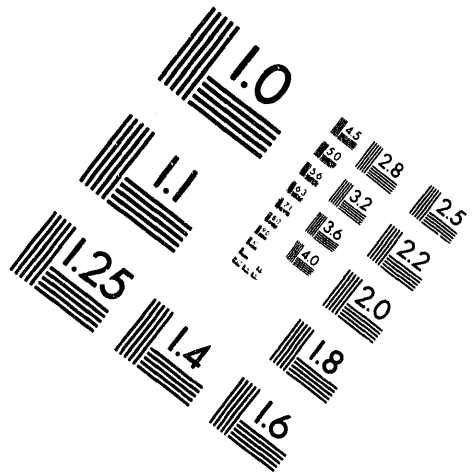

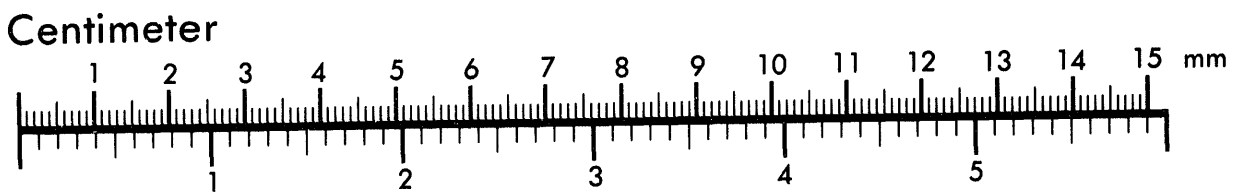

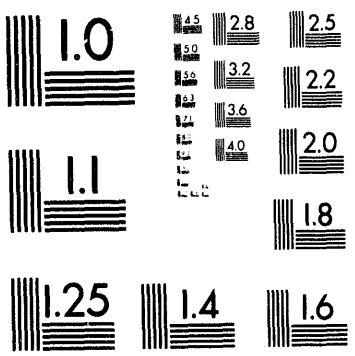

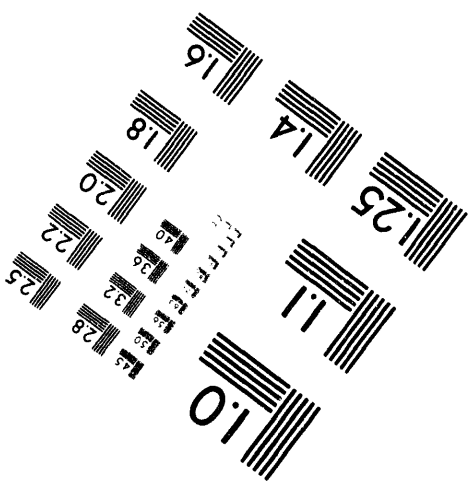

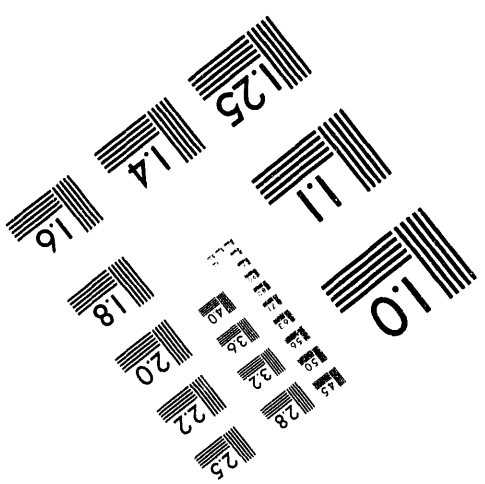

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WSRC-TR-92-415

ANALYSIS OF WATER AND SOIL FROM THE WETLANDS OF UPPER THREE RUNS CREEK - VOLUMES 1, 2A, 2B, & 3

by
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DOE Contract No. **DE-AC09-89SR18035**

WSRC - TR - 92 -415

ANALYSIS OF WATER AND SOIL FROM THE WETLANDS OF UPPER THREE RUNS CREEK (U)

VOLUME 1
SUMMARY REPORT

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August 1992

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Westinghouse Savannah River Company

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VOLUME 1 - SUMMARY REPORT: ANALYSIS OF WATER AND SOIL FROM THE WETLANDS OF UPPER THREE RUNS CREEK

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LIST OF ACRONYMS/ABBREVIATIONS

BGC	Burial Ground Complex
FHSB	F- and H-Area Seepage Basins
FMB	Fourmile Branch
GSA	General Separations Area
MBV	Maximum Baseline Value
MWMF	Mixed Waste Management Facility
RCRA	Resource Conservation and Recovery Act
SCDHEC	South Carolina Department of Health and Environmental Control
SDWA-MCL	Safe Drinking Water Act - Maximum Contaminant Level
SL	Sanitary Landfill
SRS	Savannah River Site
UTRC	Upper Three Runs Creek
WSRC	Westinghouse Savannah River Company

EXECUTIVE SUMMARY

Shallow water and soils along Upper Three Runs Creek (UTRC) and associated wetlands between SRS Road F and Cato Road were sampled for nonradioactive and radioactive constituents. The sampling program is associated with risk evaluations being performed for various regulatory documents in these areas of the Savannah River Site (SRS). WSRC selected fifty sampling sites bordering the Mixed Waste Management Facility (MWMF), F- and H-Area Seepage Basins (FHSB), and the Sanitary Landfill (SL). The analytical results from this study provided information on the water and soil quality in UTRC and its associated wetlands.

This investigation involved the collection of shallow water samples during the Fall of 1991 and the Spring of 1992 at fifty (50) sampling locations. Sampling was performed during these periods to incorporate high and low water table periods. Samples were collected from three sections along UTRC denoted as Phase I (MWMF), Phase II (FHSB) and Phase III (SL). One vibracored soil sample was also collected in each phase during the Fall of 1991.

The analytical results from this investigation indicated that the primary constituents and radiological indicators detected in the shallow water and soils were tritium, gross alpha, radium 226, total radium and strontium 90. Tritium levels exceeded the Safe Drinking Water Act Maximum Contaminant Levels (SDWA-MCL) in 72% of the samples collected from Phase I in the Fall and in 88% of the samples collected from Phase I in the Spring. Tritium levels exceeded the SDWA-MCL in 13% of the samples collected from Phase II in the Fall and in 7% of the samples collected from Phase II in the Spring. All samples collected from Phase III contained tritium at a concentration less than the SDWA-MCL. Gross alpha levels exceeded the SDWA-MCL in samples from all Phases in both the Spring and Fall. The proposed SDWA-MCL for radium 226 was exceeded in Phase I samples, only. Sixteen percent of the Phase I samples collected during the Fall of 1991 exceeded the SDWA-MCL for radium 226. Analytical results for the Spring of 1992 sampling event did not include radium 226; instead, the samples were analyzed for total radium. Total radium was detected at a concentration which exceeded the SDWA-MCL (5 pCi/L) in 24% of the Phase I samples and in 7% of the Phase II samples. The SDWA-MCL for strontium 90 (8 pCi/L) was exceeded in both Phase I (28% of the Fall samples and 12% of the Spring samples) and Phase II (20% of the Fall samples, only). Because of the high turbidity of the collected samples, a very high error at the 95% confidence limit exists for much of the radiological data. The error was not considered in presenting this summary of samples which exceeded the SDWA-MCLs. A more conservative approach in which the maximum error is considered could result in many more samples potentially exceeding the SDWA-MCL.

1.0 INTRODUCTION

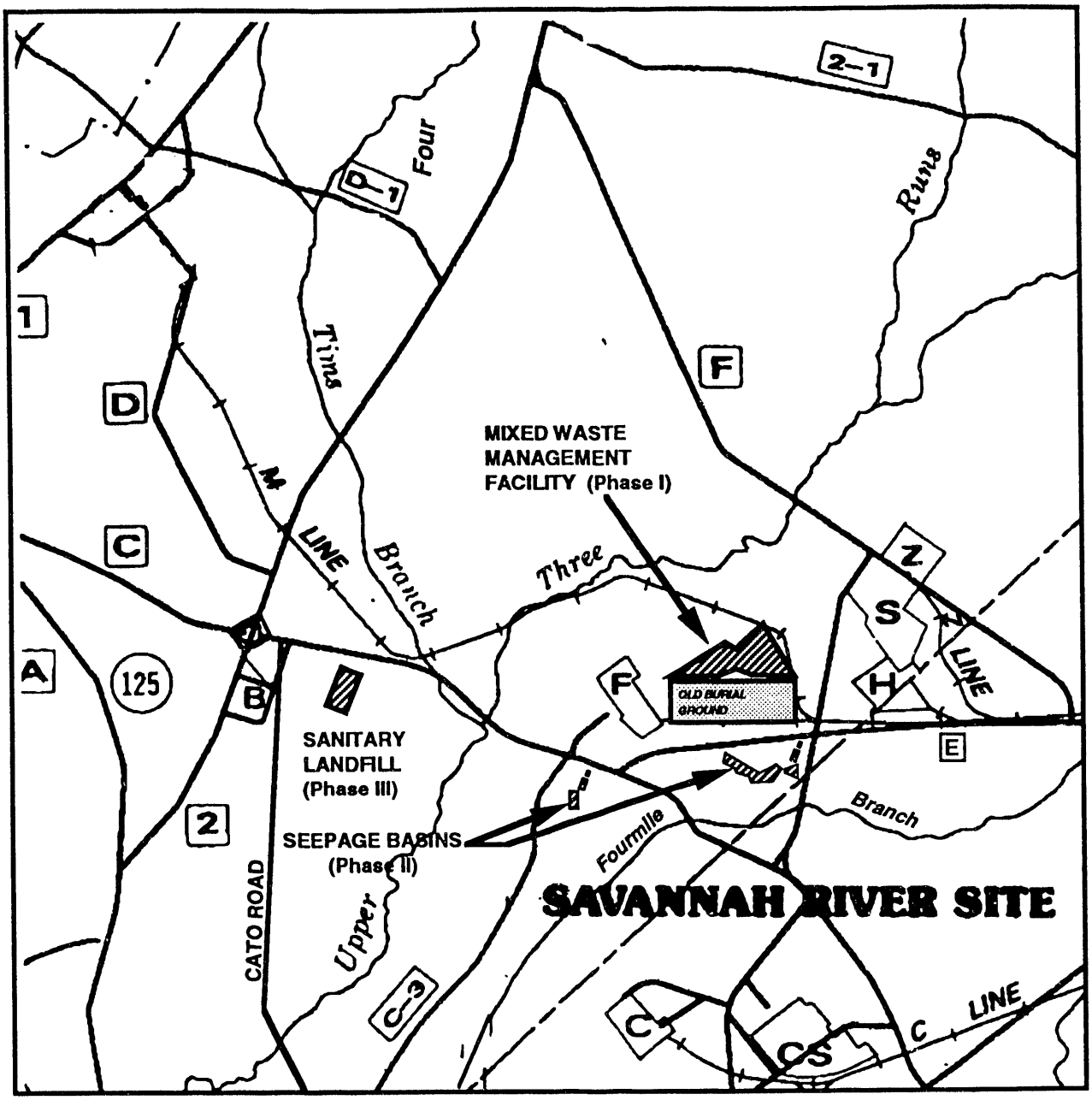
1.1 Site Description

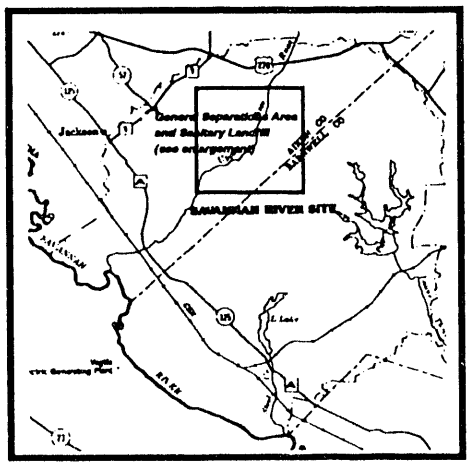
The Savannah River Site (SRS) is located in southwestern South Carolina. The site occupies an area of approximately 300 square miles within Aiken, Barnwell, and Allendale counties of South Carolina. The site lies approximately 22 miles southeast of Augusta, Georgia and is bounded by the Savannah River along its southwestern border. The study area for this project is located in the north-central portion of the SRS (Figure 1-1). The study area, which includes the General Separations Area (GSA) and the Sanitary Landfill (SL) Area, is bounded to the north and west by Upper Three Runs Creek (UTRC), and to the south by Fourmile Branch (FMB). The purpose of this report is to present and to discuss the analytical results obtained from an investigation of water and soils in the UTRC wetlands area. Three solid waste management units of interest to this investigation are located within the study area and are discussed in the following paragraphs. Other facilities are located in the study area; however, the influence of these facilities on the data reported in this document has not been determined.

The following description of the F- and H-Area Seepage Basins (FHSB) is taken from *Baseline Risk Assessment for the F- And H-Area Seepage Basins Groundwater Unit (U)*, WSRC-RP-91-950.

> *The basins were designed to permit the infiltration of process wastewaters discharged from their respective separations facilities. All liquids entering the basins either percolated into the ground or evaporated from the basin surfaces. The basins were constructed using an excavation and fill placement approach. Material excavated from the basin interiors and from the topographically elevated adjacent sides was used for dikes along the topographically low sides. The basins were generally bermed around their perimeters for control of run-on.*
>
> *As waste water percolated downward through the basin subsoils, chemical radioactive waste constituents were retained or delayed through absorption, ion exchange, and filtration processes. Wastewater eventually reached the underlying saturated zone, resulting in contamination of the underlying groundwater. The contamination has since migrated to the south of the seepage basins, emerging at the seepline and entering Fourmile Branch.*

The basins operated from 1955 to 1988 for the handling of liquid wastes containing low-level radioactivity and chemicals from the F- and H-Area separations facilities. The wastes discharged to these basins contained radionuclides (primarily tritium), nitrates, mercury, sodium hydroxide, and chromium. (Killian et al., 1987) *The Baseline Risk Assessment for the F- And H-Area Seepage Basins Groundwater Unit (U)*, WSRC-RP-91-950, report lists 78 potential contaminants of concern associated with the FHSB. The contaminants include 33 inorganic chemicals, 8 organic chemicals, and 37 radionuclides.





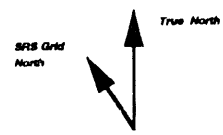


FIGURE 1-1. SITE LOCATION MAP
ANALYSIS OF SOIL AND WATER FROM THE WETLANDS OF UPPER THREE RUNS CREEK

(Not to scale)

The Mixed Waste Management Facility (MWMF) is part of the Burial Ground Complex (BGC). The MWMF received wastes from 1972 to 1986. A Resource Conservation and Recovery Act (RCRA) Closure Plan for the MWMF, which included installation of a clay cap, was approved by the South Carolina Department of Health and Environmental Control (SCDHEC) in 1987. Closure was completed in December 1990, and SCDHEC accepted the closure certification in April 1991. (SAIC, 1992)

The Mixed Waste Management Facility (MWMF) covers approximately 58 acres. Mixed waste buried in the MWMF included scintillation fluids, waste oil in absorbent material sealed in 55 gallon drums, lead shielding, wastes in metal disposal boxes , and radioactively contaminated equipment. The MWMF is unlined and there is no leachate collection system. Runoff from the MWMF is collected via ditches in a set of settling basins. A large drainage ditch transports water draining off the clay closure cap to FMB. (SAIC, 1992)

The Sanitary Landfill (SL), currently in use, began operations in 1974 as a 32 acre site. In 1987 a southern area and northern area were added. The northern area is under construction. The 22 acre southern area is currently in operation and is nearing capacity. The SL has received approximately 10,000 to 20,000 tons of waste per year during its 19 years of operation (1974-1992). A trench and fill operation is used at the landfill. Wastes are placed in one of the following four excavated trenches: the main trench, the asbestos trench, the sludge trench, and the regulated material trench. The main trench receives the bulk of the solid waste. The asbestos trench receives asbestos materials and construction debris. Skimmings from the sewage treatment plant, dead animals and remains of animals killed during organized hunts at the SRS are received at the sludge trench. Paper, office waste, and coveralls from regulated areas are sent to the regulated material trench.

On February 23, 1990 the Department of Energy (DOE) notified SCDHEC that solvent rags and wipes used for cleaning and radioactive decontamination had been deposited in portions of the landfill. DOE questioned the RCRA applicability to the deposited solvent rags and wipes and sought guidance from SCDHEC. In response, SCDHEC advised DOE that the solvent rags and wipes constituted hazardous waste subject to RCRA regulation. Thus, in August, 1991, without adjudication, both parties agreed to execute a settlement agreement. This agreement states that DOE will submit a closure and post closure plan to SCDHEC by February 28, 1993 for the portions of the SL that received solvent rags and wipes.

Additional information on each of these solid waste management units is provided in the following Environmental Information Documents: *Radioactive Waste Burial Grounds* (DPST-85-694); *H-Area Seepage Basins* (DPST-85-706); *F-Area Seepage Basins* (DPST-85-704). The MWMF is further discussed in *Hydrogeological Characterization of the Mixed Waste Management Facility (U).*

1.2 Local Hydrogeology

The General Separations Area (GSA) is centrally located within the SRS atop a broad watershed which drains into Upper Three Runs Creek (UTRC) and Fourmile Branch (FMB). The three prominent hydrogeologic zones present are described using a new hydrostratigraphic nomenclature presented in the document *Hydrogeological Characterization*

of the Mixed Waste Management Facility (U), (SAIC, 1992). The three prominent hydrogeologic zones include the principal confined aquifer which is the shallowest confined aquifer beneath the GSA, the principal confining unit and the uppermost aquifer. Figure 1-2 and Figure 1-3 for Tertiary age sediments help to clarify this new nomenclature.

The principal confined aquifer in Aquifer System I is the uppermost sandy unit within the Cretaceous-age formation and is not shown on Figure 1-3. The shallowest confined aquifer in the system is referred to as Aquifer Unit IB (Peedee Aquifer) and is significant in that it is the source of domestic water or connected to underlying aquifers used as drinking sources. The aquifer is a medium to coarse grained, micaceous sand with pebble beds throughout.

The principal confining unit, the Confining System I-II lies directly above the Aquifer Unit IB (Peedee Aquifer) dipping to the south and southwest. The Confining System I-II (Ellenton Clay) consists of very fissile, highly micaceous and carbonaceous clays and silt. The uppermost aquifer includes Aquifer System II. It is subdivided into aquifer units with a corresponding confining unit. The upper unit, Aquifer Unit IIB, is further subdivided into aquifer zones with a confining zone. This is shown in Figure 1-2. Lithologic descriptions for these units and zones are discussed in the previously mentioned document prepared by SAIC (1992). This system includes the Aquifer Zone IIB_2 (Water Table Aquifer). Depth to water table from ground surface ranges from 4 to 80 feet.

The principal confining unit, Confining System I-II, is an effective hydraulic barrier as shown from field tests that consistently point out low hydraulic conductivities (vertical and horizontal) on the order of 10^{-5} to 10^{-1} (Bledsoe et al, 1990). The confining unit/zone of Aquifer System II characteristically thickens, thins and pinches out abruptly. Displacements have been mapped and are thought to be slump features caused by dissolution of carbonate and recompaction. The Tertiary/Cretaceous boundary represented by the Confining System I-II (Ellenton Clay) has demonstrated a phenomenon known as head reversal. First discovered by subsurface exploration by the U.S. Army Corps of Engineers (1952), it represents an upward gradient across the Confining System I-II (Ellenton Clay) instead of the normal downward gradient found in natural hydraulic systems. Figure 1-4 indicates that groundwater flow in Aquifer Unit IIA (Congaree Aquifer) is northwest toward UTRC. Due to downcutting of the UTRC into Aquifer Unit IIA (Congaree Aquifer), a discharge area has formed. As illustrated in Figure 1-5 a groundwater divide, exists in Aquifer Zone IIB_1 (Barnwell/McBean Aquifer) beneath the Burial Ground Complex (BGC) causing groundwater to flow to the north and northwest towards UTRC and to the southwest towards FMB. Figure 1-6 shows that this groundwater division, though poorly defined, also exists in Aquifer Zone IIB_2 (Water Table Aquifer) with flow occurring in the same general directions towards UTRC and FMB.

Head differences across Confining Unit IIA -IIB (Green Clay) and Confining Zone IIB_1 - IIB_2 (Tan Clay) are noted by SAIC (1992). A decrease in head differences north of the H-Area Seepage Basins coincides with the presence of calcareous sediments in the Confining Unit IIA-IIB (Green Clay) indicating a higher permeability. Subsurface data implies a decrease in head differences across Confining Zone IIB_1-IIB_2 (Tan Clay). These decreases indicate an extensive vertical flow component, suggesting leaking confining units.

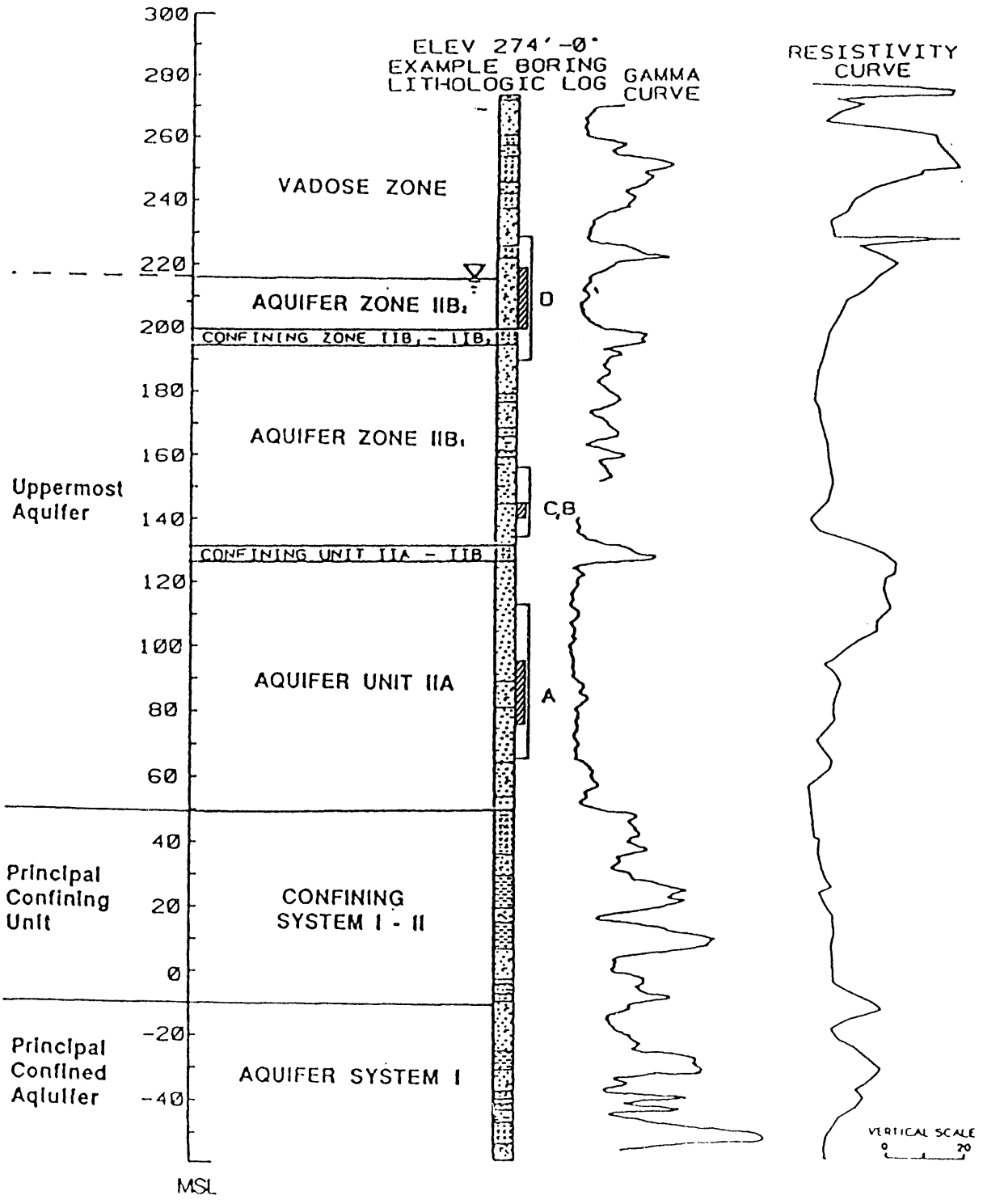


Figure 1-2. Geophysical Characteristics of Hydrostratigraphic Units (from SAIC, 1992)

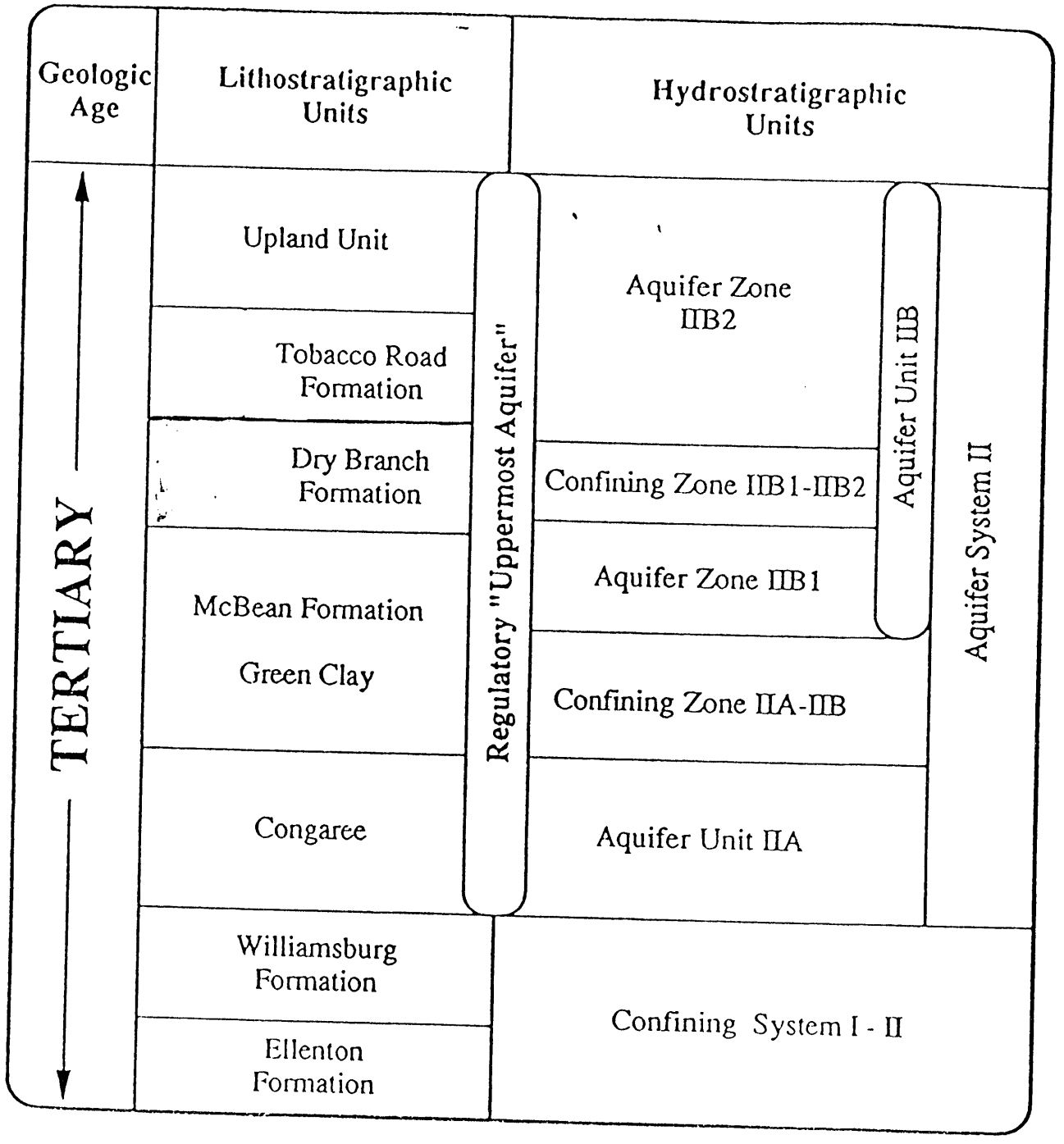
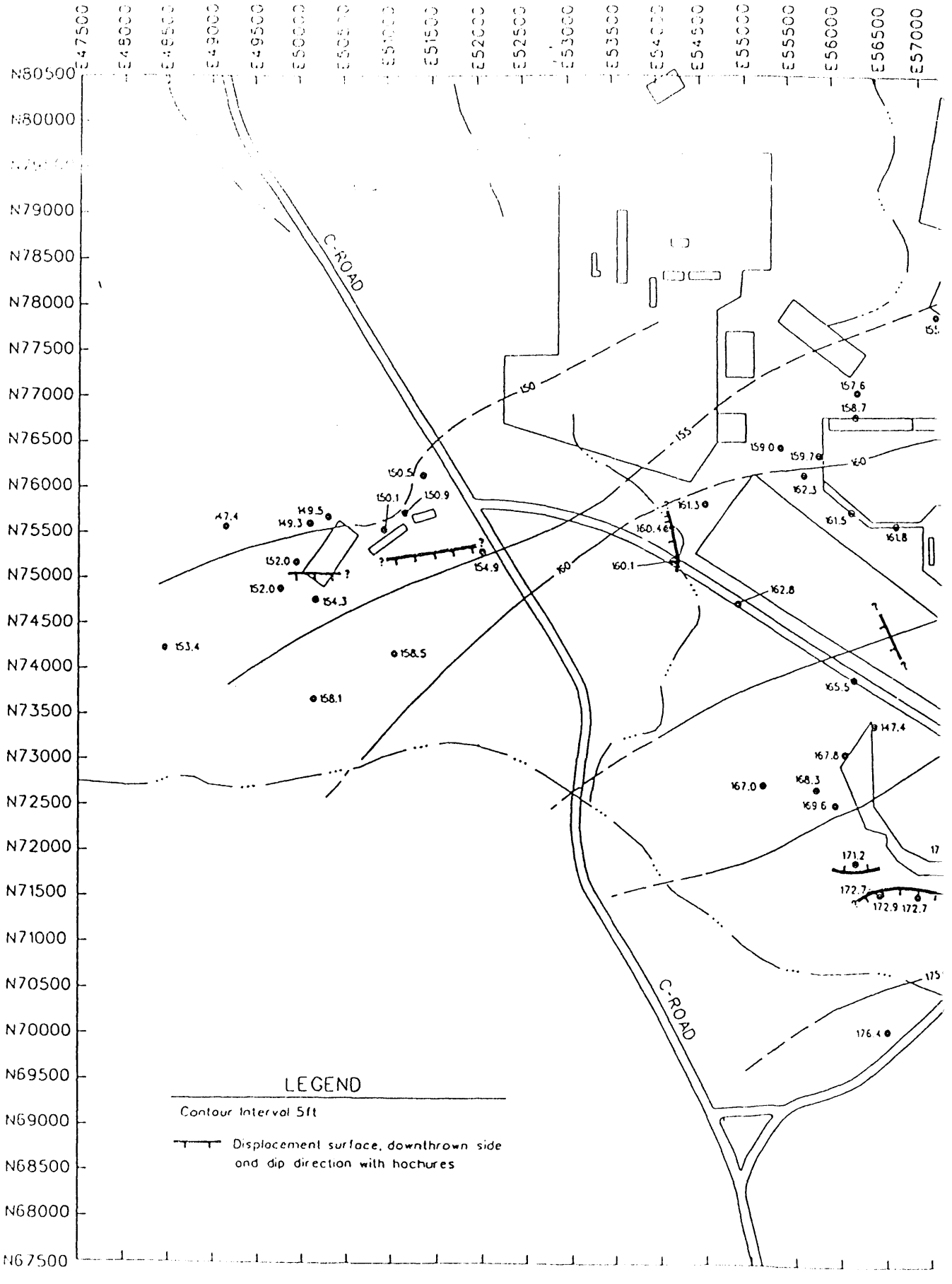


Figure 1-3. Hydrostratigraphic Nomenclature of the SRS (from SAIC, 1992)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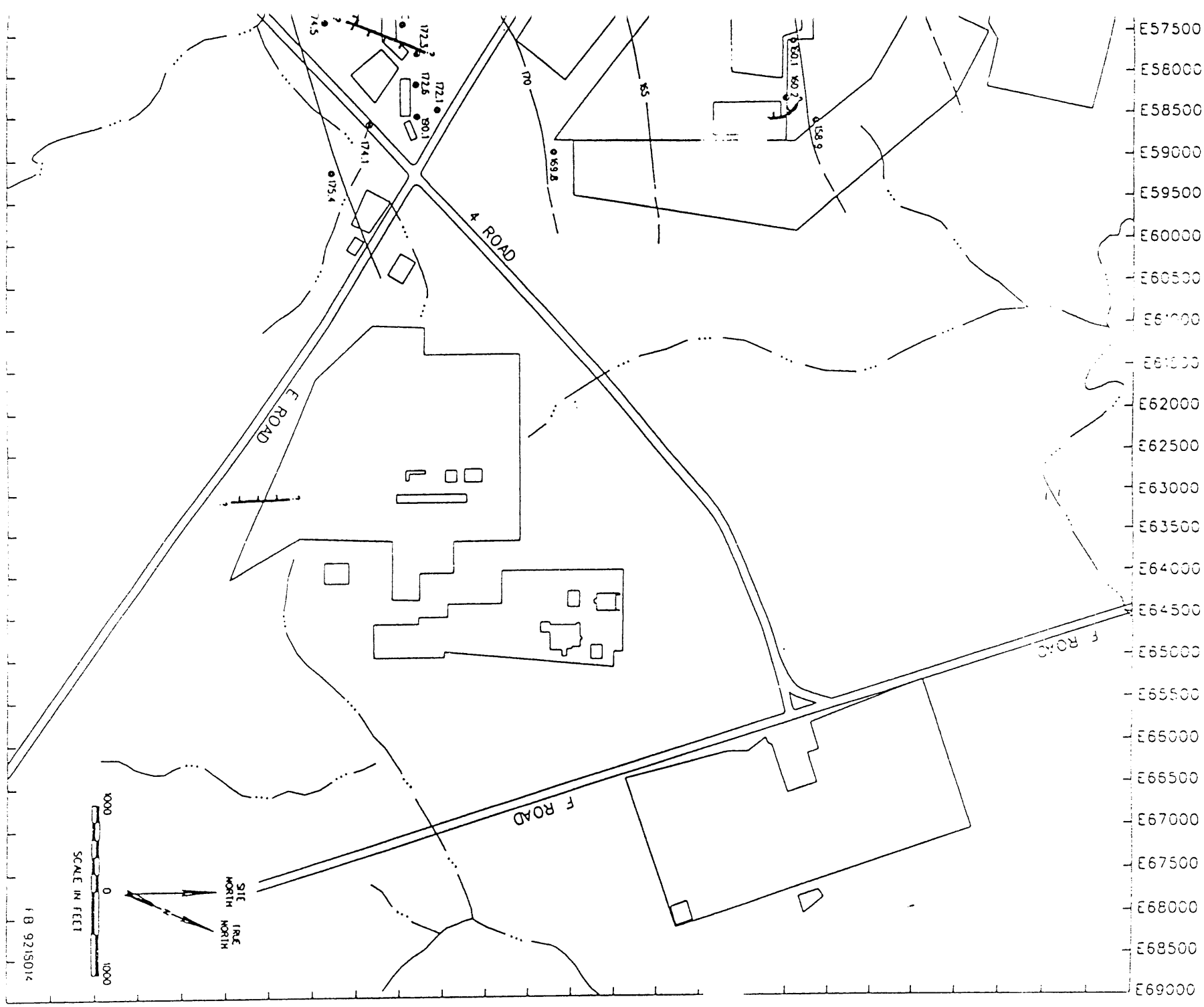
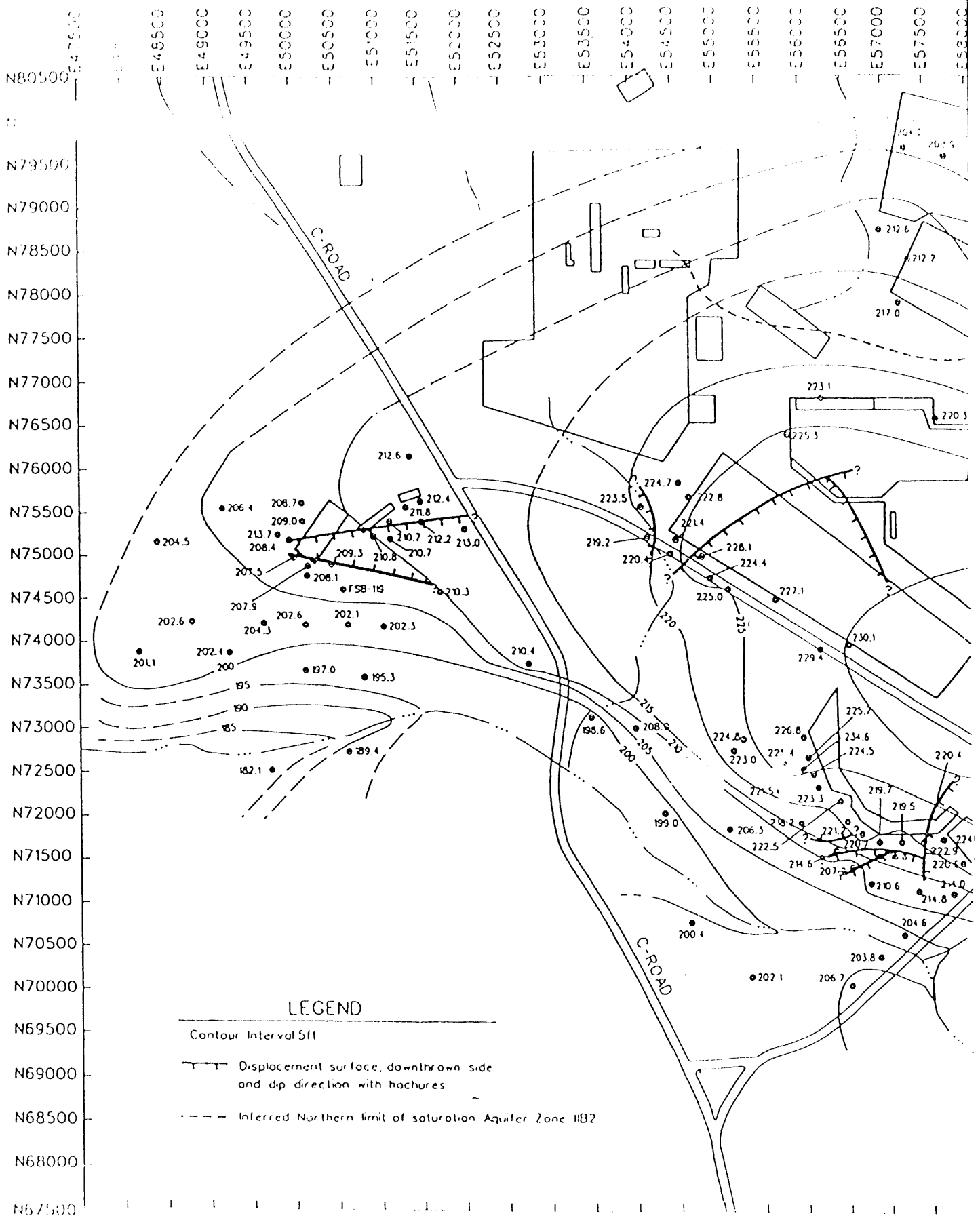


Figure 1-4. Potentiometric Surface Map of Aquifer Unit IIA (Congaree Aquifer) (from SAIC, 1992)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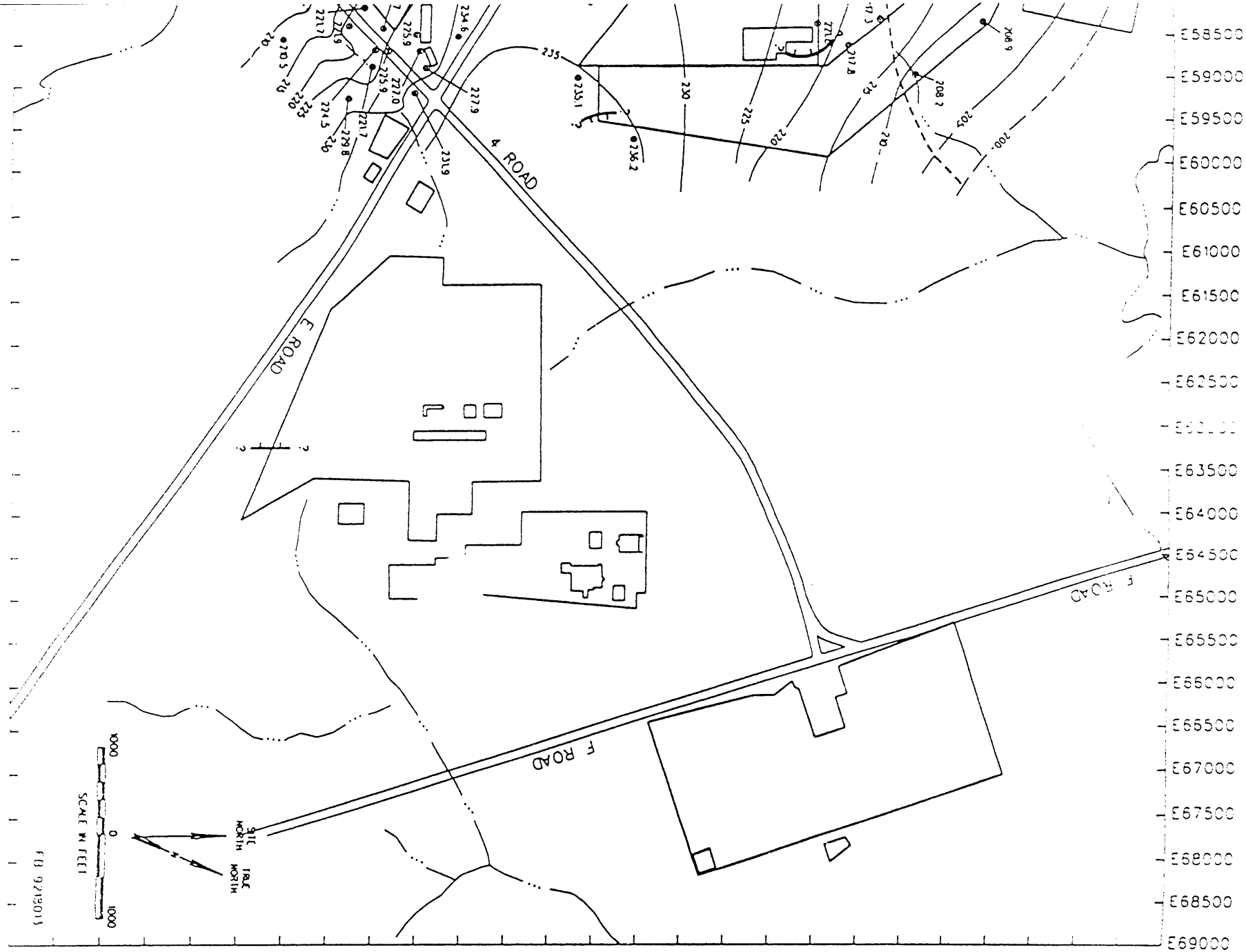
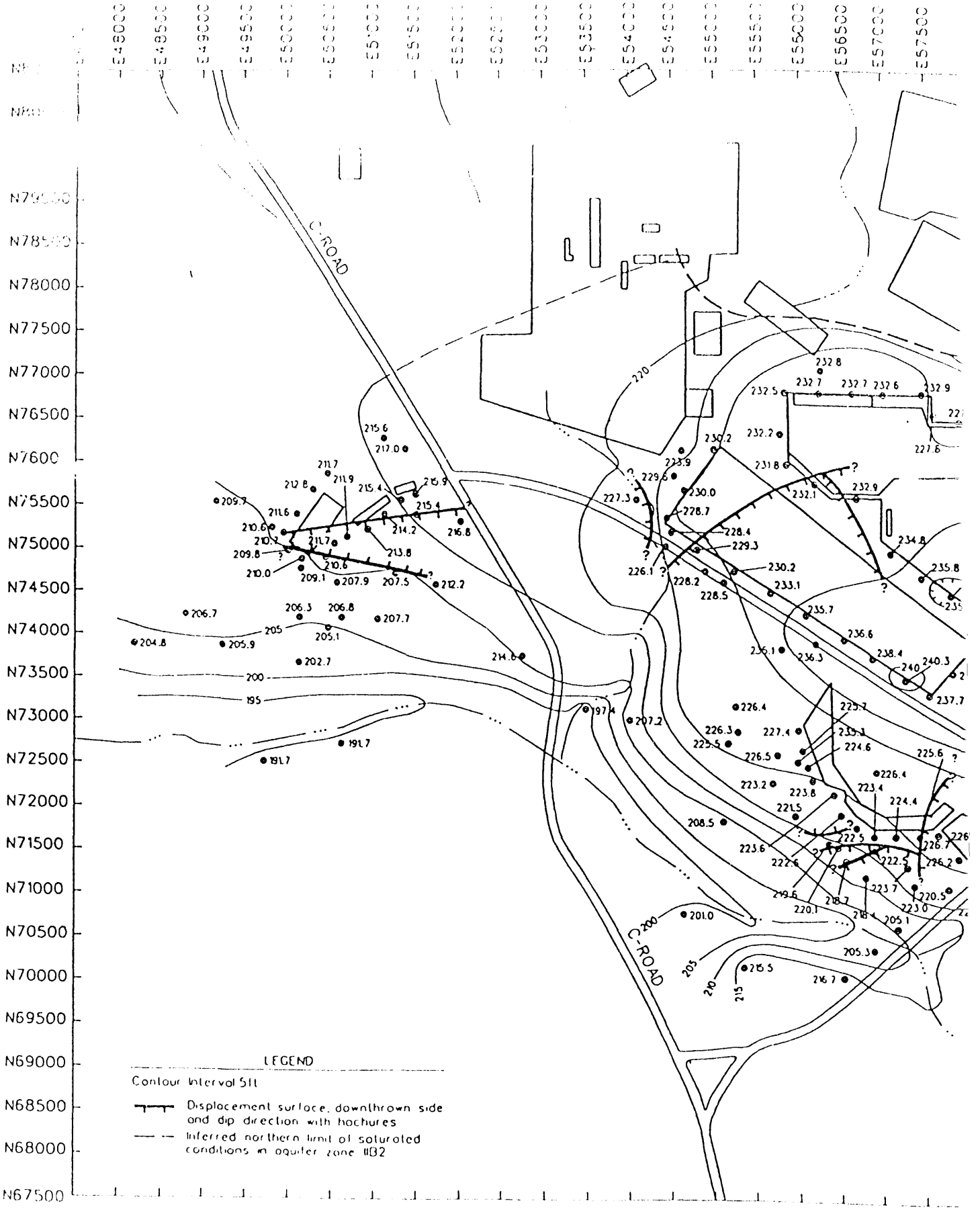


Figure 1-5. Potentiometric Surface Map of Aquifer Zone IIB_1 (Barnwell/McBean Aquifer) (from SAIC, 1992)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Contour interval 5ft
Displacement surface, downthrown side and dip direction with hachures
Inferred northern limit of saturated conditions in aquifer zone IIB2

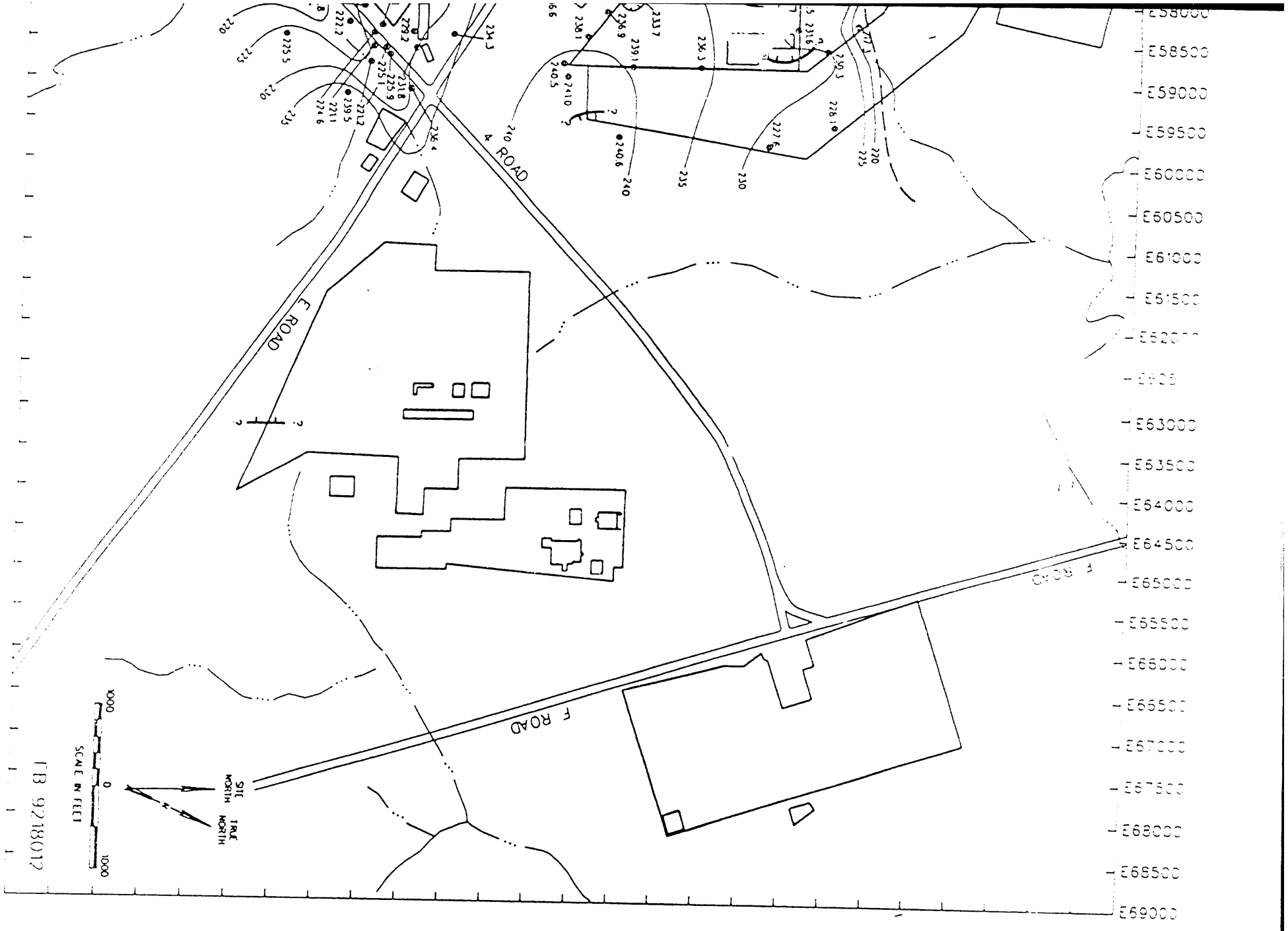


Figure 1-6. Potentiometric Surface Map of Aquifer Zone IIB_2 (Water Table Aquifer) (from SAIC, 1992)

1.3 Previous Sampling

Major groundwater, seepline and surface water monitoring programs were established in the study area beginning in the 1960s and are listed as references in Looney et al. (1988) and as an Appendix in Haselow et al. (1990). Most recently, an extensive seepline survey for pH, conductivity, and tritium was performed during 1989 and 1990 along FMB (Haselow et al., 1990). The study documented a tritium contaminated plume emanating from the F- and H-Areas and provided evidence of preferential subsurface flow of the plume towards FMB. As part of the study, both seepline water, surface water, and soil samples were analyzed for an extensive list of both nonradioactive and radioactive constituents. The results were compared to applicable federal water standards (Primary and Secondary Drinking Water Standards). In the study, with the exception of cadmium, all the metal concentrations in both the water and soil samples were below the Primary Drinking Water Standards at the FMB seeplines. Manganese and iron concentrations exceeded the Secondary Drinking Water Standards. Aluminum and sodium concentrations were elevated, but no standards exist for these constituents.

The following, an excerpt from Haselow et al., summarizes the radiological results of the seepline water sampling study:

> *Gross alpha, gross beta, ^{241}Am, ^{129}I, ^{3}H, ^{226}Ra, ^{89}Sr, ^{90}Sr, $^{233/234}U$, and ^{238}U are above either the proposed or established drinking water standard at one point or more along the F-Area FMC (FMB) seepline. Gross alpha, gross beta, ^{3}H, ^{226}Ra, ^{89}Sr, and ^{90}Sr are above either the proposed or established drinking water standard at one point or more along the H-Area FMC (FMB) seepline. ^{244}Cm, ^{60}Co, ^{134}Cs and ^{137}Cs have apparently impacted the seepline water as indicated by the elevated concentrations of these constituents in the central portion of the plume as compared to the outer edges. Gross beta and ^{3}H are above either the proposed or established drinking water standard at one point or more in FMC (FMB).*
>
> *Nitrate is also above the PDWS (10 ppm) at both the F & H Area seepline, but not in the creek.*

The current study for UTRC followed the same approach as the FMB study, with soil and water sampled and analyzed along the seepline of UTRC. The UTRC samples were analyzed for the same nonradioactive and radioactive constituents as the FMB samples.

From February 28, 1991 through April 18, 1991, a preliminary investigation was conducted along the UTRC wetlands boundary. Wetland water was sampled at a total of 271 sites and analyzed for pH, conductivity and tritium. After receiving the analytical results from this preliminary investigation, WSRC selected fifty (50) of the 271 sites for further investigation in this study. Twenty-five of these sites were located in the Phase I area; fifteen of the sites were located in the Phase II area and ten of the sites were located in the Phase III area. The results of the preliminary investigation are presented in Table C1, Appendix C.

2.0 MATERIALS AND METHODS

2.1 Wetlands Survey

The 271 preliminary wetland sample locations were permanently marked with a 1-inch Schedule 40 PVC pipe driven 2 feet below grade and marked with orange paint and the station number. The 50 stations selected for water sampling during this investigation were marked with yellow flagging tape. The wetland boundaries were marked with pink flagging tape.

The results of the wetlands survey are presented in Volume 3. Volume 3, Section 1 presents the SRS coordinates for each of the 271 preliminary sampling locations. Volume 3, Section 2 contains drawings of the wetlands boundaries. Each of the 271 preliminary sampling locations is indicated on these drawings as "SP".

2.2 Wetlands Water Sampling

Wetlands water samples were collected from the 50 locations indicated in Table 2.1. These samples were collected during September/October 1991 and January/February 1992. The 50 sampling locations were divided into the following three phases:

Phase I - Mixed Waste Management Facility - contained 25 stations (#15 through #161)

Phase II - F- and H-Area Seepage Basins - contained 15 stations (#186 through #230)

Phase III - Sanitary Landfill contained 10 stations (#254 through #271).

At each sample location a hole was dug with a shovel and post hole digger in the immediate vicinity of the PVC pipe. Digging continued until water began to seep into the bottom of the hole. At this point, a five (5) gallon plastic bucket with a mesh bottom and four mesh panels on the side was placed inside the hole to contain the water that was seeping in. The bucket was covered with a lid and allowed to remain overnight in order to reduce the turbidity of the water sample. The next day, the sample was collected by pumping the water from the bucket into the sample jars through Tygon® tubing using a small electric pump powered by a 12 volt battery. Before pumping the sample into the sample container, the water was allowed to flow through the tubing for 20 seconds in order to flush any residue from the previous sample.

The wetlands water samples were analyzed for the parameters listed in Table 2.2.

Samples collected for metals analysis were kept on ice and transported to the onsite laboratory at 704-B where they were filtered through a 0.45 micron membrane filter (to remove fine particulate matter from the water to be analyzed) within four hours of sample collection. Both filtered and non-filtered metals samples were preserved with a 5% nitric acid solution to a pH of less than 2.

Table 2.1. Wetland Sampling Location Numbers

PHASE I	PHASE II	PHASE III
15	186	254
22	190	258
23	191	259
24	192	262
65	196	263
66	205	266
68	206	267
71	207	268
77	208	269
114	209	271
115	220	
116	221	
117	222	
118	225	
134	230	
135		
137		
140		
142		
155		
156		
157		
160		
161		
164		

Table 2.2. Analytical Parameters

ANALYTICAL PARAMETER	WATER	SOIL
Metals		
Silver (Ag)	X	X
Aluminum (Al)	X	X
Arsenic (As)	X	X
Barium (Ba)	X	X
Cadmium (Cd)	X	X
Chromium (Cr)	X	X
Iron (Fe)	X	X
Manganese (Mn)	X	X
Mercury (Hg)	X	X
Nickel (Ni)	X	X
Lead (Pb)	X	X
Selenium (Se)	X	X
Zinc (Zn)	X	X
Inorganics		
Chloride	X	X
Nitrate	X	X
Sulfate	X	X
Alkalinity, Acidity	X	X
Total Hardness	X	
pH	X	
Conductivity	X	
Low Level Radionuclides		
Gross Alpha	X	X
Gross (non-volatile) Beta	X	X
Americium-241	X	X
Carbon-14	X	X
Gamma PHA	X	X
Tritium	X	X
Iodine-129	X	X
Plutonium-238,239,240	X	X
Radium (total and 226)	X	X
Strontium-89,90	X	X
Technetium-99	X	X
Uranium-234,236,238	X	X
GC/MS Volatile Organics	X	

The pH, conductivity, and oxygen-reduction potential of the water sampled was measured in the field and recorded on field data sheets.

All samples were kept cool from the time of sampling until their arrival at the analytical laboratory.

2.3 Soil Sampling

During the first round of sampling in October 1991, three soil samples were collected. One soil sample was collected from each Phase. An approximately three meter long continuous soil core was taken from Stations 161 in Phase I, Station 206 in Phase II, and Station 258 in Phase III.

The sampling methods used by Haselow et al. (1990) were repeated for this study with slight modifications. The soil cores were collected by first vibracoring a four inch diameter aluminum tube down approximately three meters. This tube served as an outer casing to prevent borehole collapse after retrieval of the soil core and to allow for grouting the borehole after the sample was retrieved. A three inch diameter aluminum tube was then vibracored inside the outer tube. After the inner three inch tube was in place, it was capped with a plumber's test plug and a vacuum was applied using water to ensure recovery of the core. The inner core barrel was then retrieved by utilizing a jack, tripod, and tackle arrangement.

The core was divided into equal lengths and each length was split in half. One half of each of the core sections was wrapped in plastic and labelled to indicate the location and depth of the sample. These archival samples were submitted to Westinghouse for storage. Two samples were collected from the other half of the core; one sample was collected from a sand layer and one sample was collected from a clay layer. The samples were placed into glass sample jars with the appropriate label information, kept cool, and shipped to the analytical laboratory for analysis.

Soil samples were analyzed for the parameters listed in Table 2.2.

2.4 Sample Handling and Shipping

All sample containers with appropriate preservatives, coolers, ice packs, and chain-of-custody forms were supplied by WSRC's analytical laboratory. Chain-of-custody forms were completed prior to packaging the samples for shipment. The sample containers were placed in ziplock type bags with an ice pack. These bags were then filled with vermiculite and sealed. The samples were then placed in coolers with additional vermiculite and ice packs. All glass sample containers were wrapped in bubble pack before placement in the ziplock type bag. Samples were then transported to WSRC shipping where a representative from the shipping department signed the appropriate Chain of Custody form. These forms were then copied and the original sealed in a plastic bag and placed inside the cooler. The cooler was then sealed with packing tape and shipped (priority overnight) to the analytical laboratory. Copies of the chain-of-custody forms are included in the analytical data packages in Volumes 2A and 2B.

2.5 QA/QC Procedures

A trip blank (VOA vial filled with boiled deionized water) was included with each sampling event. Each trip blank was analyzed for all of the parameters listed in Table 2.2. For additional QA/QC, one duplicate sample was collected for every 20 field collected samples. The results of these analyses are presented in Appendix A.

The sampling buckets were decontaminated before use at each site to avoid cross-contamination. Decontamination procedures included scrubbing each sampling bucket and rinsing it with tap water.

2.6 Summary of Analytical Methods

A summary of the analytical methods used by WSRC's subcontract laboratory in this study are listed in Table 2.3.

Table 2.3. Summary of Analytical Methods

Metals/Inorganics:

Arsenic:	EPA 206.2	Selenium:	EPA 270.2
Lead:	EPA 239.2	ICP Scan:	EPA 200.7
Mercury:	EPA 245.1	All Others:	EPA 200.7
Thallium:	EPA 279.2	EP Leachates (except Mercury):	EPA 200.7

The analytical methods applied by the laboratory for the determination of drinking water is 5.2.1.

VOLATILES:

SW 846 Method 8240 for TCL Volatile target compounds

RADIONUCLIDES:

Radionuclide:	Method:	Lower Limit of Detection:
Gross Alpha	900.0	2 pCi/l
Gross Beta	900.0	2 pCi/l
Radium-226	SM-705	0.2 pCi/l
Uranium-234/235/238	908.0	0.4 pCi/l
Tritium	906.0	200 pCi/l
Iodine-129	-	-
Plutonium-238/239/240	-	-
Strontium-89/90	905.0	1 pCi/l
Technetium-99	HASL300	1 pCi/l
Americium-241	907.0	2 pCi/l
Carbon-14	520-84-006	3 pCi/l
Cesium-137	901.0/Sm-709	1 pCi/l
Gamma Spec	901.1	25 pCi/l

The analytical methods applied by the laboratory, unless otherwise requested, for all inorganic analyses are derived from the USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600-4-79-020) and Standards Methods for the Examination of Water and Wastewater, 16 ed. Methods for the analysis of solid samples are derived from Test Methods for Evaluating Solid Waste. (USEPA SW846).

3.0 RESULTS

3.1 Soil Sampling

Soil samples collected using vibracore technology were separated into a sand subsample and a clay subsample. The Phase I core, collected at site 161, was advanced to a depth of 7 feet. The clay sample from the Phase I core was taken from the 0-100 cm section and the sand sample was taken from the 100-204 cm section. The Phase II core, collected at site 206, was advanced to a depth of 6 feet. The sand sample from the Phase II core was taken from the 0-100 cm section; the clay sample was taken from the 100-168 cm section. The Phase III core, collected at site 258, was advanced to a depth of 8 feet, 8 inches. The clay sample from the Phase III core was taken from the 100-200 cm section and the sand sample was taken from the 200-265 cm section. The clay component of the Phase III core was a mixture of organic matter and sand.

The results of the analyses on these samples were compared to values obtained from a survey of non-impacted soils on the SRS (Looney et al., 1990). In Haselow et al. (1990) soils are defined as impacted if they exceed the maximum baseline value (MBV) determined from the background soil study. Table 3.1 summarizes the maximum baseline values used for comparison purposes in this report. Table B1 in Appendix B summarizes the analytical data for the soil samples.

3.1.1 Radiological

Gross alpha exceeded the maximum baseline value (20 pCi/g) in the sand and clay fraction from Phase I, MWMF and Phase II FHSB clay subsample. Gross beta exceeded the MBV (23 pCi/g) in the FHSB clay fraction. Tritium values ranged from 2.2 pCi/g in the sand fraction of Phase III Sanitary Landfill soil to a maximum of 212 pCi/g in the sand fraction of Phase I Mixed Waste Management Facility sample. No MBV for tritium was available for comparison. Uranium (MBV 4.7 pCi/g) and Strontium 90 (MBV 1.0 pCi/L) were below MBVs for all samples.

3.1.2 Metals

All metals, with the exception of one silver concentration detected in the clay layer of location 206 (Phase II), were below the MBVs. The reporting limit in several samples for cadmium and sodium exceeded the MBV reported in Looney et al. (1990). Results for these metals were below their detection limits.

3.1.3 Inorganics

Chloride (MBV 118.4 ppm) and nitrate (MBV 44.4 ppm) concentrations were below MBVs for all soil samples. In the Phase III SL sand subsample, the sulfate concentration slightly exceeded the MBV of 25.1 ppm.

Table 3.1. Soil Maximum Baseline Values[a]

CONSTITUENT	MAXIMUM BASELINE VALUE	UNITS
Metals:		
Silver	1.80	µg/g
Aluminum	53,530.00	µg/g
Arsenic	15.20	µg/g
Barium	77.40	µg/g
Cadmium	1.19	µg/g
Chromium	105.10	µg/g
Mercury	0.89	µg/g
Nickel	17.90	µg/g
Lead	16.67	µg/g
Selenium	<4.00	µg/g
Zinc	267.00	µg/g
Miscellaneous:		
Chloride	118.40	µg/g
Nitrate	44.40	µg/g
Alkalinity	N/A	
Acidity	N/A	
Gross Alpha	20.0	pCi/g
Non-volatile Beta	23.0	pCi/g
Low Level Radionuclides:		
Americium-241	N/A	
Carbon-14	N/A	
Gamma PHA	N/A	
Tritium	N/A	
Iodine-129	N/A	
Plutonium- 238,239,240	N/A	
Radium (total)	N/A	
Strontium-89,90	<1.00	pCi/g
Technetium-99	N/A	
Uranium-234,238	4.70	pCi/g

[a]Looney et al. 1990
N/A No available background data

3.2 Wetland Water Sampling

The analytical results obtained from the analysis of wetlands water samples are reported in Appendix B Tables B2 through B10 for September/October 1991 data and Tables B11 through B20 for January/February 1992 data. These data include metals, organics, radionuclides, and inorganic parameters. Comparisons were made with Safe Drinking Water Act Maximum Contaminant Levels (SDWA-MCLs) listed in Table B21. SDWA-MCLs were used for comparison purposes because this aquifer could theoretically be used as a drinking water supply. The revised MCLs listed for 1992 were also considered.

3.2.1 September/October 1991

3.2.1.1 Radiological

The SDWA-MCL for tritium (20,000 pCi/L) in water samples was exceeded in 18 of 25 samples for Phase I (potential MWMF influence area), exceeded in 2 of 15 samples for Phase II (potential FHSB influence areas), and no tritium values exceeded the SDWA-MCL in Phase III (potential SL influence area).

The gross alpha SDWA-MCL (15 pCi/L) was exceeded in 19 of 25 samples in Phase I, 3 of 15 samples in Phase II, and 5 of 10 samples in Phase III. The radium-226 proposed SDWA-MCL (20 pCi/L) was exceeded in 4 of 25 samples in Phase I, 1 of 15 in Phase II, and no samples in Phase III. The strontium-90 SDWA-MCL (8 pCi/L) was exceeded in 7 of 25 samples in Phase I, 3 of 15 in Phase II and none in Phase III. A very high error at the 95% confidence limit exists for much of the radiological data. This error was not considered in presenting this summary. A more conservative approach in which the maximum error is considered could result in additional samples potentially exceeding the SDWA-MCLs.

3.2.1.2 Metals

The cadmium SDWA-MCL (0.005 ppm) and chromium SDWA-MCL (0.1 ppm) were exceeded in only one sample of Phase I. Nickel proposed SDWA-MCL (0.1 ppm) was exceeded in 1 of 25 samples in Phase I and 1 of 10 samples in Phase III. The lead SDWA-MCL (0.015 ppm) was exceeded in 2 out of 25 samples of Phase I and 1 of 15 samples in Phase II.

3.2.1.3 Organics

There was no significant organic contamination found in Phases II or III samples. In Phase I (MWMF), one sample contained 0.008 ppm 1,2 Dichloroethene, slightly above the SDWA-MCL of 0.005 ppm.

3.2.1.4 Inorganics

The nitrate SDWA-MCL (10.0 ppm as NO_3-N) was exceeded in 2 of 25 samples in Phase I. The pH of the samples ranged from 3.8 to 5.6 in the field and from 3.9 to 6.0 in the lab.

3.2.2 January/February 1992

3.2.2.1 Radiological

In Phase I (MWMF) water samples, the SDWA-MCL for tritium (20,000 pCi/L) was exceeded in 15 of 17 samples (data for 8 samples not yet received). In Phase II (FHSB) samples, the SDWA-MCL for tritium was exceeded in 1 of 15 samples. In Phase III (SL) samples, no tritium values exceeded the SDWA-MCL.

The gross alpha SDWA-MCL (15 pCi/L) was exceeded in 4 of the 17 Phase I samples, 4 of the 15 Phase II samples, and 1 of the 10 Phase III samples. The SDWA-MCL for total radium (5 pCi/L) was exceeded in 4 of the 17 Phase I samples and 1 of the 15 Phase II samples. The SDWA-MCL for strontium 90 (8 pCi/L) was exceeded in 2 of the 17 Phase I samples. A very high error at the 95% confidence limit exists for much of the radiological data. This error was not considered in presenting this summary. A more conservative approach in which the maximum error is considered could result in additional samples potentially exceeding the SDWA-MCLs.

3.2.2.2 Metals

The lead SDWA-MCL (0.015 ppm) was exceeded in 2 out of 25 samples of Phase I.

3.2.2.3 Organics

There was no significant organic contamination found in Phase I, II or III samples.

3.2.2.4 Inorganics

Nitrate SDWA-MCL (10.0 ppm) was exceeded in 1 of 25 samples in Phase I. The pH of the samples ranged from 3.9 - 6.6 in the field and from 4.0 - 6.1 in the lab.

4.0 CONCLUSIONS

The data indicates that the soils in Phase I and Phase II have been impacted by operations at the associated solid waste management units. The primary contamination detected was elevated levels of gross alpha and gross beta which is indicative of the presence of radioactive elements. The gross alpha levels detected in the clay layers were higher than the gross alpha levels detected in the sand layers suggesting that contaminants are retained more easily in the clay layers.

The data indicates that 50% of the samples collected from the Phase III area in the Fall and only 10% of the samples collected from the Phase III area in the Spring exceeded SDWA-MCLs for gross alpha. However, except for gross alpha, the Phase III samples appear not to be impacted.

The primary contaminants detected in the water samples from Phases I and II were the following radiological constituents: tritium, gross alpha, radium 226, total radium, and strontium 90. Tritium levels exceeded the SDWA-MCL in 72% of the Fall Phase I samples, 13% of the Fall Phase II samples, 88% of the Spring Phase I samples, and 7% of the Spring Phase II samples. Tritium concentrations are graphically presented (Figures 4-1 through 4-3) for Phases I, II, and III with a comparison to the SDWA-MCL of 20,000 pCi/L. The graphs indicate that the same concentration trends exist in both the Fall and Spring sampling results.

Gross alpha levels exceeded the SDWA-MCL in samples from all Phases. Gross alpha concentrations are graphically presented (Figures 4-4 through 4-6) for Phases I, II, and III with a comparison to the SDWAMCL concentration of 15 pCi/L. There appears to be little correlation between Spring and Fall sampling events.

Radium 226 was detected at a high level (95 pCi/l) at site 117 in the Fall Phase I. Radium 226 was detected at a lower level (27 to 29 pCi/l) at sites 15, 22 and 27 in the Fall Phase I samples. Total radium was detected at the following Phase I sites in the Spring: 134, 137, 142, 156. Spring concentrations ranged from 6.8 to 11 pCi/L. It appears that there is no specific trend to the distribution of radium contamination.

Sites 156, 160 and 161 in the Fall Phase I sampling results showed the highest concentrations of strontium 90. Sites 160 and 164 in the Spring Phase I sampling results showed the highest concentrations of strontium.

FIGURE 4-1. PHASE I TRITIUM LEVELS

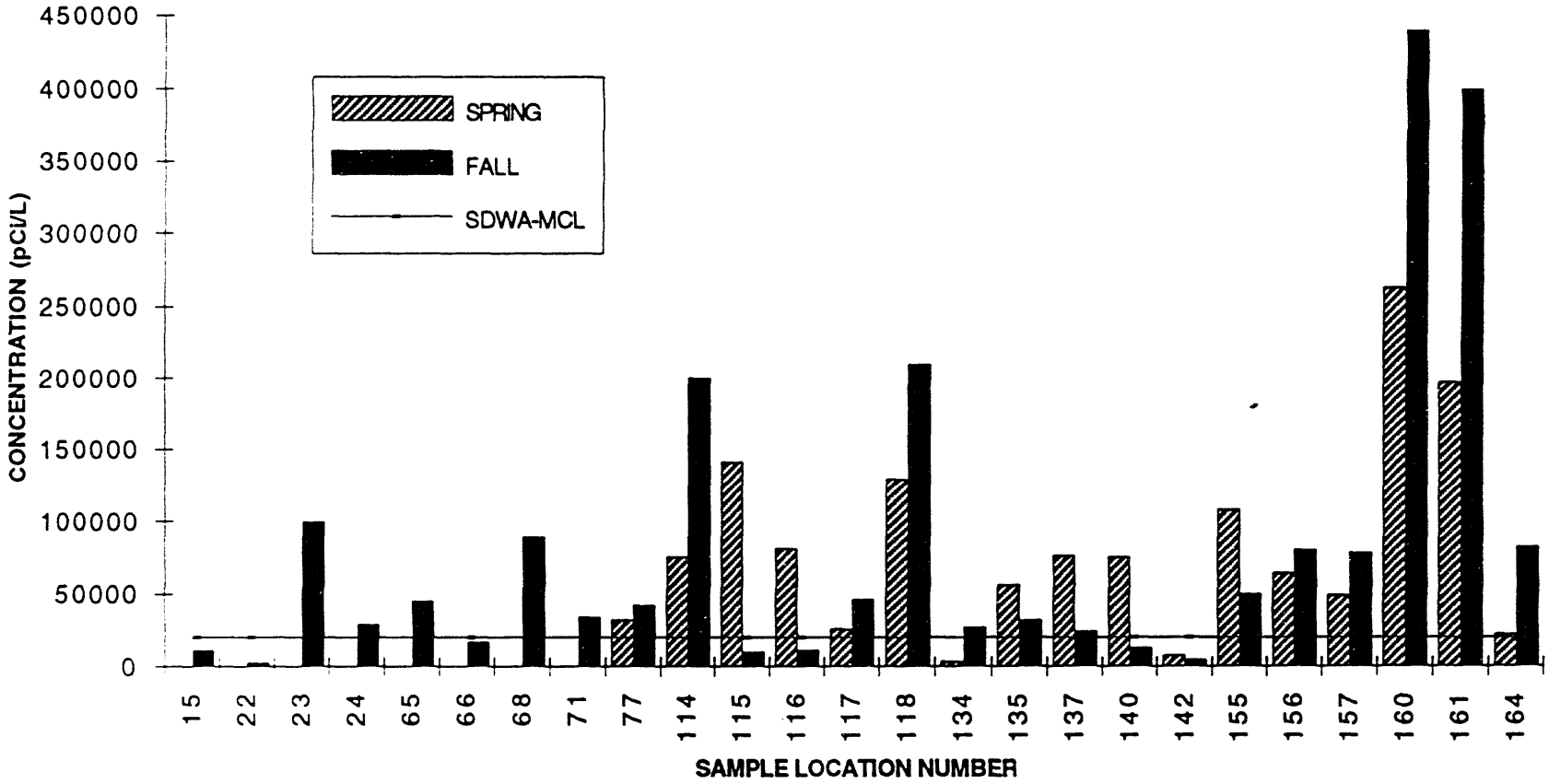


FIGURE 4-2. PHASE II TRITIUM LEVELS

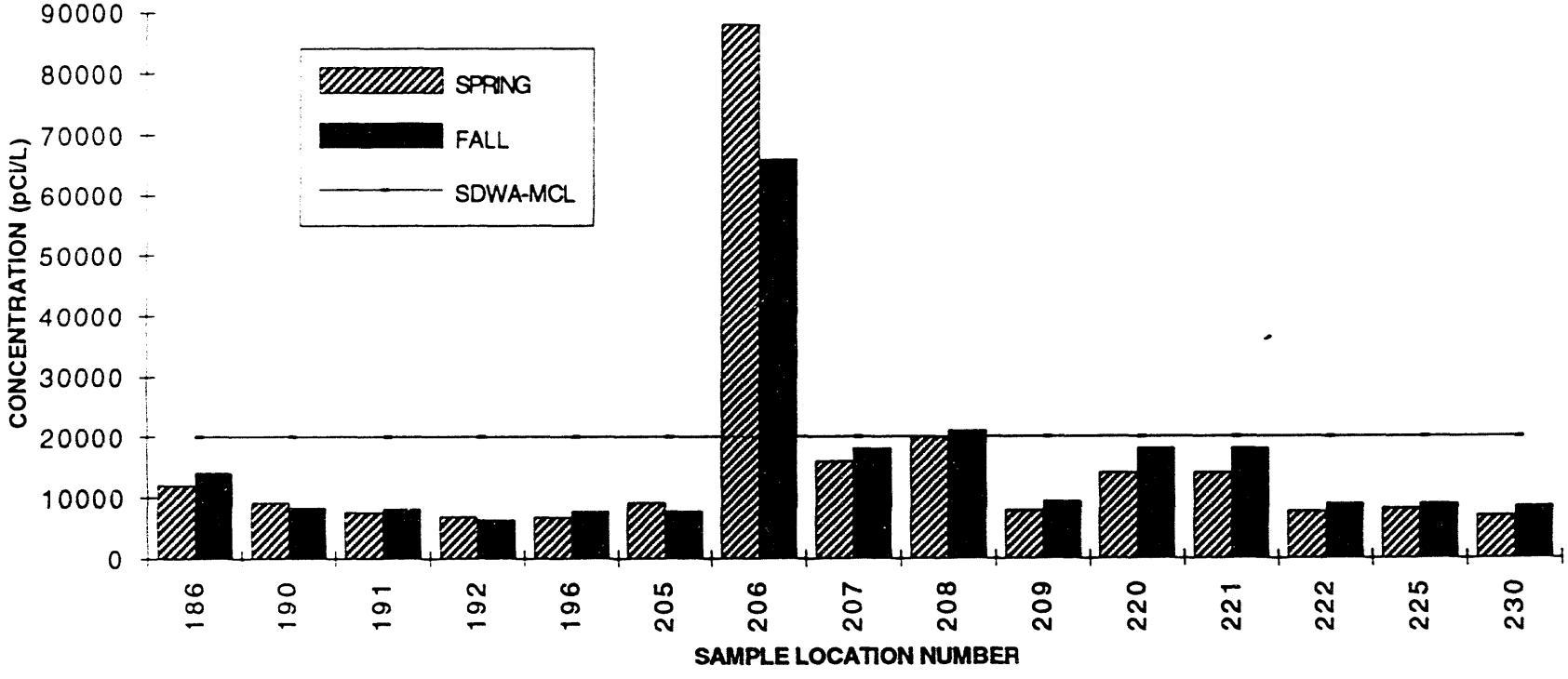


FIGURE 4-3. PHASE III TRITIUM LEVELS

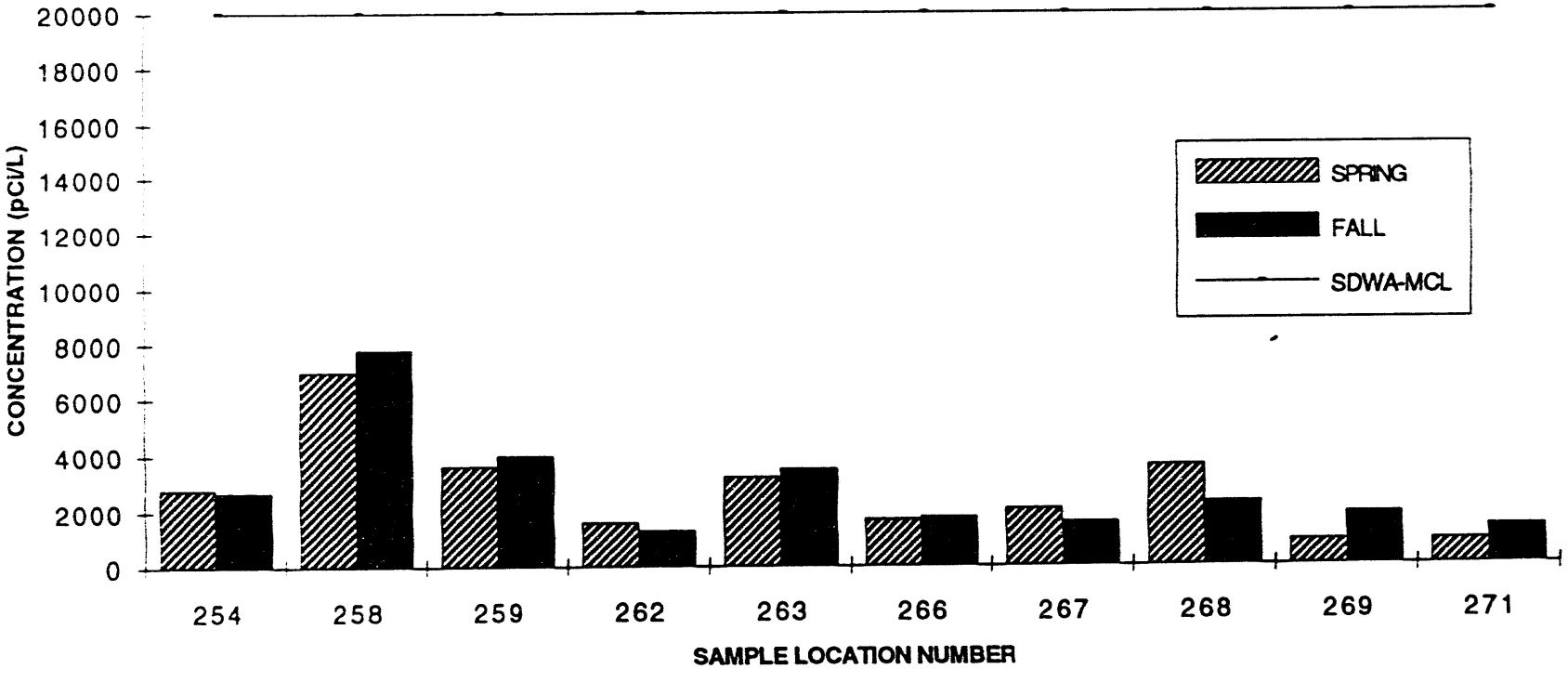


FIGURE 4-4. PHASE I GROSS ALPHA LEVELS

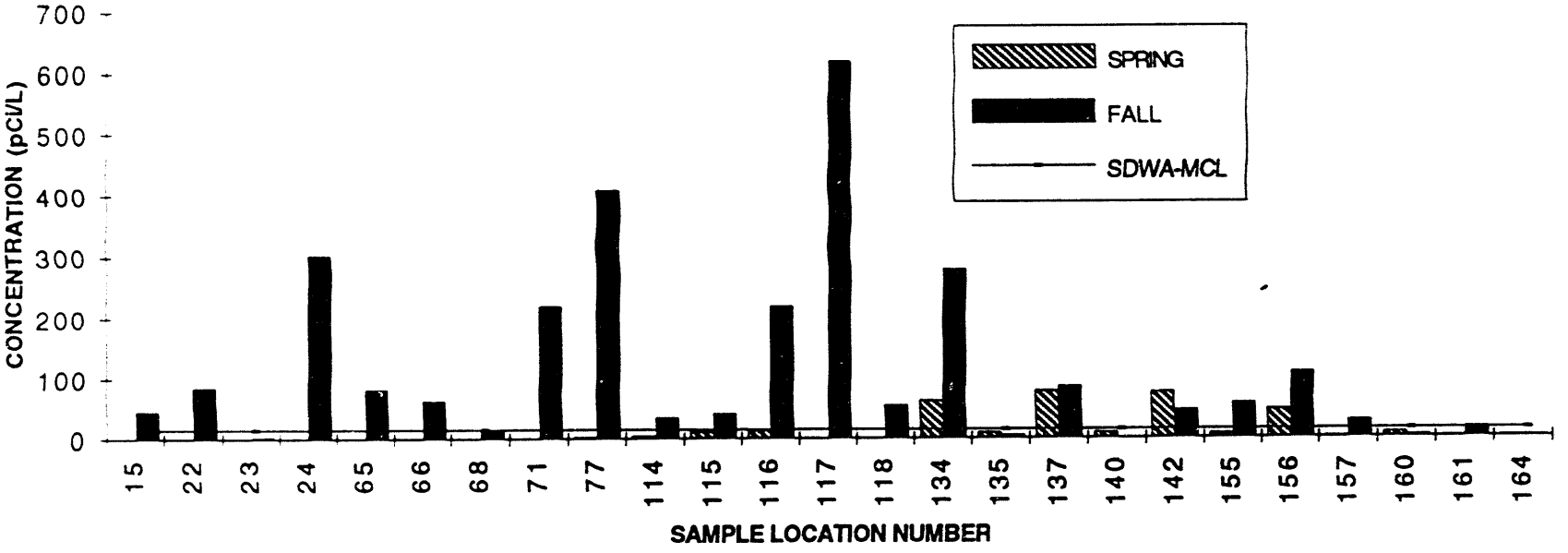


FIGURE 4-5. PHASE II GROSS ALPHA LEVELS

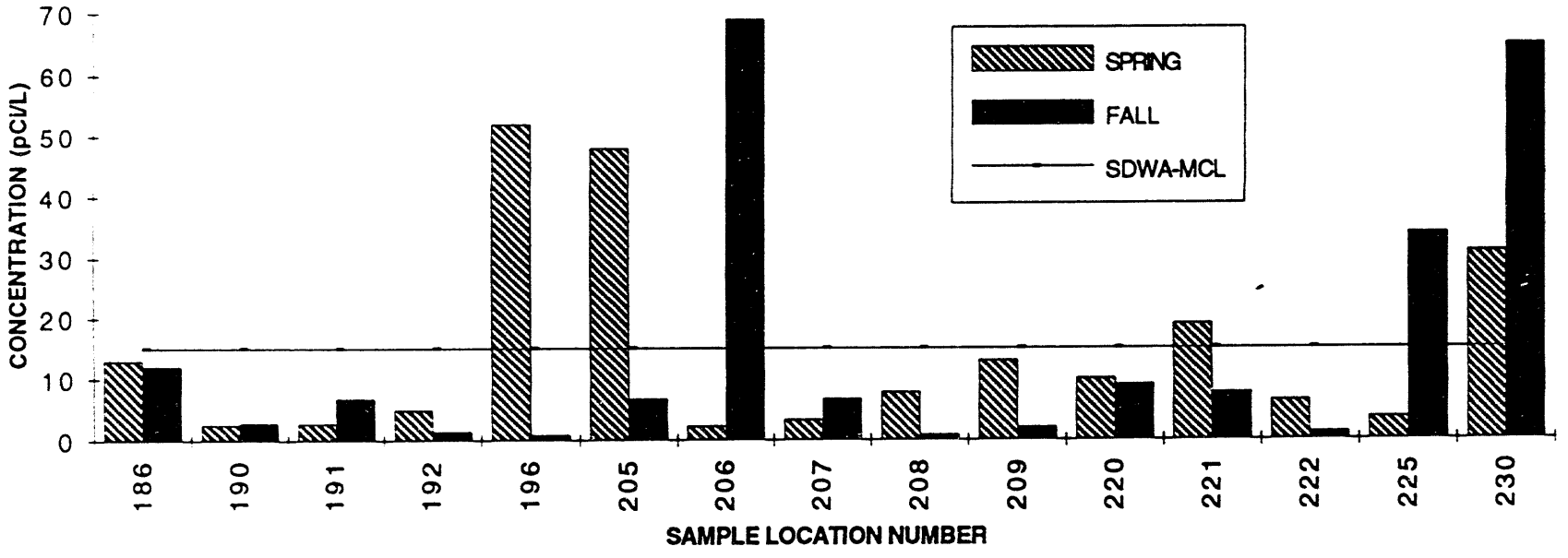
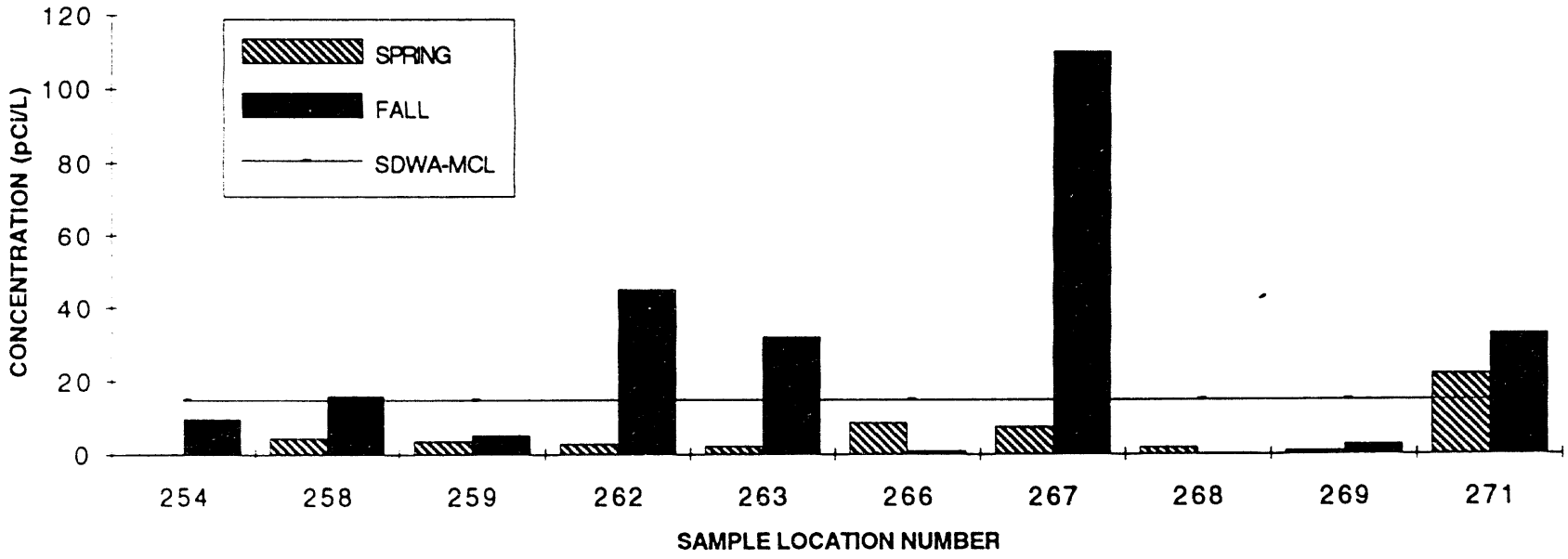


FIGURE 4-6. PHASE III GROSS ALPHA LEVELS



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APPENDIX A

SUMMARY OF ANALYTICAL DATA FOR QA/QC SAMPLES

Table A1. Analytical Results of the QA/QC Samples

(Note: u = below detection)

	PHASE I. MIXED WASTE MANAGEMENT FACILITY								
	Sample No:		15	15D	Blank	Blank	Blank	Blank	Blank
	Date Collected:		9/3/91	9/3/91	9/3/91	9/4/91	9/6/91	9/9/91	9/10/91
	Matrix:		Water	Water	Water	Water	Water	Water	Water
ANALYTE	UNITS:	REPORTING			RESULTS:				
INORGANICS		LIMIT:							
Acidity	mg/L	0.50	300	810	400	0.5 u, 8.5	0.5 u, 8.5	0.50 u, 8.	0.5 u, 8.5
Chloride	mg/L	5.00	5.0 u	5 u	5 u	5 u	5 u	5 u	5 u
Hardness	mg/L	0.10	10.6	7.6	0.10 u	0.10 u	0.10 u	0.10 u	0.10 u
Nitrate	mg-N/L	0.10	4.4	0.11	0.10 u	0.10 u	0.10 u	0.10 u	0.10 u
pH	pH units	0.01	4.5	4.6	5				
Sulfate	mg/L	5.00	5.0 u	5 u	5.0 u	5 u	5 u	5 u	5 u
Conductivity	UMHOS/cm	1	14.9	31.7	1.0 u	1 u	1 u	1 u	1 u

	PHASE II: F- AND H-AREA SEEPAGE BASINS								
	Sample		Blank	205	205D				
	Date Collected:		9/13/91	9/24/91	9/24/91				
	Matrix		Water	Water	Water				
ANALYTE	UNITS:	REPORTING							
INORGANICS		LIMITS:							
Acidity	mg/L	0.50	9.5	68	30				
Chloride	mg/L	5.00	5 u	5 u	5 u				
Hardness	mg/L	0.10	0.10 u	9.6	23.4				
Nitrate	mg-N/L	0.10	0.10 u	0.1	0.14				
pH	pH units	0.01		5.4	4.8				
Sulfate	mg/L	5.00	5 u	5 u	5 u				
Conductivity	UMHOS/cm	1	1 u	40.2	24.7				

	PHASE III: SANITARY LANDFILL								
	Sample		Blank	254	254D	Blank			
	Date Collected:		9/17/91	9/24/91	9/24/91	9/24/91			
	Matrix		Water	Water	Water	Water			
ANALYTE	UNITS:	REPORTING							
INORGANICS		LIMITS:							
Acidity	mg/L	0.50	7.5 ,8.0	48	100	0.5 u			
Chloride	mg/L	5.00	5 u	5.3	5	5 u			
Hardness	mg/L	0.10	0.10 u	6.4	8	0.10 u			
Nitrate	mg-N/L	0.10	0.10 u	0.29	0.12	0.10 u			
pH	pH units	0.01		4.8	4.8				
Sulfate	mg/L	5.00	5 u	5 u	5 u	5 u			
Conductivity	UMHOS/cm	1	1 u	24.6	29.3	1 u			

	PHASE I. MIXED WASTE MANAGEMENT FACILITY								
	Sample No:		15	15D	Blank	Blank	Blank	Blank	Blank
	Date Collected:		9/3/91	9/3/91	9/3/91	9/4/91	9/6/91	9/9/91	9/10/91
	Matrix:		Water	Water	Water	Water	Water	Water	Water
ANALYTE	UNITS:	REPORTING			RESULTS:				
METALS		LIMIT:							
Silver	ug/L	10	10 u	10.0 u	10 u	10 u	10 u	10 u	10 u
Aluminum	ug/L	200	14000	19800	200 u	200 u	200 u	200 u	200 u
Arsenic	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Barium	ug/L	200	200 u	230	200 u	200 u	200 u	200 u	200 u
Cadmium	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Chromium	ug/L	10	42.1	43.5	10 u	10 u	10 u	10 u	10 u
Copper	ug/L	25	25 u	27	25 u	25 u	25 u	25 u	25 u
Iron	ug/L	100	14700	19800	100 u	100 u	100 u	100 u	100 u
Mercury	ug/L	0.2	0.20 u	1	0.2 u	0.2 u	0.2 u	0.2 u	0.2 u
Manganese	ug/L	15	75.6	95.2	15 u	15 u	15 u	15 u	15 u
Sodium	ug/L	5000	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u
Nickel	ug/L	40	40 u	40 u	40 u	40 u	40 u	40 u	40 u
Lead	ug/L	3	51	60	3 u	3 u	3 u	3 u	3 u
Selenium	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Zinc	ug/L	20	46.1	50.6	20 u	20 u	20 u	20 u	20 u
	PHASE II: F- AND H-AREA SEEPAGE BASINS								
	Sample		Blank	Blank					
	Date Collected:		9/13/91	9/17/91					
	Matrix:		Water	Water					
ANALYTE	UNITS:	REPORTING							
METALS		LIMIT:							
Silver	ug/L	10	10 u	10 u					
Aluminum	ug/L	200	200 u	200 u					
Arsenic	ug/L	10	10 u	10 u					
Barium	ug/L	200	200 u	200 u					
Cadmium	ug/L	5	5 u	5 u					
Chromium	ug/L	10	10 u	10 u					
Copper	ug/L	25	25 u	25 u					
Iron	ug/L	100	100 u	100 u					
Mercury	ug/L	0.2	0.2 u	0.2 u					
Manganese	ug/L	15	15 u	15 u					
Sodium	ug/L	5000	5000 u	5000 u					
Nickel	ug/L	40	40 u	40 u					
Lead	ug/L	3	3 u	3 u					
Selenium	ug/L	5	5 u	5 u					
Zinc	ug/L	20	20 u	20 u					

	PHASE I. MIXED WASTE MANAGEMENT FACILITY									
	Sample No:		15TB	15	Blank	Blank	Blank	Blank	Blank	Blank
	Date Collected:		9/11/91	9/11/91	9/4/91	9/6/91	9/6/91	10/10/91	9/9/91	9/20/91
	Matrix:		Water	Water	Water	Water	Water	Water	Water	Water
ANALYTE:	UNITS:	LIMIT:								
VOLATILES:										
Chloromethane	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Bromomethane	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Vinyl Chloride	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Chloroethane	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Methylene Chloride	ug/L	5	7 B	5 B	6 B	6 B	12 B	8 B	13 B	6 B
Acetone	ug/L	10	25	120	14	14 B	9 JB	7 JB	9 J	4 JB
Carbon disulfide	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,2-Dichloroethane (total)	ug/L	5	5 u	36	5 u	5 u	5 u	5 u	5 u	5 u
Chloroform	ug/L	5	5 u	5 u	5 u	5 u	3 J	5 u	2 J	5 u
1,2-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
2-Butanone	ug/L	10	10 u	36	10 u	10 u	10 u	10 u	10 u	10 u
1,1,1-Trichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Carbon Tetrachloride	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Vinyl Acetate	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Bromodichloromethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,2-Dichloropropane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
cis-1,3-Dichloropropane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Trichloroethene	ug/L	5	5 u	12	5 u	5 u	5 u	5 u	5 u	5 u
Dibromochloromethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1,2-Trichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Benzene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Trans-1,3-Dichloropropnene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Bromoform	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
4-Methyl-2-pentanone	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
2-Hexanone	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Tetrachloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1,2,2-Tetrachloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Toluene	ug/L	5	5 u	2 J	5 u	5 u	2 J	5 u	5 u	5 u
Chlorobenzene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Ethylbenzene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Styrene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Xylene (total)	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
u BELOW DETECTION LIMIT										

	PHASE I. MIXED WASTE MANAGEMENT FACILITY									
	Sample No:		118	118D						
	Date Collected:		9/6/91	9/24/91						
	Matrix:		Water	Water						
ANALYTE:	UNITS:	LIMIT:								
VOLATILES:										
Chloromethane	ug/L	10	10 u	10 u						
Bromomethane	ug/L	10	10 u	10 u						
Vinyl Chloride	ug/L	10	10 u	10 u						
Chloroethane	ug/L	10	10 u	10 u						
Methylene Chloride	ug/L	5	4 JB	4 JB						
Acetone	ug/L	10	27 B	4 JB						
Carbon disulfide	ug/L	5	5 u	5 u						
1,1-Dichloroethane	ug/L	5	5 u	5 u						
1,1-Dichloroethane	ug/L	5	5 u	5 u						
1,2-Dichloroethane (total)	ug/L	5	5 u	5 u						
Chloroform	ug/L	5	5 u	5 u						
1,2-Dichloroethane	ug/L	5	5 u	5 u						
2-Butanone	ug/L	10	74	10 u						
1,1,1-Trichloroethane	ug/L	5	5 u	5 u						
Carbon Tetrachloride	ug/L	5	5 u	5 u						
Vinyl Acetate	ug/L	10	10 u	10 u						
Bromodichloromethane	ug/L	5	5 u	5 u						
1,2-Dichloropropane	ug/L	5	5 u	5 u						
cis-1,3-Dichloropropane	ug/L	5	5 u	5 u						
Trichloroethene	ug/L	5	5 u	5 u						
Dibromochloromethane	ug/L	5	5 u	5 u						
1,1,2-Trichloroethane	ug/L	5	5 u	5 u						
Benzene	ug/L	5	5 u	5 u						
Trans-1,3-Dichloropropnene	ug/L	5	5 u	5 u						
Bromoform	ug/L	5	5 u	5 u						
4-Methyl-2-pentanone	ug/L	10	10 u	10 u						
2-Hexanone	ug/L	10	10 u	10 u						
Tetrachloroethane	ug/L	5	5 u	5 u						
1,1,2,2-Tetrachloroethane	ug/L	5	5 u	5 u						
Toluene	ug/L	5	5 u	5 u						
Chlorobenzene	ug/L	5	5 u	5 u						
Ethylbenzene	ug/L	5	5 u	5 u						
Styrene	ug/L	5	5 u	5 u						
Xylene (total)	ug/L	5	5 u	5 u						
u BELOW DETECTION LIMIT										

TRIP BLANK AND DUPLICATE ANALYSIS										
	PHASE II: F- AND H-AREA SEEPAGE BASINS									
	Sample No:		Blank	Blank	205	205D				
	Date Collected:		9/13/91	9/18/91	9/13/91	9/24/91				
	Matrix:		Water	Water	Water	Water				
ANALYTE:	UNITS:	LIMIT:								
VOLATILES:										
Chloromethane	ug/L	10	10 u	10 u	10 u	10 u				
Bromomethane	ug/L	10	10 u	10 u	10 u	10 u				
Vinyl Chloride	ug/L	10	10 u	10 u	10 u	10 u				
Chloroethane	ug/L	10	10 u	10 u	10 u	10 u				
Methylene Chloride	ug/L	5	5 B	32 B	3 JB	5 JB				
Acetone	ug/L	10	3 J	29 B	10 u	5 JB				
Carbon disulfide	ug/L	5	5 u	5 u	5 u	5 u				
1,1-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u				
1,1-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u				
1,2-Dichloroethane (total)	ug/L	5	5 u	5 u	5 u	5 u				
Chloroform	ug/L	5	5 u	5 u	5 u	5 u				
1,2-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u				
2-Butanone	ug/L	10	10 u	10 u	10 u	10 u				
1,1,1-Trichloroethane	ug/L	5	5 u	5 u	5 u	5 u				
Carbon Tetrachloride	ug/L	5	5 u	5 u	5 u	5 u				
Vinyl Acetate	ug/L	10	10 u	10 u	10 u	10 u				
Bromodichloromethane	ug/L	5	5 u	5 u	5 u	5 u				
1,2-Dichloropropane	ug/L	5	5 u	5 u	5 u	5 u				
cis-1,3-Dichloropropane	ug/L	5	5 u	5 u	5 u	5 u				
Trichloroethene	ug/L	5	5 u	5 u	5 u	5 u				
Dibromochloromethane	ug/L	5	5 u	5 u	5 u	5 u				
1,1,2-Trichloroethane	ug/L	5	5 u	5 u	5 u	5 u				
Benzene	ug/L	5	5 u	5 u	5 u	5 u				
Trans-1,3-Dichloropropnene	ug/L	5	5 u	5 u	5 u	5 u				
Bromoform	ug/L	5	5 u	5 u	5 u	5 u				
4-Methyl-2-pentanone	ug/L	10	10 u	10 u	10 u	10 u				
2-Hexanone	ug/L	10	10 u	10 u	10 u	10 u				
Tetrachloroethane	ug/L	5	5 u	5 u	5 u	5 u				
1,1,2,2-Tetrachloroethane	ug/L	5	5 u	5 u	5 u	5 u				
Toluene	ug/L	5	5 u	5 u	3	5 u				
Chlorobenzene	ug/L	5	5 u	5 u	5 u	5 u				
Ethylbenzene	ug/L	5	5 u	5 u	5 u	5 u				
Styrene	ug/L	5	5 u	5 u	5 u	5 u				
Xylene (total)	ug/L	5	5 u	5 u	5 u	5 u				
u BELOW DETECTION LIMIT										

TRIP BLANK AND DUPLICATE ANALYSIS										
	PHASE III: SANITARY LANDFILL									
	Sample No:		Blank	254	254D	Blank				
	Date Collected:		9/18/91	9/17/91	9/24/91	9/24/91				
	Matrix:		Water	Water	Water	Water				
ANALYTE:	UNITS:	LIMIT:								
VOLATILES:										
Chloromethane	ug/L	10	10 u	10 u	10 u	10 u				
Bromomethane	ug/L	10	10 u	10 u	10 u	10 u				
Vinyl Chloride	ug/L	10	10 u	10 u	10 u	10 u				
Chloroethane	ug/L	10	10 u	10 u	10 u	10 u				
Methylene Chloride	ug/L	5	5 u	4 JB	4 JB	12 B				
Acetone	ug/L	10	10 u	10 u	16 B	4 JB				
Carbon disulfide	ug/L	5	5 u	5 u	5 u	5 u				
1,1-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u				
1,1-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u				
1,2-Dichloroethane (total)	ug/L	5	5 u	5 u	5 u	5 u				
Chloroform	ug/L	5	5 u	5 u	5 u	3 J				
1,2-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u				
2-Butanone	ug/L	10	10 u	10 u	10 u	10 u				
1,1,1-Trichloroethane	ug/L	5	5 u	5 u	5 u	5 u				
Carbon Tetrachloride	ug/L	5	5 u	5 u	5 u	5 u				
Vinyl Acetate	ug/L	10	10 u	10 u	10 u	10 u				
Bromodichloromethane	ug/L	5	5 u	5 u	5 u	5 u				
1,2-Dichloropropane	ug/L	5	5 u	5 u	5 u	5 u				
cis-1,3-Dichloropropane	ug/L	5	5 u	5 u	5 u	5 u				
Trichloroethene	ug/L	5	5 u	5 u	5 u	5 u				
Dibromochloromethane	ug/L	5	5 u	5 u	5 u	5 u				
1,1,2-Trichloroethane	ug/L	5	5 u	5 u	5 u	5 u				
Benzene	ug/L	5	5 u	5 u	5 u	5 u				
Trans-1,3-Dichloropropnene	ug/L	5	5 u	5 u	5 u	5 u				
Bromoform	ug/L	5	5 u	5 u	5 u	5 u				
4-Methyl-2-pentanone	ug/L	10	10 u	10 u	10 u	10 u				
2-Hexanone	ug/L	10	10 u	10 u	10 u	10 u				
Tetrachloroethane	ug/L	5	5 u	5 u	5 u	5 u				
1,1,2,2-Tetrachloroethane	ug/L	5	5 u	5 u	5 u	5 u				
Toluene	ug/L	5	5 u	5 u	20	5 u				
Chlorobenzene	ug/L	5	5 u	5 u	5 u	5 u				
Ethylbenzene	ug/L	5	5 u	5 u	5 u	5 u				
Styrene	ug/L	5	5 u	5 u	5 u	5 u				
Xylene (total)	ug/L	5	5 u	5 u	5 u	5 u				
u BELOW DETECTION LIMIT										

	PHASE I. MIXED WASTE MANAGEMENT FACILITY									
	Sample No:		Blank	Blank	Blank	155	155D	Blank		
	Date Collected:		1/24/92	1/27/92	1/28/92	1/29/92	1/29/92	1/29/92		
	Matrix:		Water	Water	Water	Water	Water	Water		
ANALYTE	UNITS:	REPORTING			RESULTS:					
METALS		LIMIT:								
Silver	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u		
Aluminum	ug/L	200	200 u	200 u	200 u	200 u	200 u	200 u		
Arsenic	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u		
Barium	ug/L	200	200 u	200 u	200 u	200 u	200 u	200 u		
Cadmium	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u		
Chromium	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u		
Copper	ug/L	25	25 u	25 u	25 u	25 u	25 u	25 u		
Iron	ug/L	100	100 u	100 u	100 u	100 u	100 u	100 u		
Mercury	ug/L	0.2	.20 u	.20 u	.20 u	.20 u	.20 u	.20 u		
Manganese	ug/L	15	15 u	15 u	15 u	44.9	50.8	15 u		
Sodium	ug/L	5000	5000 u	5000 u	5000 u	7730	7910	5000 u		
Nickel	ug/L	40	40 u	40 u	40 u	40 u	40 u	40 u		
Lead	ug/L	3	3 u	3 u	3 u	3 u	3 u	3 u		
Selenium	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u		
Zinc	ug/L	20	20 u	20 u	20 u	28.5	20.7	20 u		
	PHASE II: F- AND H_AREA SEEPAGE BASINS									
	Sample		Blank	Blank	230	230D	Blank			
	Date Collected:		2/10/92	2/12/92	2/20/92	2/20/92	2/20/92			
	Matrix:		Water	Water	Water	Water	Water			
ANALYTE	UNITS:	REPORTING			RESULTS					
METALS		LIMIT:								
Silver	ug/L	10	10 u	10 u	10 u	10 u	10 u			
Aluminum	ug/L	200	200 u	200 u	200 u	200 u	200 u			
Arsenic	ug/L	10	10 u	10 u	10 u	10 u	10 u			
Barium	ug/L	200	200 u	200 u	200 u	200 u	200 u			
Cadmium	ug/L	5	5 u	5 u	5 u	5 u	5 u			
Chromium	ug/L	10	10 u	10 u	10 u	10 u	10 u			
Copper	ug/L	25	25 u	25 u	25 u	28.7	25 u			
Iron	ug/L	100	100 u	100 u	794	194	100 u			
Mercury	ug/L	0.2	.20 u	.20 u	.20 u	.20 u	.20 u			
Manganese	ug/L	15	15 u	15 u	22.7	24.8	15 u			
Sodium	ug/L	5000	5000 u	5000 u	5000 u	5000 u	5000 u			
Nickel	ug/L	40	40 u	40 u	40 u	40 u	40 u			
Lead	ug/L	3	3 u	3 u	3 u	3 u	3 u			
Selenium	ug/L	5	5 u	5 u	5 u	5 u	5 u			
Zinc	ug/L	20	20 u	20 u	36.2	71.4	20 u			

	PHASE III: SANITARY LANDFILL									
	Sample		Blank	269	269D	Blank				
	Date Collected:		2/24/92	2/25/92	2/25/92	2/25/92				
	Matrix:		Water	Water	Water	Water				
ANALYTE	UNITS:	REPORTING			RESULTS					
METALS		LIMIT:								
Silver	ug/L	10	10 u	10 u	10 u	10 u				
Aluminum	ug/L	200	200 u	200 u	200 u	200 u				
Arsenic	ug/L	10	10 u	10 u	10 u	10 u				
Barium	ug/L	200	200 u	200 u	200 u	200 u				
Cadmium	ug/L	5	5 u	5 u	5 u	5 u				
Chromium	ug/L	10	10 u	10 u	10 u	10 u				
Copper	ug/L	25	25 u	25 u	25 u	25 u				
Iron	ug/L	100	100 u	115	102	100 u				
Mercury	ug/L	0.2	0.20 u	0.20 u	0.20 u	0.20 u				
Manganese	ug/L	15	15 u	96.5	88.5	15 u				
Sodium	ug/L	5000	5000 u	5000 u	5000 u	5000 u				
Nickel	ug/L	40	40 u	40 u	40 u	40 u				
Lead	ug/L	3	3 u	3 u	3 u	3 u				
Selenium	ug/L	5	5 u	5 u	5 u	5 u				
Zinc	ug/L	20	20 u	103	52.1	20 u				
u BELOW DETECTION LIMIT										

TRIP BLANK AND DUPLICATE ANALYSIS										
	PHASE I. MIXED WASTE MANAGEMENT FACILITY									
	Sample No:		Blank	Blank	Blank	155	155D	Blank		
	Date Collected:		1/24/92	1/27/92	1/28/92	1/29/92	1/29/92	1/29/92		
	Matrix:		Water	Water	Water	Water	Water	Water		
ANALYTE	UNITS:	REPORTING			RESULTS:					
INORGANICS		LIMIT:								
Acidity	mg/L	2.00	10.00	10.50	11.00	10.00	10.00	2 u		
Chloride	mg/L	5.00	5 u	5 u	5 u	5 u	5 u	5 u		
Hardness	mg/L	1.00	1 u	1 u	1 u	8.00	7.00	1 u		
Nitrate	mg-N/L	0.10	.10 u	0.10 u	0.10 u	4.60	4.70	0.10 u		
pH	pH units	0.01				4.90	5.20			
Sulfate	mg/L	5.00	5 u	5 u	5 u	5 u	5 u	5 u		
Conductivity	UMHOS/cm	1	1 u	1 u	1 u	55.20	50.20	1 u		
	PHASE II: F- AND H-AREA SEEPAGE BASINS									
	Sample		Blank	Blank	230	230D	Blank			
	Date Collected:		2/10/92	2/12/92	2/20/92	2/20/92	2/20/92			
	Matrix		Water	Water	Water	Water	Water			
ANALYTE	UNITS:	REPORTING								
INORGANICS		LIMITS:								
Acidity	mg/L	2.00	3	3	180	188	3			
Chloride	mg/L	0.25	0.25 u	0.25 u	3.7	2.9	0.25 u			
Hardness	mg/L	1.00	1.0 u	1 u	9.5	8.5	1 u			
Nitrate	mg-N/L	0.05	0.050 u	0.050 u	0.12	0.14	0.10 u			
pH	pH units	0.01			4.3	4.3				
Sulfate	mg/L	0.10	0.10 u	0.25 u	4.1	4.5	2.5 u			
Conductivity	UMHOS/cm	1	1 u	1 u	12.6	12.8	1 u			
	PHASE III: SANITARY LANDFILL									
	Sample		Blank	269	269D	Blank				
	Date Collected:		2/24/92	2/25/92	2/25/92	2/25/92				
	Matrix		Water	Water	Water	Water				
ANALYTE	UNITS:	REPORTING								
INORGANICS		LIMITS:								
Acidity	mg/L	2.00	2.5, 8.0	12	8	2.5, 8				
Chloride	mg/L	0.25	0.25 u	2	1.9	0.25 u				
Hardness	mg/L	1.00	1 u	6	6.5	1 u				
Nitrate	mg-N/L	0.10	0.10 u	0.65	0.61	0.10 u				
pH	pH units	0.01		5.3	5.4					
Sulfate	mg/L	2.50	2.5 u	6.2	6.6	2.5 u				
Conductivity	UMHOS/cm	1	1 u	24.7	26.1	1 u				

TRIP BLANK AND DUPLICATE ANALYSIS										
	PHASE I. MIXED WASTE MANAGEMENT FACILITY									
	Sample No:		Blank	Blank	Blank	155	155D	Blank		
	Date Collected:		1/24/92	1/27/92	1/28/92	1/29/92	1/29/92	1/29/92		
	Matrix:		Water	Water	Water	Water	Water	Water		
ANALYTE:	UNITS:	LIMIT:								
VOLATILES:										
Chloromethane	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u		
Bromomethane	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u		
Vinyl Chloride	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u		
Chloroethane	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u		
Methylene Chloride	ug/L	5	5	26 B	25 B	5 u	4 J	5		
Acetone	ug/L	10	10 u	10 u	10 u	6 J	8 J	10 u		
Carbon disulfide	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u		
1,1-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u		
1,1-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u		
1,2-Dichloroethane (total)	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u		
Chloroform	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u		
1,2-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u		
2-Butanone	ug/L	10	10 u	10 u	10 u	12	18	10 u		
1,1,1-Trichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u		
Carbon Tetrachloride	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u		
Vinyl Acetate	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u		
Bromodichloromethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u		
1,2-Dichloropropane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u		
cis-1,3-Dichloropropane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u		
Trichloroethene	ug/L	5	5 u	5 u	5 u	10	9	5 u		
Dibromochloromethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u		
1,1,2-Trichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u		
Benzene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u		
Trans-1,3-Dichloropropnene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u		
Bromoform	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u		
4-Methyl-2-pentanone	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u		
2-Hexanone	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u		
Tetrachloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u		
1,1,2,2-Tetrachloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u		
Toluene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u		
Chlorobenzene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u		
Ethylbenzene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u		
Styrene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u		
Xylene (total)	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u		
u BELOW DETECTION LIMIT										

TRIP BLANK AND DUPLICATE ANALYSIS

	PHASE II: F- AND H-AREA SEEPAGE BASINS									
	Sample No:		Blank	Blank	230	230D	Blank			
	Date Collected:		2/10/92	2/12/92	2/20/92	2/20/92	2/20/92			
	Matrix:		Water	Water	Water	Water	Water			
ANALYTE:	UNITS:	LIMIT:								
VOLATILES:										
Chloromethane	ug/L	10	10 u	10 u	10 u	10 u	10 u			
Bromomethane	ug/L	10	10 u	10 u	10 u	10 u	10 u			
Vinyl Chloride	ug/L	10	10 u	10 u	10 u	10 u	10 u			
Chloroethane	ug/L	10	10 u	10 u	10 u	10 u	10 u			
Methylene Chloride	ug/L	5	5 u	3 J	8 B	7 B	8 B			
Acetone	ug/L	10	10 u	10 u	4 JB	6 JB	10 B			
Carbon disulfide	ug/L	5	5 u	5 u	5 u	5 u	5 u			
1,1-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u			
1,1-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u			
1,2-Dichloroethane (total)	ug/L	5	5 u	5 u	5 u	5 u	5 u			
Chloroform	ug/L	5	5 u	5 u	5 u	5 u	5 u			
1,2-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u			
2-Butanone	ug/L	10	10 u	10 u	10 u	10 u	10 u			
1,1,1-Trichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u			
Carbon Tetrachloride	ug/L	5	5 u	5 u	5 u	5 u	5 u			
Vinyl Acetate	ug/L	10	10 u	10 u	10 u	10 u	10 u			
Bromodichloromethane	ug/L	5	5 u	5 u	5 u	5 u	5 u			
1,2-Dichloropropane	ug/L	5	5 u	5 u	5 u	5 u	5 u			
cis-1,3-Dichloropropane	ug/L	5	5 u	5 u	5 u	5 u	5 u			
Trichloroethene	ug/L	5	5 u	5 u	5 u	5 u	5 u			
Dibromochloromethane	ug/L	5	5 u	5 u	5 u	5 u	5 u			
1,1,2-Trichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u			
Benzene	ug/L	5	5 u	5 u	5 u	5 u	5 u			
Trans-1,3-Dichloropropnene	ug/L	5	5 u	5 u	5 u	5 u	5 u			
Bromoform	ug/L	5	5 u	5 u	5 u	5 u	5 u			
4-Methyl-2-pentanone	ug/L	10	10 u	10 u	10 u	10 u	10 u			
2-Hexanone	ug/L	10	10 u	10 u	10 u	10 u	10 u			
Tetrachloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u			
1,1,2,2-Tetrachloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u			
Toluene	ug/L	5	5 u	5 u	5 u	5 u	5 u			
Chlorobenzene	ug/L	5	5 u	5 u	5 u	5 u	5 u			
Ethylbenzene	ug/L	5	5 u	5 u	5 u	5 u	5 u			
Styrene	ug/L	5	5 u	5 u	5 u	5 u	5 u			
Xylene (total)	ug/L	5	5 u	5 u	5 u	5 u	5 u			
u BELOW DETECTION LIMIT										

TRIP BLANK AND DUPLICATE ANALYSIS										
	PHASE III: SANITARY LANDFILL									
	Sample No:		Blank	269	269D	Blank				
	Date Collected:		2/24/92	2/25/92	2/25/92	2/25/92				
	Matrix:		Water	Water	Water	Water				
ANALYTE:	UNITS:	LIMIT:								
VOLATILES:										
Chloromethane	ug/L	10	10 u	10 u	10 u	10 u				
Bromomethane	ug/L	10	10 u	10 u	10 u	10 u				
Vinyl Chloride	ug/L	10	10 u	10 u	10 u	10 u				
Chloroethane	ug/L	10	10 u	10 u	10 u	10 u				
Methylene Chloride	ug/L	5	8 B	5 u	5 u	6				
Acetone	ug/L	10	28 B	10 u	10 u	28 B				
Carbon disulfide	ug/L	5	5 u	5 u	5 u	5 u				
1,1-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u				
1,1-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u				
1,2-Dichloroethane (total)	ug/L	5	5 u	5 u	5 u	5 u				
Chloroform	ug/L	5	5 u	5 u	5 u	3 JB				
1,2-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u				
2-Butanone	ug/L	10	10 u	10 u	10 u	10 u				
1,1,1-Trichloroethane	ug/L	5	5 u	5 u	5 u	5 u				
Carbon Tetrachloride	ug/L	5	5 u	5 u	5 u	5 u				
Vinyl Acetate	ug/L	10	10 u	10 u	10 u	10 u				
Bromodichloromethane	ug/L	5	5 u	5 u	5 u	5 u				
1,2-Dichloropropane	ug/L	5	5 u	5 u	5 u	5 u				
cis-1,3-Dichloropropane	ug/L	5	5 u	5 u	5 u	5 u				
Trichloroethene	ug/L	5	5 u	5 u	5 u	5 u				
Dibromochloromethane	ug/L	5	5 u	5 u	5 u	5 u				
1,1,2-Trichloroethane	ug/L	5	5 u	5 u	5 u	5 u				
Benzene	ug/L	5	5 u	5 u	5 u	5 u				
Trans-1,3-Dichloropropnene	ug/L	5	5 u	5 u	5 u	5 u				
Bromoform	ug/L	5	5 u	5 u	5 u	5 u				
4-Methyl-2-pentanone	ug/L	10	10 u	10 u	10 u	10 u				
2-Hexanone	ug/L	10	10 u	10 u	10 u	10 u				
Tetrachloroethane	ug/L	5	5 u	5 u	5 u	5 u				
1,1,2,2-Tetrachloroethane	ug/L	5	5 u	5 u	5 u	5 u				
Toluene	ug/L	5	5 u	5 u	5 u	5 u				
Chlorobenzene	ug/L	5	5 u	5 u	5 u	5 u				
Ethylbenzene	ug/L	5	5 u	5 u	5 u	5 u				
Styrene	ug/L	5	5 u	5 u	5 u	5 u				
Xylene (total)	ug/L	5	5 u	5 u	5 u	5 u				
u BELOW DETECTION LIMIT										

TABLE A1. ANALYTICAL RESULTS OF QA/QC SAMPLES

	PHASE I: MIXED WASTE MANAGEMENT FACILITY				
	SITE NO:			155	155 dup
	COLLECTION DATE:			1-29-92	1-29-92
	MATRIX:			WATER	WATER
ANALYTE	UNITS:	LIMIT OF DETECTION:			
Gross Alpha	pCi/l	2 pCi/l		7.4 ± 2.7	5.7 ± 2.3
Gross Beta	pCi/l	2 pCi/l		14 ± 2	11 ± 2
Tritium	pCi/l	460 pCi/l		108000 ± 1000	104000 ± 1000
Iodine-129	pCi/l	25pCi/l		0 ± 12	0 ± 13
Plutonium-238	pCi/l	0.5 pCi/l		0.0 ± 0.4	0.0 ± 0.5
Plutonium-239/24	pCi/l	0.5 pCi/l		0.0 ± 0.4	0.0 ± 0.5
Strontium-90	pCi/l	--- pCi/l		0.0 ± 1.6	0.0 ± 1.5
Strontium-89	pCi/l	--- pCi/l		0.0 ± 1.6	0.0 ± 1.5
Technetium-99	pCi/l	--- pCi/l		10 ± 3	7.6 ± 3.8*
Carbon-14	pCi/l	0.5 pCi/l		7 ± 22	7 ± 12
Radium, total	pCi/l	1 pCi/l		0.9 ± 1.4	2.2 ± 1.2
Uranium-234	pCi/l	0.4 pCi/l		0.2 ± 0.6	0.0 ± 0.4
Uranium-235	pCi/l	0.4 pCi/l		0.0 ± 0.4	0.0 ± 0.3
Uranium-238	pCi/l	0.4 pCi/l		0.2 ± 0.7	0.0 ± 0.4
Americium-241	pCi/l	0.5 pCi/l		0.0 ± 0.9	0.0 ± 1.4
Gamma Spec	---	---		ND	ND

pCi/l picoCuries per liter

* Verified by reanalysis

ND - not detected

	PHASE II: F- AND H-AREA SEEPAGE BASINS				
		SITE NO:		230 dup	230
		DATE COLLECTED:		2-20-92	2-20-92
		MATRIX:		WATER	WATER
		UNITS:	LIMIT OF DETECTION:		
ANALYTE					
Gross Alpha		pCi/l	2 pCi/l	64 ± 20	31 ± 11
Gross Beta		pCi/l	2 pCi/l	65 ± 14	42 ± 9
Tritium		pCi/l	460 pCi/l	7700 ± 500	7000 ± 500
Iodine-129		pCi/l	25 pCi/l	0 ± 27	0 ± 27
Plutonium-238		pCi/l	0.5 pCi/l	0.0 ± 0.7	0.0 ± 0.7
Plutonium-239/240		pCi/l	0.5 pCi/l	0.1 ± 0.8	0.0 ± 0.6
Strontium-90		pCi/l	--- pCi/l	0.6 ± 1.9	0.4 ± 1.7
Strontium-89		pCi/l	--- pCi/l	0.6 ± 1.9	0.4 ± 1.7
Technetium-99		pCi/l	--- pCi/l	0.0 ± 2.3	0.2 ± 2.4
Carbon-14		pCi/l	0.5 pCi/l	19 ± 21	6 ± 16
Radium, total		pCi/l	1 pCi/l	6.3 ± 1.4	4.2 ± 1.2
Uranium-234		pCi/l	0.4 pCi/l	0.8 ± 1.0	2.3 ± 1.4
Uranium-235		pCi/l	0.4 pCi/l	0.0 ± 0.5	0.0 ± 0.5
Uranium-238		pCi/l	0.4 pCi/l	1.2 ± 1.1	0.8 ± 1.0
Americium-241		pCi/l	0.5 pCi/l	0.0 ± 2.1	0.0 ± 2.5
Gamma Spec			---	NAD	NAD

NAD - no activity detected
pCi/l picoCuries per liter

	PHASE III: SANITARY LANDFILL				
		SITE NO:		269	269 dup
		DATE COLLECTED:		2-25-92	2-25-92
		MATRIX:		WATER	WATER
ANALYTE		UNITS:	LIMIT OF DETECTION		
Gross Alpha		pCi/l	2 pCi/l	1.0 ± 1.5	3.3 ± 1.8
Gross Beta		pCi/l	2 pCi/l	2.0 ± 1.8	3.3 ± 1.8
Tritium		pCi/l	460 pCi/l	900 ± 300	860 ± 300
Iodine-129		pCi/l	25 pCi/l	0 ± 38	0 ± 23
Plutonium-238		pCi/l	0.5 pCi/l	0.0 ± 1.1	0.0 ± 1.2
Plutonium-239/240		pCi/l	0.5 pCi/l	0.0 ± 0.9	0.0 ± 0.8
Strontium-90		pCi/l	--- pCi/l	1.2 ± 3.6	2.2 ± 3.0
Strontium-89		pCi/l	--- pCi/l	1.2 ± 3.6	2.2 ± 3.0
Technetium-99		pCi/l	--- pCi/l	0.0 ± 3.2	0.2 ± 2.3
Carbon-14		pCi/l	0.5 pCi/l	0.7 ± 9.8	9 ± 18
Radium, total		pCi/l	1 pCi/l	0.7 ± 0.8	2.4 ± 1.0
Uranium-234		pCi/l	0.4 pCi/l	0.5 ± 1.0	0.2 ± 0.9
Uranium-235		pCi/l	0.4 pCi/l	0.0 ± 0.7	0.0 ± 0.6
Uranium-238		pCi/l	0.4 pCi/l	0.3 ± 1.0	0.0 ± 0.8
Americium-241		pCi/l	0.5 pCi/l	0.0 ± 1.1	0.0 ± 1.1
Gamma Spec			---	NAD	NAD

NAD - no activity detected
pCi/l picoCuries per liter

APPENDIX B

SUMMARY OF ANALYTICAL DATA FOR SEPTEMBER/OCTOBER 1991 AND JANUARY/FEBRUARY 1992 SAMPLING EVENTS

TABLE B1. CHARACTERIZATION OF SOIL SAMPLES FROM WETLANDS ASSOCIATED WITH UPPER THREE RUNS CREEK

	PHASE I: MIXED WASTE MANAGEMENT FACILITY				PHASE II: F- AND H-AREA SEEPAGE BASINS		
	SITE NO:		161			206	
	DATE COLLECTED:		01 OCT 91		DATE COLLECTED:	08 OCT 91	
	MATRIX:		SAND	CLAY	MATRIX:	SAND	CLAY
		REPORTING LIMIT:	RESULTS:	RESULTS:		RESULTS:	RESULTS:
ANALYTE							
Gross Alpha	pCi/g (dry)	5	22 ± 10	46 ± 11		15 ± 8	56 ± 12
Gross Beta	pCi/g (dry)	9	8.9 ± 3.9	13 ± 4		15 ± 4	26 ± 4
Tritium	pCi/g (wet)	200	212 ± 2	161 ± 2		16 ± 1	24 ± 1
Iodine-129	pCi/g (wet)		0 ± 15	2 ± 4.7		0 ± 3.8	1.2 ± 4.6
Plutonium-238	pCi/g (dry)	1	0 ± 0.3	0 ± 0.4		0 ± 0.2	0 ± 0.4
Plutonium-239/240	pCi/g (dry)	1	0 ±0.3	0 ± 0.4		0 ± 0.3	0 ± 0.4
Strontium-90	pCi/g (dry)	1	1 ± 1.3	0.4 ± 1.1		0.8 ± 1.1	0.7 ± 1.2
Strontium-89	pCi/g (dry)	1	3 ± 1.1	3.5 ± 1.1		4.8 ± 1.8	1.6 ± 1.1
Technetium-99	pCi/g (dry)		0 ± 0.7	0 ± 0.8		0.0 ± 0.7	0.1 ± 0.8
Carbon-14	pCi/g (wet)		0 ± 0.2	1.2 ± 0.5		0.2 ± 0.3	1.5 ± 0.4
Radium-226	pCi/g (dry)	0.2	1.2 ± 0.6	1.4 ± 0.6		1.8 ± 0.7	2.6 ± 0.9
Radium-226	pCi/g (wet)		1.3 ± 0.4	2.4 ± 0.4		2.2 ± 0.5	4.7 ± 0.8
Thallium-208	pCi/g (wet)		0.2 ± 0.1	0.6 ± 0.1		0.4 ± 0.1	0.7 ± 0.1
Uranium-234	pCi/g (dry)	0.4	1.5 ± 1.4	1.2 ± 1.3		0.5 ± 1.1	2.8 ± 1.8
Uranium-235	pCi/g (dry)	0.4	0 ± 0.7	0 ± 0.7		0.0 ± 0.6	0.0 ± 0.8
Uranium-238	pCi/g (dry)	0.4	0.8 ± 1	2 ± 1.4		0.6 ± 1.0	3.4 ± 1.8
Americium-241	pCi/g (wet)	0.5	<0.1	<0.1		<0.1	<0.1
Lead-214	pCi/g (wet)		0.5 ± 0.1	0.9 ± 0.1		0.8 ± 0.1	1.4 ± 0.1
Lead-212	pCi/g (wet)		0.4 ± 0.1	0.9 ± 0.1		0.7 ± 0.1	1.3 ± 0.1
Lead-210	pCi/g (wet)		<0.3	<0.2		<0.1	0.8 ± 0.2
Bismuth-214	pCi/g (wet)		0.3 ± 0.1	0.9 ± 0.1		0.8 ± 0.1	1.6 ± 0.1
Bismuth-212	pCi/g (wet)		<1	2.1 ± 0.4		1.6 ± 0.3	2.3 ± 0.5
Actinium-228	pCi/g (wet)		0.6 ± 0.1	1.1 ± 0.2		<0.1	1.5 ± 0.2
Moisture	%		21.9	16.8		13.3	17.8
Potassium-40	pCi/g (wet)					<0.6	1.9 ± 0.4

TABLE 81. CHARACTERIZATION OF SOIL SAMPLES FROM WETLANDS ASSOCIATED WITH UPPER THREE RUNS CREEK

	PHASE III: SANITARY LANDFILL SITE NO: 258 DATE COLLECTED: 08 OCT 91			
	MATRIX:		SAND	CLAY
ANALYTE:	UNITS:	REPORTING LIMIT:	RESULTS:	RESULTS:
Gross Alpha	pCi/g (dry)	5	16 ± 8	18 ± 9
Gross Beta	pCi/g (dry)	9	10 ± 4	9.7 ± 4.0
Tritium	pCi/g (wet)	200	2.2 ± 0.5	2.4 ± 0.3
Iodine-129	pCi/g (wet)		4.4 ± 2.4	4.9 ± 4.0
Plutonium-238	pCi/g (dry)	1	0.0 ± 0.4	0.0 ± 0.3
Plutonium-239/240	pCi/g (dry)	1	0.8 ± 0.6	0.0 ± 0.3
Strontium-90	pCi/g (dry)	1	0.8 ± 1.0	1.0 ± 1.0
Strontium-89	pCi/g (dry)	1	3.3 ± 1.1	4.0 ± 1.1
Technetium-99	pCi/g (dry)		0.0 ± 0.7	0.0 ± 0.8
Carbon-14	pCi/g (wet)		0.0 ± 1.8	1.8 ± 0.7
Radium-226	pCi/g (dry)	0.2	0.8 ± 0.5	1.5 ± 0.6
Radium-226	pCi/g (wet)		1.1 ± 0.3	1.2 ± 0.3
Thallium-208	pCi/g (wet)		0.3 ± 0.1	0.3 ± 0.1
Uranium-234	pCi/g (dry)	0.4	0.0 ± 0.9	0.6 ± 1.1
Uranium-235	pCi/g (dry)	0.4	0.0 ± 0.7	0.0 ± 0.6
Uranium-238	pCi/g (dry)	0.4	0.0 ± 0.6	0.9 ± 1.2
Americium-241	pCi/g (wet)	0.5	<0.1	<0.1
Lead-214	pCi/g (wet)		0.4 ± 0.1	0.4 ± 0.1
Lead-212	pCi/g (wet)		0.6 ± 0.1	0.5 ± 0.1
Lead-210	pCi/g (wet)		<0.2	0.3 ± 0.1
Bismuth-214	pCi/g (wet)		0.5 ± 0.1	0.4 ± 0.1
Bismuth-212	pCi/g (wet)		0.8 ± 0.2	1.0 ± 0.2
Actinium-228	pCi/g (wet)		0.7 ± 0.1	0.5 ± 0.1
Moisture	%		11.3	13.9

TABLE B2. CHARACTERIZATION OF SOIL SAMPLES FROM WETLANDS ASSOCIATED WITH UPPER THREE RUNS CREEK

	PHASE I: MIXED WASTE MANAGEMENT FACILITY					PHASE II: F- AND H-AREA SEEPAGE BASINS				
	SITE NO:		161					206		
	DATE COLLECTED:		01 OCT 91			DATE COLLECTED:		08 OCT 91		
	MATRIX:	SAND		CLAY		MATRIX:	SAND		CLAY	
ANALYTE:	UNITS:	REPORTING LIMIT:	RESULTS:	REPORTING LIMITS:	RESULTS:		REPORTING LIMIT:	RESULTS:	REPORTING LIMITS:	RESULTS:
METALS										
Silver	MG/KG	2.5	•	2.4	•		2.2	•	2.6	3.7
Aluminum	MG/KG	49.9	1700.0	47.0	1720.0		43.5	438.0	51.2	4320.0
Arsenic	MG/KG	2.5	•	2.3	•		2.2	•	2.5	•
Barium	MG/KG	49.9	•	47.0	•		43.5	•	51.2	•
Cadmium	MG/KG	1.2	•	1.2	•		1.1	•	1.3	•
Chromium	MG/KG	2.5	4.7	2.4	21.9		2.2	9.1	2.6	•
Copper	MG/KG	6.2	•	5.9	•		5.4	•	6.4	7.3
Iron	MG/KG	24.9	530.0	23.5	288.0		21.7	2880.0	25.6	27500.0
Mercury	MG/KG	0.13	•	0.12	•		0.12	•	0.13	•
Manganese	MG/KG	3.7	8.3	3.5	•		3.3	4.2	3.8	54.2
Sodium	MG/KG	1250.0	•	1180.0	•		1090.0	•	1280.0	•
Nickel	MG/KG	10.0	•	9.4	•		8.7	•	10.2	•
Lead	MG/KG	0.76	5.5	0.70	3.7		0.67	•	0.75	2.4
Selenium	MG/KG	1.3	•	1.2	•		1.1	•	1.2	•
Zinc	MG/KG	5.0	•	4.7	6.0		4.3	•	5.1	22.5
INORGANICS										
% Solids	%	0.10	74.9	0.10	83.3		0.10	86.8	0.10	77.8
Acidity	MG/KG	13.4	214.0	12.0	156.0		11.5	127	12.8	103.0
Chloride	MG/KG	33.4	•	30.0	•		28.8	•	32.1	•
Nitrate	MG/KG	0.67	4.4	0.60	10.4		0.58	0.92	0.64	2.5
Sulfate	MG/KG	33.4	•	30.0	•		28.8	•	32.1	•

*BELOW DETECTION LIMIT

TABLE B2. CHARACTERIZATION OF SOIL SAMPLES FROM WETLANDS ASSOCIATED WITH UPPER THREE RUNS CREEK

		PHASE III: SANITARY LANDFILL			
		SITE NO:	258		
		DATE COLLECTED:	08 OCT 91		
		MATRIX:	SAND	CLAY	
ANALYTE:	UNITS:	REPORTING LIMIT:	RESULTS:	REPORTING LIMIT:	RESULTS:
METALS					
Silver	MG/KG	2.1	•	2.2	•
Aluminum	MG/KG	41.9	686.0	43.5	2120.0
Arsenic	MG/KG	2.2	•	2.1	•
Barium	MG/KG	41.9	•	43.5	•
Cadmium	MG/KG	1.0	•	1.1	•
Chromium	MG/KG	2.1	3.4	2.2	4.9
Copper	MG/KG	5.2	•	5.4	•
Iron	MG/KG	20.9	765.0	21.8	114.0
Mercury	MG/KG	0.11	•	0.12	•
Manganese	MG/KG	3.1	•	3.3	•
Sodium	MG/KG	1050.0	•	1090.0	•
Nickel	MG/KG	8.4	•	8.7	•
Lead	MG/KG	0.65	1.4	0.84	3.6
Selenium	MG/KG	1.1	•	1.1	•
Zinc	MG/KG	4.2	•	4.3	•
INORGANICS					
% Solids	%	0.10	90.0	0.10	85.0
Acidity	MG/KG	11.1	222.0	11.8	188.0
Chloride	MG/KG	27.8	•	29.4	•
Nitrate	MG/KG	0.56	•	0.59	•
Sulfate	MG/KG	27.8	29.4	29.4	•

TABLE 83. CHEMICAL CHARACTERIZATION OF WATER FROM WETLANDS ASSOCIATED WITH UPPER THREE RUNS CREEK

PHASE I: MIXED WASTE MANAGEMENT FACILITY

ANALYTE:	SITE NO: / DATE COLLECTED: / MATRIX: / UNITS:	REPORTING LIMIT:	15 9-3-91 WATER	22 9-3-91 WATER	23 9-4-91 WATER	24 9-4-91 WATER	65 9-4-91 WATER	66 9-4-91 WATER	68 9-5-91 WATER	71 9-5-91 WATER	77 9-5-91 WATER	114 9-6-91 WATER	115 9-6-91 WATER	116 9-6-91 WATER	117 9-6-91 WATER
METALS:															
Silver	UG/L	10.0	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u
Aluminum	UG/L	200.0	14000	52800	326.0	237.0	200.0 u	209.0	200.0 u	242	308	1320	200.0 u	343	299
Arsenic	UG/L	10.0	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u
Barium	UG/L	200.0	200.0 u	536.0	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u
Cadmium	UG/L	5.0	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.1
Chromium	UG/L	10.0	42.1	950.0	10.0 u	10.0 u	10.7	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	14.1
Copper	UG/L	25.0	25.0 u	108.0	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u
Iron	UG/L	100.0	14700	38000	880.0	387.0	186.0	182.0	255	192	4240	4030	1000	3170	5180
Mercury	UG/L	0.20	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u
Manganese	UG/L	15.0	75.6	669.0	25.0	44.0	15.1	26.5	35.7	42.7	173	129	71.1	148	176
Sodium	UG/L	5000.0	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u
Nickel	UG/L	40.0	40.0 u	500.0	46.0	43.9	40.0 u	40.0 u	40.0 u	40.0 u	40.0 u	40.0 u	40.0 u	40.0 u	40.0 u
Lead	UG/L	3.0	51.0	73.0	6.6	9.0	4.1	3.0 u	10.2	10.3	9.5	5.9	3.1	13.0	3.0 u
Selenium	UG/L	5.0	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u
Zinc	UG/L	20.0	46.1	162.0	171.0	314.0	95.5	93.6	248	190	153	133	82.4	280	47.7
INORGANICS:															
Acidity	MG/L	2.0	300	40.0	30.0	40.0	110	570	180	180	390.00	60	270	446	22.0
Chloride	MG/L	5.0	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u
Hardness	MG/L	0.10	10.6	42.0	5.6	7.6	62.8	18.8	16.0	48	38.0	11.2	20.7	76.0	8.6
Nitrate, as N	MG/L	0.10	4.4	8.7	0.18	0.10 u	0.24	0.10 u	0.37	1.5	0.48	0.54	0.15	0.27	0.10 u
pH	pH UNITS	0.01	4.5	4.8	5.1	4.4	5.2	4.8	4.7	5.2	5.7	4.8	5.0	4.4	4.4
Sulfate	MG/L	5.0	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	22.4	5.0 u
Conductivity	UMHOS/CM	1	14.9	28.8	20.9	15.3	21.9	50.7	20.9	23.1	23.4	21.9	19.5	53.5	19.1
FIELD CHEMISTRIES:															
pH			4.22	5.22	4.18	4.79	4.83	4.34	4.17	4.17	5.65	4.86	5.4	4.77	4.61
Conductivity			89	73	35	44	35	38	33	24	62	50	24	51	30
Redox			-20	-49	86	86	150	130	19	41	10	-111	92	-17	-179

TABLE B3. CHEMICAL CHARACTERIZATION OF WATER FROM WETLANDS ASSOCIATED WITH UPPER THREE RUNS CREEK

PHASE I: MIXED WASTE MANAGEMENT FACILITY

ANALYTE:	SITE NO: / DATE COLLECTED: / MATRIX:	UNITS:	REPORTING LIMIT:	118 9-8-91 WATER	134 9-10-91 WATER	135 9-10-91 WATER	137 9-10-91 WATER	140 9-10-91 WATER	142 9-10-91 WATER	155 9-8-91 WATER	156 9-8-91 WATER	157 9-8-91 WATER	160 9-10-91 WATER	161 9-10-91 WATER	164 9-10-91 WATER
METALS:															
Silver		UG/L	10.0	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u
Aluminum		UG/L	200.0	200.0 u	505	200.0 u	200.0 u	200.0 u	416	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u
Arsenic		UG/L	10.0	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u
Barium		UG/L	200.0	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u
Cadmium		UG/L	5.0	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u
Chromium		UG/L	10.0	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u
Copper		UG/L	25.0	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u
Iron		UG/L	100.0	2550	425	100.0 u	100.0 u	100.0 u	16900	100.0 u	100.0 u	100.0 u	100.0 u	100.0 u	369
Mercury		UG/L	0.20	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u
Manganese		UG/L	15.0	36.9	34.8	87.6	172	118	1260	46.2	50.7	54.8	34.1	108	19.7
Sodium		UG/L	5000.0	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	6310	5480	19400	11500	6150
Nickel		UG/L	40.0	40.0 u	55.1	98.4	79.7	80.2	78.0	40.0 u	40.0 u	40.0 u	46.0	40.0 u	40.0 u
Lead		UG/L	3.0	3.0 u	3.0 u	3.0 u	3.0 u	3.0 u	3.5	3.0 u	3.0 u	3.0 u	3.0 u	3.0 u	3.0 u
Selenium		UG/L	5.0	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u
Zinc		UG/L	20.0	141	109	84.0	109	80.3	131	38.4	66.4	80.1	28.1	20.0 u	38.0
INORGANICS:															
Acidity		MG/L	2.0	54.0	44.0	2.0 u	14.0	84.0	48.0	50.0	30.0	30.0	240	30.0	2.0 u
Chloride		MG/L	5.0	5.0 u	7.9	5.0 u	5.0 u	5.0 u	5.8	5.0 u	5.0 u	5.0 u	8.7	5.7	7.3
Hardness		MG/L	0.10	9.6	30.0	43.0	32.8	33.2	130	8.2	14.0	10.6	60.8	62.8	13.2
Nitrate, as N		MG/L	0.10	0.23	0.10 u	0.15	0.16	0.10 u	0.39	2.4	5.3	0.36	10.8	24.3	0.99
pH		pH UNITS	0.01	5.1	5.6	6.0	5.5	5.8	5.0	5.8	3.9	6.0	6.7	4.9	5.8
Sulfate		MG/L	5.0	5.0 u	7.7	20.2	10.8	7.1	27.0	5.0 u	18.8	5.0 u	13.0	5.0 u	5.0 u
Conductivity		UMHOS/CM	1	20.2	40.0	102	54.9	73.6	80.2	33.8	52.8	32.8	202	210	51.1
FIELD CHEMISTRY:															
pH				4.96	5.39	5.42	4.88	5.63	5.39	4.56	3.8	4.51	6.02	5.09	5.36
Conductivity				39	48	80	43	83	113	40	90	37	175	189	55
Redox				105	-61	2	42	10	-48	140	158	71	-24	-30	-50

TABLE B4. CHEMICAL CHARACTERIZATION OF WATER FROM WETLANDS ASSOCIATED WITH UPPER THREE RUNS CREEK

PHASE II: F- AND H-AREA SEEPAGE BASINS																
ANALYTE:	REPORTING LIMIT:	186 9-13-91 WATER	190 9-13-91 WATER	191 9-13-91 WATER	192 9-13-91 WATER	196 9-13-91 WATER	205 9-13-91 WATER	206 9-13-91 WATER	207 9-13-91 WATER	208 9-13-91 WATER	209 9-13-91 WATER	220 9-17-91 WATER	221 9-17-91 WATER	222 9-17-91 WATER	225 9-17-91 WATER	230 9-17-91 WATER
METALS:																
Silver	10.0	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u
Aluminum	200.0	200.0 u	200.0 u	200.0 u	200.0 u	417	357	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	1000.0	1130.0
Arsenic	10.0	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u
Barium	200.0	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u
Cadmium	5.0	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u
Chromium	10.0	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u
Copper	25.0	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u
Iron	100.0	1150	100.0 u	277	122	1680	14400	124	100.0 u	181	100.0 u	123.0	1380.0	2040.0	8370.0	8410.0
Mercury	0.20	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u
Manganese	15.0	54.9	15.0 u	15.0 u	15.0 u	39.2	166	15.0 u	15.0 u	15.0 u	15.0 u	61.6	22.4	42.5	18.1	24.3
Sodium	5000.0	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u
Nickel	40.0	44.7	40.0 u	40.0 u	40.0 u	44.5	40.0 u	40.0 u	40.0 u	40.0 u	40.0 u	65.3	40.0 u	40.0 u	48.9	52.5
Lead	3.0	3.0 u	3.0 u	3.0 u	3.0 u	10.1	3.0 u	3.0 u	3.0 u	6.5	3.0 u	5.0	4.3	3.0 u	20.8	6.1
Selenium	5.0	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u
Zinc	20.0	65.6	20.0 u	20.0 u	39.8	163	52.2	20.0 u	20.0 u	130	43.7	266.0	57.5	110.0	283.0	210.0
INORGANICS:																
Acidity	2.0	46.0	58.0	52.0	30.0	160	68.0	78.0	30.0	24.0	36.0	82.0	142.00	26.00	78.00	312
Chloride	5.0	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.10	5.0 u	5.0 u
Hardness	0.20	10.8	6.4	3.6	7.4	5.4	9.6	6.6	4.6	3.40	4.2	7.0	8.00	5.80	8.00	10
Nitrate	0.10	0.10 u	0.16	0.88	0.15	0.10 u	0.10	1.5	0.63	0.10 u	0.10 u	0.20	0.20	0.15	0.16	0.8
pH	0.010	4.8	5.1	5.2	5.1	4.6	5.4	5.2	5.0	4.7	4.4	4.7	4.60	4.60	4.80	5.3
Sulfate	5.0	5.0 u	5.0 u	5.0 u	5.0 u	51.1	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u
Conductivity	1	28.1	23.4	16.1	27.0	21.6	40.2	22.5	15.5	16.1	14.9	27.50	30.10	22.20	38.40	27.2
FIELD CHEMISTRIES:																
pH		4.34	4.42	4.97	4.24	4.82	5.35	4.9	4.82	4.21	4.26	5.06	4.6	4.28	4.86	4.83
Conductivity		41	25	19	31	38	92	27	22	22	22	41	28	28	45	38
Redox		-11	79	49	-144	69	1	64	80	58	70	-10	29	36	-104	-86

TABLE B5. CHEMICAL CHARACTERIZATION OF WATER FROM WETLAND AREAS ASSOCIATED WITH UPPER THREE RUNS CREEK

PHASE III: SANITARY LANDFILL

ANALYTE:	REPORTING LIMIT:	254 9-17-91 WATER	258 9-17-91 WATER	259 9-17-91 WATER	262 9-17-91 WATER	263 9-17-91 WATER	266 9-18-91 WATER	267 9-18-91 WATER	268 9-18-91 WATER	269 9-18-91 WATER	271 9-18-91 WATER
METALS											
Silver	10.0	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u
Aluminum	200.0	200.0 u	445.0	201.0	282.0	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u
Arsenic	10.0	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u
Barium	200.0	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u	200.0 u
Cadmium	5.0	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u
Chromium	10.0	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	11.8	10.0 u	10.0 u	10.0 u	10.0 u
Copper	25.0	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u
Iron	100.0	884.0	5040.0	2030.0	2270.0	1600.0	3230.00	4570.0	100.0 u	100.0 u	219.0
Mercury	0.2	0.2 u	0.2 u	0.2 u	0.2 u	0.2 u	0.2 u	0.2 u	0.2 u	0.2 u	0.2 u
Manganese	15.0	61.3	40.4	18.2	15.0 u	41.8	200.0	139.0	15.0 u	141.0	280.0
Sodium	5000.0	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u
Nickel	40.0	40.0 u	46.6	40.0 u	43.5	75.7	121.0	53.4	42.4	57.0	58.8
Lead	3.0	4.8	12.6	3.0 u	7.0	12.2	3.0 u	3.0 u	3.0 u	3.0 u	3.0 u
Selenium	5.0	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u
Zinc	20.0	119.0	224.0	100.0	234.0	514.0	239.0	108.0	27.2	244.0	137.0
INORGANICS											
Acidity	2.0	48.0	428.0	30.0	308.0	164.0	32.0	94.0	14.0	16.0	40.0
Chloride	5.0	5.3	5.4	5.1	5.0 u	5.0 u	5.0 u	5.2	6.5	7.1	5.0 u
Hardness	0.2	6.4	10.2	4.8	8.0	11.2	14.0	24.0	4.2	23.2	23.6
Nitrate	0.1	0.29	0.22	0.11	0.1 u	0.18	0.1 u	0.18	0.17	0.13	0.10
pH	0.010	4.8	5.0	4.8	4.4	4.6	5.0	4.7	4.9	5.4	5.2
Sulfate	5.0	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	6.0	6.8	5.0 u	8.5	8.4
Conductivity	1.0	24.6	33.6	26.2	26.4	23.8	34.1	34.3	23.7	48.3	38.6
FIELD CHEMISTRY											
pH		4.43	4.55	4.16	3.86	3.84	4.24	4.57	4.58	5.03	5.2
Conductivity		33	38	30	26	30	42	36	27	49	41
Redox		-57	-48	-115	-109	-100	69	9	-12	-32	-80

TABLE B6. RADIOLOGICAL CHARACTERIZATION OF WATER FROM WETLANDS ASSOCIATED WITH UPPER THREE RUNS CREEK

	PHASE I: MIXED WASTE MANAGEMENT FACILITY								
	SITE NO:		15	22	23	24	65	66	68
	DATE COLLECTED:		9-3-91	9-3-91	9-4-91	9-4-91	9-4-91	9-4-91	9-5-91
	MATRIX:		WATER	WATER	WATER	WATER	WATER	WATER	WATER
ANALYTE	UNIT	LIMIT OF DETECTION:							
Gross Alpha	pCi/l	2.0	46 ± 11	86 ± 19	2.8 ± 1.9	303 ± 65	.50 ± 29.40	.90 ± 26.90	11 ± 3
Gross Beta	pCi/l	4.0	34 ± 5	51 ± 8	4.5 ± 3.6	191 ± 46	.00 ± 54.60	.00 ± 61.00	8.3 ± 2.0
Tritium	pCi/l	460.0	1000 ± 560	2700 ± 370	*99.6 ± 1.8	*29.3 ± 1.4	5.20 ± 3.40	16.7 ± 1.80	9000 ± 700
Iodine-129	pCi/l	1.0	25 ± 20	2 ± 13	.00 ± 84.40	0.00 ± 93.7	00 ± 123.00	.00 ± 98.40	0.0 ± 9.5
Plutonium-238	pCi/l	0.4	0.0 ± 3.6	0.0 ± 3.7	0.00 ± 0.04	0.52 ± 0.15	0.41 ± 0.19	0.07 ± 0.05	0.0 ± 0.4
Plutonium-239/240	pCi/l	0.4	260 ± 20	6.3 ± 5.5	0.06 ± 0.04	1.43 ± 0.28	1.13 ± 0.35	0.21 ± 0.09	0.0 ± 0.4
Strontium-90	pCi/l	1.0	0.0 ± 9.7	4.7 ± 5.9	0.7 ± 0.30	1.00 ± 0.40	0.70 ± 0.40	0.60 ± 0.30	2.0 ± 3.1
Strontium-89	pCi/l	1.0	8.9 ± 6.2	3.9 ± 5.6	0.00 ± 0.40	0.00 ± 0.40	0.00 ± 0.50	0.00 ± 0.40	9.0 ± 3.0
Technetium-99	pCi/l	1.0	1.1 ± 3.8	0.0 ± 3.8	0.00 ± 1.11	*	0.00 ± 1.35	0.00 ± 0.99	0.1 ± 1.8
Carbon-14	pCi/l	3.0	45 ± 23	20 ± 22	3.50 ± 0.50	4.30 ± 0.30	1.40 ± 0.30	0.00 ± 0.50	77 ± 67
Radium-226	pCi/l	0.2	28 ± 9	29 ± 8					2.7 ± 1.0
Uranium-234	pCi/l		5.8 ± 3.4	1.7 ± 2.3	0.27 ± 0.13	1.21 ± 1.82	2.83 ± 0.63	3.34 ± 0.66	
Uranium-235	pCi/l		0.7 ± 1.8	0.0 ± 1.3	0.00 ± 0.04	0.50 ± 0.18	0.14 ± 0.11	0.17 ± 0.10	
Uranium-238	pCi/l		4.4 ± 2.9	2.3 ± 2.3	0.19 ± 0.11	1.48 ± 1.86	3.09 ± 0.68	3.31 ± 0.65	
Americium-241	pCi/l	0.5	0.0 ± 4.2	0.0 ± 7.1	0.00 ± 0.15	0.22 ± 0.15	0.00 ± 0.11	0.00 ± 0.06	0.0 ± 2.0
Lead-214	pCi/l		<150.0	<26					<19
Lead-212	pCi/l								<14
Bismuth-214	pCi/l		<210.0	<46					<27
Cesium-137	pCi/l				0.00 ± 27.20	.00 ± 26.20	.00 ± 27.90	.00 ± 27.20	<14
Cs-134	pCi/l				0.00 ± 24.10	.00 ± 25.30	.00 ± 26.30	.00 ± 26.30	
CM-244	pCi/l				0.00 ± 0.32	0.21 ± 0.16	0.00 ± 0.13	0.00 ± 0.06	
T-RA	pCi/l				0.23 ± 0.13	0.26 ± 0.13	0.15 ± 0.10	0.00 ± 0.16	

pCi/l picoCuries per liter

mg/l milligrams per liter

pCi/l** combined U238, 234, 235 based on equilibrium co.

< below detection limit

* lost in process

** pCi/ml

TABLE B6. RADIOLOGICAL CHARACTERIZATION OF WATER FROM WETLANDS ASSOCIATED WITH UPPER THREE RUNS CREEK

	PHASE I: MIXED WASTE MANAGEMENT FACILITY								
	SITE NO:			71	77	114	115	116	117
	DATE COLLECTED:			9-5-91	9-5-91	9-6-91	9-6-91	9-6-91	9-6-91
	MATRIX:			WATER	WATER	WATER	WATER	WATER	WATER
ANALYTE	UNITS:	LIMIT OF DETECTION:							
Gross Alpha	pCi/l	2.0		220 ± 50	410 ± 100	35 ± 7	42 ± 11	220 ± 60	620 ± 120
Gross Beta	pCi/l	4.0		150 ± 30	280 ± 40	19 ± 3	37 ± 6	210 ± 40	570 ± 50
Tritium	pCi/l	460.0		34000 ± 500	2000 ± 500	000 ± 1100	0000 ± 800	1000 ± 800	000 ± 1000
Iodine-129	pCi/l	1.0		0.0 ± 7.9	4 ± 20	0 ± 17	0 ± 20	0 ± 21	1 ± 24
Plutonium-238	pCi/l	0.4		0.0 ± 0.4	0.0 ± 0.9	0.0 ± 1.0	0.0 ± 0.5	0.0 ± 0.5	0.5 ± 2.5
Plutonium-239/240	pCi/l	0.4		1.0 ± 0.7	3.2 ± 1.8	2.2 ± 1.0	0.0 ± 0.4	0.0 ± 0.4	46 ± 9
Strontium-90	pCi/l	1.0		14 ± 18	4.2 ± 3.2	2.2 ± 2.6	2.2 ± 2.7	1.4 ± 2.5	10 ± 10
Strontium-89	pCi/l	1.0		4 ± 18	6.8 ± 3.0	2.6 ± 2.6	1.1 ± 2.4	6.4 ± 2.7	1.0 ± 6.0
Technetium-99	pCi/l	1.0		0.1 ± 1.8	4.3 ± 2.1	0.3 ± 1.7	0.2 ± 1.7	0.0 ± 1.6	0.0 ± 3.7
Carbon-14	pCi/l	3.0		92 ± 62	180 ± 120	19 ± 13	90 ± 71	410 ± 300	530 ± 240
Radium-226	pCi/l	0.2		5.5 ± 1.4	27 ± 3	2.3 ± 1.0	0.6 ± 0.5	12 ± 2	95 ± 18
Uranium-234	pCi/l								14 ± 5
Uranium-235	pCi/l								0.0 ± 1.3
Uranium-238	pCi/l								9.3 ± 3.9
Americium-241	pCi/l	0.5		0.0 ± 3.0	0.0 ± 3.3	0.0 ± 2.3	0.0 ± 2.9	0.0 ± 5.0	0.5 ± 3.0
Lead-214	pCi/l			21 ± 11	19 ± 12	16 ± 11	<16	31 ± 11	<150
Lead-212	pCi/l			<14	16 ± 9	<13	<10	<15	
Bismuth-214	pCi/l			<26	32 ± 18	<26	<23	26 ± 16	<180
Cesium-137	pCi/l			<16	<15	<16	<14	<12	

pCi/l picoCuries per liter
mg/l milligrams per liter
pCi/l** combined U238, 234, 235 based on equilibrium co.
< below detection limit

TABLE B6. RADIOLOGICAL CHARACTERIZATION OF WATER FROM WETLANDS ASSOCIATED WITH UPPER THREE RUNS CREEK

	PHASE I: MIXED WASTE MANAGEMENT FACILITY							
	SITE NO:		118	134	135	.37	140	142
	DATE COLLECTED:		9-6-91	9-10-91	9-10-91	9-10-91	9-10-91	9-10-91
	MATRIX:		WATER	WATER	WATER	WATER	WATER	WATER
ANALYTE	UNITS:	LIMIT OF DETECTION:						
Gross Alpha		2 pCi/l	56 ± 9	280 ± 60	5.3 ± 2.8	88 ± 24	IS	47 ± 11
Gross Beta		4 pCi/l	27 ± 4	180 ± 30	9.1 ± 2.1	54 ± 10	IS	32 ± 6
Tritium		460 pCi/l	210000 ± 1100	7000 ± 800	2000 ± 850	4000 ± 760	3000 ± 590	700 ± 430
Iodine-129		1pCi/l	0 ± 18	3 ± 14	0.0 ± 8.5	6 ± 12	0.0 ± 35	0.0 ± 7.9
Plutonium-238		0.4 pCi/l	0.0 ± 0.4	0.0 ± 2.3	0.0 ± 0.5	0.2 ± 0.5	1.0 ± 2.7	0.0 ± 0.5
Plutonium-239/240		0.4 pCi/l	1.2 ± 0.9	6.7 ± 3.8	0.0 ± 0.4	2.2 ± 0.9	0.0 ± 2.1	9.1 ± 1.8
Strontium-90		1 pCi/l	2.0 ± 2.7	1.3 ± 4.4	3.3 ± 3.5	9.1 ± 8.5	16 ± 20	5.0 ± 5.5
Strontium-89		1 pCi/l	1.1 ± 2.5	7.9 ± 3.2	0.1 ± 2.6	0.0 ± 2.8	2 ± 18	1.0 ± 2.7
Technetium-99		1 pCi/l	0.5 ± 3.3	1.2 ± 1.9	0.0 ± 1.8	1.1 ± 1.9	5.3 ± 7.5	0.0 ± 1.6
Carbon-14		3 pCi/l	15 ± 13	19 ± 47	10 ± 13	15 ± 11	6 ± 61	46 ± 16
Radium-226		0.2 pCi/l	2.9 ± 0.9	4.6 ± 1.6	0.1 ± 0.6	3.0 ± 1.4	IS	7.6 ± 2.0
Uranium-234								
Uranium-235								
Uranium-238								
Americium-241		0.5 pCi/l	0.0 ± 3.7	0.8 ± 6.0	1.0 ± 1.6	2.1 ± 5.0	2.0 ± 1.9	0.0 ± 6.6
Lead-214			<15	34 ± 14	<22	50 ± 13	140 ± 50	95 ± 52
Lead-212			<12	34 ± 11	<16	31 ± 9	<54	<54
Bismuth-214			<24	28 ± 17	<26	<27	150 ± 50	94 ± 57
Cesium-137			<14					
Gamma Spec		25 pCi/l						

pCi/l picoCuries per liter
IS Insufficient sample
mg/l milligrams per liter
pCi/l** combined U238, 234, 235 based on equilibrium co.
< below detection limit

TABLE B6. RADIOLOGICAL CHARACTERIZATION OF WATER FROM WETLANDS ASSOCIATED WITH UPPER THREE RUNS CREEK

	PHASE I: MIXED WASTE MANAGEMENT FACILITY							
	SITE NO:		155	156	157	160	161	164
	COLLECTION DATE:		9-9-91	9-9-91	9-9-91	9-10-91	9-10-91	9-10-91
	MATRIX:		WATER	WATER	WATER	WATER	WATER	WATER
ANALYTE	UNITS:	LIMIT OF DETECTION:						
Gross Alpha		2 pCi/l	59 ± 10	110 ± 20	29 ± 6	3.4 ± 2.5	17 ± 3	1.0 ± 1.4
Gross Beta		4 pCi/l	46 ± 5	130 ± 10	20 ± 3	83.4 ± 4	220 ± 10	5.6 ± 1.8
Tritium		460 pCi/l	50000 ± 600	0000 ± 700	8000 ± 700	000 ± 3000	000 ± 3000	000 ± 1300
Iodine-129		1pCi/l	0.5 ± 8.5	0.0 ± 9.8	2.7 ± 9.1	0.0 ± 7.2	0.0 ± 8.5	3 ± 16
Plutonium-238		0.4 pCi/l	0.0 ± 0.4	0.0 ± 0.6	0.5 ± 0.6	0.0 ± 0.5	0.0 ± 0.4	0.0 ± 0.6
Plutonium-239/240		0.4 pCi/l	0.0 ± 0.4	0.5 ± 0.7	0.5 ± 0.6	0.0 ± 0.5	0.0 ± 0.4	0.0 ± 0.4
Strontium-90		1 pCi/l	3.6 ± 2.9	26 ± 4	5.6 ± 6.0	43 ± 4	130 ± 10	0.0 ± 2.6
Strontium-89		1 pCi/l	0.0 ± 2.2	3.0 ± 4.0	0.0 ± 2.9	0.0 ± 4.0	0 ± 10	1.1 ± 2.0
Technetium-99		1 pCi/l	11 ± 6	34 ± 6	5.2 ± 4.0	0.0 ± 1.9	0.5 ± 1.9	0.4 ± 1.8
Carbon-14		3 pCi/l	64 ± 53	1 ± 12	68 ± 42	22 ± 59	330 ± 90	38 ± 51
Radium-226		0.2 pCi/l	6.8 ± 1.5	12 ± 2	6.1 ± 1.8	1.2 ± 1.1	3.8 ± 1.4	1.1 ± 1.1
Uranium-234								
Uranium-235								
Uranium-238								
Americium-241		0.5 pCi/l	0.0 ± 5.2	1.5 ± 3.0	0.0 ± 5.5	1.0 ± 3.4	0.0 ± 2.6	0.7 ± 3.5
Lead-214			43 ± 11	26 ± 12	23 ± 12	22 ± 12	<93	<80
Lead-212						22 ± 90	<64	<59
Bismuth-214			45 ± 16	34 ± 15	38 ± 15	<22	140 ± 60	<85
Cesium-137								
Gamma Spec		25 pCi/l						

pCi/l picoCuries per liter

mg/l milliograms per liter

pCi/l** combined U238, 234, 235 based on equilibrium co.

< below detection limit

TABLE B7. RADIOLOGICAL CHARACTERIZATION OF WATER FROM WETLAND AREAS ASSOCIATED WITH UPPER THREE RUNS CREEK

	PHASE II: F- AND H-AREA SEEPAGE BASINS									
	SITE NO:		186	190	191	192	196	205	206	207
	DATE COLLECTED:		9-13-91	9-13-91	9-13-91	9-13-91	9-13-91	9-13-91	9-13-91	9-13-91
	MATRIX:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
	UNITS:	LIMIT OF DETECTION:								
ANALYTE										
Gross Alpha	pCi/l	2 pCi/l	12 ± 3	2.9 ± 1.8	6.9 ± 2.4	1.5 ± 1.5	0.9 ± 1.4	6.8 ± 2.7	69 ± 8	6.8 ± 2.1
Gross Beta	pCi/l	2 pCi/l	8.7 ± 1.7	5.5 ± 1.8	6.0 ± 1.9	2.8 ± 1.7	5.1 ± 1.8	8.5 ± 2.1	36 ± 3	7.0 ± 1.9
Tritium	pCi/l	460 pCi/l	4000 ± 600	400 ± 500	8200 ± 490	6400 ± 460	7800 ± 490	7800 ± 490	00 ± 1200	000 ± 670
Iodine-129	pCi/l	1 pCi/l	0 ± 13	0 ± 13	0.0 ± 7.3	0.0 ± 8.7	0 ± 12	1.6 ± 8.4	0.0 ± 9.4	0.0 ± 8.7
Plutonium-238	pCi/l	0.4 pCi/l	0.0 ± 0.7	0.0 ± 0.5	0.0 ± 0.6	0.0 ± 0.4	0.0 ± 1.9	0.0 ± 0.5	0.0 ± 0.8	0.0 ± 0.4
Plutonium-239/240	pCi/l	0.4 pCi/l	0.4 ± 0.6	0.0 ± 0.4	0.0 ± 0.4	0.0 ± 0.3	0.7 ± 2.0	0.6 ± 0.8	8.5 ± 1.8	2.2 ± 1.0
Strontium-90	pCi/l	1 pCi/l	2.3 ± 3.8	0.8 ± 4.5	8.7 ± 6.5	14 ± 10	0.4 ± 5.7	8.7 ± 4.1	0.0 ± 1.9	3.1 ± 4.7
Strontium-89	pCi/l	1 pCi/l	0.0 ± 4.1	0.0 ± 5.3	0.0 ± 4.6	0.8 ± 6.5	4.2 ± 5.2	0.0 ± 4.4	0.0 ± 1.9	0.0 ± 4.5
Technetium-99	pCi/l	1 pCi/l	1.3 ± 1.9	1.0 ± 1.7	2.2 ± 2.0	0.2 ± 1.9	0.0 ± 1.8	0.3 ± 1.7	0.0 ± 1.8	0.6 ± 1.9
Carbon-14	pCi/l	3 pCi/l	2 ± 12	17 ± 15	0.0 ± 9.7	12 ± 12	10 ± 12	13 ± 27	11 ± 8	13 ± 17
Radium-226	pCi/l	0.2 pCi/l	2.0 ± 0.8	1.7 ± 0.7	5.0 ± 1.3	1.9 ± 0.8	0.8 ± 0.6	3.2 ± 1.6	24 ± 4	1.2 ± 1.1
Uranium-234	pCi/l	0.4 pCi/l	0.2 ± 1.0	0.0 ± 0.6	0.6 ± 1.2	0.0 ± 0.8	0.5 ± 1.1	0.3 ± 1.4	2.4 ± 1.7	0.7 ± 1.2
Uranium-235	pCi/l	0.4 pCi/l	0.0 ± 0.7	0.0 ± 0.6	0.0 ± 0.6	0.0 ± 0.6	0.0 ± 0.6	0.0 ± 0.8	0.0 ± 0.6	0.0 ± 0.7
Uranium-238	pCi/l	0.4 pCi/l	0.0 ± 0.7	0.0 ± 0.7	1.0 ± 1.2	0.0 ± 0.7	0.0 ± 0.8	0.0 ± 1.1	2.1 ± 1.5	0.4 ± 1.0
Americium-241	pCi/l	0.4 pCi/l	0.0 ± 0.8	0.0 ± 0.9	0.0 ± 0.7	0.1 ± 1.6	0.0 ± 0.8	0.0 ± 1.1	0.0 ± 0.8	0.6 ± 1.0
Lead-214	pCi/l									
Lead-212	pCi/l									
Bismuth-214	pCi/l									
Cesium-137	pCi/l		<10	<10	<10	<10	<10	<10	<10	<10
Gamma Spec	pCi/l	25 pCi/l								

pCi/l picoCuries per liter

2 counting error at the 95% confidence level

TABLE B7. RADIOLOGICAL CHARACTERIZATION OF WATER FROM WETLAND AREAS ASSOCIATED WITH UPPER THREE RUNS CREEK

	PHASE II: F- AND H-AREA SEEPAGE BASINS									
		SITE NO:		208	209	220	221	222	225	230
		DATE COLLECTED:		9-13-91	9-13-91	9-17-91	9-17-91	9-17-91	9-17-91	9-17-91
		MATRIX:		WATER	WATER	WATER	WATER	WATER	WATER	WATER
		UNITS:	LIMIT OF DETECTION:							
ANALYTE										
Gross Alpha		pCi/l	2 pCi/l	0.9 ± 1.2	2.2 ± 1.5	9.1 ± 2.2	7.7 ± 2.6	1.3 ± 1.6	34 ± 8	65 ± 16
Gross Beta		pCi/l	2 pCi/l	1.4 ± 1.5	3.3 ± 1.7	6.4 ± 1.6	6.6 ± 1.8	5.5 ± 1.8	24 ± 4	43 ± 8
Tritium		pCi/l	460 pCi/l	1000 ± 710	400 ± 520	8000 ± 700	8000 ± 700	000 ± 500	9000 ± 500	600 ± 500
Iodine-129		pCi/l	1 pCi/l	5.4 ± 8.1	0 ± 15	0.2 ± 7.2	7.4 ± 7.8	3.7 ± 8.8	0.0 ± 8.9	2.6 ± 8.6
Plutonium-238		pCi/l	.04 pCi/l	0.0 ± 0.6	0.0 ± 0.6	0.0 ± 0.5	0.0 ± 0.6	0.0 ± 1.1	0.0 ± 0.8	0.0 ± 0.4
Plutonium-239/240		pCi/l	0.4 pCi/l	1.1 ± 0.9	0.8 ± 0.8	0.0 ± 0.5	0.0 ± 0.4	0.1 ± 1.0	0.3 ± 0.6	0.0 ± 0.4
Strontium-90		pCi/l	1 pCi/l	5.8 ± 5.1	0.0 ± 4.5	0.0 ± 2.1	0.0 ± 1.6	0.0 ± 2.8	0.0 ± 5.3	0.0 ± 2.4
Strontium-89		pCi/l	1 pCi/l	0.0 ± 3.6	0.0 ± 5.4	0.5 ± 1.3	0.0 ± 1.6	0.4 ± 1.6	0.0 ± 3.3	0.6 ± 1.6
Technetium-99		pCi/l	1 pCi/l	0.8 ± 1.9	0.0 ± 1.8	0.6 ± 1.9	0.1 ± 1.9	0.0 ± 1.7	0.3 ± 1.9	0.0 ± 1.8
Carbon-14		pCi/l	3 pCi/l	1 ± 15	4.0 ± 11	13.0 ± 8.0	4.0 ± 22.0	0.0 ± 12.0	0.0 ± 11.0	.0 ± 20.0
Radium-226		pCi/l	1 pCi/l	1.7 ± 1.3	1.3 ± 1.2	4.5 ± 1.7	3.4 ± 0.9	1.8 ± 0.7	4.0 ± 1.6	6.9 ± 1.2
Uranium-234		pCi/l	0.4 pCi/l	0.0 ± 0.8	0.0 ± 0.8	2.5 ± 1.6	11 ± 3	5.4 ± 2.2	3.3 ± 1.8	2.5 ± 1.6
Uranium-235		pCi/l	0.4 pCi/l	0.0 ± 0.6	0.0 ± 0.7	0.0 ± 0.6	0.0 ± 0.7	0.0 ± 0.6	0.0 ± 0.6	0.0 ± 0.7
Uranium-238		pCi/l	0.4 pCi/l	0.0 ± 0.8	0.4 ± 1.0	3.7 ± 1.8	8.7 ± 2.6	2.8 ± 1.6	2.6 ± 1.6	2.6 ± 1.6
Americium-241		pCi/l	0.5 pCi/l	0.0 ± 1.7	0.0 ± 1.1	0.0 ± 4.7	0.0 ± 2.6	0.0 ± 3.7	0.0 ± 2.3	1.4 ± 2.6
Lead-214		pCi/l				30 ± 11	25 ± 13	23 ± 12	25 ± 10	<21
Lead-212		pCi/l								
Bismuth-214		pCi/l				41 ± 16	22 ± 14	45 ± 16	30 ± 14	36 ± 14
Cesium-137		pCi/l		<10	<10					

pCi/l picoCuries per liter

2 counting error at the 95% confidence level

TABLE B8. RADIOLOGICAL CHARACTERIZATION OF WATER FROM WETLAND AREAS ASSOCIATED WITH UPPER THREE RUNS CREEK

	PHASE III: SANITARY LANDFILL											
	SITE NO:		254	258	259	262	263	266	267	268	269	271
	DATE COLLECTED:		9-17-91	9-17-91	9-17-91	9-17-91	9-17-91	9-18-91	9-18-91	9-18-91	9-18-91	9-18-91
	MATRIX:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
ANALYTE	UNIT	LIMIT OF DETECTION										
Gross Alpha	pCi/l	2	9.7 ± 2.3	16 ± 6	5.2 ± 2.2	45 ± 12	32 ± 7	0.9 ± 1.4	110 ± 20	0.1 ± 1.3	2.7 ± 1.8	33 ± 8
Gross Beta	pCi/l	4	8.2 1.9	16 ± 3	5.0 ± 1.8	28 ± 6	20 ± 4	2.7 ± 1.7	57 ± 10	3.4 ± 1.7	3.3 ± 1.7	17 ± 4
Tritium	pCi/l	460	2700 400	7800 ± 500	4000 ± 400	1300 ± 400	3500 ± 400	1800 ± 400	1600 ± 400	300 ± 400	900 ± 400	1400 ± 400
Iodine-129	pCi/l	1	0.0 ± 9.0	0 ± 11	0.0 ± 8.6	0.0 ± 9.1	0.0 ± 9.0	0.8 ± 9.4	6.1 ± 9.8	0.0 ± 8.8	2.1 ± 9.4	4.9 ± 9.2
Plutonium-238	pCi/l	0.4	0.0 ± 0.5	0.2 ± 0.6	0.0 ± 0.5	0.0 ± 0.6	0.0 ± 2.8	0.0 ± 0.6	0.0 ± 0.6	0.0 ± 0.5	0.0 ± 0.6	0.0 ± 1.3
Plutonium-239/240	pCi/l	0.4	0.0 ± 0.6	0.0 ± 0.4	0.0 ± 0.6	0.0 ± 0.5	NO DATA	0.0 ± 0.5	1.3 ± 0.9	0.0 ± 0.3	0.0 ± 0.5	0.0 ± 1.0
Strontium-90	pCi/l	1	0.0 ± 2.3	0.0 ± 1.8	0.0 ± 1.7	0.5 ± 3.2	1.2 ± 5.3	0.0 ± 1.8	0.0 ± 2.7	0.0 ± 1.8	0.0 ± 1.8	0.0 ± 6.7
Strontium-89	pCi/l	1	0.4 ± 1.6	0.0 ± 1.8	0.0 ± 1.7	0.8 ± 1.9	0.0 ± 2.6	0.0 ± 1.8	1.3 ± 2.1	0.0 ± 1.8	0.0 ± 1.8	0.0 ± 6.7
Technetium-99	pCi/l	1	0.0 ± 1.8	1.1 ± 1.9	0.6 ± 1.7	2.0 ± 2.0	0.6 ± 2.0	0.0 ± 1.7	1.3 ± 2.0	0.0 ± 1.8	0.5 ± 1.9	0.0 ± 9.7
Carbon-14	pCi/l	3	3.8 ± 9.6	0.0 ± 28	10 ± 16	3 ± 12	1 ± 12	5.1 ± 7.6	0.0 ± 9.0	0.6 ± 9.2	5.7 ± 8.9	1.0 ± 7.3
Radium-226	pCi/l	1	2.6 ± 0.8	2.2 ± 0.8	2.1 ± 0.7	2.2 ± 0.8	4.2 ± 1.0	2.1 ± 0.8	5.4 ± 1.1	1.6 ± 0.7	1.5 ± 0.6	2.9 ± 0.9
Uranium-234	pCi/l		0.2 ± 0.8	3.1 ± 1.8	2.9 ± 1.7	1.5 ± 1.4	3.4 ± 2.9	0.0 ± 0.8	6.2 ± 2.5	0.2 ± 1.0	4.3 ± 2.0	1.6 ± 1.7
Uranium-235	pCi/l		0.0 ± 0.4	0.0 ± 0.62	0.0 ± 0.5	0.0 ± 0.5	0.0 ± 1.3	0.0 ± 0.7	0.3 ± 0.8	0.0 ± 0.6	0.0 ± 0.5	0.0 ± 0.8
Uranium-238	pCi/l		0.4 ± 0.8	2.4 ± 1.5	1.3 ± 1.2	1.5 ± 1.3	3.1 ± 2.6	0.2 ± 0.9	4.5 ± 2.0	0.0 ± 0.8	2.5 ± 1.5	3.5 ± 2.1
Americium-241	pCi/l	0.5	0.5 ± 2.5	0.0 ± 4.2	0.0 ± 3.5	0.0 ± 2.3	1.5 ± 7.5	0.0 ± 1.1	0.0 ± 0.9	0.0 ± 0.8	0.0 ± 0.7	0.5 ± 1.8
GAMMA SPECTROSCOPY												
Lead-214	pCi/l		31 ± 12	30 ± 11	<21	31 ± 12	27 ± 13	18	30 ± 15	<18	22 ± 10	47 ± 21
Bismuth-214	pCi/l		34 ± 15	44 ± 17	36 ± 17	<27	44 ± 17	<25	51 ± 17	<25	<25	<49

pCi/l picoCuries per liter

2 counting error at the 95% confidence level

TABLE B9. CHEMICAL CHARACTERIZATION OF WATER IN WETLANDS AREAS ASSOCIATED WITH UPPER THREE RUNS CREEK

PHASE I: MIXED WASTE MANAGEMENT FACILITY															
	SITE NO:		15	22	23	24	65	66	68	71	77	114	115	116	117
	DATE COLLECTED:		9-3-91	9-3-91	9-4-91	9-14-91	9-4-91	9-4-91	9-6-91	9-6-91	9-6-91	9-6-91	9-6-91	9-6-91	9-11-91
	MATRIX:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
ANALYTE:	UNITS:	REPORTING LIMIT:													
VOLATILES:															
Chloromethane	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Bromomethane	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Vinyl Chloride	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Chloroethane	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Methylene Chloride	ug/L	5	5 B	3 JB	4 JB	4 JB	3 JB	3 JB	4 JB	3 JB	3 JB	5 B	3 JB	5 B	4 JB
Acetone	ug/L	10	120	15	4 J	10 u	5 J	10 u	13 B	12 B	10 u	26 B	8 JB	36 B	3 JB
Carbon disulfide	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1-Dichloroethene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,2-Dichloroethane (total)	ug/L	5	36	3 J	3 J	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Chloroform	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,2-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
2-Butanone	ug/L	10	36	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	34	10 u	120	10 u
1,1,1-Trichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Carbon Tetrachloride	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Vinyl Acetate	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Bromodichloromethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,2-Dichloropropane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
cis-1,3-Dichloropropene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Trichloroethene	ug/L	5	12	2 J	6	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Dibromochloromethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1,2-Trichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Benzene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Trans-1,3-Dichloropropene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Bromoform	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
4-Methyl-2-pentanone	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
2-Hexanone	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Tetrachloroethene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1,2,2-Tetrachloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u

TABLE B9. CHEMICAL CHARACTERIZATION OF WATER IN WETLANDS AREAS ASSOCIATED WITH UPPER THREE RUNS CREEK

PHASE I: MIXED WASTE MANAGEMENT FACILITY															
	SITE NO:		15	22	23	24	65	66	68	71	77	114	115	116	117
	DATE COLLECTED:		9-3-91	9-3-91	9-4-91	9-14-91	9-4-91	9-4-91	9-6-91	9-6-91	9-6-91	9-6-91	9-6-91	9-6-91	9-11-91
	MATRIX:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
ANALYTE:	UNITS:	REPORTING LIMIT:													
VOLATILES:															
Toluene	ug/L	5	2 J	2 J	5 u	5 u	5 u	5 u	19	38	5 u	5 u	5 u	17	5 u
Chlorobenzene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Ethylbenzene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	1 J	3 J	5 u	5 u	5 u	5 u	5 u
Styrene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Xylene (total)	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5	19	5 u	5 u	5 u	4 J	5 u

B Detected in associated blank

J estimated value

u Below detection limit

TABLE B9. CHEMICAL CHARACTERIZATION OF WATER IN WETLANDS AREAS ASSOCIATED WITH UPPER THREE RUNS CREEK

PHASE I: MIXED WASTE MANAGEMENT FACILITY

	SITE NO:		118	134	135	137	140	142	155	156	157	160	161	164
	MATRIX:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
	DATE COLLECTED:		9-6-91	9-10-91	9-10-91	9-10-91	9-10-91	9-10-91	9-9-91	9-9-91	9-9-91	9-10-91	9-10-91	9-10-91
ANALYTE:	UNITS:	REPORTING LIMITS:												
VOLATILES:														
Chloromethane	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Bromomethane	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Vinyl Chloride	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Chloroethane	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Methylene Chloride	ug/L	5	4 JB	6 B	4 JB	6 B	3 JB	5 B	5 B	5 u	4 JB	2 JB	2 JB	3 JB
Acetone	ug/L	10	27 B	10 u	10 u	5 JB	10 u	26 B	10 u	10 u	10 B	11	9 J	34
Carbon disulfide	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1-Dichloroethene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,2-Dichloroethene (total)	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Chloroform	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,2-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
2-Butanone	ug/L	10	74	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
1,1,1-Trichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Carbon Tetrachloride	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Vinyl Acetate	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Bromodichloromethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,2-Dichloropropane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
cis-1,3-Dichloropropene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Trichloroethene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	3 J	8	5 u	5 u	5 u	5 u
Dibromochloromethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1,2-Trichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Benzene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Trans-1,3-Dichloropropene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Bromoform	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
4-Methyl-2-pentanone	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
2-Hexanone	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u

TABLE B9. CHEMICAL CHARACTERIZATION OF WATER IN WETLANDS AREAS ASSOCIATED WITH UPPER THREE RUNS CREEK

PHASE I: MIXED WASTE MANAGEMENT FACILITY														
	SITE NO:		118	134	135	137	140	142	155	156	157	160	161	164
	MATRIX:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
	DATE COLLECTED:		9-6-91	9-10-91	9-10-91	9-10-91	9-10-91	9-10-91	9-9-91	9-9-91	9-9-91	9-10-91	9-10-91	9-10-91
ANALYTE:	UNITS:	REPORTING LIMITS:												
VOLATILES:														
Tetrachloroethene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1,2,2-Tetrachloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Toluene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	4 J	5 u	5 u
Chlorobenzene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Ethylbenzene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Styrene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Xylene (total)	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	2 J	2 J	5 u

B Detected in associated blank

J estimated value

u Below detection limit

TABLE B10. CHEMICAL CHARACTERIZATION OF WATER IN WETLANDS ASSOCIATED WITH UPPER THREE RUNS CREEK

PHASE II: F- AND H-AREA SEEPAGE BASINS																	
	SITE NO:		186	190	191	192	196	205	206	207	208	209	220	221	222	225	230
	DATE COLLECTED:		9-13-91	9-13-91	9-13-91	9-13-91	9-13-91	9-13-91	9-13-91	9-13-91	9-13-91	9-17-01	9-17-91	9-17-91	9-17-91	9-17-91	9-17-91
	MATRIX:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
ANALYTE:	UNITS:	REPORTING LIMIT:															
VOLATILES																	
Chloromethane	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Bromomethane	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Vinyl Chloride	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Chloroethane	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Methylene Chloride	ug/L	5	3 JB	4 JB	5 B	3 JB	4 JB	3 JB	4 JB	5 B	3 JB	3 JB	5 u	5 u	4 JB	9 B	5 B
Acetone	ug/L	10	8 J	4 J	10 u	5 J	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	3 JB	10 u	10 u
Carbon Disulfide	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1,-Dichloroethene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1,-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,2-Dichloroethene (total)	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Chloroform	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,2-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
2-Butanone	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
1,1,1-Trichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Carbon Tetrachloride	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Vinyl Acetate	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Bromodichloromethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,2-Dichloropropene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
cis-1,3-Dichloropropene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Trichloroethene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Dibromochloromethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1,2-Trichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Benzene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Trans-1,2-Dichloropropene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Bromoform	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
4-Methyl-2-pentanone	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
2-Hexanone	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u

TABLE B10. CHEMICAL CHARACTERIZATION OF WATER IN WETLANDS ASSOCIATED WITH UPPER THREE RUNS CREEK

PHASE II: F- AND H-AREA SEEPAGE BASINS																	
	SITE NO:		186	190	191	192	196	205	206	207	208	209	220	221	222	225	230
	DATE COLLECTED:		9-13-91	9-13-91	9-13-91	9-13-91	9-13-91	9-13-91	9-13-91	9-13-91	9-13-91	9-17-01	9-17-91	9-17-91	9-17-91	9-17-91	9-17-91
	MATRIX:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
ANALYTE:	UNITS:	REPORTING LIMIT:															
VOLATILES:																	
Tetrachloroethene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1,2,2-Tetrachloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Toluene	ug/L	5	5 u	5 u	5 u	5 u	5 u	3 J	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Chlorobenzene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Ethylbenzene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Styrene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Xylene (total)	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u

B Detected in associated blank

J estimated value

u Below detection limit

TABLE B11. CHEMICAL CHARACTERIZATION OF WATER OF WETLANDS ASSOCIATED WITH UPPER THREE RUNS CREEK

PHASE III: SANITARY LANDFILL												
	SITE NO:		254	258	259	262	263	266	267	268	269	271
	DATE COLLECTED:		9-17-91	9-17-91	9-17-91	9-17-91	9-17-91	9-18-91	9-18-91	9-18-91	9-18-91	9-18-91
	MATRIX:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
ANALYTE:	UNITS:	REPORTING LIMIT:										
VOLATILES:												
Chloromethane	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Bromomethane	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Vinyl Chloride	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Chloroethene	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Methylene Chloride	ug/L	5	4 JB	19 B	16 B	4 JB	4 JB	35 B	29 B	4 JB	13 B	37 B
Acetone	ug/L	10	10 u	10	10 u	10 u	29	16 B	17 B	10 u	10 u	24
Carbon Disulfide	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1-Dichloroethene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u	3 J	5 u	5 u	5 u	5 u	5 u
1,2-Dichloroethene (total)	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Chloroform	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,2-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
2-Butanone	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
1,1,1-Trichloroethane	ug/L	5	5 u	5 u	5 u	5 u	3 J	5 u	5 u	5 u	5 u	5 u
Carbon Tetrachloride	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Vinyl Acetate	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Bromodichloromethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,2-Dichloropropane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
cis-1,3-Dichloropropene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Trichloroethene	ug/L	5	5 u	5 u	5 u	5 u	1 J	5 u	5 u	5 u	5 u	5 u
Dibromochloromethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1,2-Trichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Benzene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Trans-1,3-Dichloropropene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Bromoform	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
4-Methyl-2-pentanone	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
2-Hexanone	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u

TABLE B11. CHEMICAL CHARACTERIZATION OF WATER OF WETLANDS ASSOCIATED WITH UPPER THREE RUNS CREEK

PHASE III: SANITARY LANDFILL												
	SITE NO:		264	268	269	262	263	266	267	268	269	271
	DATE COLLECTED:		9-17-91	9-17-91	9-17-91	9-17-91	9-17-91	9-18-91	9-18-91	9-18-91	9-18-91	9-18-91
	MATRIX:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
ANALYTE:	UNITS:	REPORTING LIMIT:										
VOLATILES:												
Tetrachloroethene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1,2,2-Tetrachloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Toluene	ug/L	5	5 u	2 J	5 u	5 u	40	5 u	5 u	5 u	5 u	1 J
Chlorobenzene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Ethylbenzene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Styrene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Xylene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u

B Detected in associated blank

J estimated value

u Below detection limit

TABLE B12. CHEMICAL CHARACTERIZATION OF WATER FROM WETLANDS AREAS ASSOCIATED WITH UPPER THREE RUNS CREEK PHASE I: MIXED WASTE MANAGEMENT FACILI

	SITE NO:		15	22	23	24	65	66	68	71	77	114	115	116	117
	DATE COLLECTED:		1-24-92	1-24-92	1-24-92	1-24-92	1-24-92	1-24-92	1-24-92	1-24-92	1-27-92	1-27-92	1-27-92	1-27-92	1-27-92
	MATRIX:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
ANALYTE:		REPORTING													
METALS	UNITS:	LIMITS:													
Silver	UG/L	10	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u
Aluminum	UG/L	200	230	200 u	200 u	200 u	200 u	200 u	200 u	200 u	200 u	200 u	200 u	200 u	200 u
Arsenic	UG/L	10	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	34.3	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u
Barium	UG/L	200	200 u	200 u	200 u	200 u	200 u	200 u	200 u	200 u	200 u	200 u	200 u	200 u	200 u
Cadmium	UG/L	5	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u
Chromium	UG/L	10	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u
Copper	UG/L	25	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u
Iron	UG/L	100	290	926	235	183	111	129	149	391	11000	5350	378	450	2370
Mercury	UG/L	0.2	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u
Manganese	UG/L	15	44.1	320	37.2	37.2	28.2	16.1	47	71.5	350	86.2	32.2	59.2	95.7
Sodium	UG/L	5000	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u
Nickel	UG/L	40	40.0 u	40.0 u	51.3	40.0 u	40.0 u	40.0 u	40.0 u	40.0 u	40.0 u	40.0 u	40.0 u	40.0 u	40.0 u
Lead	UG/L	3	20.5	3.7	82.1	3 u	4.6	3 u	4.9	3 u	3 u	3 u	4.4	3 u	3 u
Selenium	UG/L	5	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u
Zinc	UG/L	20	146	188	200	81	38.4	30	36.3	59.9	119	110	113	72	46.4
INORGANICS															
Acidity	MG/L	2	48	48	48	232	36	56	46	70	48	56	60	214	40
Chloride	MG/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Hardness	MG/L	1	2.2	22	3	12	6.2	3	2.5	7.5	14	5.5	5	6.5	3.5
Nitrate	MG-N/L	0.1	0.1	0.16	0.46	0.37	0.16	0.22	0.28	0.1	0.1 u	0.1 u	0.27	0.1 u	0.17
pH	PH UNITS	0.01	4.3	5.1	5.1	4.3	6	5.1	5.1	4.5	5.9	5.1	5	5.3	5.3
Sulfate	MG/L	5	5 u	7.9	5 u	10.7	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Conductivity	UMHOS/CM	1	23.9	39.5	22.1	65.5	19.8	18.3	11.4	16.8	38.8	21.6	22.9	18.5	21.4
FIELD CHEMISTRIES															
pH			4.48	5.36	4.94	5.22	5.19	5.24	5	4.8	6.02	5.12	4.5	4.9	5.47
Conductivity			35	23	14	50	82	31	77	90	87	32	118	113	44
Redox			240	243	246	275	242	267	291	285	88	182	209	189	71

u Below Detection Limit

TABLE B12. CHEMICAL CHARACTERIZATION OF WATER FROM WETLANDS AREAS ASSOCIATED WITH UPPER THREE RUNS CREEK PHASE I: MIXED WASTE MANAGEMENT FACILITY

	SITE NO:		118	134	135	137	140	142	155	156	157	160	161	164
	DATE COLLECTED:		1-27-92	1-28-92	1-28-92	1-28-92	1-28-92	1-28-92	1-29-92	1-29-92	1-29-92	1-29-92	1-29-92	1-29-92
	MATRIX:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
ANALYTE:		REPORTING												
METALS	UNITS:	LIMITS:												
Silver	UG/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Aluminum	UG/L	200	200 u	1170	200 u	200 u	209	200 u	200 u	200 u	200 u	1480	200 u	200 u
Arsenic	UG/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Barium	UG/L	200	200 u	200 u	200 u	200 u	200 u	200 u	200 u	200 u	200 u	200 u	200 u	200 u
Cadmium	UG/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Chromium	UG/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Copper	UG/L	25	25 u	25 u	25 u	25 u	25 u	25 u	25 u	25 u	25 u	25 u	25 u	25 u
Iron	UG/L	100	1510	1480	100 u	100 u	111	1960	100 u	100 u	132	100 u	100 u	194
Mercury	UG/L	0.2	0.2 u	0.2 u	0.2 u	0.2 u	0.2 u	0.2 u	0.2 u	0.2 u	0.2 u	0.2 u	0.2 u	0.2 u
Manganese	UG/L	15	41.4	19.2	15 U	31.6	15 U	429	44.9	62.8	46.3	846	15 U	15 U
Sodium	UG/L	5000	5000 u	5000u	5000u	5000u	5000u	7200	7730	8090	5000u	9410	7440	5280
Nickel	UG/L	40	40 u	40 u	40 u	40 u	40 u	40 u	40 u	40 u	40 u	40 u	40 u	40 u
Lead	UG/L	3	3 u	3 u	3 u	3 u	3 u	3 u	3 u	3 u	3 u	3 u	3 u	3 u
Selenium	UG/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Zinc	UG/L	20	39.7	75.7	30.8	62.1	136	353	28.5	32.5	20 u	93.3	44.8	20.7
INORGANICS														
Acidity	MG/L	2	48	62	46	66	72	90	10	24	12	20	24	2
Chloride	MG/L	5	5 u	8.8	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Hardness	MG/L	1	4.5	30	31.5	18.5	23	19	8	14.5	17	39.5	27.5	2
Nitrate	MG-N/L	0.1	0.1 u	0.17	0.14	0.27	0.16	0.15	4.6	5.6	0.58	16	4.1	0.52
pH	PH UNITS	0.01	5.3	5.5	5.1	4.9	5.7	5.5	4.9	5.3	5.8	4.8	5.5	5.7
Sulfate	MG/L	5	5 u	9.5	11.5	9.4	20.3	16.9	5 u	5 u	5 u	5 u	6.6	5 u
Conductivity	UMHOS/CM	1	20.7	43.8	71.9	44.1	64.5	82.3	55.2	56.9	36	141	85.8	33.7
FIELD CHEMISTRIES														
pH			5.28	5.61	5.58	4.95	5.16	5.31	4.94	5.04	5.12	4.02	5.34	4.88
Conductivity			31	77	62	37	73	69	54	98	21	95	57	25
Redox			144	212	197	191	191	162	278	292	223	265	237	229

u Below Detection Limit

TABLE B13. CHEMICAL CHARACTERIZATION OF WATER FROM WETLANDS ASSOCIATED WITH UPPER THREE RUNS CREEK PHASE II: F- AND H-AREA SEEPAGE BASINS

	SITE NO:		186	190	191	192	196	205	206	207	208	209	220	221	222	225	230
	DATE COLLECTED:		2-10-92	2-10-92	2-10-92	2-10-92	2-10-92	2-12-92	2-10-92	2-10-92	2-12-92	2-12-92	2-20-92	2-20-92	2-20-92	2-20-92	2-20-92
	MATRIX:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
ANALYTE:		REPORTING															
METALS:	UNITS:	LIMIT:															
Silver	UG/L	10	10 u	10 u	10 u	10 u	10 u	16	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Aluminum	UG/L	200	200 u	200 u	200 u	200 u	200 u	266	200 u	200 u	200 u	200 u	215	203	248	200 u	200 u
Arsenic	UG/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Barium	UG/L	200	200 u	200 u	200 u	200 u	200 u	200 u	200 u	200 u	200 u	200 u	200 u	200 u	200 u	200 u	200 u
Cadmium	UG/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Chromium	UG/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Copper	UG/L	25	25 u	25 u	25 u	25 u	25 u	25 u	25 u	25 u	25 u	25 u	25 u	25 u	25 u	25 u	25 u
Iron	UG/L	100	116	142	100 u	100 u	814	8230	147	100 u	102	100 u	165	464	744	287	794
Mercury	UG/L	0.2	0.2 u	0.2 u	0.2 u	0.2 u	0.2 u	0.2 u	0.2 u	0.2 u	0.2 u	0.2 u	0.2 u	0.2 u	0.2 u	0.2 u	0.2 u
Manganese	UG/L	15	36.8	15 u	15 u	15 u	30.2	64.8	15 u	15 u	15 u	15 u	46.1	38.3	53.6	15 u	22.7
Sodium	UG/L	5000	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u
Nickel	UG/L	40	40 u	40 u	40 u	40 u	40 u	40 u	40 u	40 u	40 u	40 u	42.1	40 u	40 u	40 u	40 u
Lead	Ug/L	3	3 u	3 u	3 u	3 u	3 u	4.2	3 u	3 u	3 u	3 u	3 u	4.2	3 u	3 u	3 u
Selenium	UG/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Zinc	UG/L	20	26.3	42.5	28.7	21	43.5	133	22.8	20.3	73	38.7	175	123	72.1	51.7	36.2
INORGANICS:																	
Acidity	MG/L	2	22	18	8	16	24	90	4	8	10	20	16	20	32	384	180
Chloride	MG/L	0.25	4.6	3.6	4	4.1	6.5	5.8	3.6	3.5	4.9	4	3.5	4	3.7	3.8	3.7
Hardness	MG/L	1	23	4.4	3	6.4	5	10	6	3.3	1.3	4	12	6	5.5	5	9.5
Nitrate	MG/L	0.05	0.22	0.27	0.13	0.18	0.28	0.11	6.6	0.17	0.19	0.17	0.18	0.10 u	0.10 u	0.23	0.12
pH	pH UNITS	0.01	5.4	5.2	5.2	5.4	6.1	5	5.2	5	5	5	5	4	4.3	4.4	4.3
Sulfate	MG/L	0.1	9	0.8	0.54	2.5	0.59	3.9	0.37	0.38	0.85	1.6	2.9	3.2	4.2	2.5 u	4.1
Conductivity	UMHOS/CM	1.0	21.1	14.6	16.1	21.1	24.2	25.1	27	14.8	14.1	14.5	17.4	26.2	16.8	16	12.6
FIELD CHEMISTRIES																	
pH			5.01	4.88	4.35	4.4	4.43	6.65	5.92	5.74	5.62	5.6	5.35	4.91	5.25	5.05	5.17
Conductivity			76	9	13	14	11	36	19	11	7	16	21	15	15	12	10
Redox			218	255	253	234	241	108	179	174	173	184	183	226	224	237	221

u BELOW DETECTION LIMIT

TABLE B14. CHEMICAL CHARACTERIZATION OF WATER FROM WETLANDS AREAS ASSOCIATED WITH UPPER THREE RUNS CREEK PHASE III. SANITARY LANDFILL

	SITE NO:			254	258	259	262	263	266	267	268	269	271
	DATE COLLECTED:			2-24-92	2-24-92	2-24-92	2-24-92	2-24-92	2-25-92	2-25-92	2-25-92	2-25-92	2-25-92
	MATRIX:			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
ANALYTE:		REPORTING											
METALS	UNITS:	LIMITS:											
Silver	UG/L	10		10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u
Aluminum	UG/L	200		200 u	227	245	369	200 u	478	200 u	237	200 u	300
Arsenic	UG/L	10		10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u
Barium	UG/L	200		200 u	200 u	200 u	200 u	200 u	200 u	200 u	200 u	200 u	200 u
Cadmium	UG/L	5		5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u
Chromium	UG/L	10		10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u	10.0 u
Copper	UG/L	25		25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u	25.0 u
Iron	UG/L	100		454	653	388	840	426	9860	550	100 u	115	100 u
Mercury	UG/L	0.2		0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u	0.20 u
Manganese	UG/L	15		35.6	65.2	58.5	41.7	68.4	6990	603	241 u	96.5	30.7
Sodium	UG/L	5000		5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u	5000 u
Nickel	UG/L	40		40.0 u	40.0 u	40.0 u	40.0 u	40.0 u	40.0 u	40.0 u	40.0 u	40.0 u	40.0 u
Lead	UG/L	3		3	4.3	4	6.7	5.8	3.0 u	3.0 u	3.0 u	3.0 u	3.0 u
Selenium	UG/L	5		5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u	5.0 u
Zinc	UG/L	20		156	110	171	140	94.7	98.9 u	64.4	118	103	30.7
INORGANICS													
Acidity	MG/L	2		30	70	36	46	26	18	22	16	12	14
Chloride	MG/L	0.25		3.6	4.8	3.6	2.9	3	5.1	5.4	3.6	2	3.2
Hardness	MG/L	1		110	9	10	12	10	31	11	12	6	4.5
Nitrate	MG-N/L	0.1		0.11	0.16	0.21	0.35	0.27	0.16	0.17	0.22	0.65	0.24
pH	pH units	0.01		4.7	4.7	4.4	4.2	4.4	5.9	5.2	4.9	5.3	5.3
Sulfate	MG/L	2.5		2.5 u	2.5 u	4.3	4.7	2.5 u	12.4	17.8	5.7	8.2	10.9
Conductivity	UMHOS/CM	1		17.8	29.4	25.7	26.3	18.4	83.4	83	28	24.7	37.4
FIELD CHEMISTRIES													
pH				5.94	4.55	4.34	3.98	4.4	4.8	4.53	4.31	5.82	5.86
Conductivity				16	21	18	20	15	63	23	21	17	34
Redox				194	176	209	207	193	133	223	235	242	212

u BELOW DETECTION LIMIT

TABLE B15. RADIOLOGICAL CHARACTERIZATION OF WATER FROM WETLANDS ASSOCIATED WITH UPPER THREE RUNS CREEK

	PHASE I: MIXED WASTE MANAGEMENT FACILITY								
	SITE NO:		15	22	23	24	65	66	68
	DATE COLLECTED:								
	MATRIX:		WATER	WATER	WATER	WATER	WATER	WATER	WATER
ANALYTE	UNITS:	LIMIT OF DETECTION:							
Gross Alpha	pCi/l	2.0							
Gross Beta	pCi/l	4.0							
Tritium	pCi/l	460.0							
Iodine-129	pCi/l	1.0							
Plutonium-238	pCi/l	0.4							
Plutonium-239/240	pCi/l	0.4							
Strontium-90	pCi/l	1.0							
Strontium-89	pCi/l	1.0							
Technetium-99	pCi/l	1.0							
Carbon-14	pCi/l	3.0							
Radium-226	pCi/l	0.2							
Uranium	mg/l	0.0003							
Uranium	pCi/l**								
Uranium-234	pCi/l								
Uranium-235	pCi/l								
Uranium-238	pCi/l								
Americium-241	pCi/l	0.5							
Lead-214	pCi/l								
Lead-212	pCi/l								
Bismuth-214	pCi/l								
Cesium-137	pCi/l								
Cs-134	pCi/l								
CM-244									
T-RA									

pCi/l picoCuries per liter
mg/l milliograms per liter
pCi/l** combined U238, 234, 235 based on equilibrium co
< below detection limit
* lost in process
** pCi/ml

TABLE B15. RADIOLOGICAL CHARACTERIZATION OF WATER FROM WETLANDS ASSOCIATED WITH UPPER THREE RUNS CREEK

	PHASE I: MIXED WASTE MANAGEMENT FACILITY								
	SITE NO:		15	22	23	24	65	66	68
	DATE COLLECTED:		2-19-92	2-19-92	2-19-92	2-19-92	2-19-92	2-19-92	2-19-92
	MATRIX:	LIMIT OF	WATER	WATER	WATER	WATER	WATER	WATER	WATER
ANALYTE:	UNITS:	DETECTION:							
Gross Alpha	pCi/l	2	1.1 ± 1.5	6.9 ± 2.0	0.0 ± 1.2	50 ± 9	0.3 ± 1.0	4.8 ± 1.8	2.6 ± 1.8
Gross Beta	pCi/l	4	3.2 ± 1.8	7.9 ± 1.9	3.1 ± 1.8	3.1 ± 1.8	6.0 ± 1.9	3.4 ± 1.9	5.8 ± 1.9
Gamma Spec	pCi/l		NAD	NAD	NAD	NAD	NAD	NAD	NAD
Tritium	pCi/l	460	17900 ± 700	87000 ± 1000	105000 ± 1000	33800 ± 900	86000 ± 1000	20600 ± 700	58000 ± 1000
Iodine-129	pCi/l	25	0.0 ± 14	0.0 ± 9.4	3 ± 20	0.0 ± 10	0 ± 26	0.0 ± 18	1 ± 36
Plutonium-238	pCi/l	0.4	0.0 ±1.0	0.0 ± 0.7	0.0 ± 0.8	0.0 ± 1.4	0.0 ± 1.1	0.0 ± 1.8	0.0 ± 1.0
Plutonium-239/240	pCi/l	0.4	0.0 ± 0.8	0.0 ± 0.6	0.0 ± 0.8	0.0 ± 1.0	0.0 ± 0.8	0.0 ± 1.0	0.0 ± 0.8
Strontium-89	pCi/l	1.0	0.0 ± 0.9	3.6 ± 1.7	2.4 ± 2.6	8.4 ± 2.0	4.1 ± 2.7	4.2 ± 3.1	3.1 ± 1.4
Strontium-90	pCi/l	1.0	0.7 ± 2.9	0.0 ± 2.4	0.8 ± 4.4	0.6 ± 3.5	0.0 ± 5.9	0.0 ± 6.1	0.0 ± 3.0
Technetium-99	pCi/l	1.0	2.4 ± 1.9	2.0 ± 2.1	0.5 ± 3.5	1.3 ± 2.0	2.0 ± 4.0	1.9 ± 2.3	3.6 ± 4.6
Uranium-234	pCi/l	0.4	0.8 ± 1.1	1.5 ± 1.1	0.9 ± 0.9	1.9 ± 1.2	1.2 ± 1.0	0.9 ± 0.9	0.8 ± 0.9
Uranium-235	pCi/l	0.4	0.0 ± 0.6	0.0 ± 0.4	0.0 ± 0.4	0.0 ± 0.4	0.0 ± 0.5	0.0 ± 0.4	0.0 ± 0.5
Uranium-238	pCi/l	0.4	1.3 ± 1.3	1.0 ± 1.0	0.5 ± 0.8	1.3 ± 1.1	1.0 ± 1.0	0.4 ± 0.8	0.2 ± 0.7
Americium-241	pCi/l	0.5	0.0 ± 0.5	0.0 ± 0.6	0.0 ± 0.8	0.0 ± 0.7	0.0 ± 0.6	0.0 ± 0.5	0.0 ± 0.9
Carbon-14	pCi/l	3.0	5 ± 11	4 ± 10	43 ± 13	3 ± 13	0.0 ± 11	51 ± 15	7 ± 11
Radium-Total	pCi/l	1	1.4 ± 0.4	9.1 ± 2.1	1.1 ± 0.7	12 ± 2	8.2 ± 2.1	4.7 ± 1.7	4.6 ± 1.6

pCi/l picoCuries per liter

mg/l milliograms per liter

pCi/l** combined U238, 234, 235 based on equilibrium co

NAD no activity detected

* lost in process

** pCi/ml

TABLE 815. RADIOLOGICAL CHARACTERIZATION OF WATER FROM WETLANDS ASSOCIATED WITH UPPER THREE RUNS CREEK

	PHASE I: MIXED WASTE MANAGEMENT FACILITY								
	SITE NO:			71	77	114	115	116	117
	DATE COLLECTED:			2-19-92	1-27-92	1-27-92	1-27-92	1-27-92	1-27-92
	MATRIX:			WATER	WATER	WATER	WATER	WATER	WATER
	UNITS:	LIMIT OF DETECTION:							
ANALYTE									
Gross Alpha	pCi/l	2 pCi/l		0.8 ± 1.5	2.7 ± 1.7	3.9 ± 1.7	11 ± 3	13 ± 3	0.0 ± 1.1
Gross Beta	pCi/l	2 pCi/l		2.6 ± 1.8	4.9 ± 2.2	2.9 ± 1.8	11 ± 2	13 ± 3	0.4 ± 1.7
Tritium	pCi/l	460 pCi/l		13100 ± 600	32000 ± 1000	75000 ± 1000	141000 ± 2000	81000 ± 1000	26000 ± 1000
Iodine-129	pCi/l	25pCi/l		0.0 ± 37	0 ± 10	0 ± 14	0 ± 11	0 ± 11	4 ± 18
Plutonium-238	pCi/l	0.5 pCi/l		0.0 ± 1.1	0.0 ± 0.4	0.0 ± 0.5	0.0 ± 0.5	0.0 ± 0.5	0.0 ± 0.9
Plutonium-239/240	pCi/l	0.5 pCi/l		0.0 ± 0.8	0.0 ± 0.4	0.0 ± 0.4	0.2 ± 0.6	0.0 ± 0.4	0.0 ± 0.9
Strontium-90	pCi/l	— pCi/l		0.0 ± 4.6	2.7 ± 4.7	0.5 ± 1.9	0.0 ± 1.7	1.0 ± 1.6	0.8 ± 2.7
Strontium-89	pCi/l	— pCi/l		2.5 ± 2.0	5.0 ± 2.2	0.5 ± 1.9	0.0 ± 1.7	1.0 ± 1.6	0.8 ± 2.7
Technetium-99	pCi/l	— pCi/l		4.6 ± 4.7	1.6 ± 1.8	3.4 ± 1.9	1.4 ± 1.7	1.7 ± 1.8	3.7 ± 1.9
Carbon-14	pCi/l	0.5 pCi/l		22 ± 12	0.0 ± 10	4 ± 10	2 ± 21	4 ± 27	0.0 ± 9.7
Radium, total	pCi/l	1 pCi/l		4.6 ± 1.7	1.6 ± 0.5	1.8 ± 0.5	1.9 ± 0.5	4.4 ± 0.8	1.6 ± 0.5
Uranium-234	pCi/l	0.4 pCi/l		0.2 ± 1.5	1.0 ± 0.8	0.4 ± 0.6	0.8 ± 0.8	0.4 ± 0.8	0.6 ± 0.7
Uranium-235	pCi/l	0.4 pCi/l		0.0 ± 1.1	0.0 ± 0.3	0.0 ± 0.3	0.0 ± 0.3	0.0 ± 0.4	0.1 ± 0.5
Uranium-238	pCi/l	0.4 pCi/l		0.6 ± 1.8	1.0 ± 0.8	0.0 ± 0.5	1.0 ± 0.8	1.0 ± 1.0	0.5 ± 0.7
Americium-241	pCi/l	0.5 pCi/l		0.0 ± 0.5	0.0 ± 1.2	0.0 ± 0.9	0.0 ± 2.4	0.0 ± 1.1	0.0 ± 1.0
Gamma Spec	—	—		NAD	NAD	NAD	NAD	NAD	NAD

pCi/l picoCuries per liter

NAD - no activity detected

TABLE 815. RADIOLOGICAL CHARACTERIZATION OF WATER FROM WETLANDS ASSOCIATED WITH UPPER THREE RUNS CREEK

	PHASE I: MIXED WASTE MANAGEMENT FACILITY								
	SITE NO:			118	134	135	137	140	142
	DATE COLLECTED:			1-27-92	1-28-92	1-28-92	1-28-92	1-28-92	1-28-92
	MATRIX:			WATER	WATER	WATER	WATER	WATER	WATER
ANALYTE	UNITS:	LIMIT OF DETECTION:							
Gross Alpha	pCi/l	2 pCi/l		0.0 ± 1.1	64 ± 14	9.4 ± 2.7	80 ± 17	8.8 ± 2.2	78 ± 20
Gross Beta	pCi/l	2 pCi/l		4.7 ± 1.9	59 ± 11	12 ± 2	62 ± 12	11 ± 2	83 ± 14
Tritium	pCi/l	460 pCi/l		129000 ± 2000	3500 ± 400	58000 ± 1000	76000 ± 1000	75000 ± 1000	7300 ± 500
Iodine-129	pCi/l	25pCi/l		0 ± 13	0 ± 19	0 ± 14	0 ± 11	0 ± 12	0 ± 14
Plutonium-238	pCi/l	0.5 pCi/l		0.0 ± 0.5	0.0 ± 0.8	0.0 ± 0.5	0.0 ± 0.5	0.0 ± 0.5	0.0 ± 0.5
Plutonium-239/240	pCi/l	0.5 pCi/l		0.0 ± 0.4	0.0 ± 0.4	0.0 ± 0.4	0.5 ± 0.7	0.0 ± 0.6	0.0 ± 0.5
Strontium-90	pCi/l	— pCi/l		0.0 ± 2.8	1.1 ± 1.5	0.0 ± 1.7	1.6 ± 3.4	0.7 ± 1.8	0.5 ± 1.7
Strontium-89	pCi/l	— pCi/l		0.0 ± 2.8	1.1 ± 1.5	0.0 ± 1.7	1.6 ± 3.4	0.7 ± 1.8	0.5 ± 1.7
Technetium-99	pCi/l	— pCi/l		2.9 ± 2.4	1.0 ± 2.5	1.1 ± 2.1	0.0 ± 2.0	0.0 ± 2.0	0.9 ± 2.0
Carbon-14	pCi/l	0.5 pCi/l		0.0 ± 9.4	3 ± 20	2 ± 10	3 ± 12	7 ± 11	6 ± 18
Radium, total	pCi/l	1 pCi/l		1.7 ± 0.5	6.8 ± 0.9	2.4 ± 0.6	8.4 ± 1.5	2.2 ± 0.6	9.5 ± 1.6
Uranium-234	pCi/l	0.4 pCi/l		0.6 ± 0.5	2.6 ± 1.2	4.6 ± 1.6	3.7 ± 1.6	0.0 ± 0.4	1.0 ± 0.9
Uranium-235	pCi/l	0.4 pCi/l		0.0 ± 0.3	0.0 ± 0.4	0.0 ± 0.3	0.1 ± 0.7	0.0 ± 0.3	0.0 ± 0.3
Uranium-238	pCi/l	0.4 pCi/l		0.1 ± 0.5	3.3 ± 1.4	3.0 ± 1.3	4.6 ± 1.7	0.0 ± 0.4	0.1 ± 0.6
Americium-241	pCi/l	0.5 pCi/l		0.0 ± 0.9	1.0 ± 1.4	0.0 ± 0.9	0.0 ± 1.6	0.0 ± 1.2	0.2 ± 1.3
Gamma Spec	—	—		NAD	NAD	NAD	NAD	NAD	NAD

pCi/l picoCuries per liter

NAD - no activity detected

TABLE B15. RADIOLOGICAL CHARACTERIZATION OF WATER FROM WETLANDS ASSOCIATED WITH UPPER THREE RUNS CREEK

	PHASE I: MIXED WASTE MANAGEMENT FACILITY								
	SITE NO:			155	156	157	160	161	164
	COLLECTION DATE:			1-29-92	1-29-92	1-29-92	1-29-92	1-29-92	1-29-92
	MATRIX:			WATER	WATER	WATER	WATER	WATER	WATER
ANALYTE	UNITS:	LIMIT OF DETECTION:							
Gross Alpha	pCi/l	2 pCi/l		7.4 ± 2.7	48 ± 7	1.3 ± 1.5	8.4 ± 2.5	1.2 ± 1.4	1.9 ± 1.3
Gross Beta	pCi/l	2 pCi/l		14 ± 2	120 ± 10	6.2 ± 1.9	210 ± 10	26 ± 3	5.6 ± 1.9
Tritium	pCi/l	460 pCi/l		108000 ± 1000	64000 ± 1000	49000 ± 1000	263000 ± 2000	197000 ± 2000	22000 ± 1000
Iodine-129	pCi/l	25pCi/l		0 ± 12	6.7 ± 2.5	0 ± 10	0 ± 11	0 ± 12	0 ± 12
Plutonium-238	pCi/l	0.5 pCi/l		0.0 ± 0.4	0.0 ± 0.4	0.0 ± 1.0	0.0 ± 0.9	0.0 ± 0.8	0.0 ± 0.7
Plutonium-239/240	pCi/l	0.5 pCi/l		0.0 ± 0.4	0.0 ± 0.3	0.6 ± 1.3	0.0 ± 0.8	0.0 ± 0.7	0.0 ± 0.8
Strontium-90	pCi/l	— pCi/l		0.0 ± 1.6	0.0 ± 3.2	1.1 ± 1.8	100 ± 10	11 ± 6	2.0 ± 3.2
Strontium-89	pCi/l	— pCi/l		0.0 ± 1.6	23 ± 3	1.1 ± 1.8	0.0 ± 4.0	0.0 ± 3.5	2.0 ± 3.2
Technetium-99	pCi/l	— pCi/l		10 ± 3	52 ± 7*	2.8 ± 2.1	18 ± 4*	3.8 ± 2.1	3.9 ± 2.0
Carbon-14	pCi/l	0.5 pCi/l		7 ± 22	0 ± 11	0 ± 12	0 ± 13	0 ± 12	3 ± 24
Radium, total	pCi/l	1 pCi/l		0.9 ± 1.4	11 ± 2	1.7 ± 1.0	2.0 ± 1.4	1.2 ± 1.2	0.3 ± 0.9
Uranium-234	pCi/l	0.4 pCi/l		0.2 ± 0.6	2.3 ± 1.2	0.0 ± 0.4	1.5 ± 1.1	0.5 ± 0.8	0.2 ± 0.7
Uranium-235	pCi/l	0.4 pCi/l		0.0 ± 0.4	0.0 ± 0.4	0.0 ± 0.5	0.0 ± 0.4	0.0 ± 0.4	0.0 ± 0.5
Uranium-238	pCi/l	0.4 pCi/l		0.2 ± 0.7	2.6 ± 1.2	0.0 ± 0.5	0.0 ± 0.5	0.0 ± 0.5	0.0 ± 0.4
Americium-241	pCi/l	0.5 pCi/l		0.0 ± 0.9	0.0 ± 1.0	0.2 ± 2.1	0.0 ± 1.0	0.0 ± 0.8	0.0 ± 0.8
Gamma Spec	—	—		NAD	NAD	NAD	NAD	NAD	NAD

pCi/l picoCuries per liter

* Verified by reanalysis

NAD - no activity detected

TABLE B16. RADIOLOGICAL CHARACTERIZATION OF WATER FROM WETLAND AREAS ASSOCIATED WITH UPPER THREE RUNS CREEK

	PHASE II: F- AND H-AREA SEEPAGE BASINS										
		SITE NO:		186	190	191	192	196	206	206	207
		DATE COLLECTED:		2-10-92	2-10-92	2-10-92	2-10-92	2-10-92	2-12-92	2-12-92	2-12-92
		MATRIX:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
		UNITS:	DETECTION:								
ANALYTE											
Gross Alpha		pCi/l	2 pCi/l	13 ± 4	2.6 ± 1.5	2.8 ± 1.6	5.0 ± 1.9	62 ± 5	48 ± 12	2.3 ± 1.1	3.4 ± 1.6
Gross Beta		pCi/l	2 pCi/l	23 ± 2	28 ± 2	8.5 ± 2.0	32 ± 3	8.6 ± 2.0	45 ± 9	7.7 ± 2.0	2.9 ± 1.8
Tritium		pCi/l	460 pCi/l	12000 ± 600	9100 ± 500	7600 ± 500	6900 ± 500	6800 ± 500	9100 ± 500	89000 ± 1000	16000 ± 1000
Iodine-129		pCi/l	25 pCi/l	1 ± 23	0 ± 21	0 ± 30	0 ± 22	0 ± 58	0 ± 33	0 ± 15	0 ± 29
Plutonium-238		pCi/l	0.5 pCi/l	0.0 ± 0.6	0.0 ± 0.9	0.0 ± 1.1	0.0 ± 0.8	0.0 ± 0.8	0.0 ± 0.7	0.0 ± 0.8	0.0 ± 0.9
Plutonium-239/240		pCi/l	0.5 pCi/l	0.0 ± 0.6	0.0 ± 0.7	0.0 ± 0.9	0.0 ± 0.7	0.0 ± 0.6	0.0 ± 0.5	0.0 ± 0.6	0.0 ± 0.7
Strontium-90		pCi/l	— pCi/l	0.6 ± 1.4	0.2 ± 1.2	0.3 ± 1.4	0.0 ± 1.2	0.0 ± 1.3	0.5 ± 1.6	0.1 ± 1.2	1.0 ± 1.4
Strontium-89		pCi/l	— pCi/l	0.6 ± 1.4	0.2 ± 1.2	0.3 ± 1.4	0.0 ± 1.2	0.0 ± 1.3	0.5 ± 1.6	0.1 ± 1.2	1.0 ± 1.4
Technetium-99		pCi/l	— pCi/l	0.9 ± 1.6	1.6 ± 3.1	1.3 ± 3.1	0.9 ± 1.5	4.5 ± 2.6	0.0 ± 2.5	8.7 ± 2.9	0.2 ± 3.5
Carbon-14		pCi/l	0.5 pCi/l	0 ± 15	2 ± 14	0 ± 11	8 ± 12	7 ± 12	0 ± 20	6 ± 11	0 ± 11
Radium, total		pCi/l	1 pCi/l	4.0 ± 1.9	0.5 ± 1.2	1.1 ± 1.4	4.3 ± 2.3	0.0 ± 1.5	7.7 ± 2.4	3.1 ± 1.8	1.0 ± 1.4
Uranium-234		pCi/l	0.4 pCi/l	0.8 ± 0.9	0.5 ± 0.8	5.1 ± 1.9	0.2 ± 0.7	0.2 ± 0.7	0.6 ± 1.0	0.6 ± 0.9	1.4 ± 1.1
Uranium-235		pCi/l	0.4 pCi/l	0.0 ± 0.4	0.0 ± 0.4	0.2 ± 0.7	0.0 ± 0.4	0.0 ± 0.5	0.0 ± 0.6	0.0 ± 0.7	0.0 ± 0.5
Uranium-238		pCi/l	0.4 pCi/l	0.0 ± 0.5	0.0 ± 0.6	5.0 ± 1.8	0.0 ± 0.6	0.3 ± 0.8	1.1 ± 1.2	0.3 ± 0.8	0.6 ± 0.9
Americium-241		pCi/l	0.5 pCi/l	0.0 ± 0.6	0.0 ± 0.6	0.0 ± 1.1	0.0 ± 0.6	0.0 ± 0.6	0.0 ± 0.8	0.0 ± 0.7	0.0 ± 0.7
Gamma Spec		pCi/l	—	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD

NAD no activity detected

pCi/l picoCuries per liter

2 counting error at the 95% confidence level

TABLE B16. RADIOLOGICAL CHARACTERIZATION OF WATER FROM WETLAND AREAS ASSOCIATED WITH UPPER THREE RUNS CREEK

	PHASE II: F- AND H-AREA SEEPAGE BASINS									
		SITE NO:		208	209	220	221	222	225	230
		DATE COLLECTED:		2-12-92	2-12-92	2-20-92	2-20-92	2-20-92	2-20-92	2-20-92
		MATRIX:		WATER	WATER	WATER	WATER	WATER	WATER	WATER
		UNITS:	LIMIT OF DETECTION:							
ANALYTE										
Gross Alpha		pCi/l	2 pCi/l	7.8 ± 2.6	13 ± 5	10 ± 3	19 ± 4	6.5 ± 2.5	3.7 ± 1.8	31 ± 11
Gross Beta		pCi/l	2 pCi/l	3.4 ± 1.8	18 ± 4	5.5 ± 2.0	24 ± 3	5.8 ± 2.0	3.9 ± 1.9	42 ± 9
Tritium		pCi/l	480 pCi/l	20000 ± 1000	7900 ± 500	14000 ± 1000	14000 ± 1000	7700 ± 500	8200 ± 500	7000 ± 500
Iodine-129		pCi/l	25 pCi/l	0 ± 29	3 ± 18	0 ± 40	0 ± 47	0 ± 43	0 ± 26	0 ± 27
Plutonium-238		pCi/l	0.5 pCi/l	0.0 ± 0.8	0.0 ± 1.0	0.0 ± 1.3	0.0 ± 0.4	0.0 ± 0.8	0.0 ± 0.8	0.0 ± 0.7
Plutonium-239/240		pCi/l	0.5 pCi/l	0.0 ± 0.7	0.0 ± 1.1	0.0 ± 1.1	0.0 ± 0.4	0.0 ± 0.6	0.0 ± 0.7	0.0 ± 0.6
Strontium-90		pCi/l	— pCi/l	0.5 ± 1.3	1.2 ± 1.3	0.0 ± 1.4	0.5 ± 1.6	0.0 ± 1.6	0.0 ± 1.4	0.4 ± 1.7
Strontium-89		pCi/l	— pCi/l	0.5 ± 1.3	1.2 ± 1.3	0.0 ± 1.4	0.5 ± 1.6	0.0 ± 1.6	0.0 ± 1.4	0.4 ± 1.7
Technetium-99		pCi/l	— pCi/l	0.2 ± 2.3	0.0 ± 2.5	0.0 ± 2.2	1.0 ± 2.3	0.0 ± 2.5	0.0 ± 2.0	0.2 ± 2.4
Carbon-14		pCi/l	0.5 pCi/l	0 ± 12	1 ± 16	12 ± 13	5 ± 15	7 ± 14	8 ± 18	6 ± 16
Radium, total		pCi/l	1 pCi/l	2.5 ± 2.8	2.7 ± 1.6	2.2 ± 1.0	1.8 ± 0.9	3.2 ± 1.2	3.9 ± 1.2	4.2 ± 1.2
Uranium-234		pCi/l	0.4 pCi/l	0.3 ± 0.7	0.8 ± 0.9	0.3 ± 0.8	0.3 ± 0.8	1.2 ± 1.1	1.3 ± 1.1	2.3 ± 1.4
Uranium-235		pCi/l	0.4 pCi/l	0.0 ± 0.4	0.0 ± 0.4	0.0 ± 0.5	0.0 ± 0.5	0.0 ± 0.5	0.0 ± 0.6	0.0 ± 0.5
Uranium-238		pCi/l	0.4 pCi/l	0.0 ± 0.4	0.3 ± 0.7	0.3 ± 0.8	0.3 ± 0.8	0.5 ± 0.9	1.8 ± 1.2	0.8 ± 1.0
Americium-241		pCi/l	0.5 pCi/l	0.0 ± 0.7	0.0 ± 1.0	0.0 ± 1.1	0.0 ± 1.8	0.0 ± 1.9	0.0 ± 1.9	0.0 ± 2.5
Gamma Spec			—	NAD	NAD	NAD	NAD	NAD	NAD	NAD

NAD - no activity detected

pCi/l picoCuries per liter

TABLE B17. RADIOLOGICAL CHARACTERIZATION OF WATER FROM WETLAND AREAS ASSOCIATED WITH UPPER THREE RUNS CREEK

	PHASE III: SANITARY LANDFILL										
		SITE NO:		254	258	259	262	263	266	267	268
		DATE COLLECTED:		2-24-92	2-24-92	2-24-92	2-24-92	2-24-92	2-25-92	2-24-92	2-25-92
		MATRIX:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
ANALYTE		UNITS:	LIMIT OF DETECTION								
Gross Alpha		pCi/l	2 pCi/l	0.1 ± 1.3	4.5 ± 2.6	3.6 ± 2.1	2.9 ± 1.9	2.2 ± 1.7	8.7 ± 3.2	7.5 ± 2.9	1.9 ± 1.6
Gross Beta		pCi/l	2 pCi/l	3.9 ± 1.8	7.5 ± 2.1	58 ± 4	4.2 ± 1.9	3.1 ± 1.8	6.7 ± 2.1	6.2 ± 2.1	5.4 ± 1.9
Tritium		pCi/l	460 pCi/l	2800 ± 400	7000 ± 500	3600 ± 400	1600 ± 400	3200 ± 400	1700 ± 400	2100 ± 400	3600 ± 400
Iodine-129		pCi/l	25 pCi/l	0 ± 21	0 ± 32	0 ± 14	0 ± 16	0 ± 20	0 ± 15	9 ± 14	0 ± 12
Plutonium-238		pCi/l	0.5 pCi/l	0.0 ± 0.7	0.0 ± 0.7	0.0 ± 0.5	0.0 ± 0.6	0.0 ± 0.8	0.0 ± 1.2	0.0 ± 0.5	0.0 ± 0.6
Plutonium-239/240		pCi/l	0.5 pCi/l	0.0 ± 0.6	0.0 ± 0.7	0.0 ± 0.4	0.0 ± 0.5	0.0 ± 0.6	0.0 ± 0.7	0.4 ± 0.7	0.6 ± 0.9
Strontium-90		pCi/l	— pCi/l	2.2 ± 3.6	1.2 ± 1.4	0.6 ± 1.6	0.6 ± 1.5	2.3 ± 2.3	0.6 ± 1.7	0.5 ± 1.6	0.0 ± 2.7
Strontium-89		pCi/l	— pCi/l	2.2 ± 3.6	1.2 ± 1.4	0.6 ± 1.6	0.6 ± 1.5	2.3 ± 2.3	0.6 ± 1.7	0.5 ± 1.6	1.7 ± 1.6
Technetium-99		pCi/l	— pCi/l	0.0 ± 3.4	0.0 ± 2.5	0.0 ± 2.6	0.5 ± 2.7	1.7 ± 2.8	2.7 ± 2.7	0.0 ± 2.6	0.0 ± 2.6
Carbon-14		pCi/l	0.5 pCi/l	7 ± 11	7 ± 13	10 ± 13	6 ± 15	3 ± 10	0 ± 12	0 ± 11	2.3 ± 9.8
Radium, total		pCi/l	1 pCi/l	0.9 ± 1.0	1.9 ± 1.5	1.8 ± 1.0	1.2 ± 0.8	2.2 ± 1.0	2.3 ± 1.2	1.1 ± 1.0	0.5 ± 0.9
Uranium-234		pCi/l	0.4 pCi/l	2.0 ± 1.4	0.3 ± 0.8	1.1 ± 1.1	0.7 ± 0.9	0.5 ± 0.9	0.5 ± 0.8	0.8 ± 1.0	0.7 ± 0.9
Uranium-235		pCi/l	0.4 pCi/l	0.0 ± 0.7	0.0 ± 0.5	0.0 ± 0.5	0.0 ± 0.5	0.0 ± 0.5	0.0 ± 0.5	0.0 ± 0.5	0.0 ± 0.5
Uranium-238		pCi/l	0.4 pCi/l	0.8 ± 1.2	0.5 ± 0.8	0.3 ± 0.8	1.2 ± 1.1	0.7 ± 0.9	0.3 ± 0.8	0.8 ± 1.0	0.2 ± 0.7
Americium-241		pCi/l	0.5 pCi/l	0.0 ± 2.8	0.0 ± 0.8	0.0 ± 0.7	0.0 ± 0.6	0.0 ± 0.7	0.8 ± 1.4	0.0 ± 0.6	0.0 ± 0.8
Gamma Spec			—	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD

NAD - no activity detected

pCi/l picoCuries per liter

TABLE B18. CHEMICAL CHARACTERIZATION OF WATER OF WETLANDS ASSOCIATED WITH UPPER THREE RUNS CREEK

PHASE I: MIXED WASTE MANAGEMENT FACILITY														
	SITE NO:		15	22	23	24	65	66	68	71	77	114	115	116
	DATE COLLECTED:		1-24-92	1-24-92	1-24-92	1-24-92	1-24-92	1-24-92	1-24-92	1-24-92	1-27-92	1-27-92	1-27-92	1-27-92
	MATRIX:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
ANALYTE:	UNITS:	REPORTING LIMIT:												
VOLATILES:														
Chloromethane	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Bromomethane	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Vinyl Chloride	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Chloroethene	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Methylene Chloride	ug/L	5	3 J	3 J	3 J	3 J	3 J	5	3 J	5 u	26 B	23 B	25 B	25 B
Acetone	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Carbon Disulfide	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1-Dichloroethene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,2-Dichloroethene (total)	ug/L	5	8	5 u	3 J	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Chloroform	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,2-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
2-Butanone	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
1,1,1-Trichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Carbon Tetrachloride	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Vinyl Acetate	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Bromodichloromethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,2-Dichloropropane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
cis-1,3-Dichloropropene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Trichloroethene	ug/L	5	2 J	5 u	8	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Dibromochloromethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1,2-Trichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Benzene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Trans-1,3-Dichloropropene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Bromoform	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
4-Methyl-2-pentanone	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
2-Hexanone	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Tetrachloroethene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1,2,2-Tetrachloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Toluene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Chlorobenzene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Ethylbenzene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Styrene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Xylene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u

u BELOW DETECTION LIMIT

TABLE B18. CHEMICAL CHARACTERIZATION OF WATER FROM WETLANDS AREAS ASSOCIATED WITH UPPER THREE RUNS CREEK

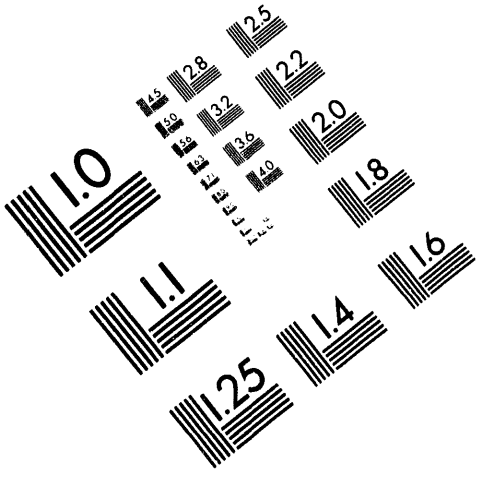
PHASE I: MIXED WASTE MANAGEMENT FACILITY											
	SITE NO:		117	118	134	135	137	140	142	155	156
	DATE COLLECTED:		1-27-92	1-27-92	1-28-92	1-28-92	1-28-92	1-28-92	1-28-92	1-29-92	1-29-92
	MATRIX:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
ANALYTE:	UNITS:	REPORTING LIMIT:									
VOLATILES:											
Chloromethane	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Bromomethane	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Vinyl Chloride	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Chloroethene	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Methylene Chloride	ug/L	5	25 B	25 B	25 B	26 B	26 B	24 B	9 B	5 u	5 u
Acetone	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	6 J	10 u
Carbon Disulfide	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1-Dichloroethene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,2-Dichloroethene (total)	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Chloroform	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,2-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
2-Butanone	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	12	10 u
1,1,1-Trichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Carbon Tetrachloride	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Vinyl Acetate	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Bromodichloromethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,2-Dichloropropane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
cis-1,3-Dichloropropene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Trichloroethene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	10	5
Dibromochloromethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1,2-Trichloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Benzene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Trans-1,3-Dichloropropene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Bromoform	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
4-Methyl-2-pentanone	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
2-Hexanone	ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Tetrachloroethene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1,2,2-Tetrachloroethane	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Toluene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Chlorobenzene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Ethylbenzene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Styrene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Xylene	ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u

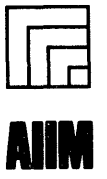
u BELOW DETECTION LIMIT

TABLE B18. CHEMICAL CHARACTERIZATION OF WATER FROM WETLANDS AREAS ASSOCIATED WITH UPPER THREE RUNS CREEK

PHASE I: MIXED WASTE MANAGEMENT FACILITY						
	SITE NO:		157	160	161	164
	DATE COLLECTED:		1/29/92	1/29/92	1/29/92	1/29/92
	MATRIX:		WATER	WATER	WATER	WATER
ANALYTE:	UNITS:	REPORTING LIMIT:				
VOLATILES:						
Chloromethane	ug/L	10	10 u	10 u	10 u	10 u
Bromomethane	ug/L	10	10 u	10 u	10 u	10 u
Vinyl Chloride	ug/L	10	10 u	10 u	10 u	10 u
Chloroethene	ug/L	10	10 u	10 u	10 u	10 u
Methylene Chloride	ug/L	5	5 u	5 u	5 u	5 u
Acetone	ug/L	10	10 u	10 u	10 u	10 u
Carbon Disulfide	ug/L	5	5 u	5 u	5 u	5 u
1,1-Dichloroethene	ug/L	5	5 u	5 u	5 u	5 u
1,1-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u
1,2-Dichloroethene (total)	ug/L	5	5 u	5 u	5 u	5 u
Chloroform	ug/L	5	5 u	5 u	5 u	5 u
1,2-Dichloroethane	ug/L	5	5 u	5 u	5 u	5 u
2-Butanone	ug/L	10	10 u	10 u	10 u	10 u
1,1,1-Trichloroethane	ug/L	5	5 u	5 u	5 u	5 u
Carbon Tetrachloride	ug/L	5	5 u	5 u	5 u	5 u
Vinyl Acetate	ug/L	10	10 u	10 u	10 u	10 u
Bromodichloromethane	ug/L	5	5 u	5 u	5 u	5 u
1,2-Dichloropropane	ug/L	5	5 u	5 u	5 u	5 u
cis-1,3-Dichloropropene	ug/L	5	5 u	5 u	5 u	5 u
Trichloroethene	ug/L	5	5 u	5 u	5 u	5 u
Dibromochloromethane	ug/L	5	5 u	5 u	5 u	5 u
1,1,2-Trichloroethane	ug/L	5	5 u	5 u	5 u	5 u
Benzene	ug/L	5	5 u	5 u	5 u	5 u
Trans-1,3-Dichloropropene	ug/L	5	5 u	5 u	5 u	5 u
Bromoform	ug/L	5	5 u	5 u	5 u	5 u
4-Methyl-2-pentanone	ug/L	10	10 u	10 u	10 u	10 u
2-Hexanone	ug/L	10	10 u	10 u	10 u	10 u
Tetrachloroethene	ug/L	5	5 u	5 u	5 u	5 u
1,1,2,2-Tetrachloroethane	ug/L	5	5 u	5 u	5 u	5 u
Toluene	ug/L	5	5 u	5 u	5 u	5 u
Chlorobenzene	ug/L	5	5 u	5 u	5 u	5 u
Ethylbenzene	ug/L	5	5 u	5 u	5 u	5 u
Styrene	ug/L	5	5 u	5 u	5 u	5 u
Xylene	ug/L	5	5 u	5 u	5 u	5 u

u BELOW DETECTION LIMIT





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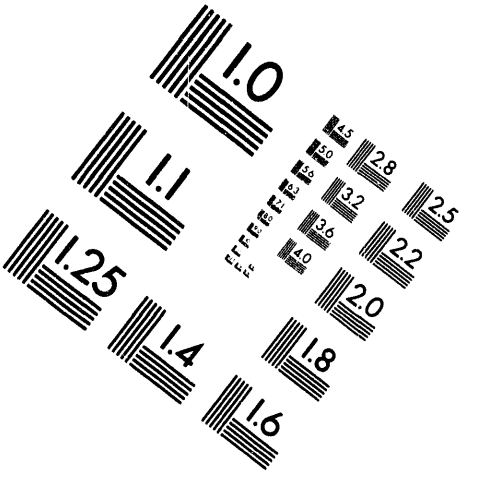

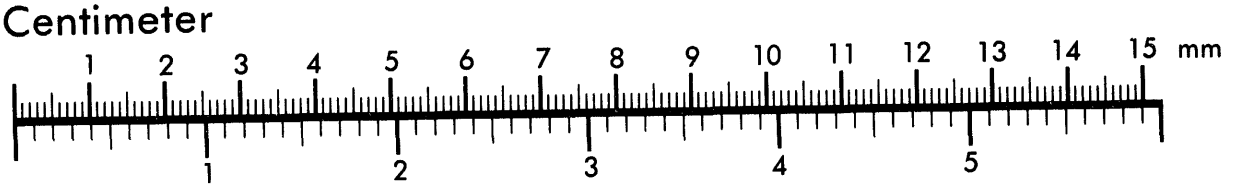

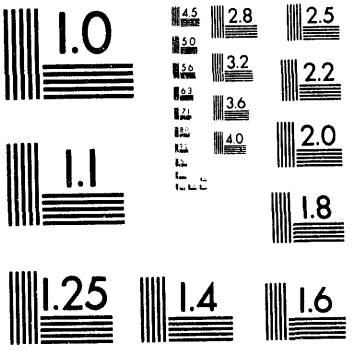

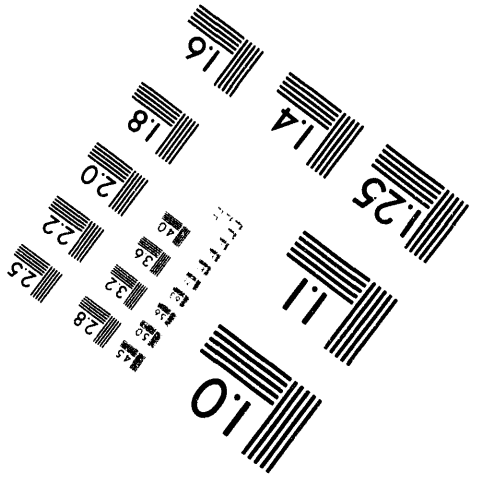

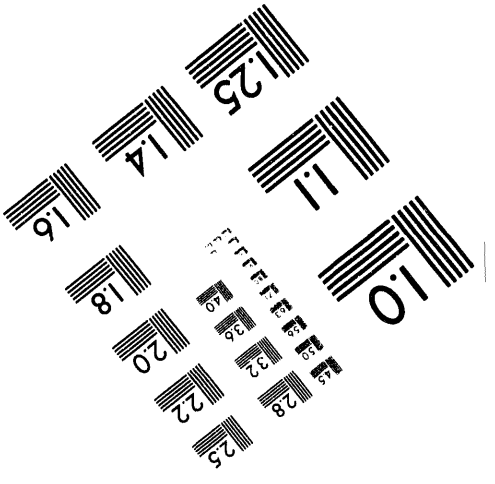

2 of 2

TABLE B19. CHEMICAL CHARACTERIZATION OF WATER IN WETLANDS ASSOCIATED WITH UPPER THREE RUNS CREEK

PHASE II: F- AND H-AREA SEEPAGE BASINS

ANALYTE:	SITE NO: / DATE COLLECTED: / MATRIX:	UNITS:	REPORTING LIMIT:	186 2-10-92 WATER	190 2-10-92 WATER	191 2-10-92 WATER	192 2-10-92 WATER	196 2-10-92 WATER	205 2-12-92 WATER	206 2-12-92 WATER	207 2-12-92 WATER	208 2-12-92 WATER	209 2-12-92 WATER	220 2-20-92 WATER	221 2-20-92 WATER
VOLATILES:															
Chloromethane		ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Bromomethane		ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Vinyl Chloride		ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Chloroethane		ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Methylene Chloride		ug/L	5	2 JB	2 JB	2 JB	2 JB	5 u	5 u	2 JB	5 B	5 B	5 B	4 JB	2 JB
Acetone		ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	19 B	3 JB
Carbon Disulfide		ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1,-Dichloroethane		ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1,-Dichloroethane		ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,2-Dichloroethane (total)		ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Chloroform		ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,2-Dichloroethane		ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
2-Butanone		ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	8 J
1,1,1-Trichloroethane		ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Carbon Tetrachloride		ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Vinyl Acetate		ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Bromodichloromethane		ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,2-Dichloropropane		ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
cis-1,3-Dichloropropene		ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Trichloroethene		ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Dibromochloromethane		ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1,2-Trichloroethane		ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Benzene		ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Trans-1,2-Dichloropropene		ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Bromoform		ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
4-Methyl-2-pentanone		ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
2-Hexanone		ug/L	10	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Tetrachloroethene		ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1,2,2-Tetrachloroethane		ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Toluene		ug/L	5	5 u	5 u	5 u	5 u	5 u	2 J	2J	5 u	1 J	5 u	5 u	5 u
Chlorobenzene		ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Ethylbenzene		ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Styrene		ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Xylene (total)		ug/L	5	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u

TABLE B19. CHEMICAL CHARACTERIZATION OF WATER IN WETLANDS ASSOCIATED WITH UPPER THREE RUNS CREEK

PHASE II: F- AND H-AREA SEEPAGE BASINS						
ANALYTE:	SITE NO: DATE COLLECTED: MATRIX:	UNITS:	REPORTING LIMIT:	222 2-20-92 WATER	225 2-20-92 WATER	230 2-20-92 WATER
VOLATILES:						
Chloromethane		ug/L	10	10 u	10 u	10 u
Bromomethane		ug/L	10	10 u	10 u	10 u
Vinyl Chloride		ug/L	10	10 u	10 u	10 u
Chloroethane		ug/L	10	10 u	10 u	10 u
Methylene Chloride		ug/L	5	7 B	9 B	8 B
Acetone		ug/L	10	2 JB	5 JB	4 JB
Carbon Disulfide		ug/L	5	5 u	5 u	5 u
1,1,-Dichloroethane		ug/L	5	5 u	5 u	5 u
1,1,-Dichloroethane		ug/L	5	5 u	5 u	5 u
1,2-Dichloroethane (total)		ug/L	5	5 u	5 u	5 u
Chloroform		ug/L	5	5 u	5 u	5 u
1,2-Dichloroethane		ug/L	5	5 u	5 u	5 u
2-Butanone		ug/L	10	10 u	10 u	10 u
1,1,1-Trichloroethane		ug/L	5	5 u	5 u	5 u
Carbon Tetrachloride		ug/L	5	5 u	5 u	5 u
Vinyl Acetate		ug/L	10	10 u	10 u	10 u
Bromodichloromethane		ug/L	5	5 u	5 u	5 u
1,2-Dichloropropane		ug/L	5	5 u	5 u	5 u
cis-1,3-Dichloropropene		ug/L	5	5 u	5 u	5 u
Trichloroethene		ug/L	5	5 u	5 u	5 u
Dibromochloromethane		ug/L	5	5 u	5 u	5 u
1,1,2-Trichloroethane		ug/L	5	5 u	5 u	5 u
Benzene		ug/L	5	5 u	5 u	5 u
Trans-1,2-Dichloropropene		ug/L	5	5 u	5 u	5 u
Bromoform		ug/L	5	5 u	5 u	5 u
4-Methyl-2-pentanone		ug/L	10	10 u	10 u	10 u
2-Hexanone		ug/L	10	10 u	10 u	10 u
Tetrachloroethene		ug/L	5	5 u	5 u	5 u
1,1,2,2-Tetrachloroethane		ug/L	5	5 u	5 u	5 u
Toluene		ug/L	5	3 J	5 u	5 u
Chlorobenzene		ug/L	5	5 u	5 u	5 u
Ethylbenzene		ug/L	5	5 u	5 u	5 u
Styrene		ug/L	5	5 u	5 u	5 u
Xylene (total)		ug/L	5	5 u	5 u	5 u

TABLE B20. CHEMICAL CHARACTERIZATION OF WATER IN WETLANDS ASSOCIATED WITH UPPER THREE RUNS CREEK

	PHASE III: SANITARY LANDFILL													
ANALYTE:	SITE NO. DATE COLLECTED: MATRIX:				254 2-24-92 WATER	258 2-24-92 WATER	259 2-24-92 WATER	262 2-24-92 WATER	263 2-24-92 WATER	266 2-25-92 WATER	267 2-25-92 WATER	268 2-25-92 WATER	269 2-25-92 WATER	271 2-25-92 WATER
		UNITS:	REPORTING LIMIT:											
VOLATILES:														
Chloromethane		ug/L	10		10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Bromomethane		ug/L	10		10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Vinyl Chloride		ug/L	10		10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Chloroethane		ug/L	10		10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Methylene Chloride		ug/L	5		6 B	6 B	5 B	5 B	11 B	5 u	2 J	5 u	5 u	4 J
Acetone		ug/L	10		11 B	16 B	11 B	15 B	15 B	10 u	10 u	10 u	10 u	10 u
Carbon Disulfide		ug/L	5		5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1,-Dichloroethane		ug/L	5		5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1,-Dichloroethane		ug/L	5		5 u	1 J	5 u	5 u	4 J	5 u	5 u	5 u	5 u	5 u
1,2,-Dichloroethene (total)		ug/L	5		5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Chloroform		ug/L	5		5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	4 JB
1,2-Dichloroethane		ug/L	5		5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
2-Butanone		ug/L	10		10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
1,1,1-Trichloroethane		ug/L	5		5 u	5 u	5 u	5 u	7	5 u	5 u	5 u	5 u	5 u
Carbon Tetrachloride		ug/L	5		5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Vinyl Acetate		ug/L	10		10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Bromodichloromethane		ug/L	5		5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,2-Dichloropropane		ug/L	5		5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
cis-1,3-Dichloropropene		ug/L	5		5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Trichloroethene		ug/L	5		5 u	5 u	5 u	5 u	3 J	5 u	5 u	5 u	5 u	5 u
Dibromochloromethane		ug/L	5		5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1,2-Trichloroethane		ug/L	5		5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Benzene		ug/L	5		5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Trans-1,2-Dichloropropene		ug/L	5		5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Bromoform		ug/L	5		5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
4-Methyl-2-pentanone		ug/L	10		10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
2-Hexanone		ug/L	10		10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u	10 u
Tetrachloroethene		ug/L	5		5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
1,1,2,2-Tetrachloroethane		ug/L	5		5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Toluene		ug/L	5		5 u	5 u	5 u	5 u	2 J	5 u	5 u	5 u	5 u	5 u
Chlorobenzene		ug/L	5		5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Ethylbenzene		ug/L	5		5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Styrene		ug/L	5		5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u
Xylene		ug/L	5		5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u	5 u

u BELOW DETECTION LIMIT

APPENDIX C

RESULTS OF PRELIMINARY SAMPLING INVESTIGATION

PRELIMINARY UPPER THREE RUNS CREEK WETLANDS WATER DATA

PHASE	ID	H3	pH	Conductivity
I	1	31.90	5.0	60.2
I	2	17.00	3.9	25.5
I	3	15.20	3.6	27.6
I	4	23.80	3.9	26.6
I	5	18.60	3.8	25.6
I	6	41.60	3.5	32.0
I	7	18.20	3.6	23.9
I	8	18.10	3.5	26.2
I	9	28.50	3.6	27.3
I	10	27.60	3.8	29.0
I	11	18.30	4.0	27.5
I	12	27.30	3.9	38.2
I	13	20.90	3.8	27.3
I	14	32.00	3.6	28.5
I	15	76.00	3.9	25.2
I	16	33.00	3.5	40.3
I	*17	11.00	5.0	40.6
I	18	30.70	4.5	33.3
I	19	21.70	4.3	32.5
I	20	29.00	4.5	21.6
I	21	39.30	3.8	30.6
I	22	76.40	4.0	34.7
I	23	83.60	4.7	29.1
I	24	50.60	4.2	13.6
I	25	40.60	4.5	26.4
I	26	36.40	4.0	36.8
I	27	37.70	4.5	84.1
I	28	25.60	4.3	57.4
I	29	33.40	4.4	54.4

MWMF = Mixed Waste Management Facility = Phase I

FHSB = F- and H-Area Seepage Basins = Phase II

SL = Sanitary Landfill = Phase III

Phase	N	Location
I	181	Rd4-RdC
II	70	RdC-Cato
III	20	N of UTRC

Phase	AVG H3	MIN H3	MAX H3
I	29.88	0.08	467.00
II	8.84	1.11	78.80
III	2.83	1.79	7.62

Phase	AVG pH	MIN pH	MAX pH
I	4.7	3.5	7.5
II	5.0	4.3	6.2
III	5.0	4.4	5.8

Phase	AVG C**	MIN C	MAX C
I	39.3	12.8	168.5
II	31.8	17.6	85.0
III	43.0	23.2	95.3

* = stream water sample

**C = conductivity

Conductivity in microsemens

H3 in pCi/ml

H3 detection limit = 1.2 pCi/ml

(Collected 2/28/91-4/18/91)

PRELIMINARY UPPER THREE RUNS CREEK WETLANDS WATER DATA

PHASE	ID	H3	pH	Conductivity	PHASE	ID	H3	pH	Conductivity
I	30	26.30	4.5	157.5	I	59	22.80	4.9	32.6
I	31	29.50	5.0	108.9	I	60	17.60	3.5	18.7
I	32	23.00	4.3	46.6	I	61	9.04	5.1	49.6
I	33	20.40	4.5	23.7	I	62	21.80	5.3	28.3
I	34	21.00	4.5	21.0	I	63	20.60	4.8	18.5
I	35	20.10	4.0	24.0	I	64	16.40	4.5	31.8
I	36	18.50	4.0	21.7	I	65	81.70	4.5	20.9
I	37	18.10	4.4	33.8	I	66	44.20	4.1	22.0
I	38	21.50	4.2	25.1	I	67	22.30	4.1	25.0
I	39	20.60	4.3	30.7	I	68	126.00	4.2	21.3
I	40	20.30	4.7	20.0	I	69	18.40	4.5	16.8
I	41	17.00	4.5	34.0	I	70	18.30	4.5	25.4
I	42	15.80	4.3	25.3	I	71	54.40	4.5	16.1
I	43	24.30	4.0	30.7	I	72	28.80	4.2	23.0
I	44	21.40	4.0	33.2	I	73	18.20	4.5	24.6
I	45	31.80	3.9	39.2	I	74	11.20	4.5	41.8
I	46	17.10	5.4	22.2	I	75	15.40	4.3	31.8
I	47	12.70	5.1	47.1	I	76	15.30	5.0	31.9
I	48	11.50	6.3	45.0	I	77	46.60	5.5	15.5
I	49	34.70	5.4	36.7	I	78	8.82	4.7	59.3
I	50	38.10	5.5	38.5	I	79	5.70	4.5	27.0
I	51	34.00	5.3	41.2	I	80	5.35	4.5	33.6
I	52	18.80	4.6	31.8	I	81	5.44	5.0	40.0
I	53	31.80	5.7	39.2	I	82	5.43	4.1	27.9
I	54	25.20	5.6	38.4	I	83	6.38	5.1	49.9
I	55	11.50	5.4	81.7	I	84	5.56	5.2	37.3
I	56	24.90	5.5	36.3	I	85	6.64	4.7	51.5
I	57	38.20	5.0	26.9	I	86	5.95	3.6	49.6
I	58	13.30	5.4	61.7	I	87	4.98	5 3	46.5

(Collected 2/28/91-4/18/91)

PRELIMINARY UPPER THREE RUNS CREEK WETLANDS WATER DATA

PHASE	ID	H3	pH	Conductivity	PHASE	ID	H3	pH	Conductivity
I	59	22.80	4.9	32.6	I	88	6.08	5.4	41.9
I	60	17.60	3.5	18.7	I	89	4.67	3.5	72.9
I	61	9.04	5.1	49.6	I	90	6.19	5.0	53.2
I	62	21.80	5.3	28.3	I	91	4.11	6.1	60.0
I	63	20.60	4.8	18.5	I	92	5.03	5.0	36.5
I	64	16.40	4.5	31.8	I	93	4.11	4.2	23.7
I	65	81.70	4.5	20.9	I	94	33.90	5.0	34.6
I	66	44.20	4.1	22.0	I	95	16.80	4.6	27.7
I	67	22.30	4.1	25.0	I	96	20.20	4.6	29.2
I	68	126.00	4.2	21.3	I	97	8.84	4.5	26.8
I	69	18.40	4.5	16.8	I	98	4.48	5.6	32.5
I	70	18.30	4.5	25.4	I	99	4.58	5.8	51.7
I	71	54.40	4.5	16.1	I	100	6.69	5.6	22.8
I	72	28.80	4.2	23.0	I	101	5.83	4.6	47.1
I	73	18.20	4.5	24.6	I	102	7.04	4.8	24.7
I	74	11.20	4.5	41.8	I	103	7.05	4.5	42.6
I	75	15.40	4.3	31.8	I	104	3.18	5.0	46.0
I	76	15.30	5.0	31.9	I	105	12.00	5.0	39.6
I	77	46.60	5.5	15.5	I	106	9.23	4.0	45.1
I	78	8.82	4.7	59.3	I	107	6.93	4.4	23.3
I	79	5.70	4.5	27.0	I	108	6.23	4.0	36.6
I	80	5.35	4.5	33.6	I	109	7.89	4.9	40.5
I	81	5.44	5.0	40.0	I	110	8.00	4.3	26.4
I	82	5.43	4.1	27.9	I	111	7.75	4.9	34.0
I	83	6.38	5.1	49.9	I	112	8.16	5.4	86.7
I	84	5.56	5.2	37.3	I	113	6.27	5.4	83.5
I	85	6.64	4.7	51.5	I	114	141.00	4.3	24.8
I	86	5.95	3.6	49.6	I	115	226.00	4.2	20.8
I	87	4.98	5.3	46.5	I	116	227.00	5.0	29.1

(Collected 2/28/91-4/18/91)

PRELIMINARY UPPER THREE RUNS CREEK WETLANDS WATER DATA

PHASE	ID	H3	pH	Conductivity	PHASE	ID	H3	pH	Conductivity
I	117	46.10	4.6	30.6	I	146	6.15	4.6	26.2
I	118	83.40	4.4	21.1	I	147	6.35	4.1	27.5
I	119	34.70	4.4	30.3	I	148	6.59	5.0	20.0
I	120	13.20	4.9	61.7	I	149	5.73	4.6	25.7
I	121	12.70	5.0	39.8	I	150	5.41	3.5	21.6
I	122	9.27	4.6	40.7	I	151	4.78	4.0	26.0
I	123	5.49	5.7	24.7	I	152	4.97	5.0	18.8
I	124	6.70	4.4	21.6	I	153	6.02	5.0	38.1
I	125	4.91	4.5	39.5	I	154	24.00	4.6	26.6
I	126	5.31	5.1	43.5	I	155	145.00	4.5	85.1
I	127	5.88	4.0	44.5	I	156	73.80	5.0	53.2
I	128	5.25	4.4	33.1	I	157	61.40	5.2	38.9
I	129	5.88	5.2	35.1	I	158	74.70	5.7	58.4
I	130	5.78	4.6	28.1	I	159	4.57	5.6	43.0
I	131	5.64	4.0	24.4	I	160	317.00	5.6	168.5
I	132	4.73	4.9	30.3	I	161	467.00	5.6	94.6
I	133	4.98	5.0	61.9	I	162	4.68	5.7	21.3
I	134	52.10	5.1	61.1	I	163	8.75	5.5	28.9
I	135	107.00	5.5	63.8	I	164	168.00	6.0	71.0
I	136	17.90	4.4	32.0	I	165	25.30	5.2	50.7
I	137	66.60	5.0	43.2	I	166	5.38	5.0	34.3
I	138	5.11	5.7	37.2	I	167	5.48	5.0	61.5
I	139	7.82	5.0	110.0	I	168	6.02	5.6	36.0
I	140	48.00	5.0	54.6	I	169	5.41	5.3	57.4
I	141	7.63	5.1	50.0	I	170	4.97	5.0	31.8
I	142	210.00	4.5	130.0	I	171	5.20	6.0	18.2
I	143	6.41	5.0	54.9	I	172	5.94	5.0	18.3
I	144	5.40	5.6	50.0	I	173	5.61	4.8	23.0
I	145	6.72	4.7	21.3	I	174	3.73	5.1	18.0

(Collected 2/28/91-4/18/91)

PRELIMINARY UPPER THREE RUNS CREEK WETLANDS WATER DATA

PHASE	ID	H3	pH	Conductivity	PHASE	ID	H3	pH	Conductivity
I	175	4.03	3.6	22.7	II	204	7.73	4.8	26.5
I	176	4.16	3.6	26.5	II	205	11.00	5.1	29.0
I	177	4.05	3.8	26.5	II	206	78.80	5.2	26.1
I	178	4.82	5.2	12.8	II	207	28.90	5.2	21.7
I	*179	0.08	7.5	105.5	II	208	31.00	5.0	18.0
I	180	6.49	6.3	42.4	II	209	9.21	4.9	25.3
I	181	6.35	6.2	25.6	II	210	7.41	4.7	38.1
II	182	8.45	6.2	81.6	II	211	7.56	5.0	27.5
II	183	4.26	5.0	43.8	II	212	7.02	5.0	20.6
II	184	6.34	5.3	32.0	II	213	6.32	5.5	41.1
II	185	4.81	5.0	40.5	II	214	5.80	5.2	20.7
II	186	13.40	5.0	31.5	II	215	6.62	4.7	34.2
II	187	8.72	5.5	23.1	II	216	3.40	6.0	76.2
II	188	6.14	5.5	32.5	II	217	5.21	5.4	45.8
II	189	7.72	5.3	85.0	II	218	4.90	4.7	28.6
II	190	9.93	5.2	19.5	II	219	1.11	4.7	51.3
II	191	9.02	5.4	17.6	II	220	13.20	4.9	30.2
II	192	9.42	5.2	20.6	II	221	14.80	4.8	18.5
II	193	5.99	5.6	24.0	II	222	9.28	4.7	28.3
II	194	5.85	4.9	23.7	II	223	7.49	5.7	43.1
II	195	8.50	4.7	23.0	II	224	5.41	4.9	29.8
II	196	9.02	4.7	22.8	II	225	9.90	4.3	30.4
II	197	6.68	5.1	27.5	II	226	6.96	4.8	23.8
II	198	8.76	4.9	32.0	II	227	8.81	4.5	31.7
II	199	8.73	4.8	26.6	II	228	8.97	4.8	26.4
II	200	7.33	5.1	28.4	II	229	7.82	4.7	25.0
II	201	8.57	4.7	27.2	II	230	9.82	4.9	23.0
II	202	7.35	5.2	24.5	II	231	7.81	5.2	29.1
II	203	7.53	5.1	21.3	II	232	8.31	4.8	24.7

(Collected 2/28/91-4/18/91)

PRELIMINARY UPPER THREE RUNS CREEK WETLANDS WATER DATA

PHASE	ID	H3	pH	Conductivity	PHASE	ID	H3	pH	Conductivity
II	233	7.62	5.0	26.8	III	262	2.62	4.6	36.0
II	234	7.47	5.0	28.7	III	263	3.59	4.9	23.2
II	235	6.60	5.2	34.6	III	264	1.86	4.9	42.4
II	236	7.37	4.9	21.1	III	265	2.55	4.8	59.2
II	237	7.02	4.9	23.4	III	266	2.55	5.0	48.5
II	238	8.61	5.0	27.4	III	267	2.82	5.2	41.1
II	239	4.36	4.9	39.7	III	268	2.82	5.0	40.1
II	240	5.11	4.6	27.2	III	269	2.72	5.2	40.4
II	241	6.20	4.5	28.5	III	270	1.99	5.2	28.1
II	242	3.81	5.1	32.4	III	271	2.60	5.3	43.8
II	243	6.04	4.7	38.8					
II	244	5.89	5.1	44.5					
II	245	5.36	5.1	33.1					
II	246	3.87	4.8	43.9					
II	247	2.53	5.0	45.0					
II	248	3.89	5.1	40.3					
II	249	3.24	4.8	33.2					
II	250	4.74	4.8	22.4					
II	251	5.66	5.1	30.4					
III	252	2.01	5.6	57.0					
III	253	1.79	5.8	60.4					
III	254	3.01	5.0	28.1					
III	255	2.44	4.9	30.8					
III	256	2.03	5.4	32.5					
III	257	1.79	5.4	46.7					
III	258	7.62	4.7	95.3					
III	259	5.84	4.7	30.1					
III	260	2.10	4.4	40.5					
III	261	1.80	4.7	34.8					

(Collected 2/28/91-4/18/91)

PRELIMINARY UPPER THREE RUNS CREEK WETLANDS WATER DATA

Blanks and Duplicates

Type	ID	H3	Duplicate of No.:	H3
Duplicate	272	7.56	203	7.53
Blank	273	-0.156		
Duplicate	274	26.5	208	31
Duplicate	275	6.38	210	7.41
Duplicate	276	6.97	226	6.96
Blank	277	0.009		
Duplicate	278	10.8	230	9.82
Blank	279	0.132		
Duplicate	280	6.52	241	6.2
Duplicate	281	5.15	245	5.36
Blank	282	0.401		
Duplicate	283	3.2	254	3.01
Blank	284	0.242		
Blank	285	0.328		
Blank	286	0.218		
Blank	287	2.83		
Duplicate	288	-0.003	264	1.86
Blank	289	-0.424		
Blank	290	0.021		
Duplicate	291	3.41	267	2.82

(Collected 2/28/91-4/18/91)

DATE
FILMED
8/18/94
END