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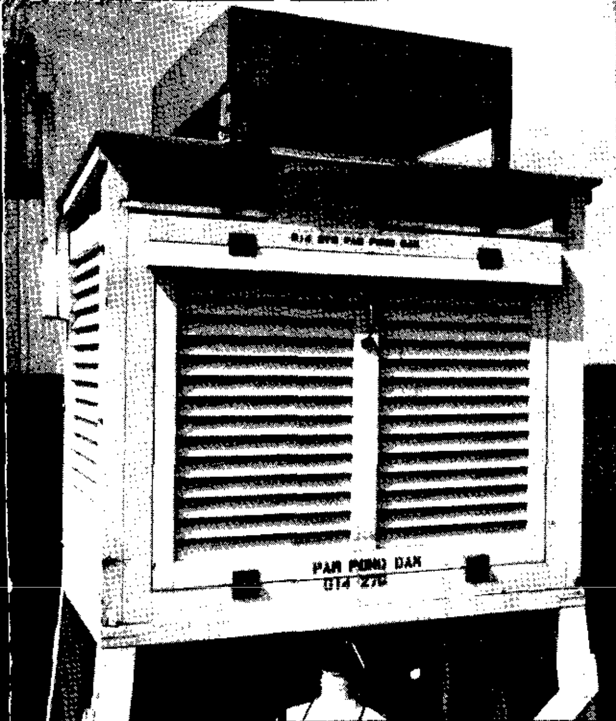
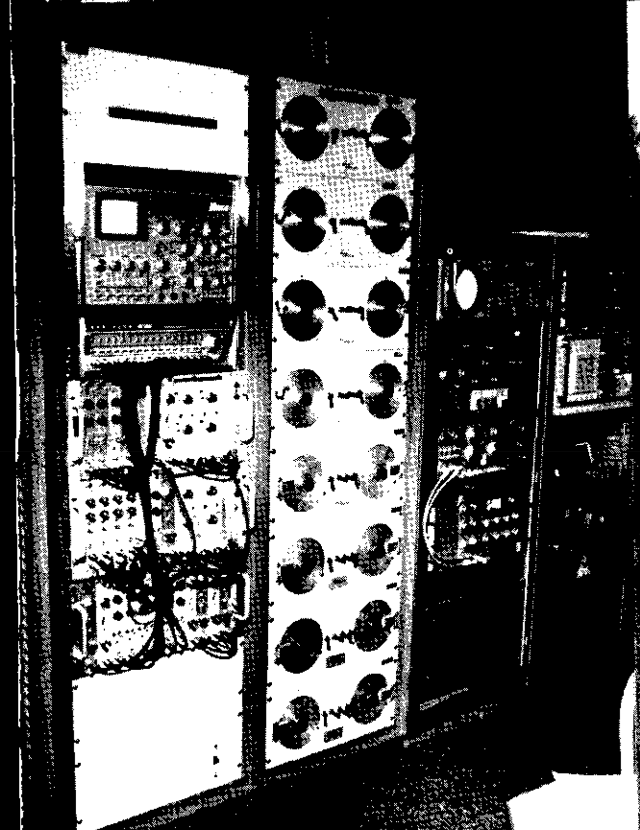
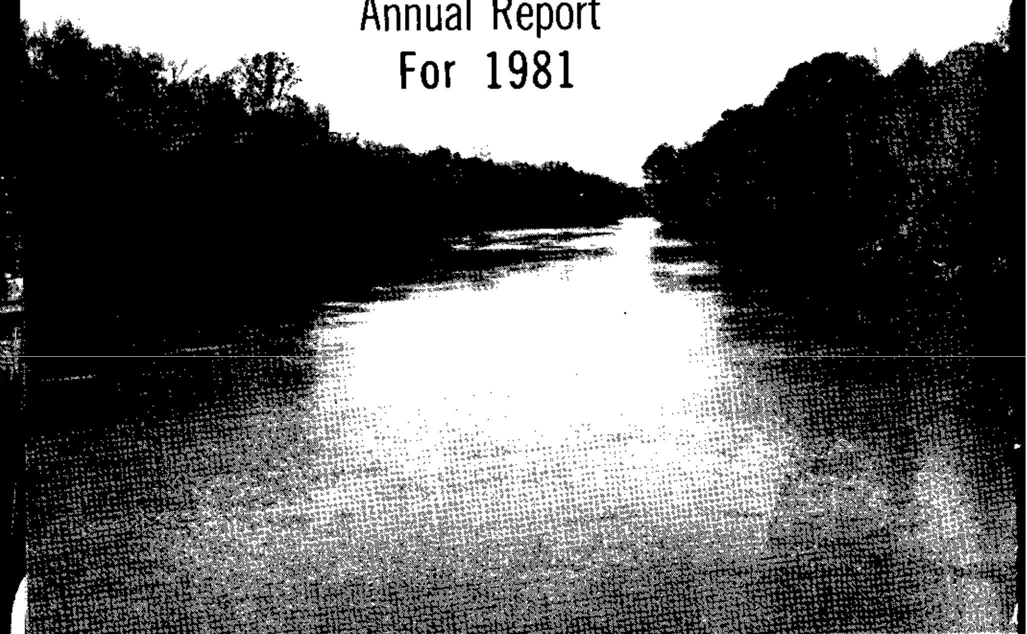


DPSPU 82-302

ENVIRONMENTAL MONITORING
Acc# 110605
AT THE SAVANNAH RIVER PLANT
Annual Report For 1981





PREFIXES FOR UNITS OF MEASURE

	PREFIXES	SYMBOLS	NAMES
0.1 = 10^{-1}	deci	d	tenth
0.01 = 10^{-2}	centi	c	hundredth
0.001 = 10^{-3}	milli	m	thousandth
0.000 001 = 10^{-6}	micro	μ	millionth
0.000 000 001 = 10^{-9}	nano (năn' oh)	n	billionth
0.000 000 000 001 = 10^{-12}	pico (pee' ko)	p	trillionth
0.000 000 000 000 001 = 10^{-15}	femto	f	quadrillionth
0.000 000 000 000 000 001 = 10^{-18}	atto	a	quintillionth

CONVERSION TABLE

Multiply	By	To Obtain	Multiply	By	To Obtain
in.	2.54	cm	cm	0.394	in.
ft	0.305	m	m	3.28	ft
mi	1.61	km	km	0.621	mi
lb	0.4536	kg	kg	2.205	lb
liq qt - U.S.	0.946	ℓ	ℓ	1.057	liq qt - U.S.
ft^2	0.093	m^2	m^2	10.764	ft^2
mi^2	2.59	km^2	km^2	0.386	mi^2
ft^3	0.028	m^3	m^3	35.31	ft^3
mCi/mi^2	0.386	mCi/km^2(nCi/m^2)	mCi/km^2	2.59	mCi/mi^2
d/m	0.450	pCi	pCi	2.22	d/m
nCi	1×10^3	pCi	pCi	1×10^{-3}	nCi
d/m/ℓ	0.45×10^{-9}	μCi/cc	μCi/cc	2.22×10^9	d/m/ℓ
d/m/ft^2	0.01256	mCi/mi^2	mCi/mi^2	79.6	d/m/ft^2
pCi/ℓ (water)	10^{-9}	μCi/mℓ (water)	μCi/mℓ (water)	10^9	pCi/ℓ (water)
pCi/m^3 (air)	10^{-12}	μCi/cc (air)	μCi/cc (air)	10^{12}	pCi/m^3 (air)
mCi/km^2	1	nCi/m^2	nCi/m^2	1	mCi/km^2

DISCLAIMER

DPSPU 82-302

ENVIRONMENTAL MONITORING AT THE SAVANNAH RIVER PLANT

ANNUAL REPORT — 1981

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April 1984

Health Protection Department
Savannah River Plant
E. I. du Pont de Nemours and Company
Aiken, South Carolina 29808

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LIST OF FIGURES

Figures in this report contain only the locations of sample points and wells that illustrate the locations for data contained in this report. Variations from year-to-year reflect changes in the routine monitoring program or the inability to obtain samples from a specific location, such as a well that becomes dry and cannot be sampled.

LIST OF FIGURES (Contd)

LIST OF TABLES

Tables in this report contain data from the routine SRP Environmental Monitoring Program unless otherwise noted. No attempt has been made to include all data for environmental research programs. Variations from year-to-year reflect changes in the routine environmental monitoring program or the inability to obtain samples from a specific location, such as a well that becomes dry and cannot be sampled.

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ENVIRONMENTAL MONITORING
AT THE SAVANNAH RIVER PLANT
ANNUAL REPORT -- 1981

SUMMARY

Ensuring the radiation safety of the public in the vicinity of the Savannah River Plant (SRP) was a foremost consideration in the design of the plant and has continued to be a primary objective during 28 years of SRP operations.

An extensive surveillance program has been continuously maintained since 1951 (before SRP startup) to determine the concentrations of radionuclides in a 2,000-square mile area in the environs of the plant and the radiation exposure of the population resulting from SRP operations. The results of this monitoring program (one of the largest of its type in the world) are reported annually. This document summarizes the 1981 results.

The radiation dose at the plant perimeter and the population dose in the region from SRP operations are very small relative to doses received from naturally occurring radiation. The 1981 annual average dose to a hypothetical individual at the plant perimeter from SRP atmospheric releases of radioactive materials was 0.8 mrem (approximately 1% of natural background). The maximum dose from atmospheric releases at the plant perimeter was 1.15 mrems, which is 0.2% of the Department of Energy (DOE) limit for offsite exposures. The population dose to people living within 80 km (50 mi) of the center of SRP (population: 465,000) was 118 person-rems. During 1981 this same population received a radiation dose of about 54,400 person-rems from natural radiation and an additional dose of about 47,000 person-rems from medical x-rays.

An individual consuming river water downstream from SRP would receive a maximum calculated dose in 1981 of 0.28 mrem, which includes dose contributions from consumer products produced using Savannah River water. Practically all of this radiation dose is due to tritium. In comparison, the National Council on Radiation Protection and Measurements reported that the dose to a person wearing a luminous wristwatch containing tritium could be as high as 5 mrems per year, which is 18 times greater than the dose resulting from SRP releases to the river.

Air and water are the major dispersal media for radioactive emissions. Samples representing segments of the environment potentially affected by these emissions were monitored to ensure a safe environment. Releases of radioactivity from SRP had an inconsequential effect on living plants and animals. With a few exceptions, concentrations outside the plant boundary were too low to distinguish from the natural radioactive background and continuing worldwide fallout from nuclear weapons tests.

The average particulate beta concentration (0.09 pCi/m^3) in air at the plant perimeter was essentially the same as 25 mi away. The average concentration of tritium at the plant perimeter (55 pCi/m^3) was approximately three times higher than at 25-mile radius locations but was still only 0.03% of the CG.

Tritium was the only radionuclide of plant origin detected in Savannah River water by routine analytical techniques. The maximum tritium concentration in river water immediately downstream of the plant was 9.2 pCi/ml (including 1.1 pCi/ml background river contribution) and represented only 0.3% of the concentration guide (CG) specified in Order DOE 5480.1A. Special research programs using very low level techniques may detect trace quantities of other radionuclides of plant origin.

Analyses of plant perimeter soil samples (5 cm deep) showed an average deposition of Cs-137 (31 mCi/km^2) and Pu-239 (1.1 mCi/km^2) within the range normally found in global fallout. The average Pu-238 deposition was less than 0.15 mCi/km^2, the lower limit of detection.

Monitoring of five square miles of swamp bordering the Savannah River immediately below the SRP boundary continued to detect radioactivity (primarily Cs-137) above the natural background levels. Only one-third of the swamp (1.7 square miles) is affected. Neither restrictions on use of the swamp nor remedial actions are considered warranted because the swamp is largely uninhabited. Radiation measurements with thermoluminescent dosimeters (TLD's) showed levels (maximum 1.1 mR/day) similar to those observed for the past several years.

Atmospheric emissions of SO_2, fly ash, and smoke were within applicable standards.

Water quality analyses of nonradioactive materials indicated that Savannah River water were not adversely affected by SRP operations. This was substantiated by independent surveys of the health of Savannah River biota by the Academy of Natural Sciences of Philadelphia, PA.

In addition to the environmental monitoring performed by SRP, the states of South Carolina and Georgia also maintain routine environmental surveillance for radioactivity around SRP. Over 50 locations around SRP are monitored by the two states for radiation (TLD's) and for radioactive concentrations in air, rain, surface water, drinking water, soil, vegetation, and milk. The state agency data are maintained and reported by the respective states.

INTRODUCTION

An environmental monitoring program has been in existence at SRP since 1951. The original preoperational surveys have evolved into an extensive environmental monitoring program in which sample types from approximately 500 locations are analyzed for radiological and/or nonradiological parameters. The results of these analyses for 1981 are presented in subsequent text, figures, and tables.

Monitoring data are contained in tables at the end of the text along with figures and maps of sampling locations. References are made in the text to specific data tables and figures.

Additional information pertaining to SRP releases of radioactive materials and their dispersion in the environment during 1981 may be obtained from DPSPU 82-30-1, Environmental Monitoring in the Vicinity of the Savannah River Plant.

ENVIRONMENTAL MONITORING -- RADIOACTIVE

Atmospheric

RADIOACTIVITY IN AIR

The average particulate alpha activity in air during 1981 (0.001 pCi/m^3 both onplant and offplant) was the same as in 1980. Plutonium analyses were performed on a monthly composite of the weekly air filters from seven sampling location groups (A Area, F Area, H Area, other onplant, plant perimeter, 25-, and 100-mile-radius stations).

Higher Pu-238 concentrations were found in air onplant (average 34 aCi/m^3 in H Area) than offplant (average 0.05 aCi/m^3 at 100-mile-radius). Average concentrations of Pu-239 in air ranged from 26 aCi/m^3 in F Area to 11 aCi/m^3 at 25-mile-radius locations. Average concentrations of both Pu-238 and Pu-239 in air were similar to those observed in 1980.

Plant-released tritium was evident as seen by the decreasing concentration with distance from the plant. The average 1981 concentrations were 290 pCi/m^3 in F Area, 1,600 pCi/m^3 in H Area, 55 pCi/m^3 at the plant perimeter, 17 pCi/m^3 at 25-mile-radius locations, and 11 pCi/m^3 at 100-mile-radius locations. Radioactivity in air data and tritium in atmospheric moisture data are presented in table 1. Continuous air monitoring stations are shown in figure 1.

The particulate beta concentration in air (average 0.09-0.1 pCi/m^3 at all sampling location groups) was about four times higher than during 1980. The increased activity is attributed to the Chinese atmospheric nuclear detonation in October 1980 (see Chinese Fallout Monitoring section below). The influence of fallout from weapons tests on particulate beta activity in air is shown in figure 2. Elevated concentrations were observed after atmospheric testing was resumed in September 1961, and also after testing by nonparticipants of the atmospheric test moratorium that was established in late 1962. Increases are generally observed after an atmospheric test; however, some increase may also occur each spring as a result of the mixing of the stratosphere with the troposphere.

This phenomenon has been generally observed between January and June depending on prevailing meteorological conditions. The beta activity for 1973, 1976, and 1979, however, was relatively low and the characteristic spring rise was not as evident. The dramatic spring increase observed in 1981 was attributed to the presence of fresh fallout from the October 1980 Chinese atmospheric test.

The major gamma-emitting radionuclide in air was Be-7, a naturally occurring radionuclide formed by the interaction of cosmic rays with oxygen and nitrogen in the upper atmosphere. Radionuclides of fallout origin detected in air were Sr-89,90, Zr,Nb-95, Cs-137, and Ce-144.

Because plant releases of particulate beta or gamma activity were not generally detectable in air by routine analytical techniques at the plant perimeter, concentrations were calculated by meteorological dispersion equations. Atmospheric releases and calculated concentrations of gases, vapors, and resulting doses are discussed in the subsection on exposure via atmospheric pathways (p 25). Methods for calculating environmental radiation doses are described in detail in DPSPU 82-30-1.

CHINESE FALLOUT MONITORING

Fallout from the October 16, 1980 Chinese atmospheric weapons test continued to be detected on high volume air samples collected during 1981. Fallout from this test was detected at SRP 19 days after the detonation and was measured on air samples through April 1981. Air gamma activity and rainfall measurements following the test are presented in figure 3.

Maximum air gamma activity from this test (740 fCi/m^3) occurred in April 1981, 6 months after the detonation. The principal radioactive components detected in air at this peak were the longer-lived fallout radionuclides (Zr,Nb-95, Ce-144, Ru-106, and Cs-137), indicating that the activity probably originated from the October 1980 test and not an additional Chinese detonation. The annual mixing of the stratosphere with the troposphere (spring rise) probably had an influence on the time that peak activity occurred. The air activity levels following the October 1980 test were generally lower than those measured after previous Chinese tests in 1976, 1977, and 1978.

Additional data from the October 1980 test are given in DPSPU 81-30-1.

RAINWATER DEPOSITION

The quantity of radioactivity that is deposited in rainwater is measured at each air monitoring station. The rainwater is collected in pans that are two feet square and passed through ion exchange columns to plastic jugs. No correction is made for dry deposition that may escape from the pans or that may be deposited in the pans during periods of dry windy weather. The ion columns are counted on a NaI detector for gamma emitters; then eluted for gross alpha and beta, strontium, and plutonium analyses. Tritium concentrations are determined by analysis of the rainwater collected in the jugs. Radionuclides deposited in rainwater are shown in table 3 and sampling locations in figure 1.

Deposition of beta-emitting radionuclides averaged 7.3 nCi/m^2 onplant, 6.6 nCi/m^2 at the plant perimeter, 5.7 nCi/m^2 at the 25-mile-radius stations, and 5.2 nCi/m^2 at the 100-mile-radius stations. The beta activity included 0.62 nCi/m^2, 0.54 nCi/m^2, 0.61 nCi/m^2, and 0.39 nCi/m^2 of Sr-90 for the four respective location groups. Detectable levels of Zr-95-Nb-95, Cs-137, and Ce-144 were found in rainwater samples collected during the first 6 months of 1981. The deposition of these radionulides was attributed to the October 1980 Chinese atmospheric weapons test.

The average annual deposition of Pu-238 and Pu-239 in rainwater was higher at locations near the plant than at the more distant locations. Plant-released tritium was evident in rain samples as seen by the decreasing concentration with distance from the plant. The average concentrations were 12 pCi/ml in F Area, 43 pCi/ml in H Area, 2.5 pCi/ml at the plant perimeter and 0.6 pCi/ml at 25-mile-radius locations.

ENVIRONMENTAL GAMMA RADIATION

Gamma radiation is measured continuously for quarterly periods with thermoluminescent dosimeters (TLD's) at the plant perimeter, 25-, and 100-mile-radius air monitoring locations. Additional measurements are also made at onplant air monitoring stations and in the corners of each operating area. In 1981 the environmental gamma radiation levels at the plant perimeter, 25-, and 100-mile-radius locations were typical of measurements observed at individual locations for the past several years. Gamma radiation measurements are given in table 4. Radiation levels at onplant stations averaged 117 mR/yr with a maximum of 230 mR/yr at H Area. The corners of the operating areas were generally higher with averages ranging from 80 mR/yr in D Area to 259 mR/yr in H Area.

Background radiation levels are measured with TLD's at 1-mile intervals along the plant perimeter (79 stations). Exposure rates at the 79 perimeter stations averaged 66 ± 22 mR/yr for the two 1981 semiannual periods. The average for 1980 was 62 ± 11 mR/yr.

Water

DRINKING WATER

Drinking water supplies from 23 onplant facilities and 14 surrounding towns (figure 1) were analyzed semiannually. Alpha and beta concentrations remained within ranges normally detected and were essentially the same as concentrations detected before plant startup. Tritium concentrations above the minimum detectable level of 0.4 pCi/ml were primarily from the locations that use surface water in their drinking water supplies. The concentration of tritium in surface waters was influenced by plant releases. Concentrations of radioactivity in drinking water samples are shown in table 5.

Tritium was also detected in drinking water from two water treatment plants that use Savannah River water. The Beaufort-Jasper treatment facility furnishes drinking water to most of Beaufort County, SC; and the Port Wentworth, GA treatment plant supplies water to a business-industrial complex near Savannah, GA (figure 4). Monthly analyses of water from these facilities showed tritium concentrations from less than 0.4 to 4.6 pCi/ml during 1981. Calculations indicate that people who consume this water and consumer products produced using this water would receive an individual annual dose commitment from tritium of 0.21 mrem at Beaufort-Jasper and 0.28 mrem at Port Wentworth. These dose rates are within the Environmental Protection Agency (EPA) National Interim Primary Drinking Water standard of 4 mrem/yr.

PLANT STREAMS AND SAVANNAH RIVER

The plantsite is drained by five streams that flow to the Savannah River (figure 5). The radioactivity that is released in plant effluents is transported by these streams to the river. Tritium accounts for the largest quantity of radioactivity released (greater than 99%) to the effluent streams and thus to the river. Concentrations of radioactivity in plant effluents during 1981 are presented in table 6 and sampling locations in figure 5.

Liquid radioactive releases from plant facilities and migration of tritium and Sr-90 from seepage basins are diluted by mixing with plant stream and Savannah River water. After complete mixing the only radionuclides detected in river water downstream from the plant at Highway 301 using routine analytical techniques were tritium and traces of Sr-90. The quantities measured in transport (corrected for upstream contribution) during the year were 25,140 Ci of tritium and ~1 Ci of Sr-90. The concentrations detected are only small percentages of the concentration guides for uncontrolled zones given in Order DOE 5480.1A. Tritium has the highest percentage and it represents only 0.1% of the concentration guide. Concentrations of radioactive materials in river water above the plant, adjacent to the plant, and at Highway 301 are shown in table 7.

TRITIUM BALANCE IN STREAMS AND RIVER

Since 1964, an annual comparison has been made between the quantity of tritium available for transport to the Savannah River (measured at the source), the quantity measured in streams before entry into the river, and the quantity measured in the river below SRP (corrected for upstream contribution). There is reasonable agreement between these values on an annual basis, and there are no apparent biases in the data. For the long term (1965 to 1981), there is good agreement (table 9). The totals for 1964 to 1981 show that tritium measured in plant streams before entry into the river was 1% more than that measured at the source, and tritium measured in the river was 4% less than that measured at the source. These differences are attributed to statistical uncertainties in flow and tritium measurements. 1981 data are presented in table 8.

This comparison shows that techniques used for measuring effluent releases and for monitoring the streams and river have been effective, consistent, and accurate. A significant deficiency in monitoring would be reflected by a large difference between the inventory of tritium released and the quanities measured in the streams and river or by a bias of the data in one of the data sets.

SEEPAGE BASINS AND GROUNDWATER

Water samples were collected from the seepage basins located in the Separations Areas (F and H), Reactor Areas (P and C), 700 Area, 300 Area, and TNX Areas. Groundwater from wells around these seepage basins and also from wells around the 100-K containment basin and the abandoned R-Area seepage basins are sampled for surveillance of radionuclide migration. Migration studies from seepage basins are discussed in subsequent sections. Seepage basin well locations are shown in figures 6 through 11. Radioanalysis data for seepage basins are shown in table 10. Radioanalysis data for groundwater monitoring in F Area are shown in table 11 and in H Area in table 12. Groundwater monitoring data for reactor areas are shown in table 13. Wells previously monitored around the F- and H-Area seepage basins were not sampled in 1981. These basins are now covered by the hazardous waste monitoring program. Radioactivity in wells around the F- and H-Area seepage basins for hazardous waste monitoring are included in the nonradioactive portion of this report.

Other surveillance wells for monitoring groundwater for radioactivity include Z and ZW wells for general Separation Areas. Locations of these wells are shown in figure 12 and radioanalysis data in table 14. Groundwater monitoring at the solid waste storage facility and at the tank farms in the Separations Areas are discussed separately in later sections.

Fluctuations in concentrations of nonvolatile beta activity in groundwater occur and are considered normal. Several fold increases and decreases are observed over a short period of time at specific locations. These varying concentrations of nonvolatile beta activity in groundwater occur primarily in relatively shallow wells where rainfall causes greater fluctuations in water levels, thereby exposing zones of various contamination levels.

Tritium concentrations in groundwater samples may change by even greater magnitudes. Tritium in transport in groundwater moves at the same rate as groundwater; therefore, rainfall can have a greater influence on tritium concentrations than other radionuclide concentrations.

MIGRATION OF RADIOACTIVITY FROM SEEPAGE BASINS

Migration from K-Area containment basin to Pen Branch is calculated using weekly tritium and flow measurements in Indian Grave Branch, a tributary of Pen Branch (figure 13). Tritium (8,910 Ci in 1981) is the only radionuclide that was detected migrating from K-Area containment basin.

Migration of radioactivity from F- and H-Area seepage basins is measured with continuous samplers and flow recorders in Four Mile Creek, as shown in figure 5. Groundwater from F-Area seepage basin outcrops into Four Mile Creek between FM-4 and FM-A7. The H-Area seepage basin outcrop from basins 1 through 3 occurs between FM-1B and FM-2 and from basin 4 between FM-2 and FM-2B. Total measured migration in 1981 was: Sr-90, 0.25 Ci from F Area, and 0.04 Ci from H Area; tritium, 1,100 Ci from F Area and 4,200 Ci from H Area. Cs-137 from seepage basins is obscured by the desorption of cesium from the streambed.

Measurements of radioactivity in transport at sample points on Four Mile Creek are presented in table 15 and measured migration compared to releases to seepage basins in table 16. In 1981 there was a difference of approximately 2,000 Ci of tritium in transport in Four Mile Creek upstream of the F-Area effluent (FM-2B) and immediately downstream of the F-Area effluent (4M-4). This difference is significantly more than the 10 Ci released by F Area and is attributed to migration from H-Area seepage basin 4 and the solid waste storage facility. A USGS flow monitor has been installed near the point where F-Area effluent enters Four Mile Creek to more effectively measure this migration.

GROUNDWATER AT R-AREA SEEPAGE BASINS

In 1957 the R-Area seepage basins received approximately 200 Ci of Sr-90 and 1,000 Ci of Cs-137 following a fuel element failure during a calorimeter test in the emergency section of the R-Area disassembly basin. A large portion of the radioactivity was contained in the original basin 1 (basins 2 through 5 were placed in operation after the incident). In the 1960's R-Area seepage basins 1 through 5 were deactivated, backfilled with clay, and the surfaces treated with herbicides and covered with asphalt. In addition, a kaolinite dike was constructed around basin 1 and the northwest end of basin 3 to contain lateral movement of the contamination in the soil.

In 1975 a substantial increase in Sr-90 activity (3,400 pCi/l) occurred in groundwater monitoring well E-13 on the east side of basin 1 outside the clay dike. Investigations revealed the source of the contamination was migration through a construction sewer line that had been abandoned after completion of R Area. The sewer line traversed the basin 1 area and allowed radioactivity to move outside the clay dike (figure 11).

During 1976-1977 wells D-4 through D-11 were installed southeast of basin 1 (down gradient from well E-13) to define the pattern of groundwater contamination and to detect additional migration. Contamination has been detected in wells D4 through D8 since they were first installed. No contamination, however, has been detected in the D-9 through D-11 series, which is inside the R-Area fence. Concentrations of radioactivity in the R-Area seepage basin wells are given in table 13.

RADIOACTIVITY IN GROUNDWATER AT SOLID WASTE STORAGE FACILITY

Elevated concentrations of tritium in the solid waste storage facility (burial ground) wells located southwest of 643-G (original burial ground) and north of 643-7G (burial ground addition) were reported in DPSPU 79-302.

The maximum tritium concentration in the 643-G perimeter wells (wells 52 through 67, shown in figure 14) was 15,500 pCi/ml in BG-56 as compared to 11,900 pCi/ml in this well in 1980. The flow path of groundwater in the vicinity of these wells is toward Four Mile Creek via the F-Area effluent. Tritium from the 643-G burial ground was outcropping in the F-Area effluent. The outcropping was attributed to erosion of the effluent stream bed by 25 years of plant cooling water discharges and storm runoff, which had deepened the F-Area effluent canal and shortened the subsurface flow path from the burial ground by about 50%. To reduce the quantity of tritium that was outcropping, a new 2,100-ft-long, F-Area effluent channel was completed in May 1980. The new F-Area effluent contains graded rock to inhibit erosion.

The isolated old effluent channel was repaired during 1980. The old channel bed base was filled with a low permeability clay, covered with topsoil, and planted with grass seed for erosion control. This repair is expected to reduce the quantity of tritium migrating to Four Mile Creek.

The maximum tritium concentration in groundwater at the north perimeter of 643-7G was 170 pCi/ml in well 34. Groundwater movement in this area is toward Upper Three Runs Creek. Additional wells north of wells BG-34 to BG-36 indicate that tritium is migrating from the north end of 643-7G toward Upper Three Runs Creek. This is shown by a maximum tritium concentration of 19,000 pCi/ml in well BG-69. A study of groundwater movement in this area indicated that most of the tritium will have decayed before the plume reaches Upper Three Runs Creek. Data are presented in table 17.

RADIOACTIVITY IN GROUNDWATER AT 200-AREA TANK FARMS

Thirty-one tank farm wells (14 in F Area, 17 in H Area) were installed in the water table at the tank farms between 1972 and 1974. The 4-in.-dia wells were screened, cased, grouted, and equipped with a locked cover. Tank farm well locations are shown in figures 15 and 16.

Low-level alpha activity (9.8 pCi/l maximum) was measured in all F-Area tank farm (FTF) wells during 1981. The concentrations were similar to those observed in 1980. Nonvolatile beta concentrations in F-Area tank farm wells ranged from 13 pCi/l to a maxmium of 25,000 pCi/l in well FTF-6. FTF-6 is one of the wells that was continuously pumped in 1974 following increases in nonvolatile beta concentrations. During pumping, gamma radioactivity levels reached 66,000 pCi/l of Ru-106. The beta concentrations in wells FTF-5 through FTF-7 were not as high in 1981 as they were in the mid-1970's.

H-Area tank farm wells contained low level concentrations of radioactivity (maximum nonvolatile beta 68 pCi/l) comparable to 1980 concentrations. Radioactivity concentrations in F- and H-Area tank farm wells are shown in tables 11 and 12, respectively.

Dry Monitoring Wells in Separations Areas Tank Farms

Radiation profile measurements were made in 11 dry monitoring (DM) wells at the F-Area tank farm and 14 DM wells at the H-Area tank farm during 1981 (locations shown in figure 17). The DM wells consist of a 2-in., closed-bottom, steel casing terminating above the water table. Each well is cement-grouted and equipped with a cap to prevent in-leakage of surface water. The well locations are at points considered most vulnerable to leaks from piping that serve the storage tanks. Background radiation levels were observed in most DM wells. In the few wells showing elevated readings, the radiation levels have remained essentially unchanged since the wells were installed.

Thirty-eight additional DM wells (RP2 through RP40, shown in figure 18) are located in a contaminated area near tank 8 in the F-Area tank farm. The activity in this area is attributed to soil contamination from overfilling tank 8 in 1961. Since 1975, the radiation levels in these wells have remained high and essentially unchanged. The radiation levels measured in the tank 8 DM wells identify the zone of major soil contamination, also shown in figure 18. Data from core samples indicated that the soil contains approximately 5,000 Ci of Cs-137. The consistent radiation readings in the tank 8 DM wells indicate no movement of radioactivity in the soil.

Typical radiation levels in 1981 observed in each dry monitoring well at the F-Area and H-Area tank farms from the date of the first measurement are shown in table 18.

Soil

The cumulative deposition of radioactivity from all sources, including SRP releases, was measured by analyses of undisturbed soil at eight locations onplant and three locations near the plant perimeter. Two locations about 100 mi from the center of the plant serve as control locations. With the exception of plutonium in F- and H-Area samples, all concentrations of radioactivity in 1981 soil samples were within the range normally found in soil and are attributed to global fallout. Data are presented in table 19. Soil samples from noncultivated areas were first collected for radioanalysis in 1973 at four locations along the plant perimeter (representing each quadrant) and at three locations up to 100 mi from the plant. Beginning in 1975, samples were also collected in F and H Areas. At each site 10 soil cores, 5 cm deep, were taken in a straight line 30 cm apart. Soil cores were composited by location for radioanalysis.

Radiocesium was the only gamma-emitting radionuclide detected in soil except for naturally occurring radium, thorium, and K-40. Concentrations of Cs-137 and plutonium at the plant perimeter were similar to ambient levels observed at the 100-mi distant locations.

Measurable quantities above ambient levels of Pu-238 and Pu-239 were detected in soil around the chemical separations facilities in F and H Areas, reflecting F- and H-Area releases. Pu-238 concentrations in soil around H Area were about a 10 to 20 times higher than ambient levels. Slightly elevated concentrations of Pu-238 in soil were also found at F Area and are probably due to the close proximity of F Area to H Area. Pu-239 concentrations around both F and H Areas are up to four times higher than in soil at other locations.

Because of the nonuniform distribution of global fallout and the variation in deposition of Cs-137, it is difficult to differentiate between worldwide fallout and SRP contributions. All Cs-137 concentrations in soil were within the range normally observed in global fallout. Table 20 summarizes deposition of radionuclides for the past 9 years.

Vegetation

PLANT PERIMETER AND OFFSITE

There are no significant differences in concentrations of radioactivity (excluding tritium) in grass samples collected at seven locations around the plant perimeter, seven locations at the 25-mile radius, and four locations at the 100-mile radius. Average alpha concentrations were generally near the minimum levels of detection (0.3 pCi/g). Naturally occurring Be-7 and K-40 were the primary beta contributors. Beta concentrations ranged from 1 to 88 pCi/g.

Trace concentrations of Cs-137 and Ce-141,144 of fallout origin were detected in several samples with a maximum of 1.4 pCi/g of Cs-137 in a Savannah, GA sample and 8.0 pCi/g of Ce-141,144 in a 25-mile-radius sample.

Tritium was the only radionuclide of plant origin detected in offplant vegetation. The average free water tritium concentration in vegetation at the plant perimeter was 4.8 pCi/ml compared with 1.2 pCi/ml at the 25-mile-radius stations and 0.3 pCi/ml at the 100-mile-radius stations. Radioactivity in plant perimeter and offsite vegetation is shown in table 21 and sample locations in figure 19.

F AND H AREAS

Vegetation collected at two locations around each of the separations areas showed alpha and nonvolatile beta concentrations similar to those observed at the plant perimeter and offplant locations. Tritium concentrations in F- and H-Area vegetation samples reflect plant releases. Concentrations averaged 47 pCi/ml in F-Area vegetation and 54 pCi/ml in H-Area vegetation. The maximum concentration in a vegetation sample was 180 pCi/ml (H Area) compared to 22 pCi/ml maximum in a plant perimeter vegetation sample. Radioactivity in vegetation is shown in table 21 and sample locations in figure 20.

SOLID WASTE STORAGE FACILITY

A survey of vegetation inside the solid waste storage area (643-G and 643-7G) in 1981 showed a maximum alpha concentration of 0.6 pCi/g and a maximum beta concentration of 330 pCi/g (primarily Sr-90), as shown in table 22. The vegetation was collected from a relatively large area at each location and composited for analysis. This method provides coverage of most of the facility while keeping the number of samples analyzed to a minimum.

The 1981 beta concentrations were low when compared to concentrations found earlier. From 1971 to 1976 the maximum beta concentrations ranged from 2,200 to 300,000 pCi/g (primarily Sr-89,90). The lower concentrations now observed occurred after a contaminated area of soil, approximately 700 m^2 (up to 15 cm deep), was excavated. The excavated area was treated with a herbicide and backfilled before the construction of a new waste monitoring facility, Building 643-12G, shown in figure 20A.

In addition to the annual survey inside the solid waste storage area fences, monthly samples are collected around the outside of the fences. The maximum concentrations outside the fences were 1.0 pCi/g alpha and 37 pCi/g beta. Measurable concentrations of a few specific gamma-emitting radionuclides were detected in the early spring. Concentrations to 10 pCi/g of Zr,Nb-95, 47 pCi/g of Ru-103,106, 7 pCi/g of Cs-137, and 26 pCi/g Ce-141,144 can likely be attributed to worldwide fallout from the Chinese weapons tests. Data are presented in table 22 and sample locations in figure 20.

STEEL CREEK

Since 1970, vegetation samples have been collected at the 10 locations between P-Area effluent and the Savannah River swamp (figure 21). Vegetation is sampled either in stream water or on portions of the old creek bed now exposed by reduced waterflow after all reactor cooling water discharges to Steel Creek were discontinued in February 1968.

Concentrations of Cs-137 in 1981 (average 260 pCi/g and maximum 2,000 pCi/g) are essentially the same as in 1980. Individual 1981 results for Steel Creek vegetation are shown in table 22A. Cs-137 data for 1981 along with annual data for the past 12 years are shown in table 22B. Occasional low levels of Co-60 and Zn-65 that have been detected in previous years were detected again in the 1981 vegetation. The 1981 maximum concentrations were 16 pCi/g of Co-60 and 60 pCi/g of Zn-65.

Milk

Milk is sampled routinely from six local dairies within a 25-mile radius of SRP and from a major distributor (milk produced in the area and sold by a major distributor). Samples were analyzed for tritiums, I-131, and Cs-137 as shown in table 23.

Concentrations of fallout radionuclides (I-131 and Cs-137) in milk were essentially the same as those reported by EPA for the southeastern United States. The average concentration of Cs-137 in milk was 5 pCi/l in 1981 compared to 3 pCi/l in 1980. Concentrations of I-131 to 10 pCi/l were detected in milk in the spring, but the annual average was less than 1 pCi/l. Cs-137 and I-131 in milk are attributed to the worldwide fallout.

Tritium in local milk is assumed to be associated with plant operations. The maximum tritium detected in 1981 was 4.2 pCi/ml and the average 0.5 pCi/ml.

Food

Over 60 samples of farm produce representing four food categories (grain, fruit, leafy vegetables, and poultry) were collected at 14 localities in the six counties surrounding SRP. Six locations were near the plant perimeter and eight at a distance of approximately 25 mi. All samples were analyzed by gamma spectrometry for gamma-emitting radionuclides. Radiochemical analyses are used for Sr-90 and liquid scintillation counting for tritium.

Except for grains all foods were prepared as though for human consumption. Peelings, seeds, and other nonedible parts were removed. Wheat, containing the whole grains only, and oats, containing both grains and husks, were processed unwashed.

The levels of radioactivity in food were near or less than the lowest detectable concentration (except for tritium) and were indistinguishable from fallout. Tritium concentrations in free water in food ranged from 0.4 to 9.3 pCi/g. Results of 1981 are summarized in table 24.

Terrestrial Animals, Game Birds, and Aquatic Specimens

DEER AND HOGS

A total of 1,791 deer and 33 hogs were killed during the 1981 public hunts for controlling the SRP deer population. This is the largest number of deer killed in a year since the public hunts began in 1965. All deer and hogs were monitored with a portable Cs-137 counter before the animals were released to the hunters. The Cs-137 concentrations averaged 8 pCi/g in deer and were within ranges observed in recent years and are similar to concentrations found in offplant deer in South Carolina. Concentrations of Cs-137 in hogs were generally lower than deer concentrations with an average of 3 pCi/g. Cs-137 in deer and hogs is attributed primarily to worldwide fallout from nuclear weapons tests. Results are presented in table 25.

The maximum Cs-137 concentration found in a deer killed during the 1981 hunts was 47 pCi/g. Edible meat from that deer weighed about 26 lb and contained about 0.55 μCi of Cs-137. An adult consuming all of this deer meat would receive a radiation dose of 33 mrem to the whole body. This is less than the annual dose the average South Carolina resident receives from natural radiation (about 100 mrem/yr).

A summary of Cs-137 concentrations in deer for all of the SRP public hunts, beginning in 1965, is presented in table 26. Concentrations of Cs-137 detected in deer from the South Carolina Coastal Plain (SCCP) by the School of Forest Resources, University of Georgia, Athens, GA are also included for comparison.

Muscle tissue and thyroids from deer (47 in 1981) were sampled during each hunt for laboratory analysis. These analyses verified the Cs-137 field measurements. No gamma emitters other than Cs-137 and naturally occurring K-40 were detected in deer tissue. Analyses of the deer thyroids indicated no measurable concentrations of I-131 (less than 1 pCi/g).

DUCKS

Fifteen ducks trapped on the plant (14 on Par Pond and one near Steel Creek) contained a maximum Cs-137 concentration of 0.7 pCi/g with a maximum of 3.2 pCi/g. These concentrations, summarized in table 27, are within the range found in 1980 and are attributed to worldwide fallout.

AQUATIC SPECIMENS

Fish were trapped in plant effluent streams, Par Pond, Pond B, and in the Savannah River upstream, adjacent to, and downstream from SRP. Individual whole fish were analyzed by gamma spectrometry for Cs-137 and other gamma-emitting radionuclides. Cs-137 was the only gamma-emitting radionuclide detected. Free water in fish flesh was analyzed for tritium. Concentrations of radioactivity in fish are shown in table 28 and locations in figure 5.

Since 1971, decreased concentrations of both Cs-137 and Sr-89,90 have occurred in most plant stream and river fish. Average concentrations of Cs-137 and Sr-90 in fish are compared with earlier values in table 29. Comparisons of 1971 and 1979 concentrations show that all fish concentrations were from 53 to 98% lower in 1979. Concentration of Cs-137 and Sr-89,90 in stream and river fish has remained fairly constant since 1979.

The highest radioactivity concentrations (240 pCi/g of Cs-137) were measured in fish from Pond B (the receiving pond for R-Area effluents). Pond B is a controlled area within the bounds of the plant and is closed to fishermen. Maximum concentrations of Cs-137 in stream and river fish were 24 pCi/g in a bream collected in Steel Creek at Road A, and 5 pCi/g in a catfish trapped in the river above the SRP boundary.

Tritium concentrations in river fish in 1981 were similar to those observed for the past 11 years, as shown in table 30. The maximum concentration in river fish was 12 pCi/ml (free water) in a carp collected adjacent to SRP. The maximum concentrations in 1979 and 1980 were 19 and 8 pCi/ml, respectively.

A large number of fish (80) from the Savannah River between SRP and Savannah, GA were obtained from the Georgia Department of Natural Resources for analyses. Concentrations of Cs-137, tritium, and mercury in these fish were similar to those observed in fish trapped at routine sample locations (River 2, 8, and 10). Maximum concentrations were 0.9 pCi/g of Cs-137 and 3.6 pCi/ml of tritium. Radioactivity data are presented in table 28.

Over 60 algae samples were collected from Par Pond, Lower Three Runs Creek, and Steel Creek (mouth) for gamma spectrometric analysis. Average concentrations of Cs-137 (from 30 to 65 pCi/g) were essentially the same as observed for the past several years, as shown in table 31.

Special Surveys and Studies

SAVANNAH RIVER SWAMP

During the 1960's some radioactive materials in SRP releases were deposited in about 1.7 square miles of offsite swamp downstream from SRP. Waterborne sediments settle in the swamp during periods of high flow in the river when the river overflows its natural banks into the swamp. When the swamp is flooded, the flow from SRP surface streams generally follows a path through the swamp paralleling the main river channel and bordering the north swamp margin. This swamp flow does not enter the main river channel until high ground is encountered at Little Hell Landing, approximately 4 mi from the SRP boundary (figure 22).

Associated with the deposit in the offsite swamp were approximately 25 Ci of Cs-137 and less than 1 Ci of Co-60. Most of the Cs-137 and Co-60 in the swamp were from releases from L- and P-Area reactor fuel basins to Steel Creek. The discharges to Steel Creek were reduced following the shutdown of L-Area reactor in 1968. Modifications to the P-Area reactor in 1970 decreased the discharges further. Aerial radiological surveys (EG&G) and ground surveys conducted in 1974 showed that approximately 4.8 Ci of Cs-137 and most of the Co-60 were deposited in a 1/4-mile-long section of swamp (43 acres) immediately adjacent to the SRP boundary. The remainder of detectable radioactivity was deposited in a 4-mile-long band bordering the north swamp margin, terminating at the Little Hell Landing.

Fifty-two locations along 10 trails transecting the swamp were selected for sampling vegetation and soil and for making TLD radiation measurements. The trails, established in 1974, are shown in figure 22.

During the period 1974 to 1977, annual surveys of the 10 trails included soil, vegetation, animals, fish, and TLD radiation measurements. Because results of these surveys have shown no significant change in radiological conditions, surveys after 1978 have included only TLD measurements. Results of the 1974 through 1977 surveys are summarized in DPSPU 78-30-1. The 1981 TLD radiation survey of the swamp showed no significant change in levels of radioactivity from those measured and reported for the past several years. The data for 1981 as well as the average annual TLD radiation measurements for 1972 to 1980 are given in table 32.

The TLD radiation measurements were made 1 m above ground at specified intervals along each trail. Gamma radiation measurements in 1981 ranged from 0.16 to 1.13 mR/day compared to a 1980 range of from 0.12 to 1.3 mR/day. The slight fluctuations between 1980 and 1981 data are attributed primarily to statistical uncertainties associated with each measurement. Radiation measurements are also influenced by water level fluctuations in the swamp. This was evidenced by the lower radiation measurements observed in 1975 when high water levels were observed in the swamp. In 1976, 1977, and 1978 when water levels were lower, radiation measurements returned to levels previously recorded in 1974.

In June 1974 and 1979, EG&G conducted aerial radiation surveys of SRP and the surrounding area. The area surveyed included the offsite swamp between the SRP boundary and Little Hell Landing.

Comparison of the 1979 radiation isopleths with the 1974 isopleths indicated that the Co-60 and the Cs-137 are located in the same areas in both surveys. This indicates that there has been little movement of the Cs-137 activity in this area.

The EG&G results cannot be compared directly with the SRP TLD measurements on the 10 transects because the TLD's measure natural radiation in addition to the Co-60 and Cs-137. The radiation from cosmic and terrestrial sources accounts for the largest components of the TLD measurements. Additional factors that influence the measurements are changes in water level, canopy coverage, and sedimentation.

SEDIMENT ANALYSES -- SAVANNAH RIVER AND EFFLUENT STREAMS

Sediment samples from the Savannah River have been collected and analyzed since 1975. Beginning in 1977, the program was expanded to include plant effluent stream sediments. These samples are collected at strategic locations along the river and plant streams to obtain an estimate of the maximum accumulation of radioactivity in the streambeds. Collection techniques were designed to obtain samples from the top 8 cm of sediment in areas where fine sediment had accumulated. Therefore, the samples are probably not representative of the entire streambed.

Sediment samples were analyzed for Sr-90, Pu-238, Pu-239, and gamma-emitting radionuclides. Samples obtained from the Savannah River during 1981 continued to show concentrations of radioactivity similar to those observed from worldwide fallout (table 33).

The 1981 plant effluent stream sediment samples, however, contained concentrations of Co-60, Cs-137, Sr-90, Pu-238, and Pu-239 above worldwide fallout levels. The maximum Co-60 and Cs-137 concentrations in 1981 sediments were 1.2 and 42 pCi/g, respectively. These maximum concentrations were detected in sediment from Steel Creek. Maximum concentrations for the remaining radionuclides were 0.9 pCi/g Sr-90, 0.04 pCi/g Pu-238, and 0.04 pCi/g of Pu-239. These samples were obtained from the Steel Creek at Road B location. Table 33 also summarizes the results of the sediment sampling program since 1975.

A comprehensive survey of the Savannah River above and below the plant was conducted in 1975 and 1976 (table 34). Additional sediment samples were also collected from the Pee Dee River in 1976 for control purposes. The results of these analyses were within the range of fallout.

URANIUM IN STEED'S POND

Liquid waste from the fuel preparation area contains some uranium. This effluent discharges into Tims Branch, which flows through Steed's Pond and over a wooden spillway into Upper Three Runs Creek. Approximately 25 Ci of uranium have been released to Tims Branch from 1954 through 1981. Core samples collected from the bottom of Steed's Pond in January 1981 showed that approximately 5 Ci of uranium are deposited in the pond sediment.

Between January 16 and January 18, 1981 the spillway was opened and Steed's Pond drained for turtle population studies. While the pond was drained, six core samples were obtained from the top 6 in. of sediment from the pond bottom. These samples were collected in a centerline extending from the Tims Branch inlet to the spillway and analyzed for uranium to determine the amount of deposition in the Steed's Pond sediment. A similar survey was conducted in February 1967. At that time 18-in. core samples showed that the top 6 in. of sediment contained greater than 90% of the uranium activity detected in the cores. Concentrations of uranium to 12 pCi/g were detected in the 12- to 18-in. segments of the 1967 cores.

The average uranium concentration in core samples collected in 1981 (170 to 700 pCi/g) was approximately two times greater than the 1967 results (20 to 530 pCi/g). This increase reflects the additional uranium released to the effluent since 1966. Approximately 10 Ci of uranium were released to Tims Branch from 1954 through 1966, and an additional 15 Ci were released from 1966 through 1981.

Uranium released from the 300 Area to Tims Branch is not detectable in Upper Three Runs Creek. However, Upper Three Runs Creek does contain slightly elevated levels of naturally occurring alpha activity. Core samples collected from Tims Branch immediately beyond the spillway contained small concentrations of uranium (8 pCi/g).

JACKSON, SC DRINKING WATER

Jackson, SC drinking water was analyzed to confirm previous studies that had identified the elevated alpha and beta activity in this water as naturally occurring radioactivity. A 47.5-liter sample of Jackson water was separated into three components (uranium, plutonium, and thorium) using ion exchange techniques and analyzed by alpha spectrometry. The results of these analyses show only naturally occurring radioactivity, predominantly Ra-226, Th-228, and their radioactive daughters. No plutonium was detected. A gamma analysis of this water also failed to show the presence of any man-made radionuclides.

ABNORMAL TRITIUM LEVEL IN RAIN SAMPLE

Abnormally high tritium concentrations were detected in two rainwater samples collected from the Perkins, GA environmental monitoring station during February. Analyses of the Perkins rainwater for alpha, beta, and gamma emitters showed no above normal concentrations. No elevated tritium concentrations were detected at other 25-mile-radius or plant perimeter locations during the same period.

Special samples of vegetations, surface rainwater, and soil in the vicinity of the Perkins station showed normal tritium concentrations except for soil at the location where the excess water from the Perkins collection jug had been previously poured. Goat milk from a nearby farm also showed no elevated concentration of tritium.

Additional analyses were performed on the Perkins rainwater samples and control samples from earlier Perkins rainwater collections and other monitoring stations. These analyses included ion chromatography, spark source mass spectrometry, and pH. Results from these analyses indicated that there was no substantial difference between the contaminated Perkins samples and the control samples.

It was concluded that a tritium-contaminated collection jug was inadvertently used to collect rainwater at the Perkins station when the high tritium concentrations were detected. This conclusion was substantiated by the high tritium concentrations in soil where the excess rain from the collection jug was poured.

Personnel in the environmental sections of the states of South Carolina and Georgia were informed of this occurrence. They indicated no serious concern because it was not due to fallout from a release.

F-AREA CANYON WELLS

Fourteen wells were drilled at foundation expansion joints of the F-Area canyon building, including one water table gradient well located north of the canyon. Six wells were drilled within the perimeter of the foundation down to the concrete pad. Corresponding wells were drilled just outside the outer edge of the concrete pad into the water table.

Water samples collected from 10 of the wells in October showed only low levels of nonvolatile beta activity in two samples (350 and 875 pCi/l). All other concentrations of nonvolatile beta activity were less than 50 pCi/l. Alpha concentrations in all samples were low, ranging from less than 0.3 to 1.5 pCi/l.

Radioactive Releases and Radiological Effects

PLUTONIUM RELEASE IN F AREA

A release of plutonium from the Building 292-F stack occurred on January 26. From stack exhaust readings and additional laboratory analyses of the daily filter, it was estimated that about 100 μCi of alpha activity had been released to the environment. Air filters downwind of the release point in H Area showed no increased alpha activity. Plant perimeter air filters did not show any elevated activity.

H-AREA TRITIUM RELEASES

On March 27 approximately 33,000 Ci of tritium were released to the atmosphere from a tritium facility in H Area over a period of about 2 hours. The release occurred when a pipe was disassembled during a routine maintenance procedure. Measurements of the ratio of oxide to elemental tritium by SRL confirmed that the tritium oxide fraction was approximately 99%. The maximum radiation dose that a hypothetical person could have received at the plant perimeter was calculated to be 0.3 mrem. Urine samples were collected from 75 people located in or near the predicted path of the release. The maximum measured dose to an offsite individual as determined by urine analysis was 0.2 mrem. The total population dose was calculated to be 4 person-rems.

High volume air samples for determining elemental to oxide tritium ratios showed elevated tritium levels in the path of the plume extending from the plant perimeter (Barnwell Barricade) to Kingstree and Lake City, SC. The results of these analyses, shown in table 36, confirmed the computer-predicted release trajectory and the tritium cloud concentration beyond the plant perimeter.

A special environmental monitoring program was initiated following the release to provide an assessment of contamination to the environment. Over 400 samples (including vegetation, soil, surface water, food crops, milk, and air) were collected from March 27 through April 2. Analysis of tritium in approximately 150 of the samples confirmed the predicted release trajectory and the low offsite dose commitment. The tritium plume trajectory, based on meteorological predictions, is shown in figure 23.

Elevated concentrations of tritium were observed in environmental samples collected in a northeasterly direction from the plant perimeter extending out to distances beyond Orangeburg, SC. Major routes monitored and locations of the maximum concentrations measured in food crops, soil, vegetation, milk, and water are shown in figure 24. Tritium levels in all environmental samples are summarized in table 35. Maximum tritium concentrations were: 270 and 100 pCi/ml in plant perimeter and offsite vegetation respectively, 8 pCi/ml in food, and 11 pCi/ml in milk. The vegetation results were about 10 times higher than routine values while food and milk concentrations were within ranges routinely observed. Specific analyses results can be found in a report of the release (DP-1613).

Approximately 2,800 Ci of tritium were released from a tritium facility stack in H Area during a period of 6 minutes on April 22. The release occurred during maintenance of a compressor in the tritium facility. Analysis of samples from the exhaust system showed that 87% of the tritium was in the elemental form, and 13% was in the more biologically active oxide form. Environmental effects from the tritium release were negligible.

This conclusion was substantiated by analyses of approximately 60 samples of rain and surface water, atmospheric moisture, vegetation, and milk. Samples were collected along the tritium plume trajectory (northwest direction). Tritium values both onplant and offplant were within ranges occurring during normal operating periods.

Approximately 3,700 Ci of tritium (predominantly in the elemental form, HT) were released from H Area over an 8-hour period on July 1. Environmental samples (vegetation and pine needles) were collected along the predicted plume trajectory (southwest) on the day of the release. Tritium oxide levels in these samples were within ranges occurring during normal operating periods.

Vegetation and pine needles provided a basis for comparison of tritium levels in the two types of sample media. At each sample location the vegetation and pine needle concentrations showed good agreement. This indicates that pine needles would be a suitable substitute for grass when needed.

BUILDING 772-F STACK RELEASE

Approximately 1.6 mCi of Pu-238 and 5.4 mCi of beta-gamma activity (predominantly Ce-144) were released to the atmosphere from the Building 772-F stack from May 3 through May 12. The release, which was about 100 times a normal weekly release, was associated with the laboratory vacuum system. Special sampling following the release showed no unusual levels of radioactivity in the environment.

L-AREA RELEASES

Beginning in May, water from miscellaneous sumps and the disassembly basin in L Area was released to Steel Creek. The disassembly basin contains radioactivity (primarily tritium, Cs-137, and Sr-90) associated with the operation of the L-Area reactor in past years. The basin was dewatered to allow replacement or repair of all underwater equipment prior to reactivation of this facility.

Prior to release of disassembly basin water to Steel Creek, a continuous water sampler was installed in the L-Area effluent canal for routine monitoring of L-Area releases. The sampling location is upstream of the entry of the P-Area process sewer to Steel Creek. 1981 liquid releases from 100-L were small: less 1 Ci of H-3, 0.05 mCi of Sr-90, 0.08 mCi of Cs-137, and 0.13 mCi of other beta or gamma emitters.

F-AREA RELEASES TO FOUR MILE CREEK

Beginning in April, weekly water samples collected in Four Mile Creek at Road E contained elevated levels of beta activity. The Road E location is used to measure F-Area releases to the stream. The source of water at this location is primarily once-through cooling water from F-Area processes. The elevated beta activity in Four Mile Creek was attributed to the contamination of once-through cooling water by evaporator coil leaks.

Additionally, the F-Area recirculating cooling water system was also contaminated by core leaks on several occasions in May and June. A small amount of radioactivity from this source may also have entered the once-through cooling water system. As a result of these leaks, releases of beta activity from F Area to Four Mile Creek increased to 15 mCi in April, 52 mCi in May, and 129 mCi in June. Releases then declined to the 12- to 30- mCi per month range by September. The F-Area total beta release for 1981 was 333 mCi.

MEASUREMENT OF I-129 RELEASES FROM F- AND H-AREA STACKS

Routine measurement of I-129 releases from the Buildings 291-F and 291-H stacks was initiated in March. In previous years the I-129 releases were calculated based on fuel content and reactor irradiation time. The stack charcoal filters (through which a portion of the effluent stream flows) are counted on a low energy photon spectrometer (LEPS) detector. Measured releases since March indicate that approximately 140 mCi of I-129 were released to the atmosphere in 1981. This value compares favorably to calculated annual releases that ranged from 130 to 160 mCi for the past 5 years.

I-129 is difficult to measure in effluent samples, because it primarily emits a weak energy beta particle (0.15 MeV) that is not easily distinguished from other radionuclides in the samples. However, in 8% of the I-129 disintegrations, a 40-keV gamma ray is also emitted. In weekly stack charcoal filters, this weak energy gamma is measured with a LEPS detector. The F- and H-Area stack charcoal samples were counted for I-129 by the Environmental Science Division of SRL.

Annual I-129 releases contribute to the population dose that results from SRP operations. The maximum thyroid dose to a hypothetical individual at the plant perimeter in 1981 from SRP atmospheric releases of I-129 was 0.64 mrem. In addition, because of its long half-life (10^7 years), the inventory of global I-129 continues to accumulate. It is therefore appropriate to determine SRP contributions to this inventory as accurately as possible.

1981 SUMMARY OF RADIOACTIVE RELEASES

Radioactive releases for 1981 are conveniently divided into four categories to compare with previous releases and to show trends. The categories are tritium, noble gases, beta and gamma emitters (excluding tritium and noble gases), and total alpha emitters. Annual releases of each of these categories to the atmosphere, seepage basins, and effluent streams for the past 11 years are shown in figures 25 through 28.

Six radionuclide releases to the atmosphere during 1981 showed significant deviations from 1980: H-3, Ar-41, Pu-238, Pu-239, Am-241, Am-243, and Cm-242-Cm-244. The causes of these changes were:

- Tritium
  Total 1981 atmospheric releases increased 25% from 1980. This increase represented an increase of 20 person-rems to the 80-km population dose commitment. Routine maintenance in the Separations Areas tritium facilities was the major cause.

- Ar-41
  Total 1981 atmospheric releases were 89% of those in 1980, representing a decrease of 1 person-rem to the 80-km dose commitment. This was a return to normal releases from the high 1980 releases caused by leaks from the dry air spaces in C-Area reactor.

- Pu-238; Pu-239
  Total 1981 atmospheric releases of Pu-238 increased 55%, and those of Pu-239 increased 177% from 1980. These represented an increase of 0.03 person-rem overall. These increases resulted from increased plutonium production.

- Am-241-Am-243; Cm-242-Cm-244
  Total 1981 atmospheric releases of Am-241-Am-243 decreased 48% and Cm-242-Cm-244 decreased 18% compared to 1980. These represented a decrease of 0.005 person-rem. These were also a return to normal release levels. An americium campaign was run from 1979 to 1980 in F Area, causing higher releases during those years.

Special Summaries

CALCULATED CONCENTRATIONS OF RADIOACTIVITY IN ATMOSPHERE

SRP radioactive releases to the atmosphere are measured continuously at the emission source (stacks). Since the radioactivity released from SRP stacks is dispersed to very low concentrations before reaching the plant boundary, atmospheric dispersion models were developed to calculate radioactivity concentrations in air at the SRP boundary.

Using the dispersion models, the annual air concentrations at the plant boundary were calculated for each radionuclide released from SRP stacks since startup. The calculated concentrations at the SRP boundary were compared to DOE concentration guides (CG) that now apply for radionuclides in an uncontrolled (offsite) area as established in Order DOE 5480.1A. The average annual concentations of H-3, Ar-41, Kr-85m, Kr-85, Kr-88, I-131, Xe-133, Xe-135, Cs-134,137, Pu-238, and Pu-239 since 1955 and their respective CG's are presented graphically in figures 29A through 29K. These are the only nuclides that represent greater than 0.01% of a CG.

In all cases the atmospheric radionuclide concentrations at the plant boundary were less than 1% of the appropriate DOE guide. The highest percent of any DOE guide observed over the operating history of SRP was for tritium, which was 0.32% of the guide in 1958. The maximum percent of the DOE airborne guide for each radionuclide released from SRP stacks since startup and the year in which the maximum occurred are shown in figure 30A.

Order DOE 5480.1A also specifies that the sum of the ratio of the concentration to the DOE guide for each radionuclide in a mixture must be less than or equal to 1, as shown in the following equation:

$$\frac{C_A}{CG_A} + \frac{C_B}{CG_B} + \frac{C_C}{CG_C} \quad . \; . \; . \leq 1$$

where:
C = Concentration of radionuclide.
CG = Appropriate DOE concentration guide.

The sum of the CG fractions for all radionuclides by year since startup is presented in figure 30B. This sum was consistently less than 1 with a maximum of 0.0044 occurring in 1958.

RADIOACTIVITY IN THE SAVANNAH RIVER WATER (1953-1981)

The Savannah River Plant releases small quantities of radioactive materials to the local environs in a controlled manner. These releases are monitored to assure compliance with the DOE guidelines and SRP's own technical standards, which are lower than the DOE guidelines. To assure compliance, water pathways are monitored using a variety of sampling and analytical techniques. The results of these measurements and the techniques used are reported in two documents: "Environmental Monitoring in the Vicinity of the Savannah River Plant" describes offsite concentrations; "Environmental Monitoring at the Savannah River Plant" describes onsite and offsite concentrations. Concentrations of radionuclides in the river are measured both above and below the plant.

In the early years of SRP operation only the nonvolatile beta and gross alpha activities were measured because of the difficulty of measuring the low activities of the individual radionuclides. In the 1960's with the advent of gamma spectrometers for routine use, the identification of individual radionuclides was made possible. Data tables 37A through 37D summarize the radionuclide concentrations and curies in transport in river water above and below the plant and may be compared with the DOE concentration guides for drinking water given in table 38. The monitoring data are presented graphically in figures 31A through 31S. Radionuclides not determined for a particular year are noted with a decimal point in the tables. Zero values indicate the concentration was less than the minimum detection level of the analysis. Brief comments with regard to the data tables and figures follow.

Nonvolatile gross alpha and beta measurements are the only measurements continuously monitored since SRP startup.

Using the averaged data (1953 to 1981), no significant difference exists between the upstream and downstream gross alpha activities, 0.48 as compared to 0.33 pCi/l, respectively. Because no change in alpha concentrations occurred during the periods of maximum nuclear weapons fallout, the alpha activity is attributed to naturally occurring radionuclides, primarily uranium and thorium.

The average nonvolatile beta activity in the Savannah River during the period 1953 to 1981 was 8.1 pCi/l upstream of SRP and 12.6 pCi/l at Highway 301 downstream of SRP. Most of the SRP contribution to the beta activity occurred in the 1960's when water from reactor disassembly basins was released to surface water streams. The water discharged from these basins, however, met applicable release guidelines. Since 1970, very little difference exists between the upstream and downstream beta activities as a consequence of the use of deionizers to reduce the concentrations of radionuclides in disassembly basin water. The impact of extensive nuclear weapons testing is evident on the beta concentration during the 1950's and 1960's.

Tritium accounts for more than 99% of the radioactivity in the Savannah River. About 1.4 million curies of tritium of plant origin have been in transport in the Savannah River since measurements began in 1960. The peak concentration of 14 pCi/l occurred in 1961 and 1963.

Of the 500 Ci of Cs-137 discharged to SRP streams since SRP startup, about 90 Ci of plant origin have been measured in transport below SRP. This 90 Ci accounts for about 74% of the total Cs-137 transport below SRP; 26% was attributed to nuclear weapons test fallout. The remainder of the Cs-137 released from the plant in the mid-1960's remains in site streams sorbed to sediment particles. Now, very little of this Cs-137 onsite is moving into the Savannah River. Sr-90 moves more readily in water due to its low sediment sorption as compared to Cs-137. Of the 166 Ci of Sr-90 in transport below SRP, about 64% is from nuclear weapons fallout. Nearly all current releases of Sr-90 from SRP facilities can be accounted for below SRP in the Savannah River.

Other less significant radionuclide concentrations and transports are also listed in the data tables and figures.

Annual concentrations of radioactivity in the Savannah River have never exceeded the concentration guidelines for drinking water for uncontrolled areas given in Order DOE 5480.1A (table 38).

Radiation Dose Commitment -- Individual and Population

As used in this report, "radiation dose" means "radiation dose equivalent" as defined by the International Commission on Radiological Protection. Radiation dose commitment is the amount of radiation dose received from major pathways of exposure, internal and external, throughout the lifetime of an individual from direct first-pass exposure. (A brief description of dose calculational techniques is given in DPSPU 82-30-1.).

Population dose commitment is the sum of radiation dose commitment of individuals and is expressed in units of person-rems. (For example, if 1,000 people each received a dose of 1 rem, their population dose would be 1,000 person-rems.) A summary of individual and population doses from SRP operations and other major sources is presented in table 39.

AREA SURROUNDING SRP -- EXPOSURE VIA ATMOSPHERIC PATHWAYS

The radiation dose received by people from atmospheric releases of radioactive materials from SRP is too low to permit direct measurement of all pathways of exposure; therefore, radiation dose commitments are calculated with mathematical models using known dispersive characteristics of the atmosphere and the known major pathways of exposure to man.

During 1981 the average dose commitment to an individual from atmospheric releases of radioactive materials from SRP was calculated to be 0.82 mrem at the plant perimeter (table 40). The major contributors to this dose were tritium (T), 79%; Ar-41, 13%; and C-14, 6%. The remaining 2% was from krypton and xenon isotopes (chemically inert noble gases), I-129 and I-131, and miscellaneous radioactive particles. The calculated population dose commitment from release of radioactive materials from SRP to the atmosphere in

1981 to people living within 80 km (50 mi) of the center of SRP (population: 465,000) was 118 person-rems. Table 40 shows the amount of each radionuclide released to the atmosphere in 1981 from normal SRP operations and the calculated whole body radiation dose commitment.

Tritium (T), the major contributor to population dose from normal SRP releases in 1981, is a radioactive isotope of hydrogen with a radiological half-life of 12.33 years. The maximum energy of the beta particle emitted during decay is 0.0186 MeV; the average energy is about 0.006 MeV. At SRP some tritium is unavoidably released during normal operations both as an elemental gas (T_2, HT, DT) and in combination with oxygen (T_2O, HTO, DTO). Both forms are readily dispersed in air and will enter into the same chemical and biological reactions as hydrogen or water vapor.

The low energy beta particle emitted by tritium during decay will penetrate human tissue only 0.013 cm. As an elemental gas, tritium constitutes little hazard because the weak beta is completely attenuated (absorbed) in the inert external skin layer (epidermis). Only 0.004% of the gas inhaled is converted to the oxide and retained in the body. However, almost all tritium oxide (water vapor) inhaled is absorbed in the lungs and enters the body water pool. In addition, almost as much tritium oxide is absorbed through the skin as is absorbed during inhalation. Because of the great difference between the biological assimilation of tritium gas and tritium oxide, the concentration guide for tritium oxide is several hundred times more restrictive than for elemental gas. The environmental radiation dosimetry program used at SRP makes the conservative assumption that all normal SRP releases are in the oxide form; and thus, there is an overestimation of individual and population dose commitment from tritium.

PERSONS DOWNSTREAM FROM SRP AND CONSUMING SAVANNAH RIVER WATER

Radioactive materials released to plant streams on the SRP site flow to the Savannah River. There is no known use of river water for irrigation downstream from SRP. Fish from the river or beef from cattle that drink Savannah River water are not an important source of food for any large segment of the population. Therefore, the most important pathway of exposure of a population segment to radioactive materials in the river is from consumption of river water. Two water treatment plants downstream from SRP supply treated water to customers in Beaufort and Jasper Counties, SC and Port Wentworth, GA. The only radionuclide detectable by routine monitoring techniques in water from the treatment plants was tritium. Data shown in table 41 for other nuclides released to effluent streams on SRP during 1981 were calculated based on dilution by known river flow rates. Of the radioactive materials in water, tritium is the source of 99% of the whole body dose commitment to consumers. People who consume this water and consumer products produced using this water would receive a dose commitment from tritium as shown below [these dose rates are within the National Interim Primary Drinking Water Regulations (40CFR141) of 4 mrems/yr]:

- Beaufort-Jasper, SC 0.21 mrem
- Port Wentworth, GA 0.28 mrem

The population dose commitment from tritium to these two groups from 1981 SRP tritium releases is 10.5 person-rems to consumers of Beaufort-Jasper water (population: 50,000) and 5.6 person-rems to consumers of Port Wentworth water (estimated consumer population: 20,000 -- most of Port Wentworth water is used for industrial purposes), a total of 16.1 person-rems to river water consumers. Radionuclides other than tritium contribute an additional 0.1 man-rem population dose commitment as shown in table 41.

COMPARISON OF 1981 AND 1980 POPULATION DOSES

The 1981 population dose from atmospheric releases (117.6 person-rems for an 80-km-radius population) was 18% higher than in 1980, primarily because of increased tritium releases from the separations areas. Population dose from liquid releases (16.2 person-rems) was 45% higher than in 1980. The higher doses from liquid releases in 1981 are attributed to less dilution in 1981 (average river flow rate -- 6,700 cfs) than in 1980 (average river flow rate -- 12,500 cfs). The calculated whole body dose to a hypothetical individual at the plant perimeter was 1.38 mrems (0.82 mrem from atmospheric releases and 0.56 mrem from liquid releases), about 1.5% of the natural radiation dose.

ENVIRONMENTAL MONITORING -- NONRADIOACTIVE

Atmospheric

SO_2, NO_x, FLY ASH, AND SMOKE

Principal nonradioactive releases to the atmosphere are oxides of sulfur dioxide (SO_2), nitrogen (NO_x), and fly ash. South Carolina emission standards and Georgia ambient air quality standards are summarized in table 44.

Atmospheric emissions of SO_2, NO_x, fly ash, and smoke were within applicable standards. There are seven coal-fired power plants at SRP that burn a total of about 500,000 tons of coal each year. Sulfur content of the coal averages 1.4%. The South Carolina standard for SO_2 emission is 3.5 lb/10^6 Btu input. Compliance with this standard is determined from analysis of coal received; all average values were within the standard, as shown in table 42.

Section 110 of the Clean Air Act Amendments of 1970 requires each state to establish, as part of its State Implementation Plan, a network to monitor the ambient air quality within that state. South Carolina and Georgia have each implemented air-sampling networks. Air quality measurements of the South Carolina and Georgia network in the vicinity of SRP are summarized in table 43.

Water

TEMPERATURE AND FLOW MEASUREMENTS IN THE SAVANNAH RIVER AND FOUR MILE CREEK

Temperature and flow profiles of the Savannah River were made in December at 100 yd, 0.7 mi, and 1.5 mi downstream of the mouth of Four Mile Creek. The profiles were made in conjunction with tests conducted by the Power Department to evaluate plant pumping capacity at low river flows. During the 2 days that the profile measurements were made, the river flow was intentionally maintained at an abnormal low flow of about 3,000 ft^3/sec.

Measurements were made at 10-ft intervals across the river starting at the South Carolina shore and proceeding toward the Georgia shore until ambient temperature levels were detected. Once ambient levels were detected, measurements were made at 10- to 25-ft intervals until the Georgia shore was reached. At each interval temperatures were made at 1-ft depth intervals from the river surface to the bottom. The temperature data at 100 yd and 0.7 mi below Four Mile Creek are depicted in figures 32 and 33. No temperature measurements above ambient were observed at 1.5 mi below Four Mile Creek. Ambient river temperatures, measured 50 yd upriver of Four Mile Creek, ranged from 11.6 to 12.2°C.

The temperature profiles showed that at 100 yd downstream of Four Mile Creek during low river flow, river temperatures were greater than 2.8°C above ambient over 43% of the cross-sectional surface of the river. This condition exceeds the National Pollutants Discharge Elimination System (NPDES) limit of 2.8°C above ambient over no more than 33% of the cross-sectional surface of the river. However, since this condition occurred during tests, it is not considered a violation of the NPDES permit.

Temperature measurements were also made in Four Mile Creek 100 ft upstream from the mouth. Measurements were made at 1- to 2-ft intervals across the stream and at 1-ft intervals from the surface to the bottom. Average temperatures in Four Mile Creek ranged from 18 to 29°C, as shown in table 45.

Flow measurements were made across the river at about 10-ft intervals. At each interval measurements were made at 20 and 80% of the river depth. Areas representing each measurement were integrated and summed to determine total flow. Flow measurements in Four Mile Creek were made in the same manner except at 2- to 3-ft intervals across the stream. Flow data in the Savannah River and Four Mile Creek are shown in table 46.

Additional temperature profile surveys of the Savannah River relative to the NPDES permit limitations are given for 1976, 1977, and 1979 in annual reports DPSPU 77-30-1, 78-30-1, 80-30-1, and 81-30-1.

SAVANNAH RIVER -- GENERAL RIVER HEALTH

The Limnology Department of the Academy of Natural Sciences of Philadelphia (ANSP), under contract to Du Pont, has performed a continuing survey of aquatic environment and water quality of the Savannah River upstream and downstream (stations 1 and 6, shown in figure 34) from SRP since 1951. The purpose of these surveys is to determine the effect, if any, of SRP effluent discharges on general river health.

Diatometers are positioned in the river at three locations (one above and two below the SRP site) to provide a continuous monitor of the effects of plant effluents on one major group of river organisms. The diatometers contain glass slides on which diatoms accumulate. The slides are replaced biweekly, and the slides containing dried diatoms are sent to ANSP for analysis.

In rivers adversely affected by pollution, the number of diatom species will be reduced in varying amounts corresponding to the degree of pollution. The less tolerant species are eliminated, while the more tolerant species become dominant. Thus, while total populations may increase in size, the number of different species will be reduced. Detailed readings and summaries of the diatometer surveys are issued annually by ANSP. There is no evidence that the operation of SRP affected the diatom flora of the Savannah River.

Quarterly surveys of other algae, insects, invertebrates, and fish are also conducted by ANSP above and below SRP. Specialists in entomology, algology, invertebrate zoology, and ichthyology sample river biota during times of the year most suitable to their specialty. An algologist or entomologist accompanies every survey to provide continuity of sample collection and methodology and to observe environmental conditions. Results of the quarterly surveys are summarized and published annually by ANSP. Periodically, or as a result of major changes in the physiography of the river, ANSP also makes comprehensive surveys of the biota and chemical water quality above, adjacent to, and below SRP to ascertain effects of SRP operations on river conditions.

The most recent comprehensive surveys were conducted in 1980. These surveys indicated that SRP has had little or no effect on the chemical and biological characteristics of the Savannah River. The results of these surveys were reported in DPSPU 81-30-1 and DPSPU 81-302.

In 1981 ANSP conducted four cursory surveys immediately above the plant at station 1 and about 5 mi below the plant at station 6. Results of the cursory algae studies were quite consistent between stations and seasons. The overall results of hand and trap insect collections indicated no degradation in the study area resulting from the operations of the SRP. Comparison of diversity and abundance of fish for 1980 and 1981 also indicated no significant plant affect.

ROUTINE WATER QUALITY ANALYSES

All water quality data for the Savannah River and plant streams are summarized in table 47. Water quality sampling locations are shown in figure 35. The 1981 stream and river data are typical of values observed since the start of the water quality programs.

FECAL COLIFORM BACTERIA IN RIVER AND STREAMS

Water samples are collected weekly from the Savannah River and SRP streams and analyzed for fecal coliform. More fecal coliform are present in river water upstream of SRP (maximum 310 colonies/100 ml) than in downstream samples (maximum 130 colonies/100 ml). The lower downstream concentration is influenced by river water that is heated in the reactor areas and discharged from SRP back into the river. Coliform bacteria in river and stream water during 1981 are summarized in table 48.

The maximum monthly geometric mean of coliform in SRP effluent streams ranged from 90 colonies/100 ml in Pen Branch at Road A to 520 colonies/100 ml in the D-Area effluent and in Four Mile Creek at Road A. The maximum at the control location on Upper Three Runs Creek at Road F was 210 colonies/100 ml.

MERCURY IN FISH

Samples of 108 fish were analyzed for mercury content in 1981. The samples were prepared from fish caught in SRP effluent streams, Par Pond, Pond B, and in the Savannah River.

The mercury levels in fish caught at all routine sample locations both onplant and offplant (table 50) were similar to those observed in recent years and are attributed to industrial sources upstream of SRP. Significant quantities of mercury were released to the river from these sources in the 1960's and early 1970's.

The action level established by the Food and Drug Administration (FDA) for daily intake of mercury in edible fish is 1 μg/g of flesh. This guideline is based on the analysis of fish composites. Therefore, it is acceptable to compare average mercury concentrations with the action level. The average mercury concentrations for all fish at a given river location were less than the FDA guideline (table 49). If individual river fish are compared to the FDA limit, only one mud fish (3.4 μg/g) and one sucker (1.1 μg/g) exceeded the guideline. Mud fish and suckers are not generally used for human consumption. This is the first year that fish other than bass, bream, and catfish were analyzed for mercury.

The maximum mercury levels in bream collected from Par Pond (2.4 μg/g) and Pond B (1.1 μg/g) remained slightly higher than the FDA limit. These levels are probably due to mercury in pond sediments that were deposited from river water that was used to supplement P-Area (and R-Area prior to 1964) cooling water and was discharged to these ponds. The average mercury concentration in fish collected from the ponds was less than the FDA guideline. Access to onplant ponds is restricted, and these fish are not available for human consumption.

A large number of fish (30) was obtained from the Georgia Department of Natural Resources during 1981. The fish were caught in the Savannah River between SRP and Savannah, GA. Mercury concentrations in these fish were similar to those observed at routine sample locations (table 49).

PESTICIDES AND PCB's IN RIVER, STREAM, AND WELL SAMPLES

In December 1981 Health Protection collected water and sediment samples to be analyzed for pesticides and polychlorinated biphenyls (PCB's). Similar samples have been analyzed for the past 6 years to determine if SRP is contributing significant quantities of these materials to the plant environs. Table 51 lists the analyses performed and the detection levels.

Water and sediment samples from seven plant streams and two river locations were analyzed for these parameters. Data are presented in tables 52 and 53. Groundwater samples from wells around the chemical-metals-pesticides pits were also analyzed. Data are presented in table 54. The 1981 samples were analyzed by a subcontractor, Envirodyne Engineers, St. Louis, MO. The samples had been analyzed in previous years by the Water Resources Division of the U. S. Department of the Interior.

The results of the pesticide concentrations in 1981 were generally at or near the limit of detection for the analytical technique. No PCB's were detected. However, DDE and diazinon were detected in sediment samples collected from Lower Three Runs and Upper Three Runs, respectively. DDE levels (18.4 μg/kg in Lower Three Runs) have decreased since 1979 when a concentration of 34 μg/kg was reported. 1981 is the first year diazinon (17 μg/kg) has been detected in an Upper Three Runs sample. Since this sample location is above any plant effluent stream, and the Forestry Service does not use diazinon, it is attributed to offplant sources.

Detectable concentrations of gamma-BHC, aldrin, and chlordane were found in groundwater samples from the chemical-metals-pesticides pits. These pits were used as a toxic chemical and pesticide disposal area. The pits were closed in 1979.

CHLORIDE CONCENTRATION IN THE SAVANNAH RIVER

The Equipment Engineering Department is conducting a study of the chlorination process used to treat water at the river pumphouses and the reactor 186 basins. As part of the study, the average annual chloride concentrations in the Savannah River above the plant (River 2) were compared with river concentrations below SRP (River 10). A summary of these data from 1960 through 1981 is shown in figure 36.

The chloride concentrations at River 10 are similar to those found at River 2. These results indicate that SRP has not significantly effected chloride levels in the river. The increasing trend in river chloride concentrations is attributed to the development of industry in the Savannah River area above SRP.

State and Federal Permits

SOUTH CAROLINA DEPARMENT OF HEALTH
AND ENVIRONMENTAL CONTROL (SCDHEC)

Sanitary Landfill Wells

SRP began operating a sanitary landfill in 1973. Four wells with galvanized steel casings (1 through 4 in figure 37) were installed around the periphery of the sanitary landfill in 1975 as part of the SRP groundwater monitoring program. A fifth galvanized steel cased well (No. 5) was drilled in 1978 for control purposes. Samples were collected from one well per month on a rotating basis and analyzed for 21 water quality parameters. Expansion of the landfill necessitated the installation of five additional wells (6 through 10) in January and February 1981. Wells 6 through 10 have polyvinyl chloride (PVC) casings.

Five new PVC-cased wells (16 through 20) were installed in August 1981 to replace the original five galvanized cased wells installed in the 1970's. Studies showed that elevated lead, zinc, iron, and cadmium concentrations were eliminated by using PVC casings and by better development of the newer wells. The developing procedure includes steps to remove the finer material and materials of construction from the groundwater being sampled.

In June 1978 SCDHEC issued SRP a permit to operate the sanitary landfill. Since August 1980, SRP's sanitary landfill has operated under criteria contained in the State of South Carolina Domestic Waste Permit Number 87A. This permit outlines the necessary operating conditions and procedures for continued safe operation of the landfill. Water samples were collected quarterly from groundwater monitoring wells that surround the landfill site and are analyzed for nine water quality parameters. Additionally, once a year water samples are collected and analyzed for trace metals and other drinking water contaminants. Table 55 contains summaries of the 1981 results for both the quarterly and annual analyses. Data from the control well have been included for comparison. Although wells 1 through 5 were replaced, the annual analyses include data from both well sets in annual analysis data tables.

The 1981 analysis results show that the SRP sanitary landfill continues to meet the groundwater standards outlined in 40 CFR Part 257. Table 56 lists the quarterly and annual analysis requirements contained in the DWP 87A permit.

SOUTH CAROLINA HAZARDOUS WASTE PARAMETERS

The Savannah River Plant has interim status from the state of South Carolina under the Hazardous Waste Management Act to continue operation of existing hazardous waste facilities. Groundwater is monitored at the waste facilities shown in table 57 along with the hazardous waste parameters. Of the facilities listed in table 57, only the F-Area seepage basin, H-Area seepage basin, M-Area seepage basin, and Building 709-G waste storage building are considered hazardous waste facilities by South Carolina. Groundwater monitoring data for all waste facilities are shown in table 58.

Groundwater at the waste facilities was also analyzed for radioactivity. Groundwater radioactivity data for all waste facilities are presented in table 59. Maximum concentrations of radioactivity measured in these groundwater samples were 104 pCi/l alpha (Old TNX seepage basin well 2) and 680 pCi/l nonvolatile beta (H-Area seepage basin well 4).

PREVENTION OF SIGNIFICANT DETERIORATION (PSD) MONITORING

The Clean Air Act Amendments of 1977 require a preconstruction review of proposed new stationary sources of air pollutants and of major modifications to existing emission sources. The purpose of the review by either the EPA or delegated state agencies is to evaluate the environmental impact of potential air emissions from the proposed construction. As part of the review, an air monitoring program for the prevention of significant deterioration (PSD) of ambient air quality must be conducted in the vicinity of proposed construction site for the year preceding submission of the application for construction. In response to the proposed construction of the defense waste processing facility and other new facilities, Health Protection developed an air monitoring program to determine the ambient air quality at SRP.

SRP's PSD network consists of five air monitoring stations. Site selection was based on topography, climatology, and the location of existing and proposed emission sources. The locations of the five stations are shown in figure 38. EPA-approved instruments have been installed at these stations to measure total suspended particulates (TSP), sulfates (SO_2), nitrous oxides (NO_x), and ozone (O_3), as required by SCDHEC. Figure 38 also lists the parameters monitored at each station. The PSD monitoring program was inspected and approved by SCDHEC personnel prior to its startup.

The SRP PSD network became operational on October 15. Air monitoring data are now being routinely and continuously collected at all five stations. The data will be transmitted to SCDHEC each quarter after being processed, assessed for accuracy, and evaluated for trends.

Both SCDHEC and EPA require a stringent quality assurance (QA) program to ensure representative monitoring data. To fulfill QA requirements, an SRP subcontractor (Northrup Services, Inc.) and SCDHEC will audit the monitoring equipment quarterly. In addition, the EPA will send gases for field testing of the equipment twice a year.

NATIONAL POLLUTANT DISCHARGE ELIMINATING SYSTEM PERMITS (NPDES)

The Savannah River Plant currently has two NPDES wastewater effluent permits. The discharges from sanitary wastewater treatment facilities are regulated by NPDES Permit No. SC0023710. The industrial wastewater effluents that discharge to onsite streams are regulated by NPDES Permit No. SC0000175. During 1981 an application listing 179 discharges was submitted to SCDHEC requesting renewal of SRP's NPDES permits.

Sanitary Wastewater Treatment Plants

Sanitary wastewater monitoring is performed at six sanitary treatment plants. Water flows are measured continuously and samples analyzed weekly for pH, fecal coliform, total suspended solids, and 5-day biochemical oxygen demand (BOD). The data are submitted to SCDHEC quarterly.

During the calendar year 1981 there were 12 out-of-limits exceptions reported to SCDHEC for five of the six facilities. The limits on total suspended solids quantity and concentration were exceeded eight times and the fecal coliform limit four times. Wastewater treatment plants' performance during 1981 is presented in table 60.

Industrial Discharges

Industrial discharges from the five ash settling basins are sampled monthly for pH and 11 heavy metals and twice a month for suspended solids and oil and grease. Flow measurements are also made monthly. In addition, the pH of the five streams receiving overflow from the ash basins is also monitored. Analysis results of the ash basin's effluent are shown in table 61. The pH data for the receiving streams are summarized in table 62.

There were four out-of-limits exceptions for total suspended solids at two facilities (P- and K-Area ash basins) and four exceptions for exceeding pH at the same two facilities. Reporting the pH of discharges from two of the five facilities (F- and H-Area ash basins), while frequently below the NPDES limit of 6.0 units, is not required by the state of South Carolina because water from the two basins comes from the Tuscaloosa aquifer, which normally has a pH lower than 6.

Chlorinated Hydrocarbons in M-Area Groundwater

Waste effluents from production operations in M Area have been discharged to process sewers since startup in 1952. A settling basin was built and placed in service in 1958 to settle-out and contain uranium discharges from Building 321-M process streams. Since then, water discharges from processes in Buildings 313-M and 320-M have been diverted from plant streams to the settling basin. Included in these waste effluents have been about 3.5 million pounds of organic solvents used for metal degreasing, namely trichloroethylene, tetrachloroethylene, and 1,1,1-trichloroethane.

Most of these volatile solvents evaporated. However, substantial quantities (estimated at 100,000 lb) of the chlorinated hydrocarbons seeped into the ground from effluent sewer leaks, the settling basin, and the overflow of the basin to Lost Lake and entered the underlying soil and groundwater.

The use of trichloroethylene as a metal degreaser in M-Area operations was discontinued in 1971. Tetrachloroethylene was used until being replaced by 1,1,1-trichloroethane in 1979. Currently, 1,1,1-trichloroethane is used and discharged to the effluent stream in concentrations of less than 1 part per million (mg/l).

The plume of degreasing solutions beneath the basin and the effluent sewer, although not fully characterized, has been initially defined. Several exploratory wells have been installed to determine the concentrations and location of organic solvents in the underlying soil and groundwater.

Soil and fluid sample anlyses have shown organic concentrations as high as 500 parts per million (mg/l). The aerial concentration contour for the level of 100 parts per billion (μg/l) has been fairly well determined and shows that the core of the organic plume has not migrated far from the surface sources. No groundwater contamination has been detected offsite.

Remedial action concurrent with additional data gathering on the less well defined areas of contamination is underway. The reference process for removing the organics from the groundwater is an air-stripping column. It is anticipated that nine production wells would be required to recover the groundwater in the heart of the plume beneath the basin and sewer.

DATA ANALYSIS AND QUALITY CONTROL

Data Analysis

The lower limits of detection (LLD) for analyses (table 63) refers to the minimum amount of radioactivity that can be detected by the radiochemical analytical technique in use. It is based on the 2-sigma statistical counting error (95% confidence level) and is influenced by sample size, counter and procedure efficiencies, length of count, counter background, and decay. Where samples are analyzed by gamma spectrometry, the lower level of detection of a given radionuclide varies with the instrument background, the geometry and volume of sample analyzed, and number of radionuclides present in the sample. For this reason average sensitivities are given for only milk and vegetation.

Many of the concentrations of radioactive materials in ambient environmental samples are at or near zero and should statistically show a distribution at or near zero. Because of this, when a chemical or instrument background is subtracted from an environmental measurement, it is possible not only to obtain net values that are less than the LLD, but also to obtain zero and negative values (values less than zero). In this report negative values are used in reporting individual measurements and in determining averages. It is believed that the best estimate of the mean is obtained if the negative values are averaged with the negative, zero, and positive values. Additionally, this approach, without any arbitrary cutoff of small or negative values, will allow all data to be reported and possibly permit better statistical evaluation to determine trends.

Average values are usually accompanied by a plus or minus (±) value, designated as 2 STD DEV. This value is the standard deviation of the average at the 95% confidence level (CL) and is an indicator of the range of concentrations encountered at that location. When the average is given for groups of locations, the standard deviation is the measure of the range of concentrations found at all locations.

In some tables the standard deviation is not calculated because of the small number of sample results (designated -- insufficient data). When a ± accompanies an individual result, such as the maximum (max) or minimum (min), it represents the statistical counting error at the 95% CL, which in many cases exceeds the net value of the sample. MAX and MIN refer to the greatest and smallest concentrations found in samples collected at a single location during the year.

No self-absorption corrections have been applied to total alpha and nonvolatile beta results. If activity appears unusual, and specific analyses are not routinely scheduled, further analyses are performed for verification.

Although the conventional arithmetic average and standard deviation are used in reporting all measurements of radioactivity, geometric means and geometric standard deviations are routinely calculated for data evaluation. The arithmetic average and standard deviation are appropriate analyses if the data have a normal (Gaussian) distribution: The standard deviation is an increment of the average. If the distribution of the data is skewed toward higher values and the logarithms of the data conform to a normal distribution, the data are said to be log-normal. Such data may then be more appropriately described using the geometric mean and standard geometric deviation. The standard geometric deviation is a multiplier of the geometric mean. The characteristics of log-normal techniques are such that annual averages are not dominated by the few largest data values, and mean values can be determined when a major portion of the data is less than the minimum detection levels.

Recent analyses of several sets of environmental monitoring data have shown log-normal distributions; however, in most cases, there is little advantage in treating the data as log-normal. Each set of data was fitted to both normal and log-normal plots in which the abscissa is in units of sigma (0 sigma = 50 percentile, +1.0 sigma = 84.17 percentile, and -1.0 sigma = 15.83 percentile, etc.). This is equivalent to probability paper and allows a least squares routine to be used to draw the fit line. Linearity of the data suggests the distribution. Although the log-normal plots possibly show better linearity, the averages of the data are given by the 0 intercepts and are similar for both plots.

Quality Control

RADIOACTIVE ANALYSES

An internal quality control program is maintained by (1) monthly calibration of counting instruments, (2) daily source and background counts, (3) daily resolution checks and alignment of NaI and Ge(Li) detectors for gamma-emitting radionuclides, (4) routine yield determinations of radiochemical procedures, (5) duplicate analyses to check precision, and (6) reagent blank analyses to check purity of all chemicals. Accuracy of radioactivity measurements is established by use of standards obtained from the National Bureau of Standards (NBS) or their equivalent. Although most counting instruments are calibrated monthly, they are also calibrated if daily background or source counts do not fall within an acceptable range. Histories of the performance of each counting instrument are maintained in logbooks and, where applicable, on computer magnetic tape.

WATER QUALITY ANALYSES

The quality control program in the water quality laboratory is designed to constantly evaluate results of the analyses. A quality control program is maintained by (1) routine calibration of instruments, (2) routine yield determinations of procedures and analysis of standards furnished by the Environmental Protection Agency (EPA), (3) routine standardization of titrating solutions used in procedures, and (4) duplicate analyses.

Because spikes are not run for biochemical oxygen demand, pH, alkalinity, and chloride analyses, the quality of these results is dependent on the accuracy of the preparation of standards and instrument calibration. Evaluations of the stability of reagents are determined. Some standards must be recalibrated daily; however, other standards are stable for varying but known amounts of time. Stability has been improved by storing standards in dark bottles or away from light. Standardization is done before significant changes occur.

Samples sometime require digestion in order to break down organic compounds that may contain the element of interest in their chemical structure. Unless the organic molecule is fragmented by digestion, this element may not exhibit the chemical properties that indicate its presence. The efficiency of the digestion process for samples is evaluated by digesting prepared standard organic compounds.

Data Evaluation

Approximately 90,000 radioanalyses were performed on almost 20,000 samples annually. Process effluents (stack emission samples and liquid release samples) account for about 20% of the workload and environmental samples about 40%. The remaining 40% is divided between special surveys and control analyses for quality assurance. Approximately 1,500 environmental samples are analyzed annually for nonradioactive materials. These include about 25 water quality parameters for stream and river water, analyses of air filters for various metals, and analyses of stream and river fish for mercury. Two control samples (an internally spiked sample and a blank sample) are analyzed for every 10 samples.

Computer programs are used to calculate, store, and retrieve most radioactive and nonradioactive monitoring data and provide daily, monthly, and annual summaries of the data. Radioactive releases are also computer-calculated and identified according to emission point, radionuclide or nonradioactive material, and mode of entry to the environment (liquid, atmosphere, or seepage basin).

Each analytical value is checked for reasonability by comparison with previous values. Daily computer printouts flag, with an asterisk, any value that is outside the minimum or maximum value of the previous year; the computer also prints the previous average, maximum, and minimum values. Additionally, daily summaries include the four most recent previous values (regardless of sampling frequency). This method of reviewing data is helpful in screening for spurious results. The comparison of current monitoring data with earlier data also aids in evaluation of trends.

Obvious errors caused by counting instrument malfunction are easily recognized from the daily computer summaries because printouts include instrument identification, background counts, total counts, and conversion factors used in many calculations. Other measures used to confirm a value include recounting, reanalysis, or resampling. Determining the validity and accuracy of monitoring data often requires an investigation into the sample collection and handling procedures. Additional factors that are considered in data evaluation include: sources of contamination, environmental conditions at the time of collection, variations in plant processes that may lead to unusual results, and trends in similar or related samples.

LIST OF FIGURES

Figures in this report contain only the locations of sample points and wells that illustrate the locations for data contained in this report. Variations from year-to-year reflect changes in the routine monitoring program or the inability to obtain samples from a specific location, such as a well that becomes dry and cannot be sampled.

LIST OF FIGURES (Contd)

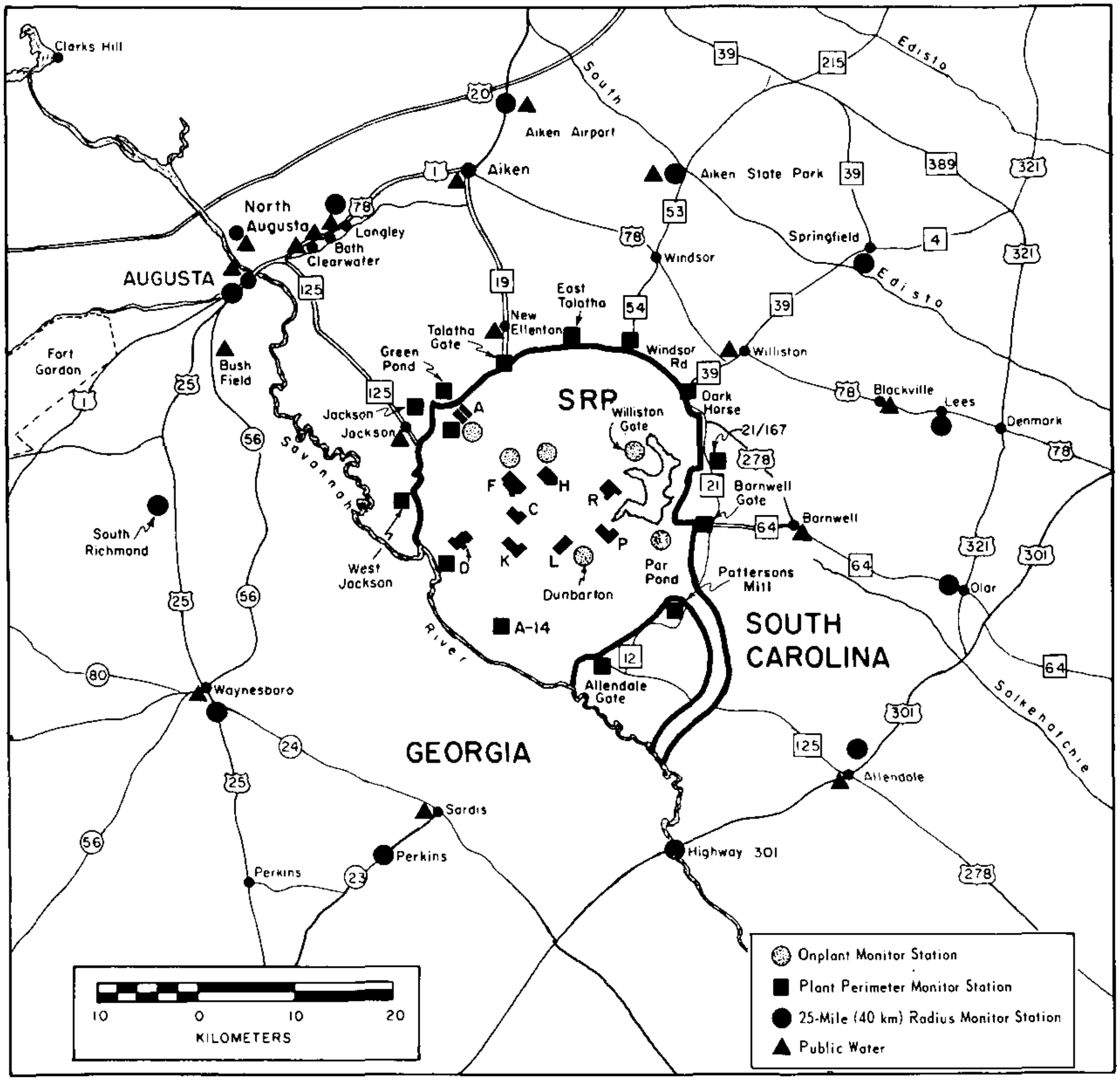


FIGURE 1. CONTINUOUS AIR MONITORING STATIONS AND PUBLIC WATER SAMPLE LOCATIONS

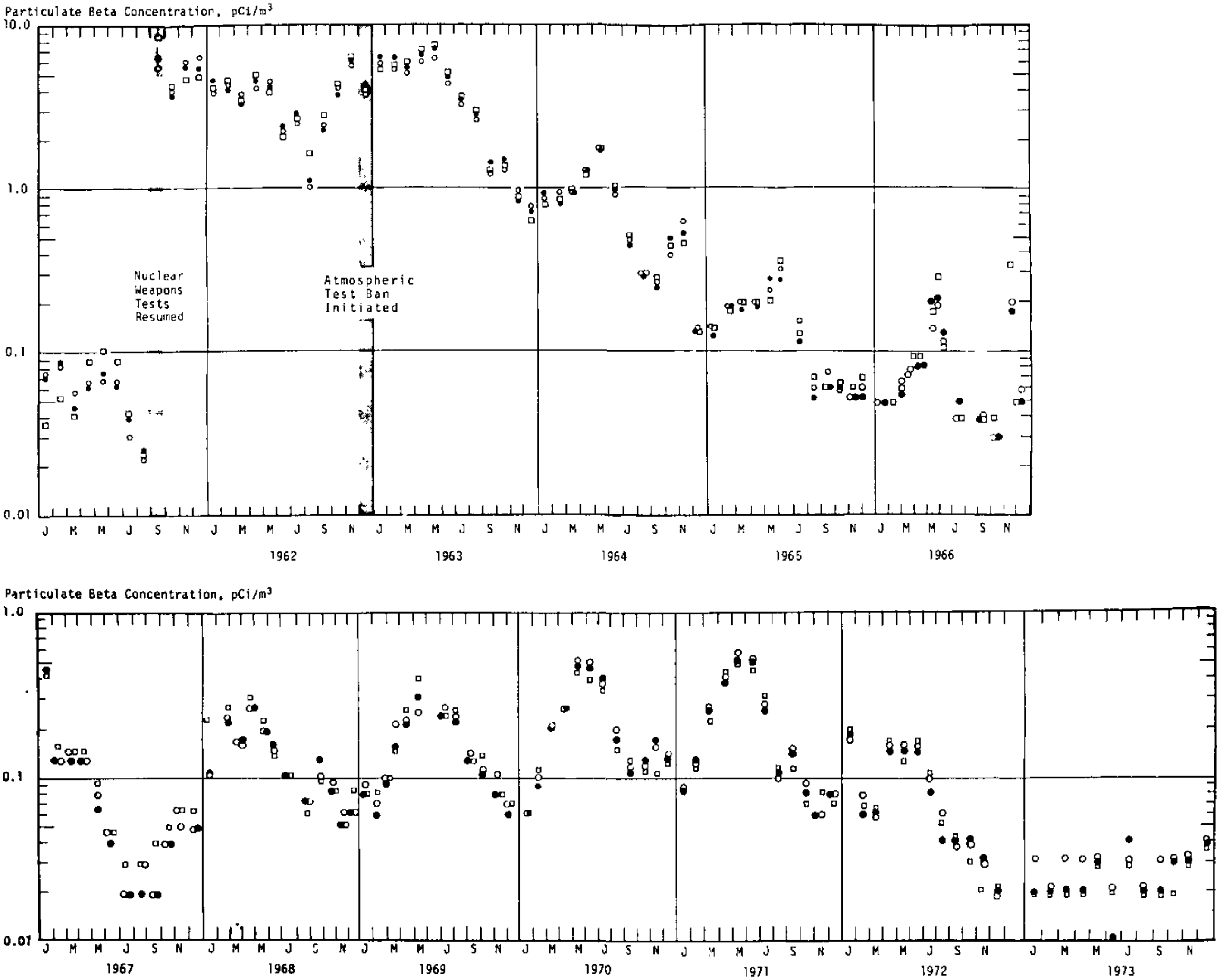
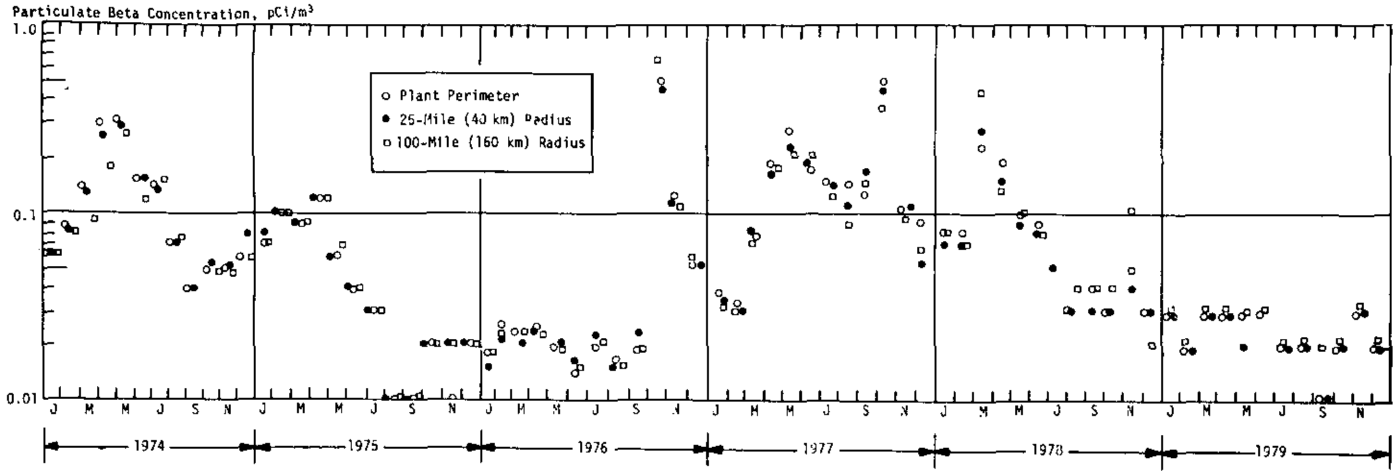


FIGURE 2. ATMOSPHERIC RADIOACTIVITY



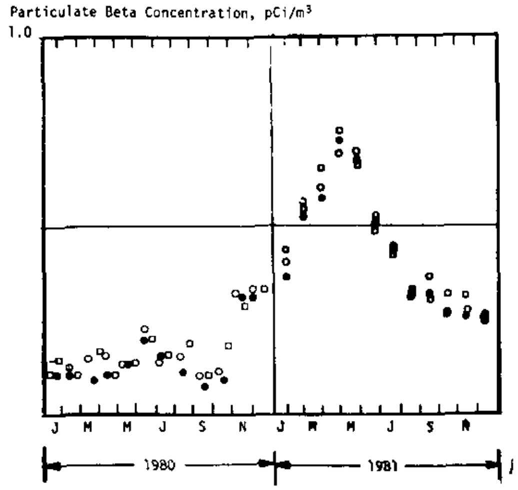


FIGURE 2. ATMOSPHERIC RADIOACTIVITY (contd)

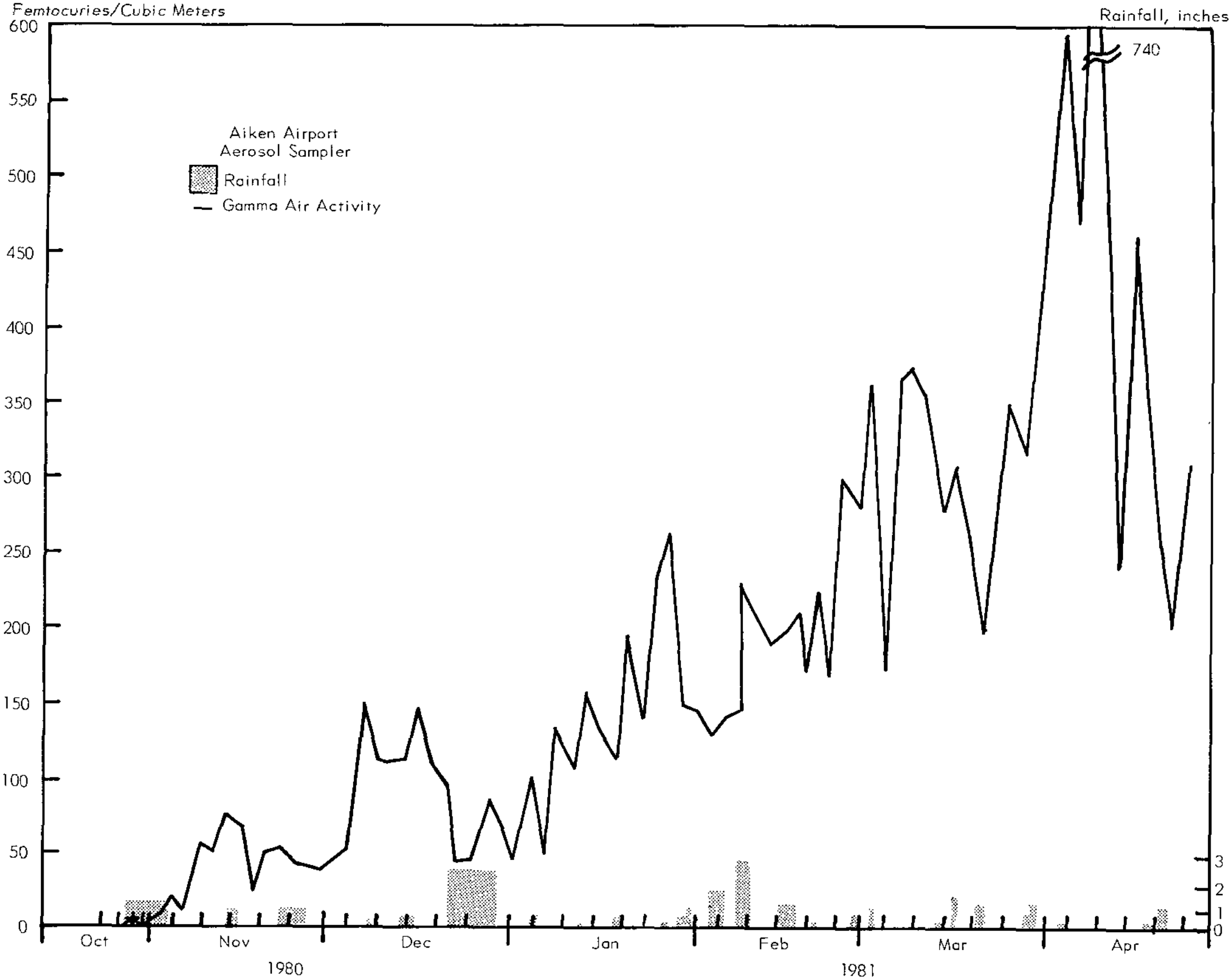


FIGURE 3. GAMMA ACTIVITY IN AIR -- CHINESE FALLOUT

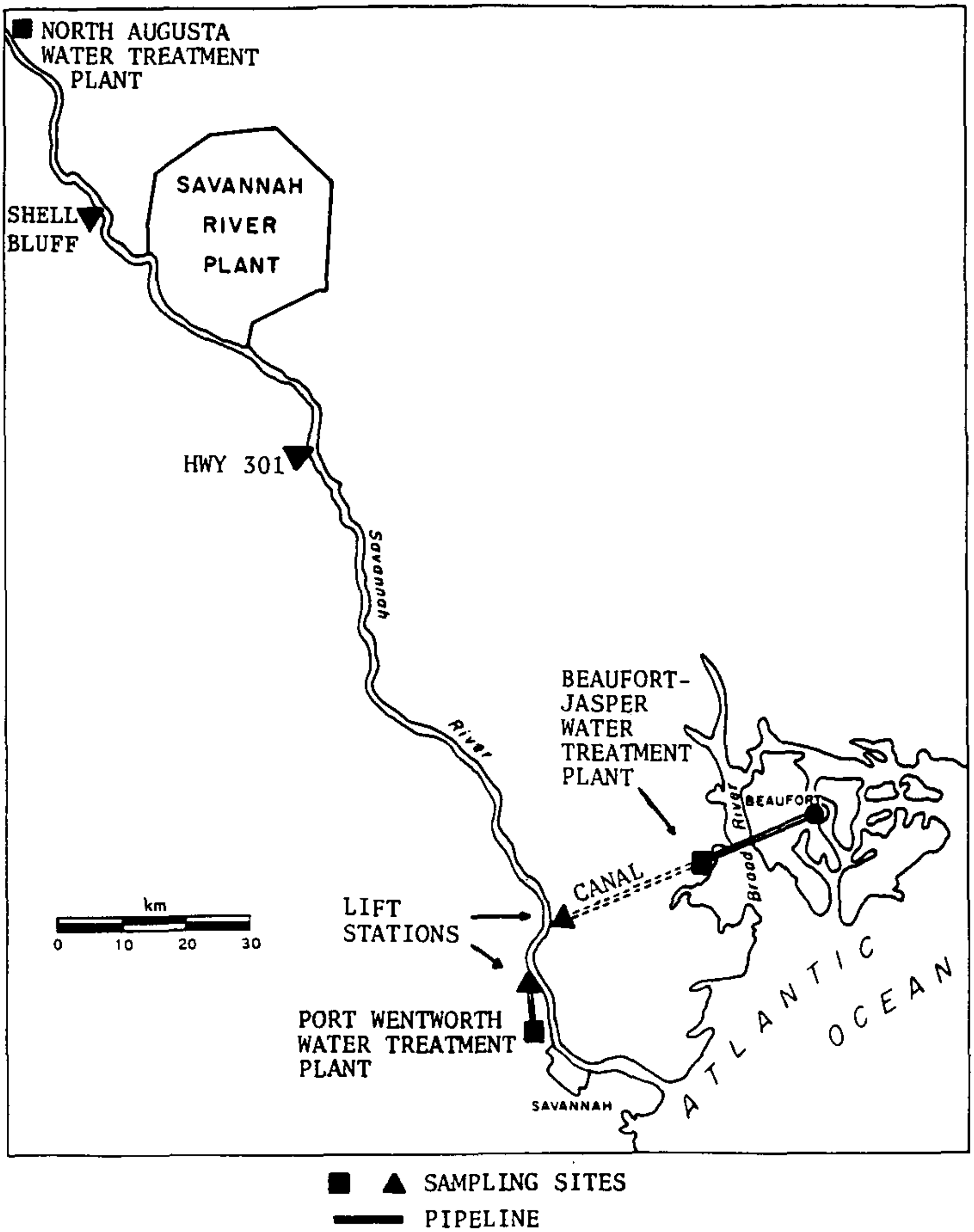


FIGURE 4. WATER TREATMENT PLANT LOCATIONS

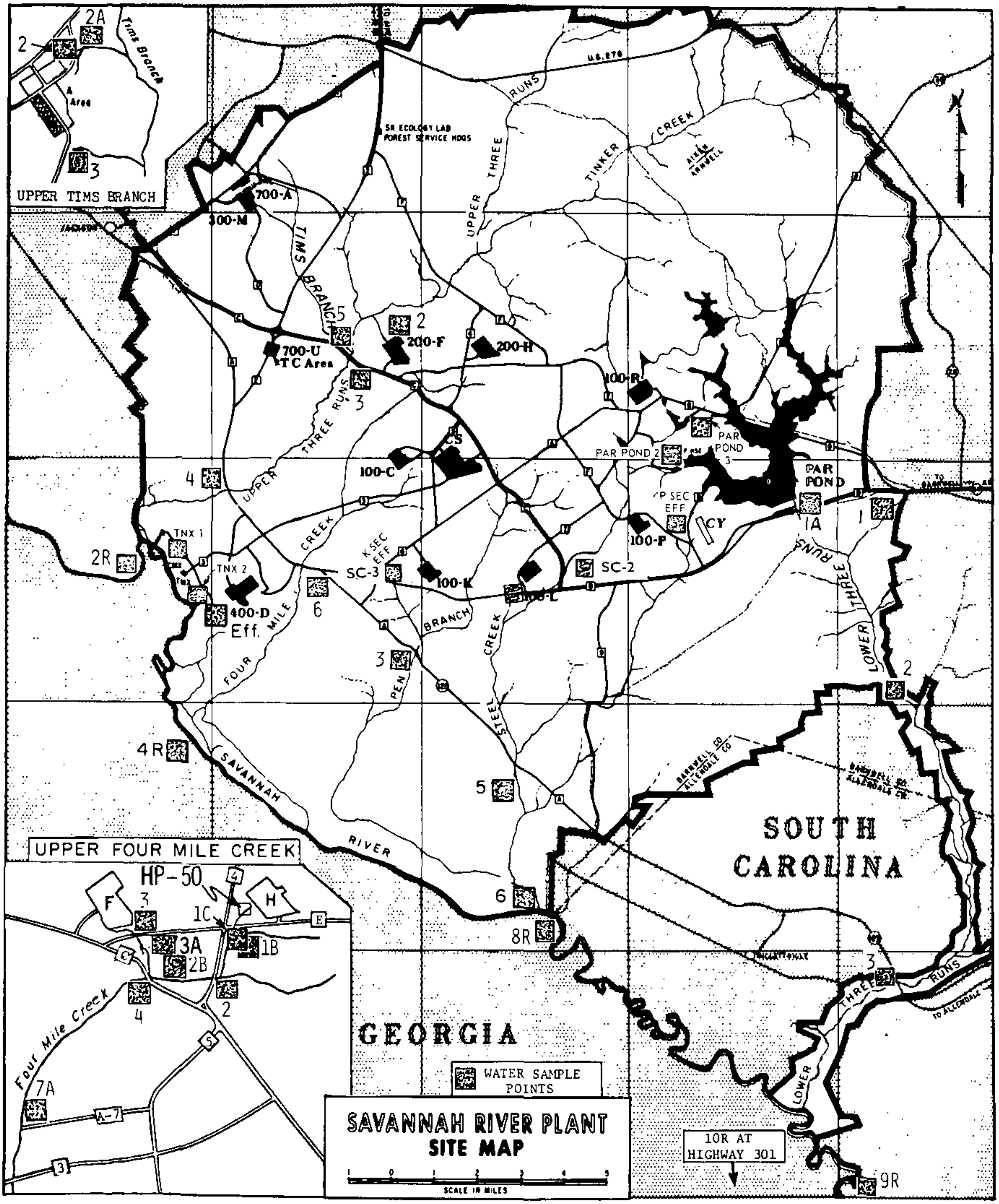


FIGURE 5. STREAM AND RIVER SAMPLE POINTS

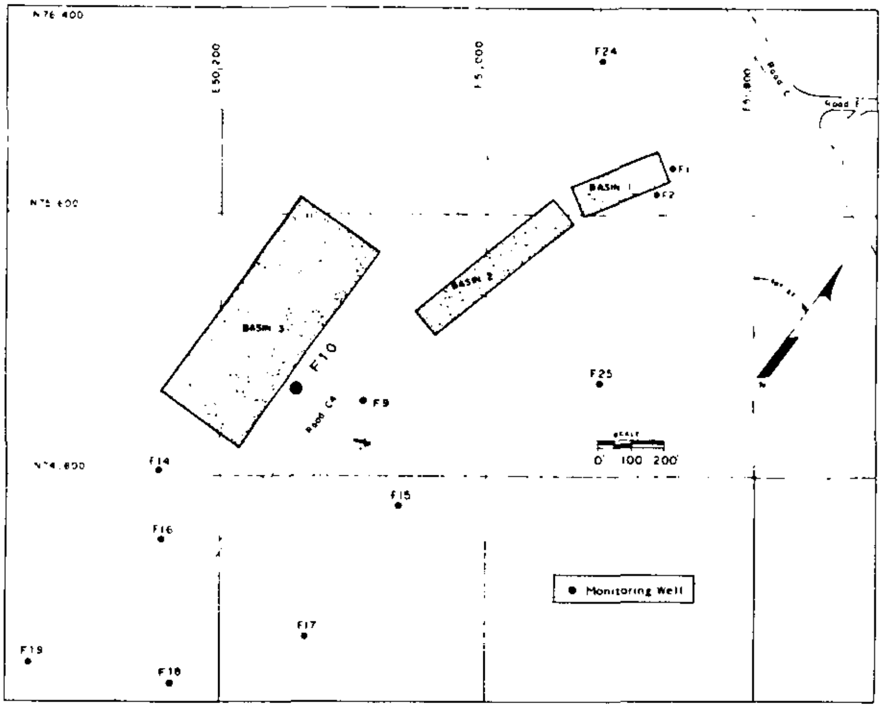


FIGURE 6. F-AREA SEEPAGE BASINS AND GROUND-WATER MONITORING WELLS

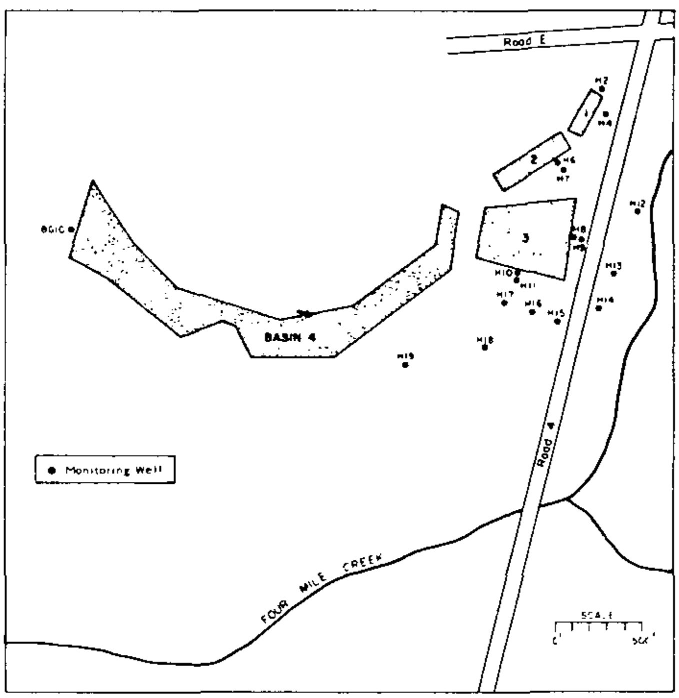


FIGURE 7. H-AREA SEEPAGE BASINS AND GROUNDWATER MONITORING WELLS

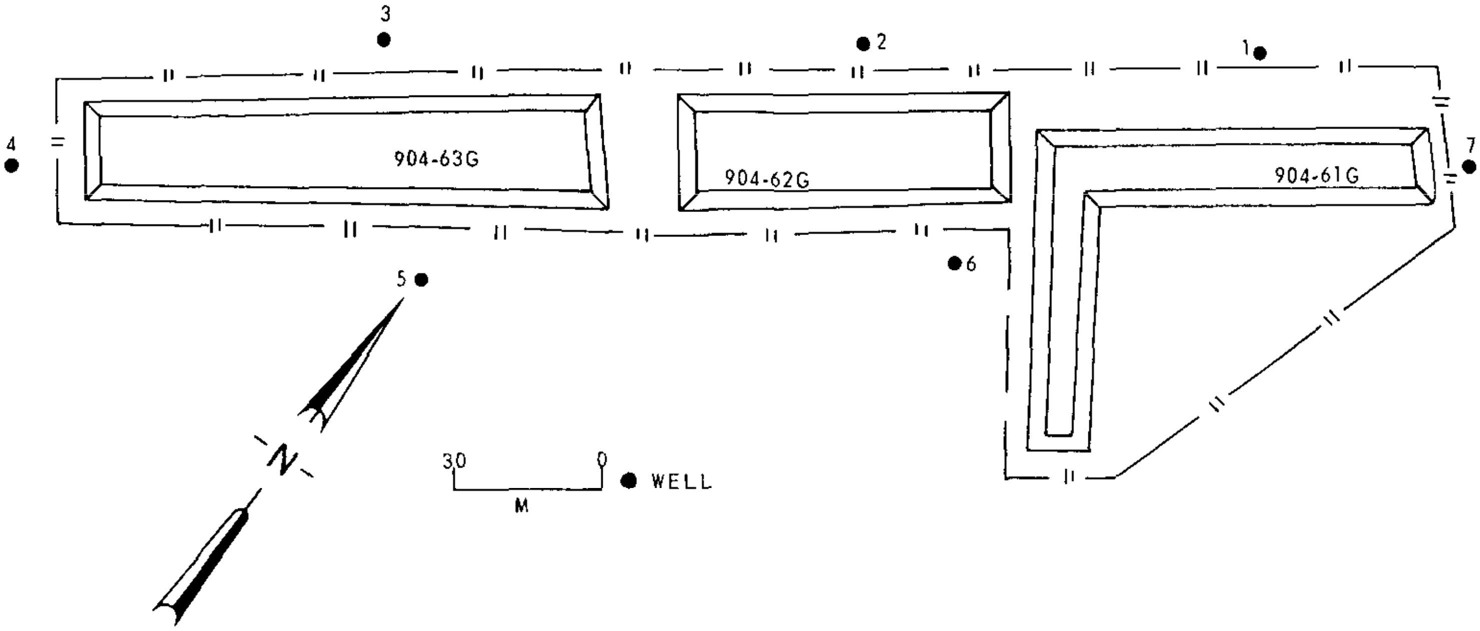


FIGURE 8. P-AREA SEEPAGE BASIN WELLS

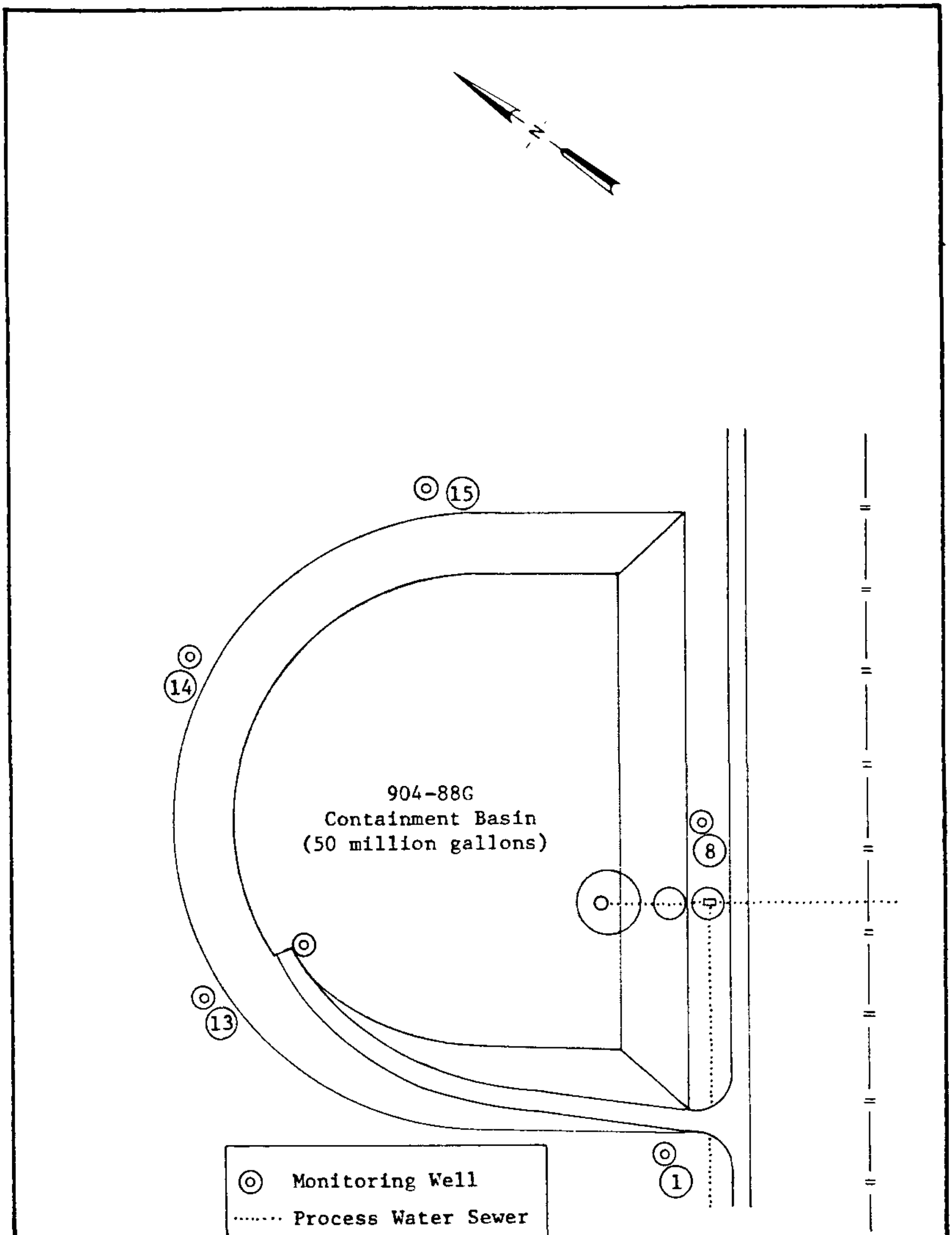


FIGURE 9. K-AREA CONTAINMENT BASIN WELLS

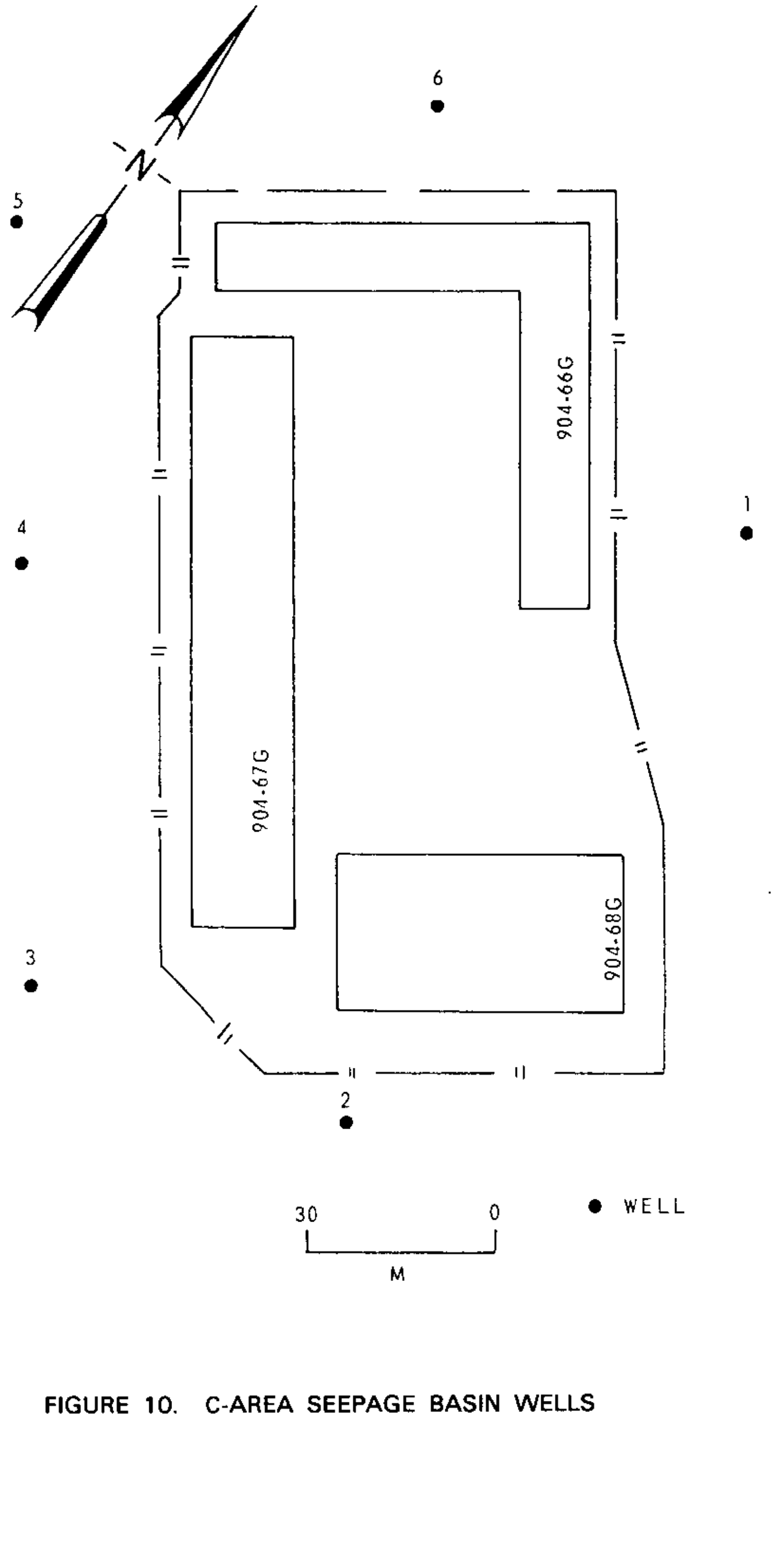


FIGURE 10. C-AREA SEEPAGE BASIN WELLS

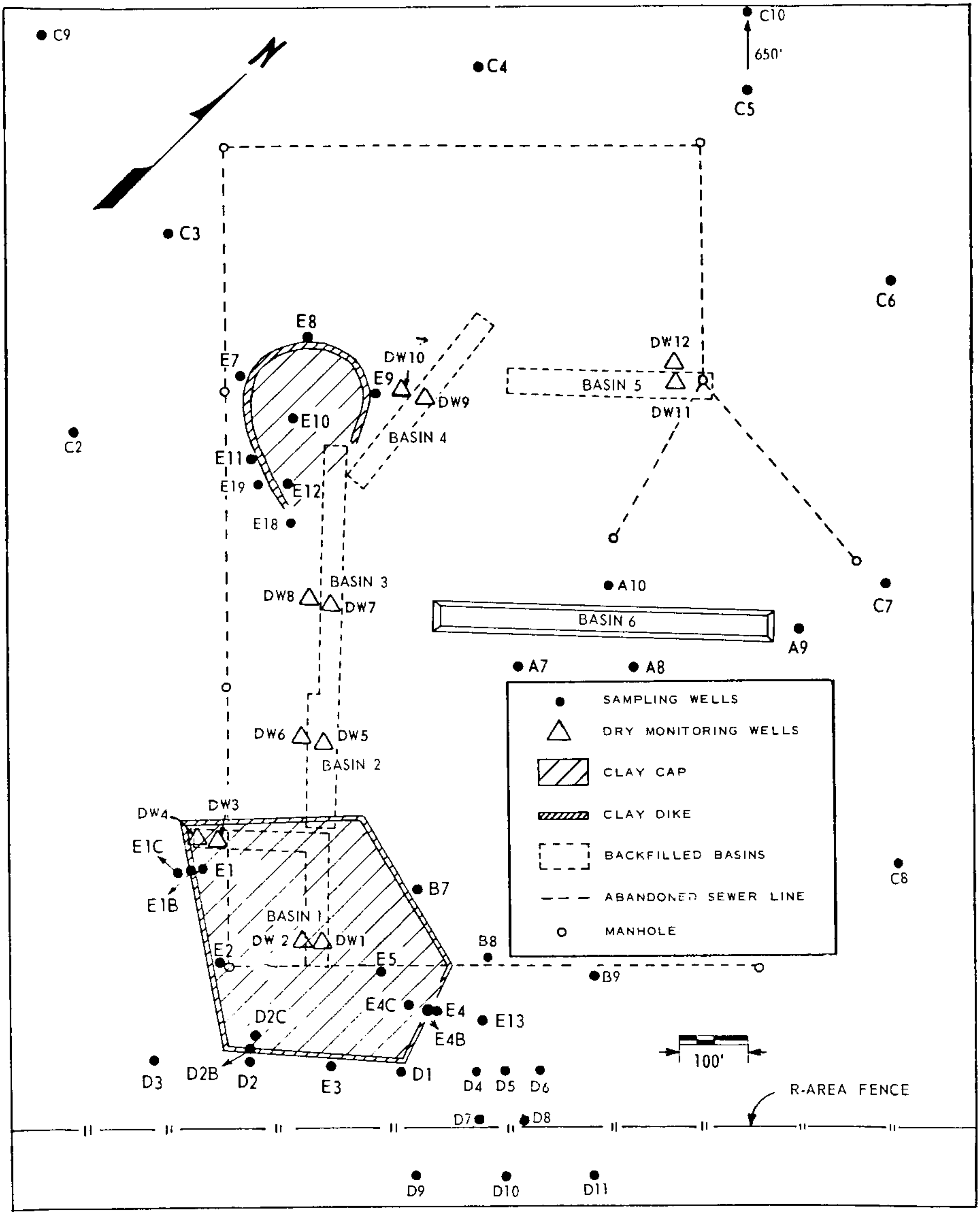


FIGURE 11. R-AREA SEEPAGE BASIN WELLS

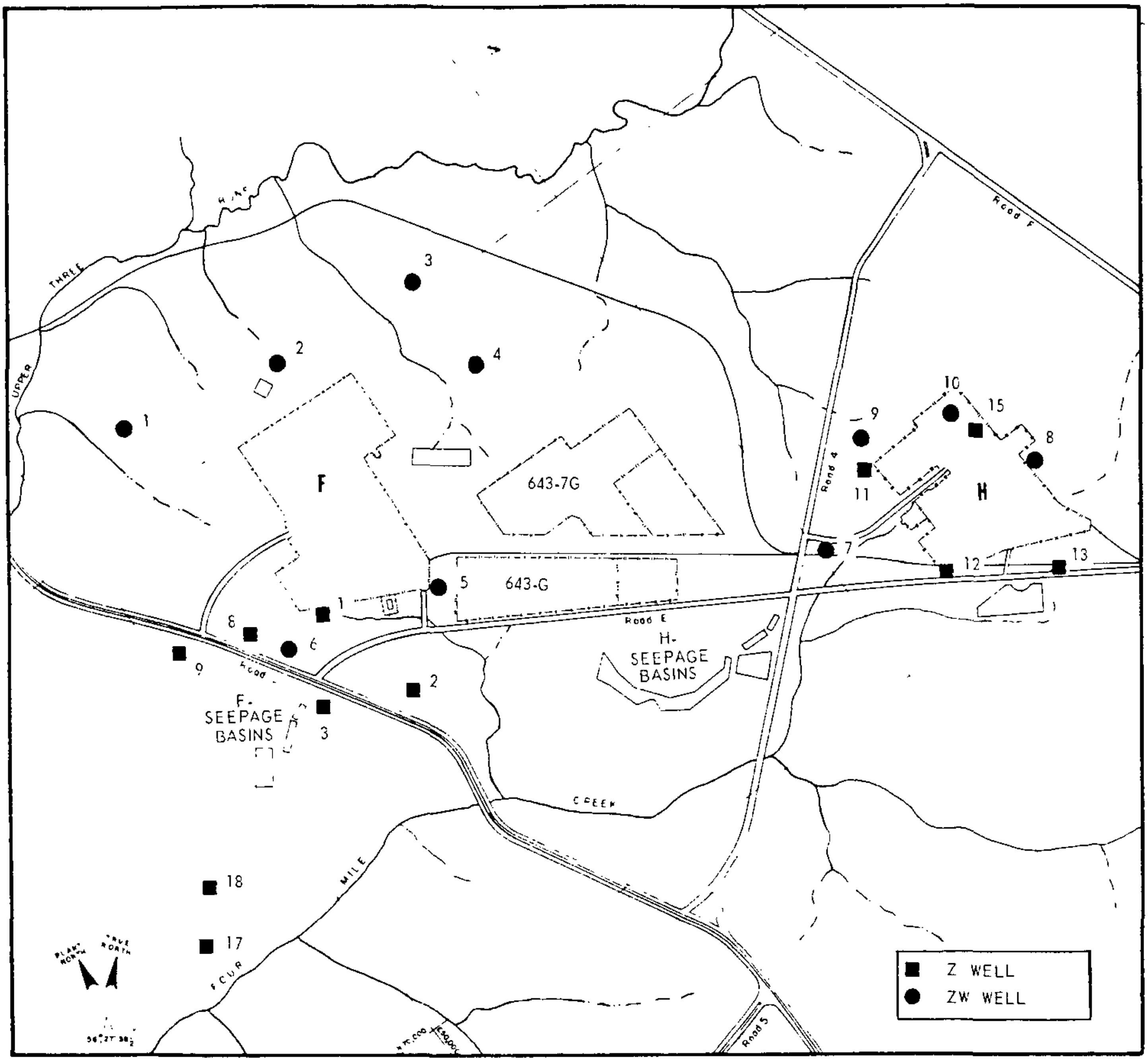


FIGURE 12. Z AND ZW WELLS

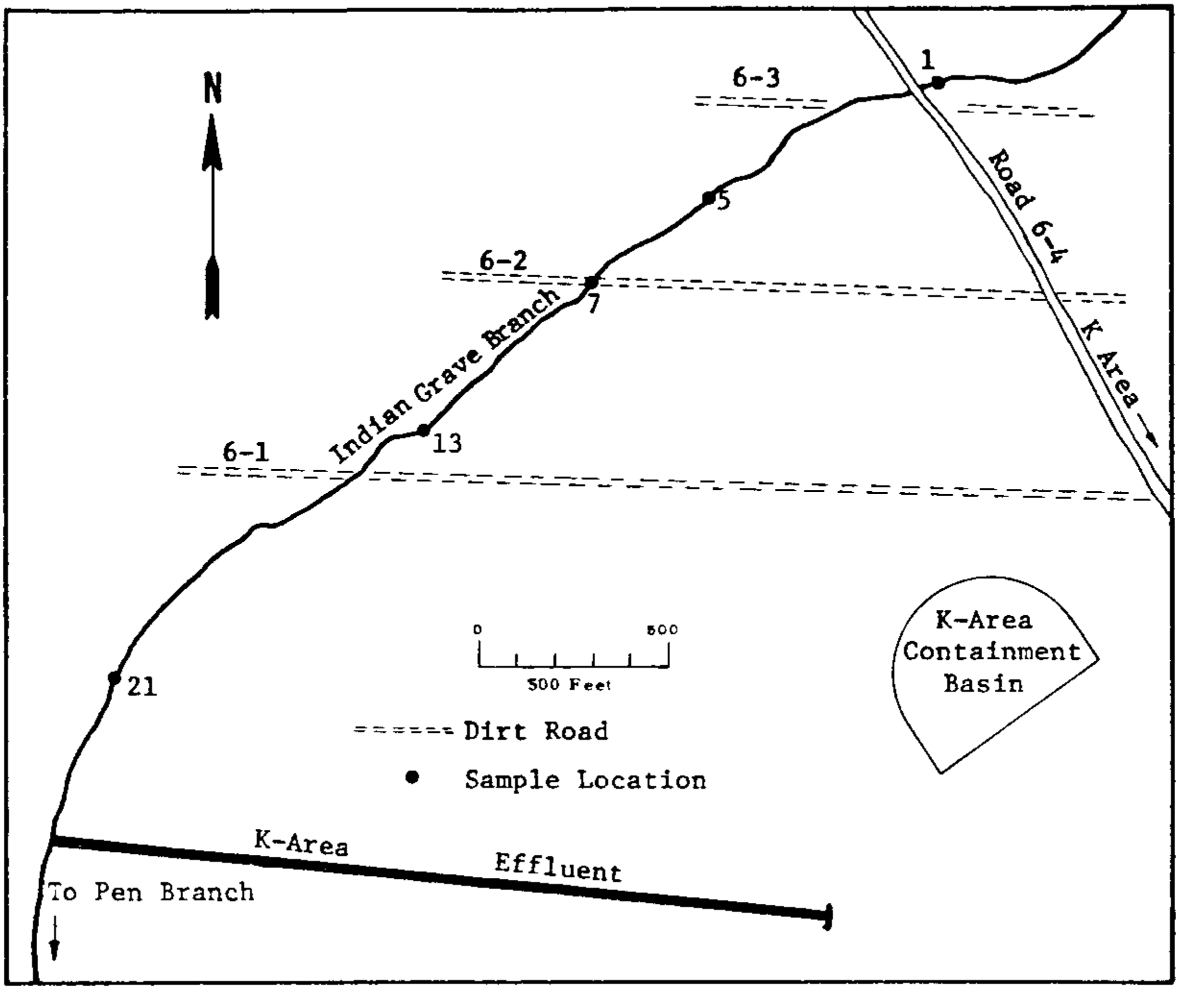


FIGURE 13. INDIAN GRAVE BRANCH SAMPLE LOCATIONS

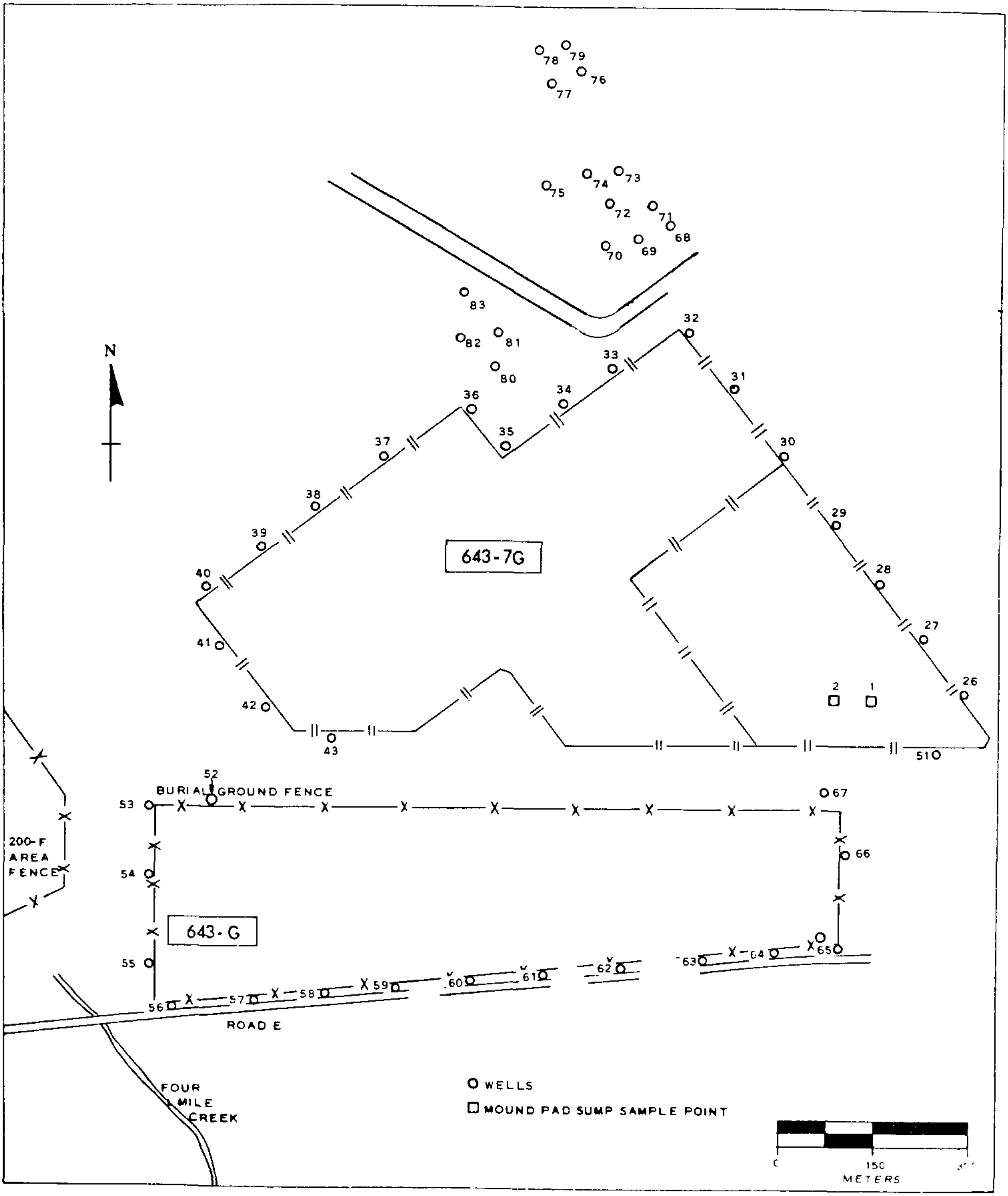


FIGURE 14. SOLID WASTE STORAGE FACILITY WELLS (OUTSIDE FENCES)

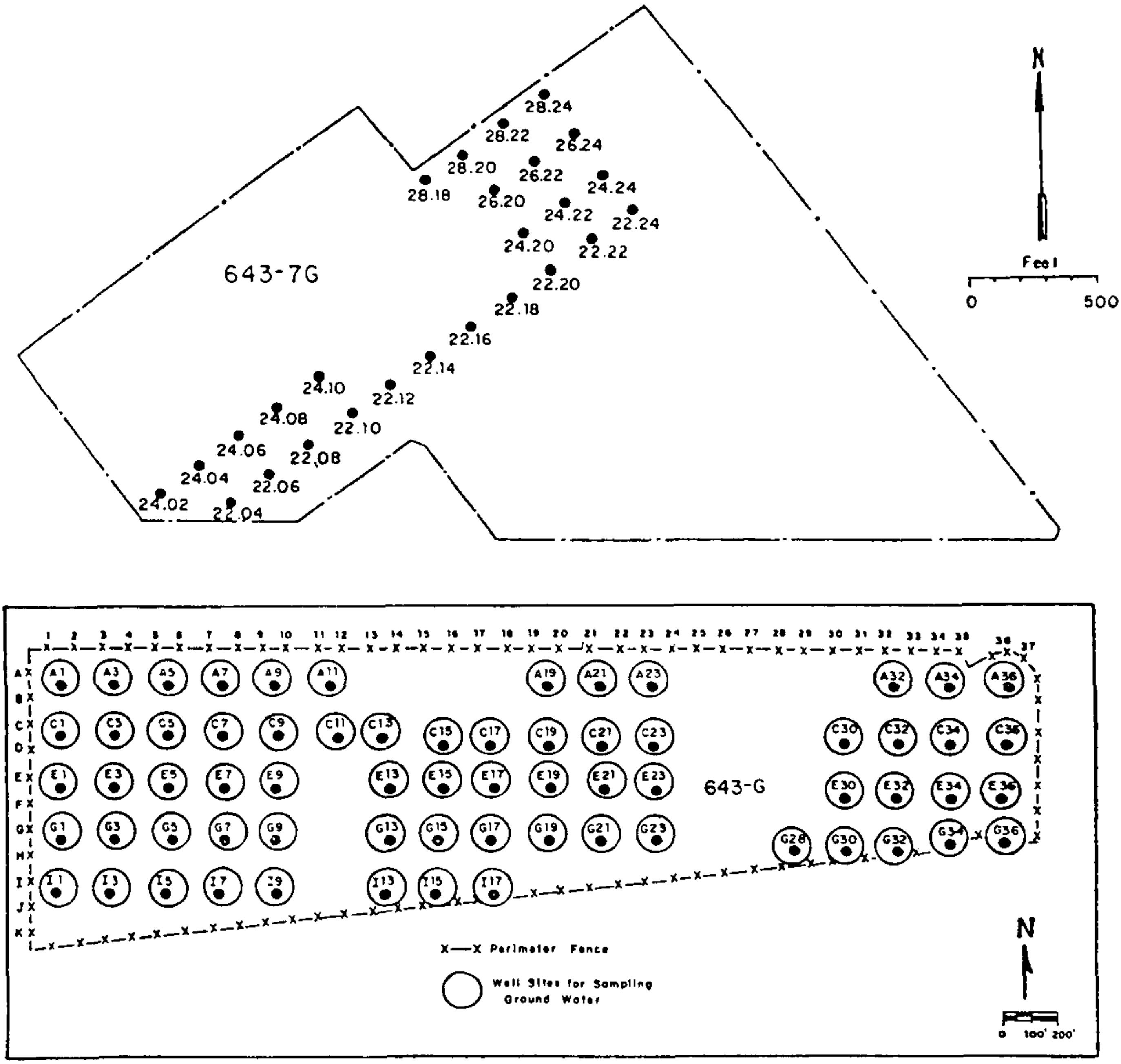


FIGURE 14A. SOLID WASTE STORAGE FACILITY WELLS (INSIDE FENCES)

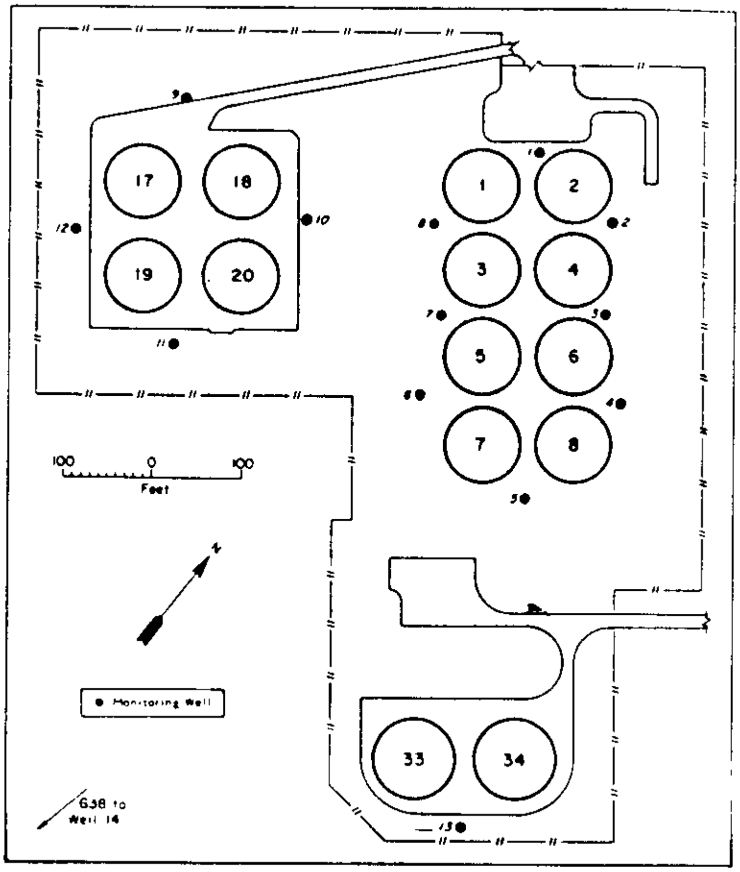


FIGURE 15. F-AREA TANK FARM GROUND-WATER MONITORING WELLS

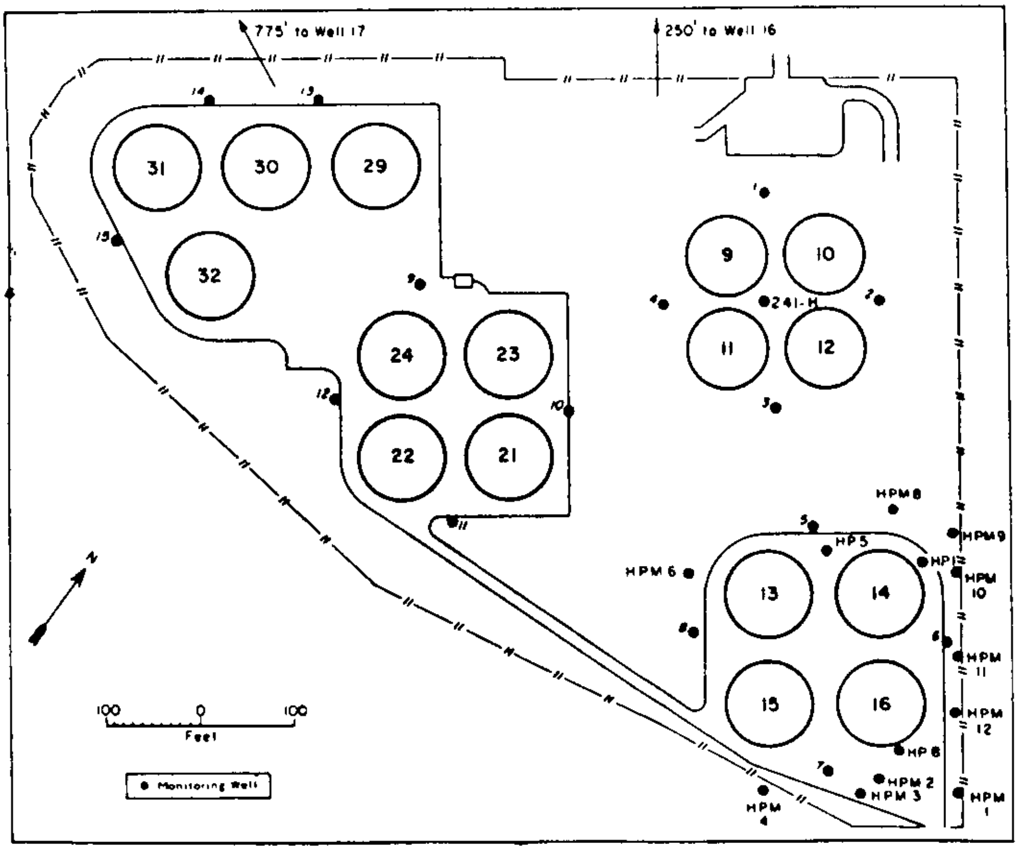


FIGURE 16. H-AREA TANK FARM GROUNDWATER MONITORING WELLS

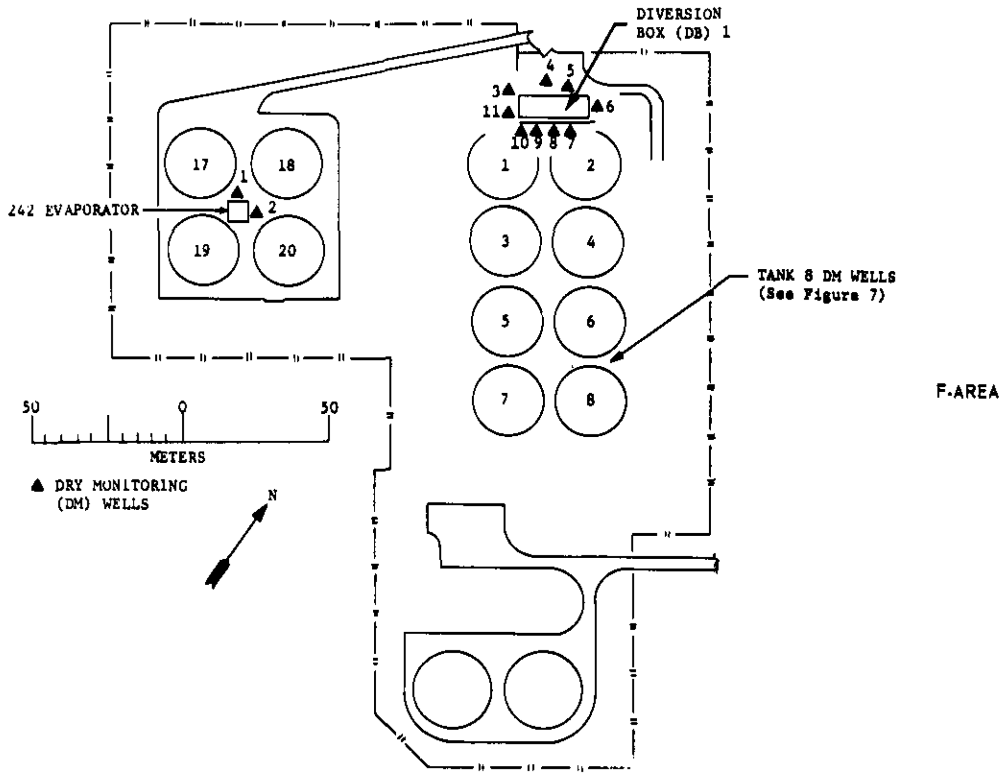


FIGURE 17. F-AREA TANK FARM DRY MONITORING WELLS

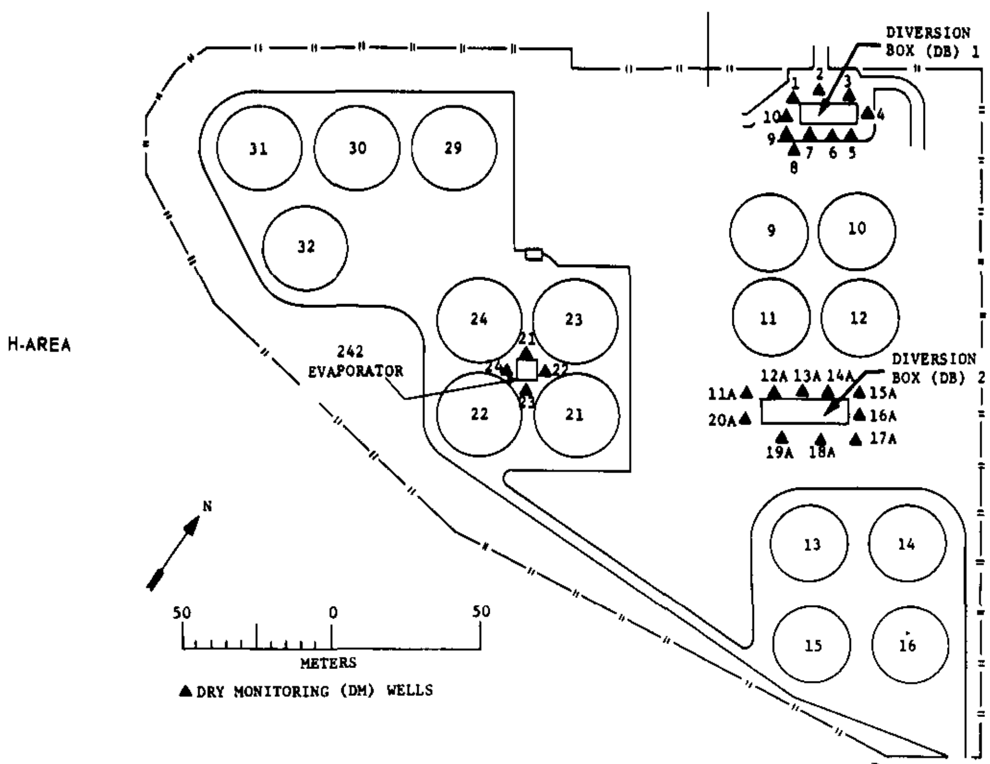
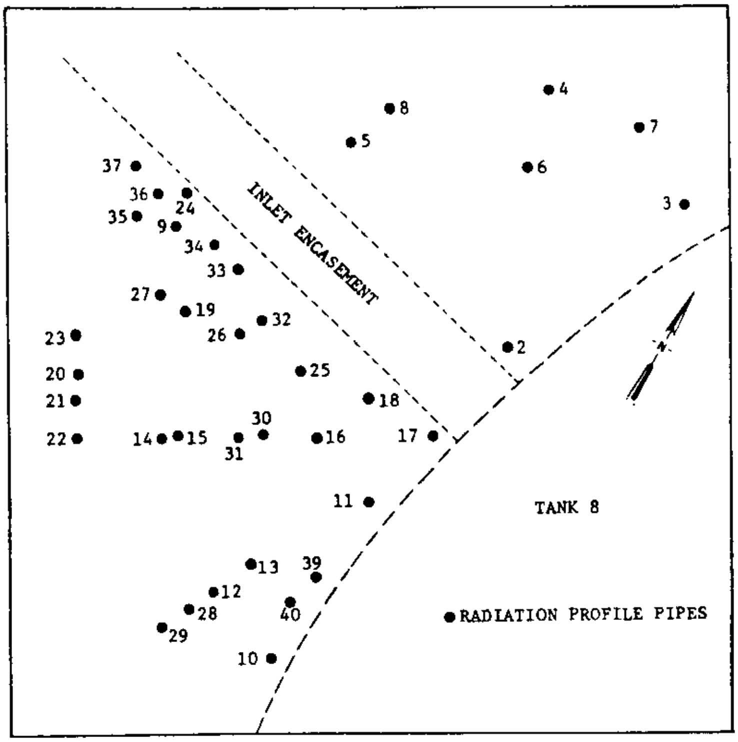


FIGURE 17A. H-AREA TANK FARM DRY MONITORING WELLS



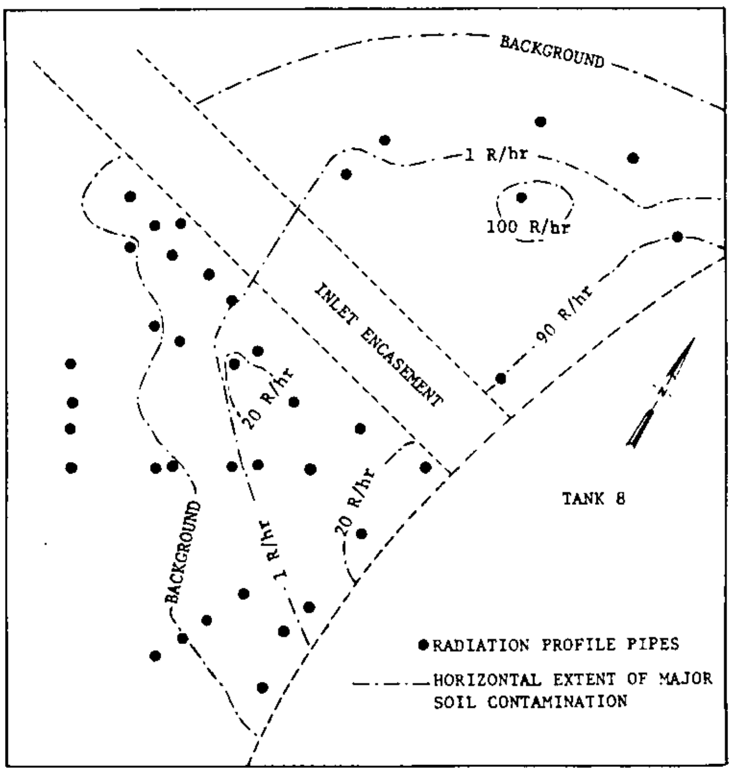


FIGURE 18. DRY MONITORING WELL LOCATIONS (RP SERIES) AND CONTAMINATED SOIL NEAR TANK 8

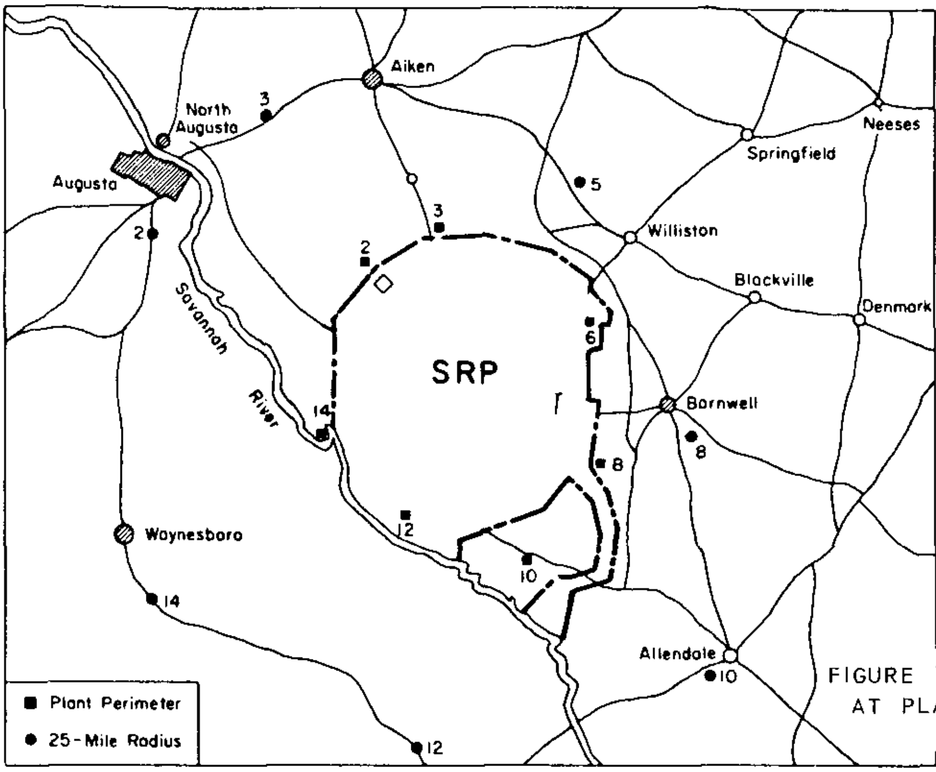
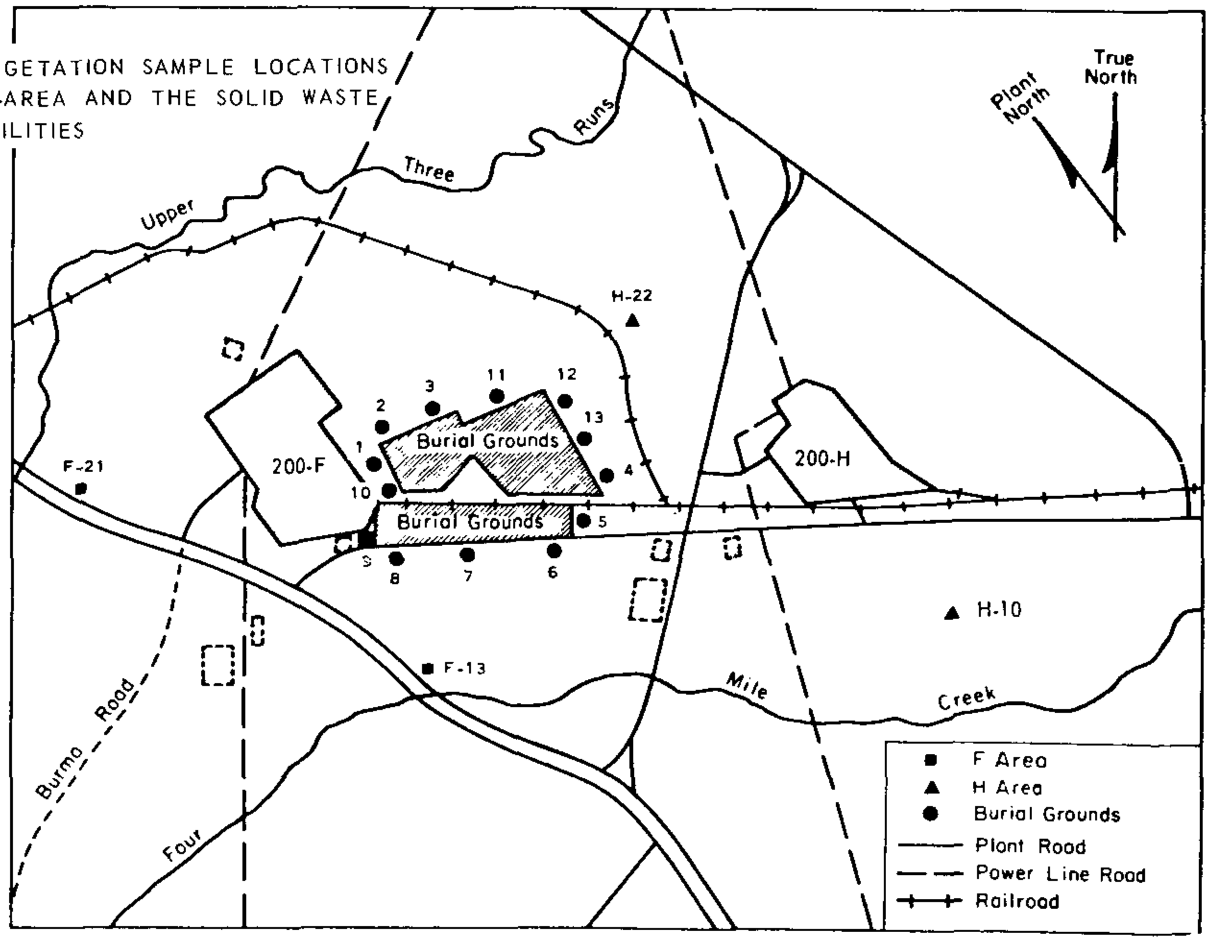


FIGURE 19. VEGETATION SAMPLE LOCATIONS AT PLANT PERIMETER AND 25-MILE RADIUS

FIGURE 20. VEGETATION SAMPLE LOCATIONS IN F-AREA, H-AREA AND THE SOLID WASTE STORAGE FACILITIES



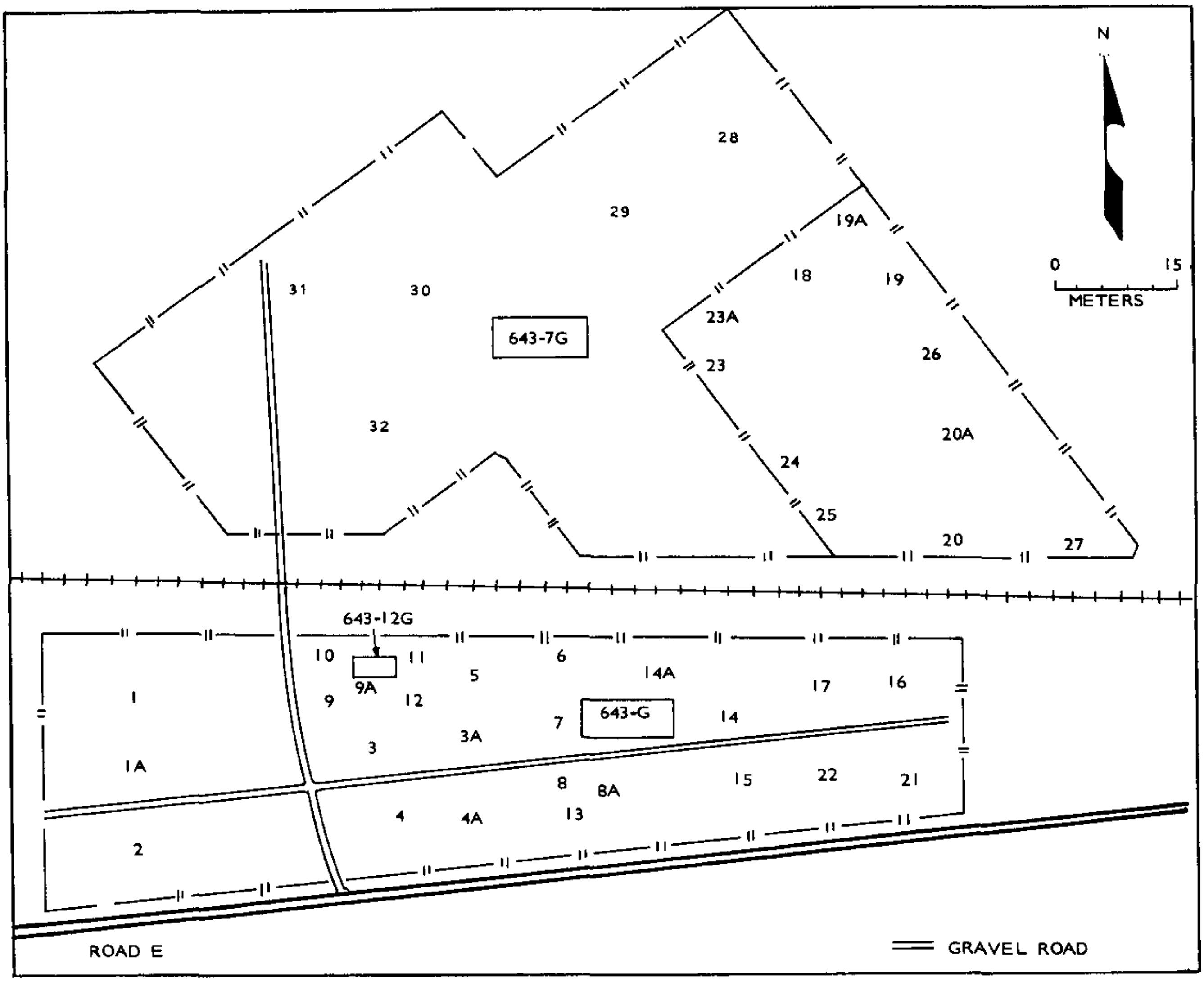


FIGURE 20A. VEGETATION SAMPLE LOCATIONS INSIDE THE SOLID WASTE STORAGE FACILITY FENCES

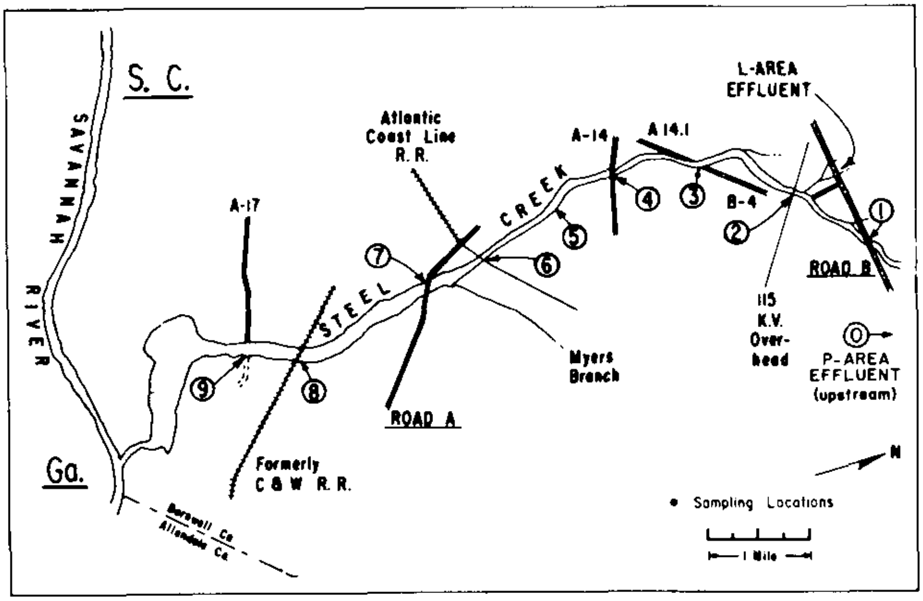


FIGURE 21. STEEL CREEK VEGETATION SAMPLE LOCATIONS

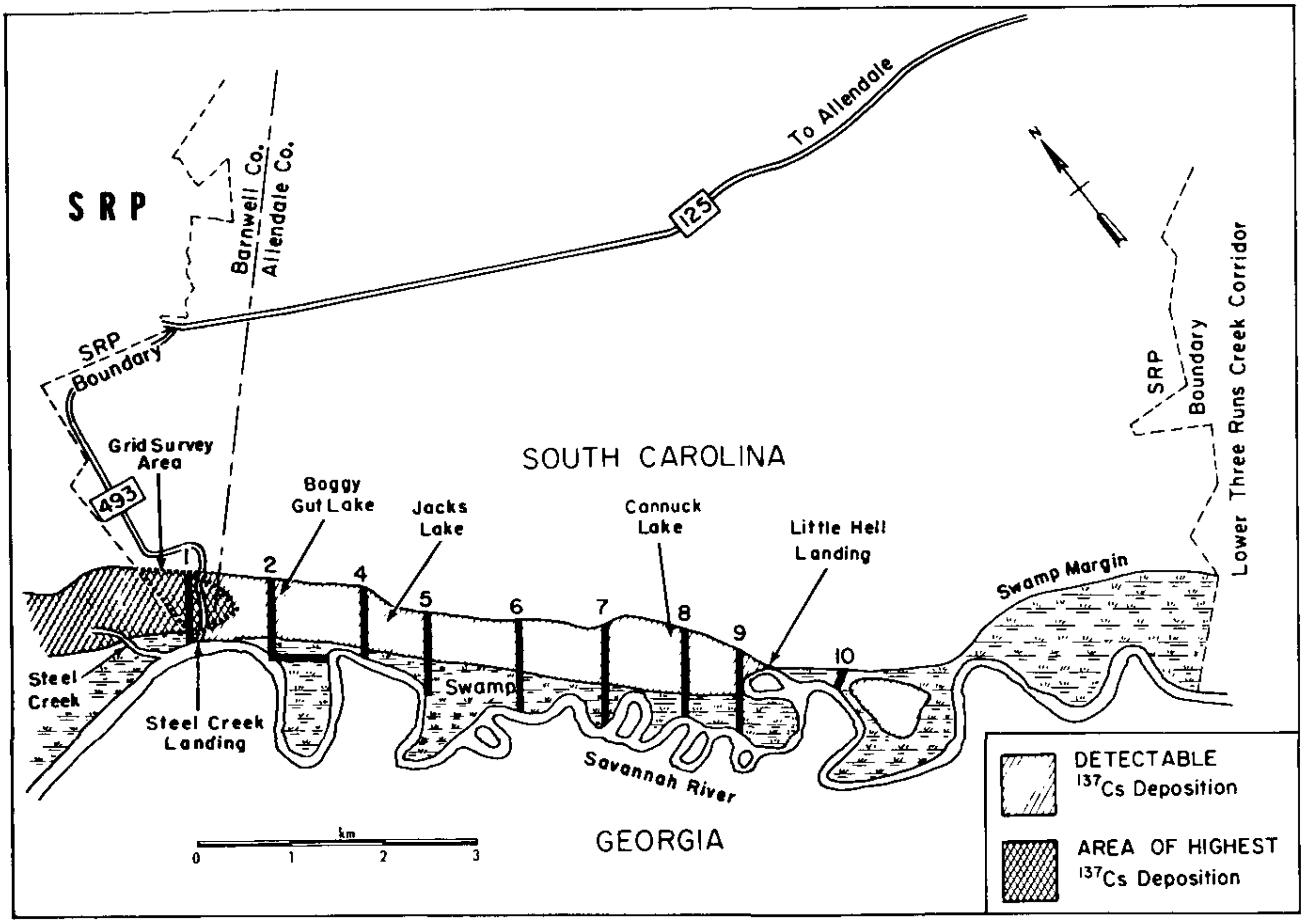


FIGURE 22. RADIOACTIVITY DEPOSITED IN THE SAVANNAH RIVER SWAMP

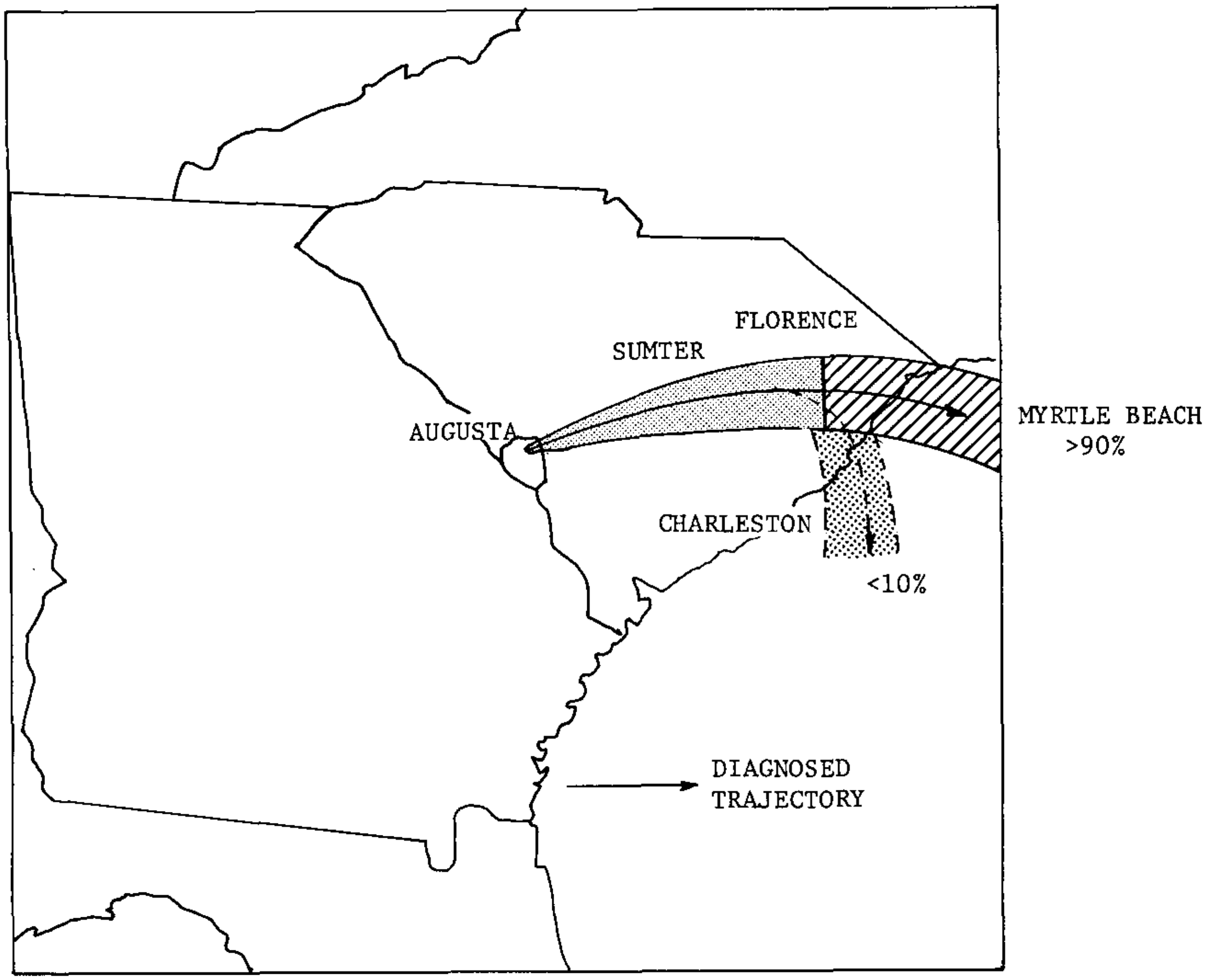


FIGURE 23. ESTIMATED TRAJECTORY FOR THE TRITIUM RELEASE ON MARCH 27, 1981

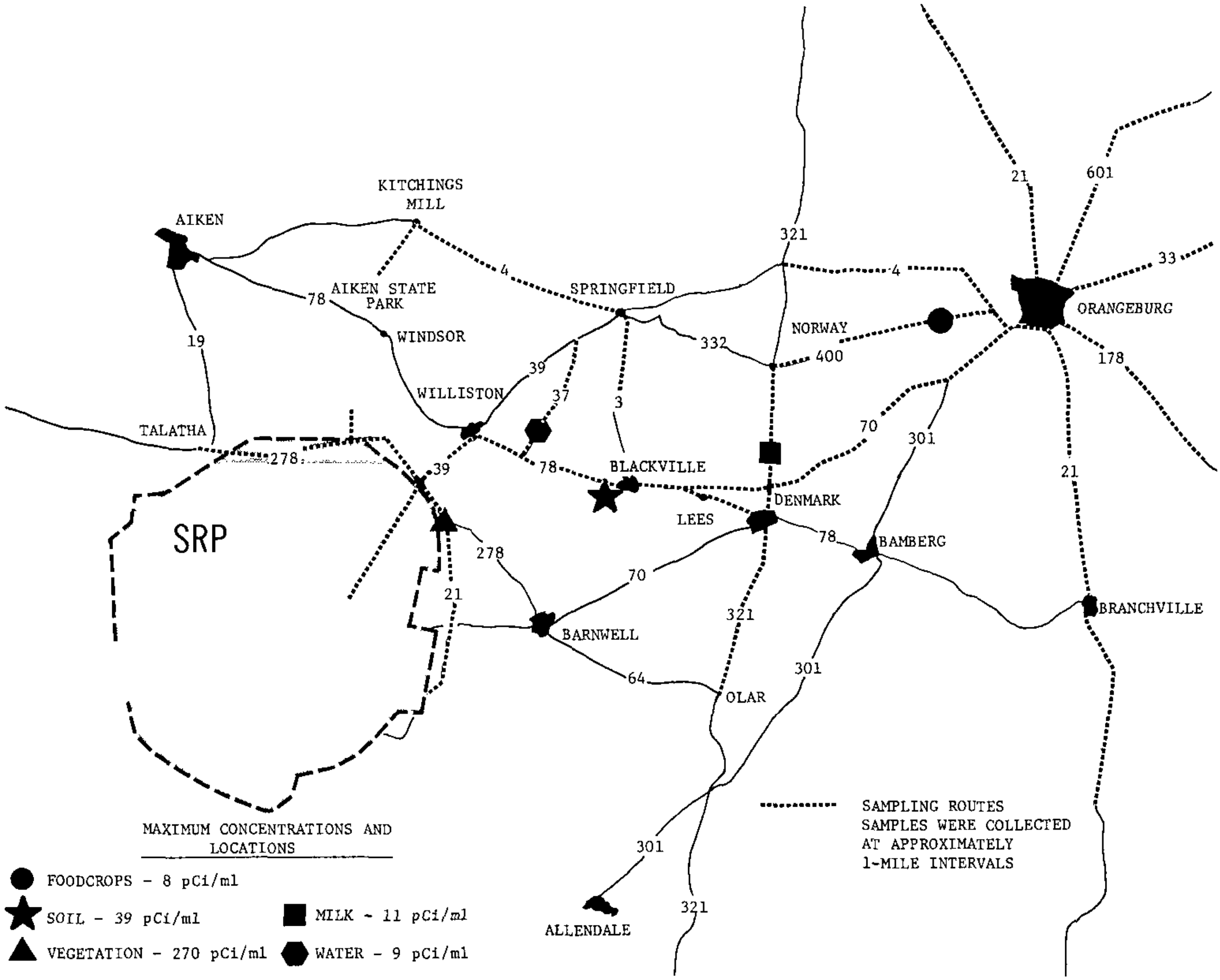
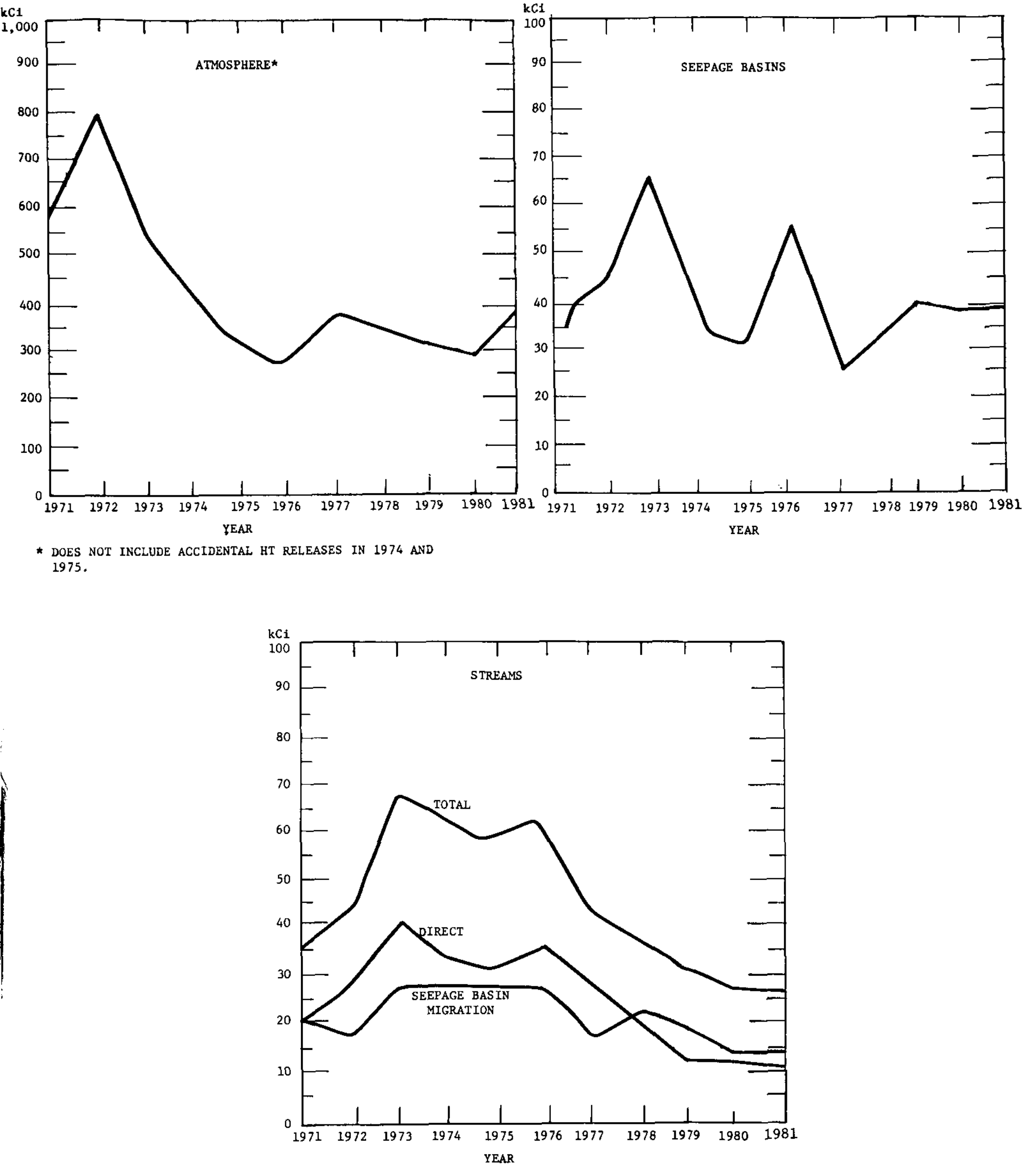


FIGURE 24. ENVIRONMENTAL SAMPLING ROUTES FOLLOWING THE TRITIUM RELEASE ON MARCH 27, 1981



* DOES NOT INCLUDE ACCIDENTAL HT RELEASES IN 1974 AND 1975.

FIGURE 25. TRITIUM RELEASES, 1971-1981

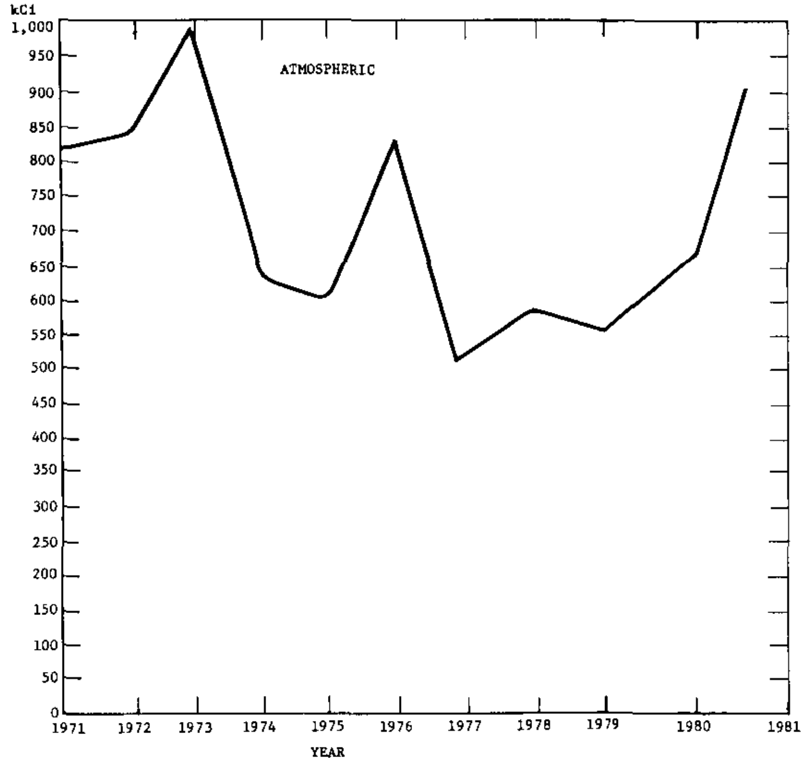
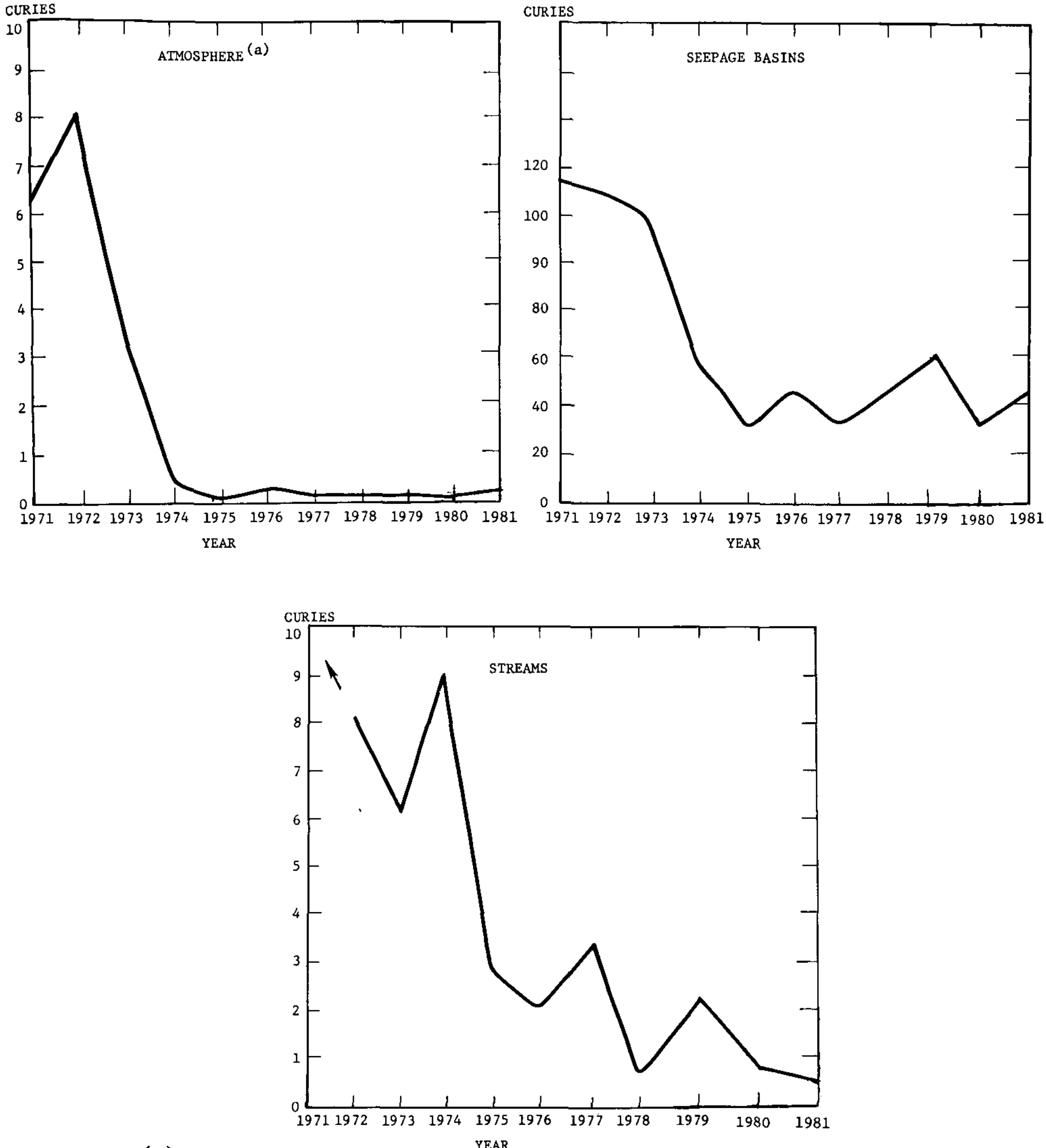


FIGURE 26. NOBLE GASES RELEASES, 1971-1981



(a) Excluding a single release of 32.9 Ci of $^{103,106}Ru$ in 1978.

FIGURE 27. BETA-GAMMA RELEASES, 1971-1981

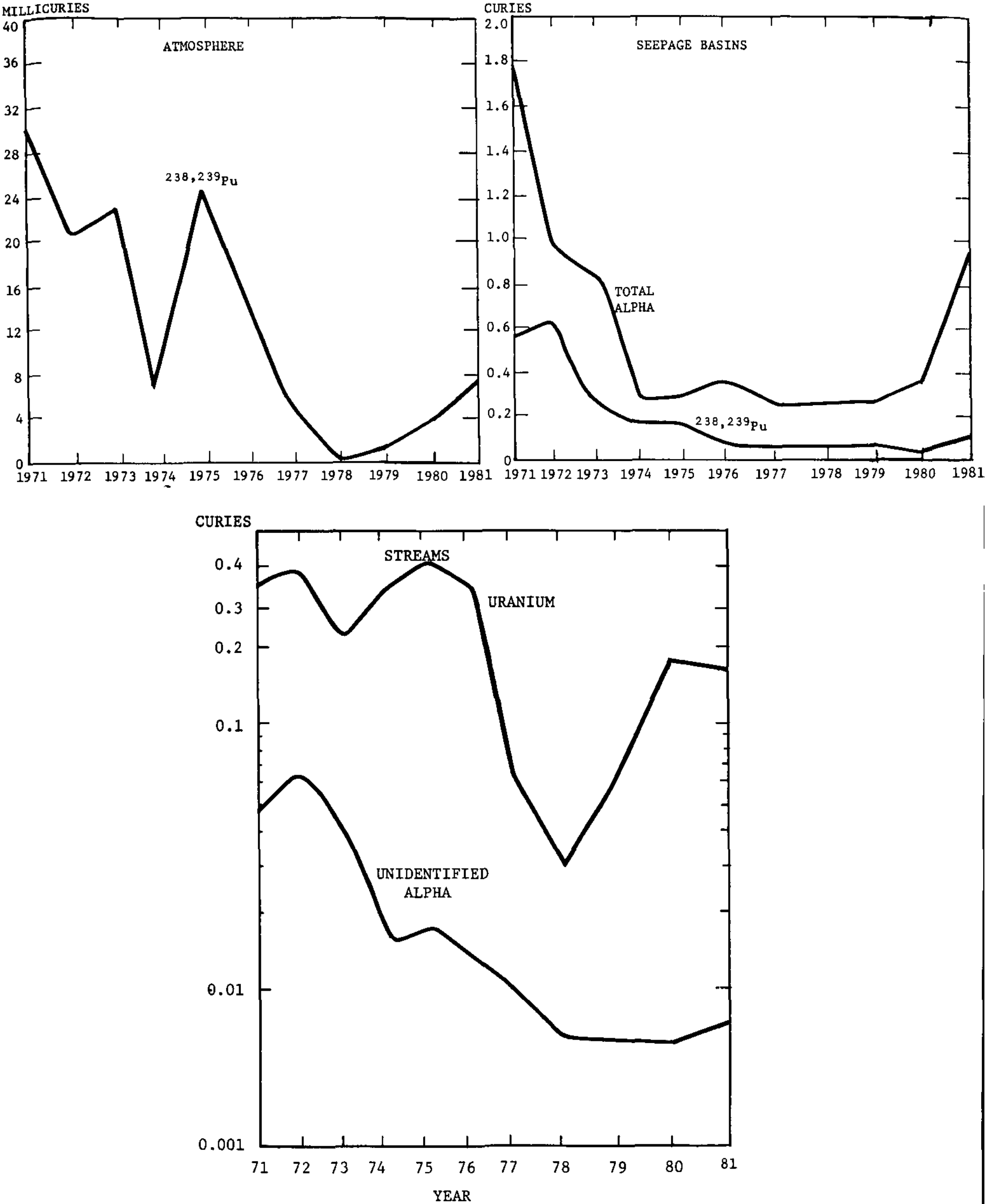


FIGURE 28. ALPHA RELEASES, 1971-1981

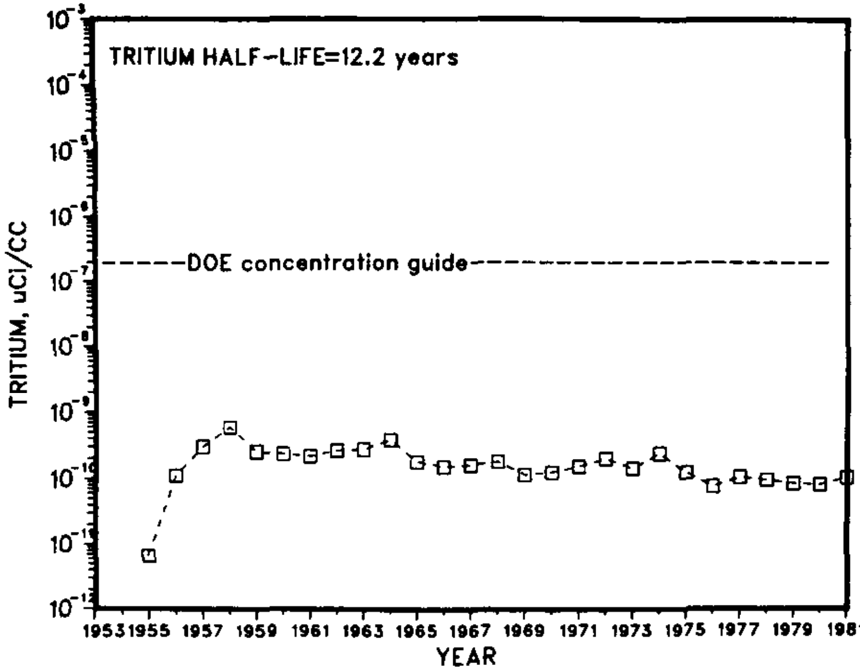


FIGURE 29A. TRITIUM CONCENTRATIONS AT THE PLANT BOUNDARY, 1953-1981

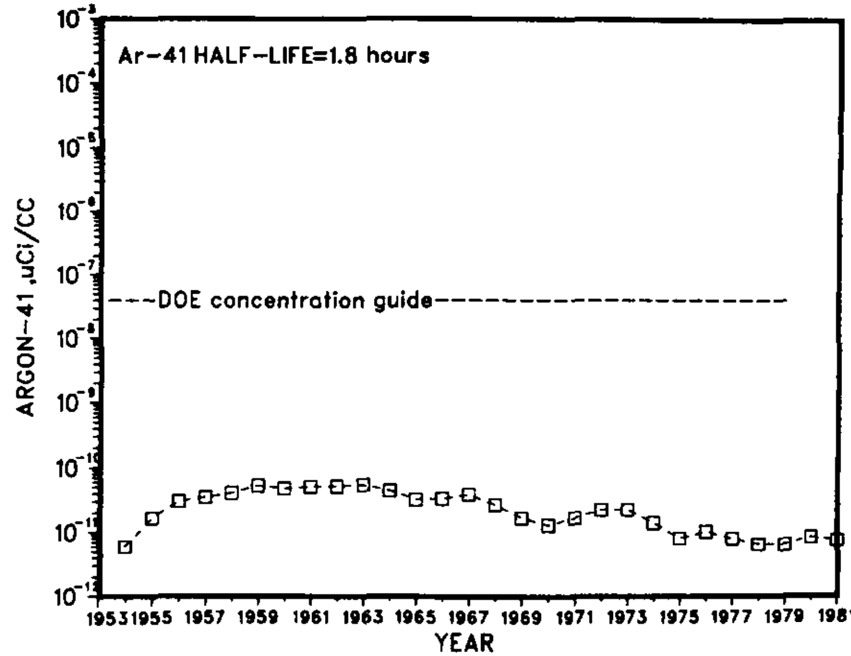


FIGURE 29B. ARGON-41 CONCENTRATION AT THE PLANT BOUNDARY, 1953-1981

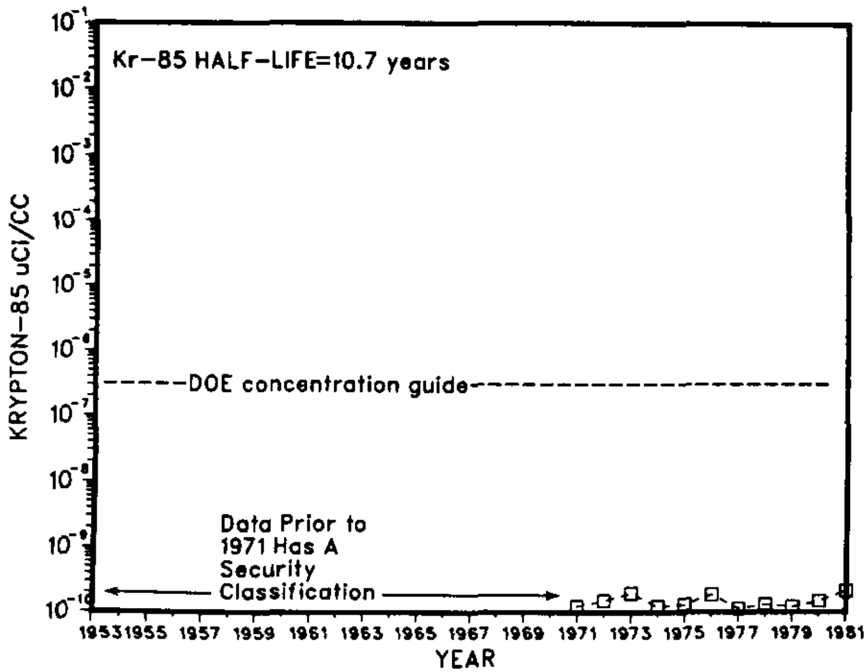


FIGURE 29C. KRYPTON-85 CONCENTRATIONS AT THE PLANT BOUNDARY, 1953-1981

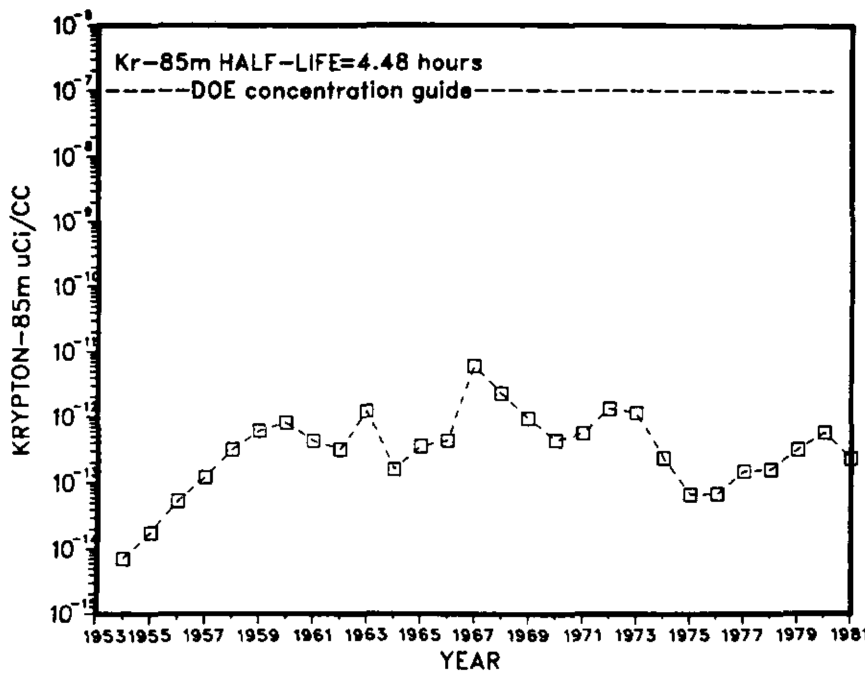


FIGURE 29D. KRYPTON-85M CONCENTRATIONS AT THE PLANT BOUNDARY, 1953-1981

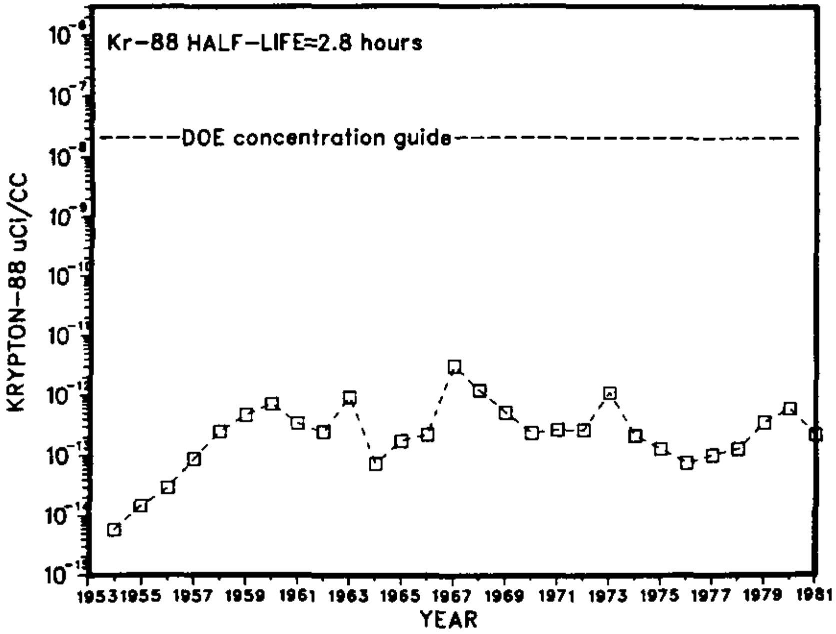


FIGURE 29E. KRYPTON-88 CONCENTRATIONS AT THE PLANT BOUNDARY, 1953-1981

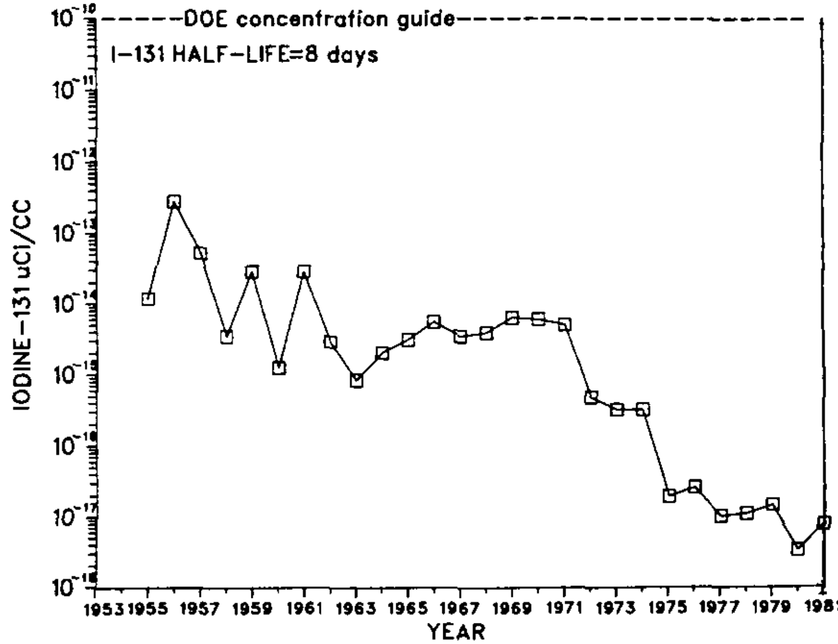


FIGURE 29F. IODINE-131 CONCENTRATIONS AT THE PLANT BOUNDARY, 1953-1981

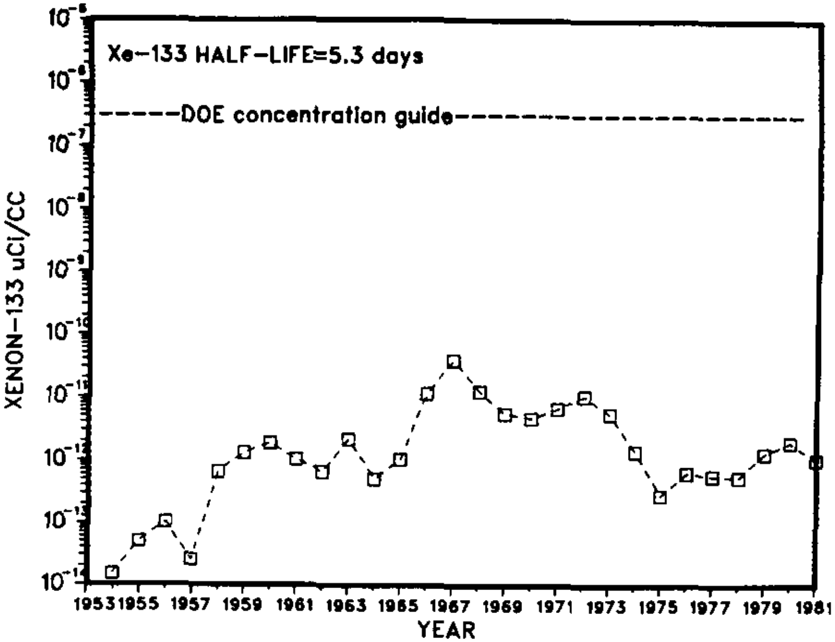


FIGURE 29G. XENON-133 CONCENTRATIONS AT THE PLANT BOUNDARY, 1953-1981

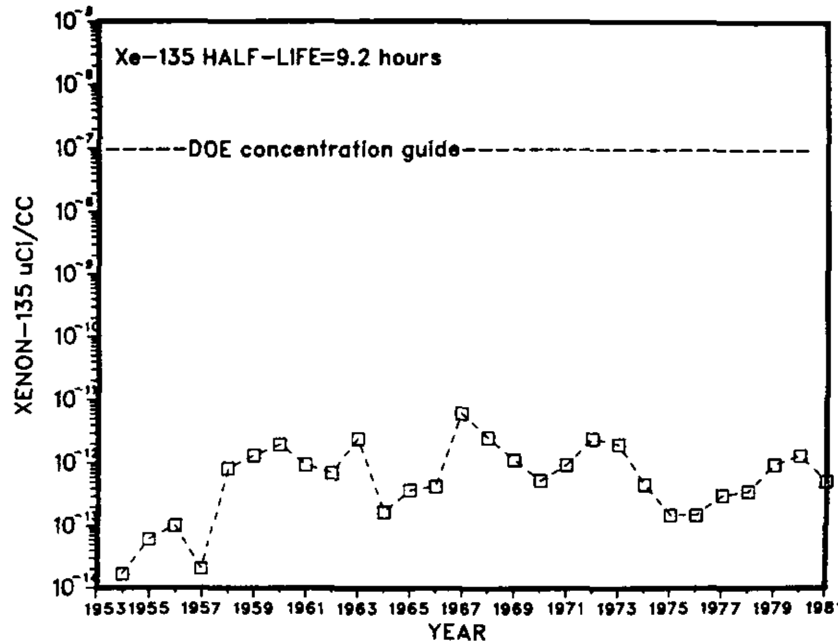


FIGURE 29H. XENON-135 CONCENTRATIONS AT THE PLANT BOUNDARY, 1953-1981

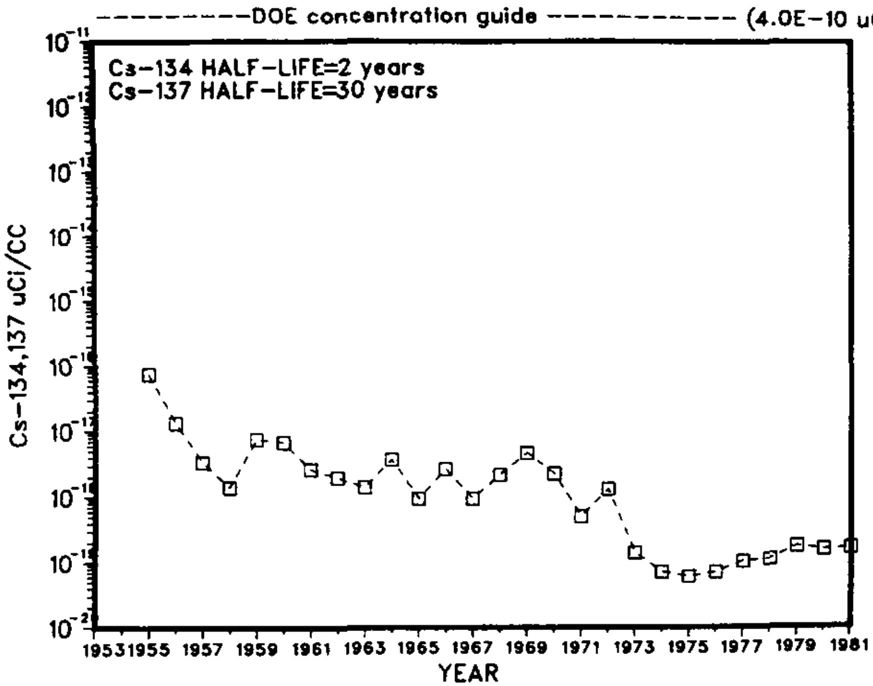


FIGURE 29I. CESIUM-134,137 CONCENTRATIONS AT THE PLANT BOUNDARY, 1953-1981

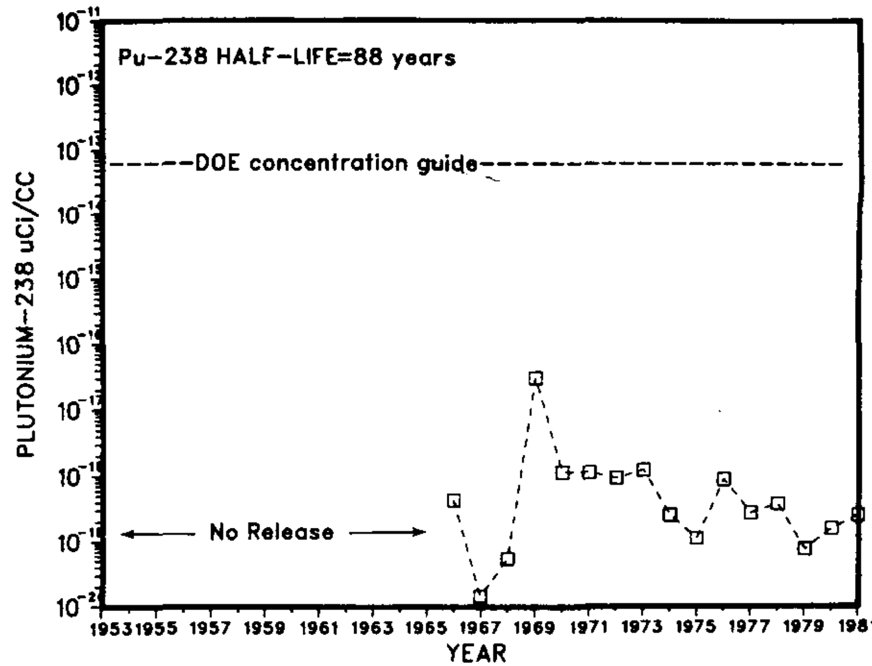


FIGURE 29J. PLUTONIUM-238 CONCENTRATIONS AT THE PLANT BOUNDARY, 1953-1981

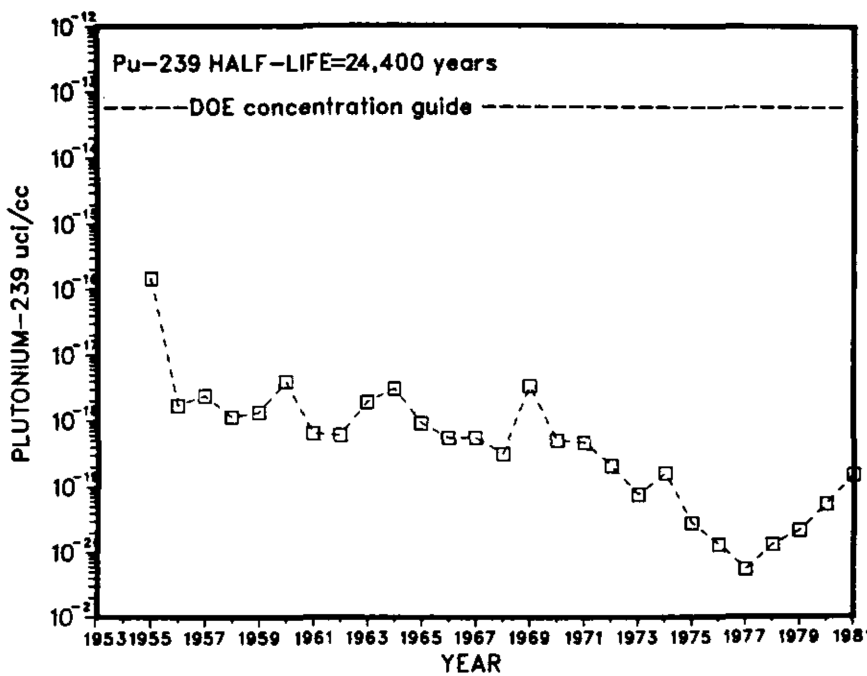


FIGURE 29K. PLUTONIUM-239 CONCENTRATIONS AT THE PLANT BOUNDARY, 1953-1981

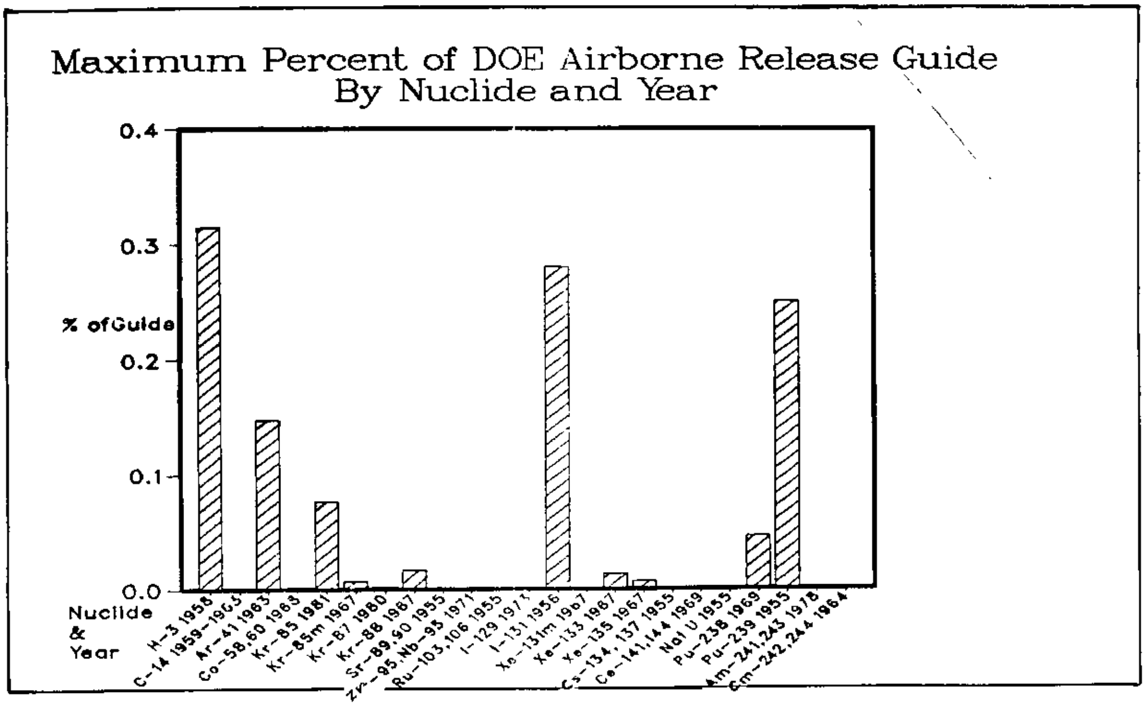
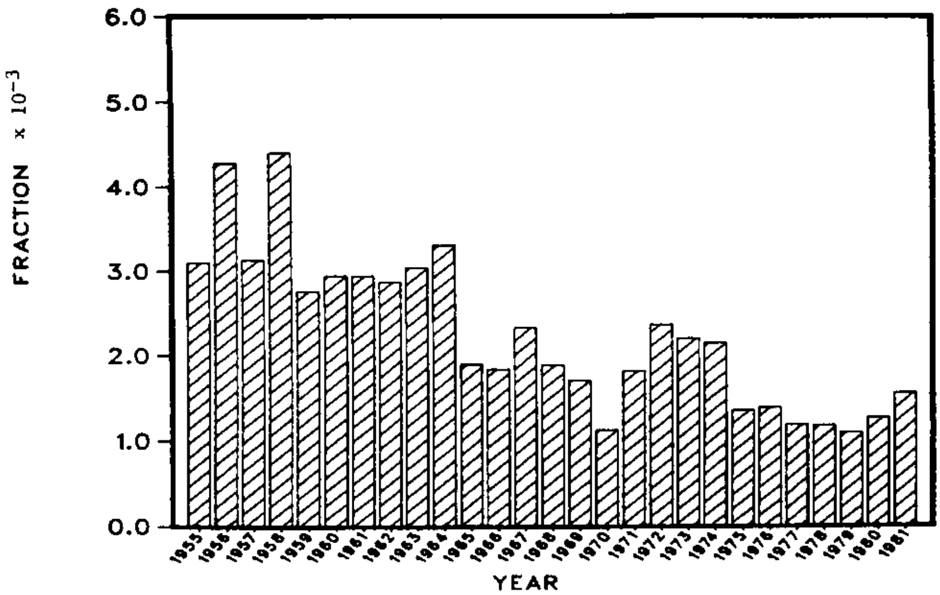


FIGURE 30A. MAXIMUM PERCENT OF DOE AIRBORNE RELEASE GUIDE BY NUCLIDE AND YEAR



$$\frac{C_A}{CG_A} \quad \frac{C_B}{CG_B} \quad \frac{C_C}{CG_C} \quad \cdot \quad \cdot \quad \cdot \quad \leq 1$$

FIGURE 30B. YEARLY CUMULATIVE FRACTION OF DOE AIRBORNE RELEASE GUIDE

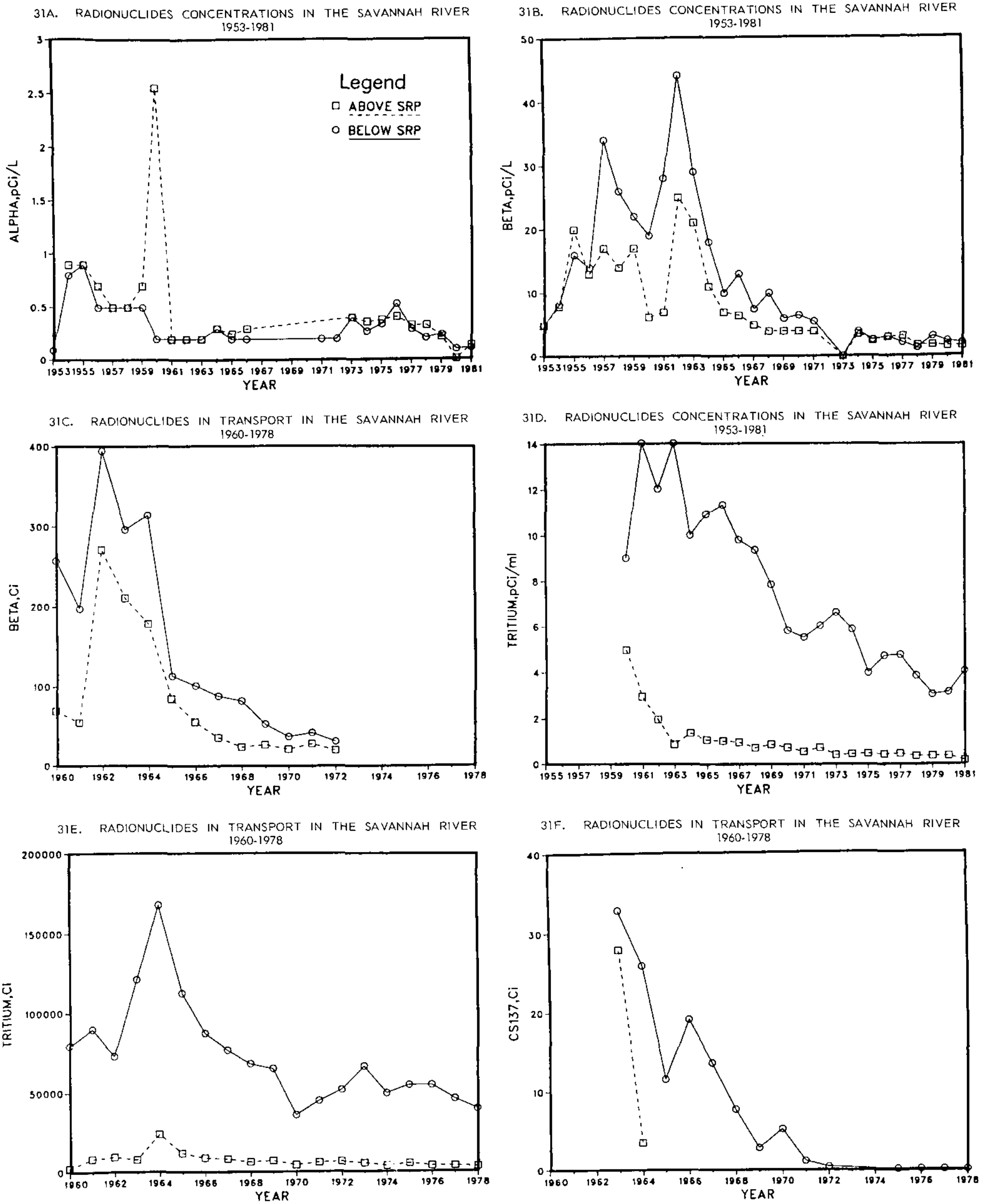
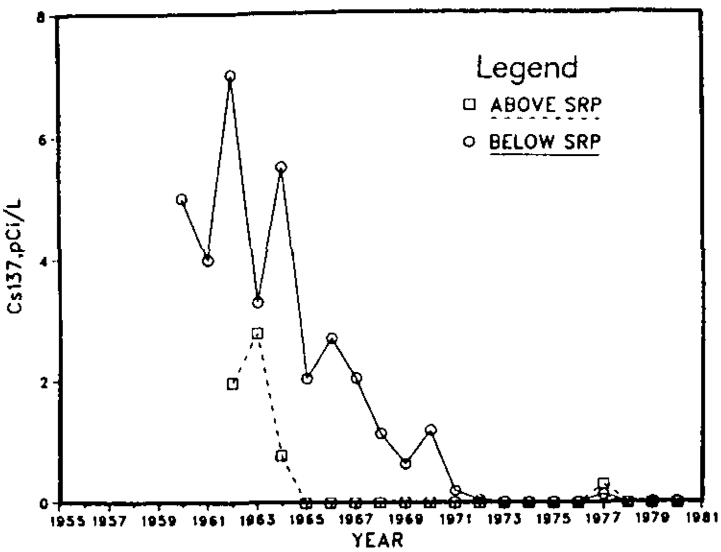
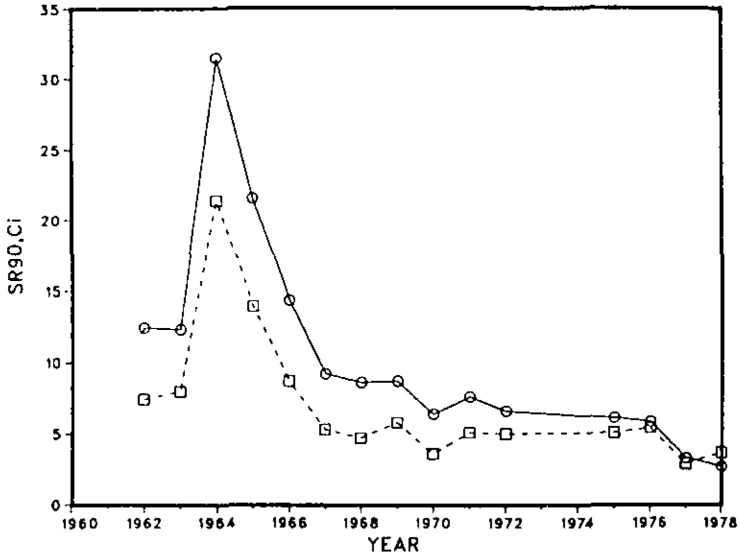


FIGURE 31. CONCENTRATIONS OF RADIONUCLIDES IN RIVER

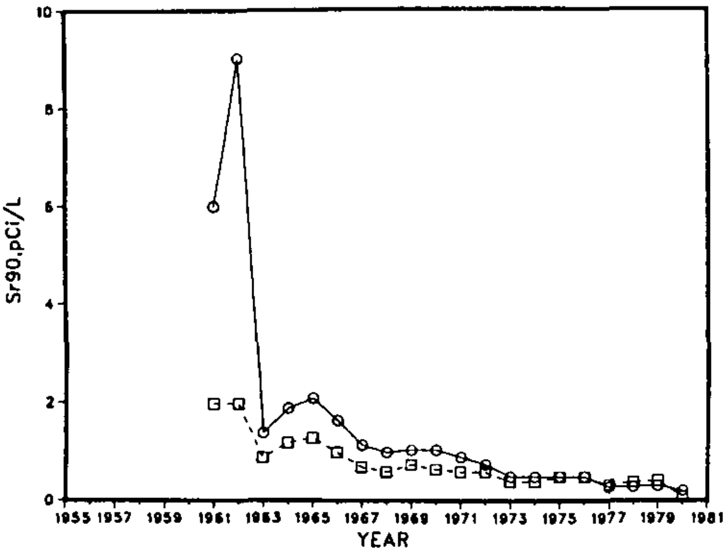
31G. RADIONUCLIDES CONCENTRATIONS IN THE SAVANNAH RIVER
1953-1981



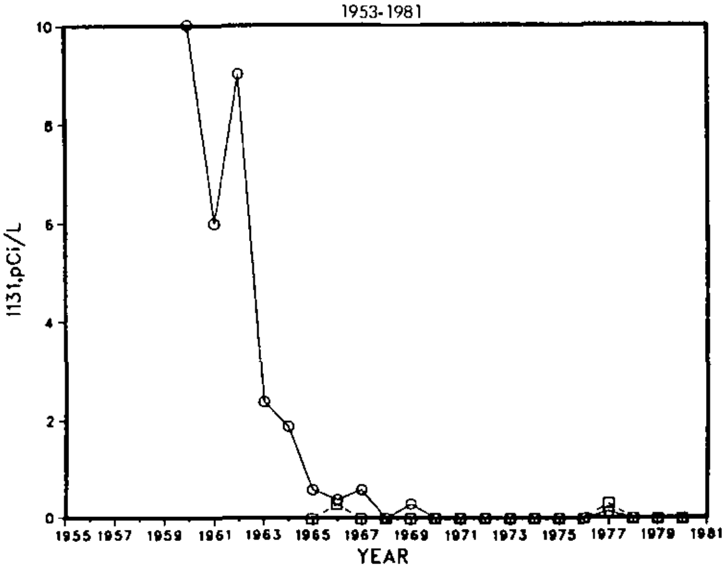
31H. RADIONUCLIDES IN TRANSPORT IN THE SAVANNAH RIVER
1960-1978



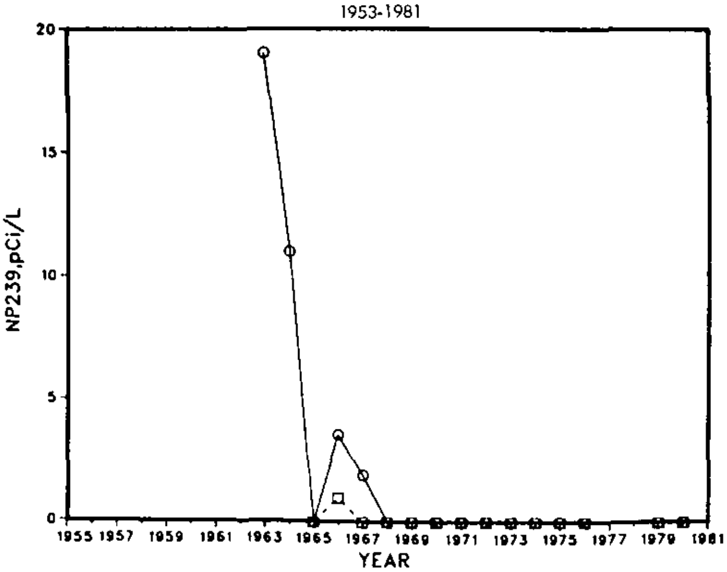
31I. RADIONUCLIDES CONCENTRATIONS IN THE SAVANNAH RIVER
1953-1981



31J. RADIONUCLIDES CONCENTRATIONS IN THE SAVANNAH RIVER
1953-1981



31K. RADIONUCLIDES CONCENTRATIONS IN THE SAVANNAH RIVER
1953-1981



31L. RADIONUCLIDES CONCENTRATIONS IN THE SAVANNAH RIVER
1953-1981

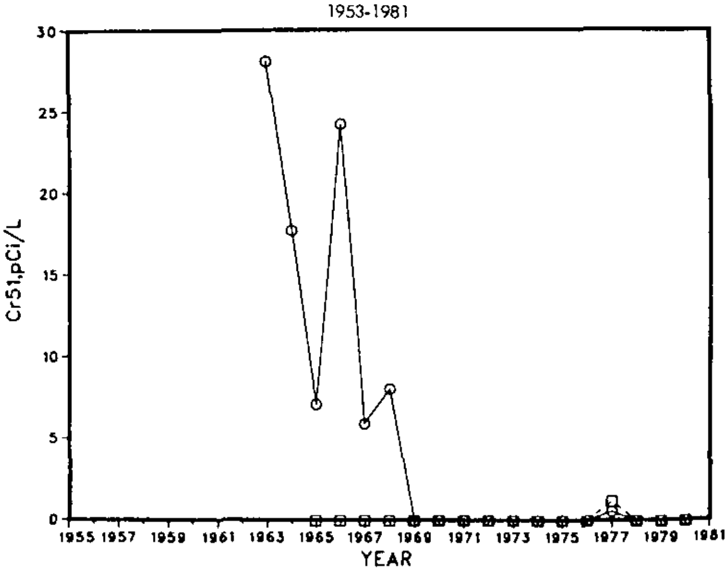
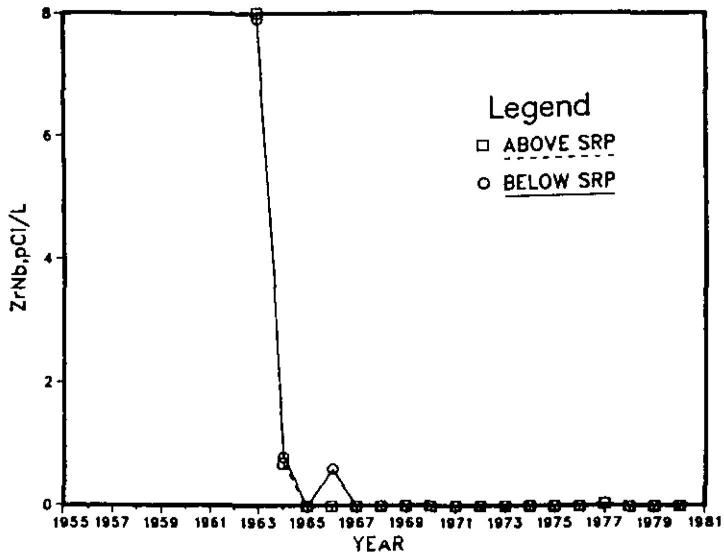
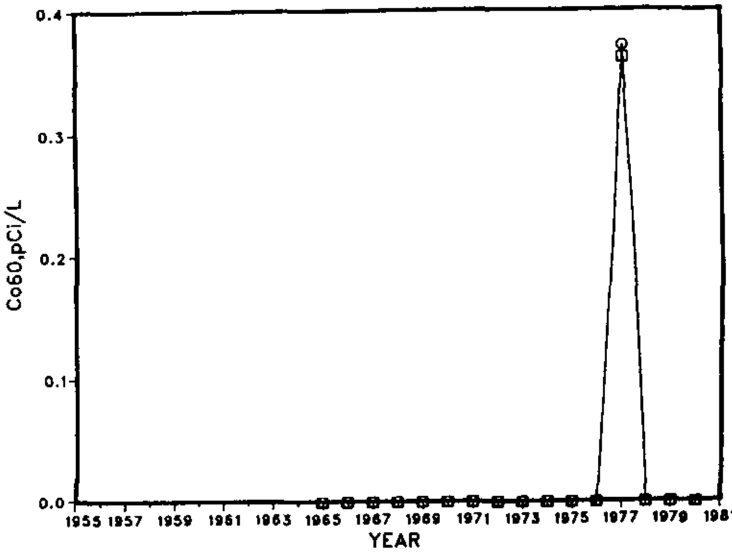


FIGURE 31. CONCENTRATIONS OF RADIONUCLIDES IN RIVER (contd)

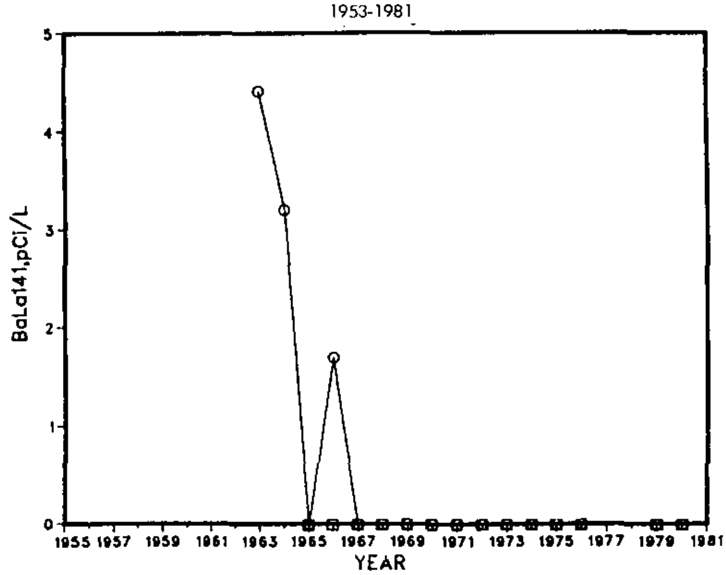
31M. RADIONUCLIDES CONCENTRATIONS IN THE SAVANNAH RIVER 1953-1981



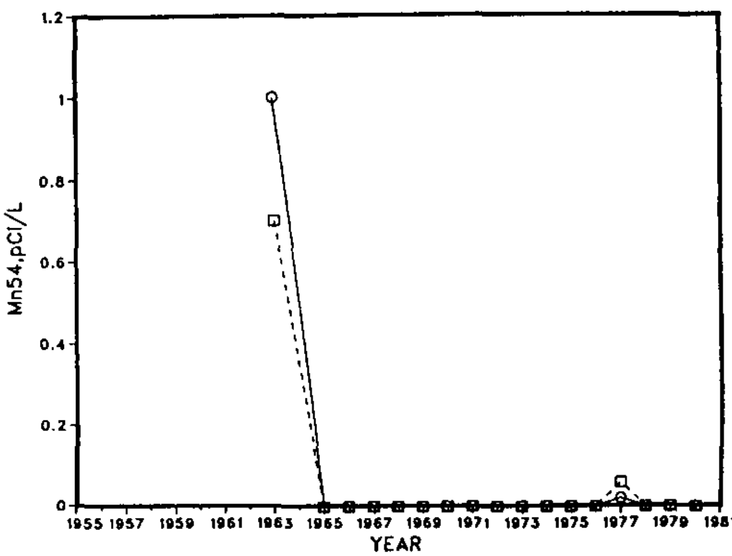
31N. RADIONUCLIDES CONCENTRATIONS IN THE SAVANNAH RIVER 1953-1981



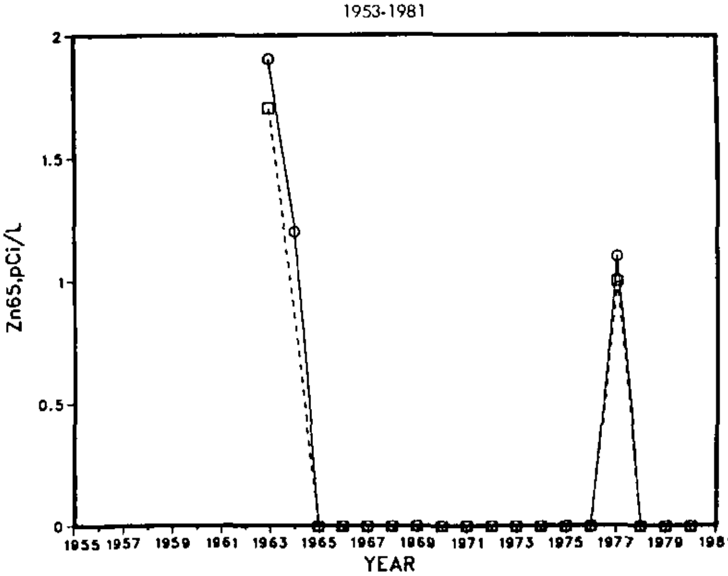
31O. RADIONUCLIDES CONCENTRATIONS IN THE SAVANNAH RIVER 1953-1981



31P. RADIONUCLIDES CONCENTRATIONS IN THE SAVANNAH RIVER 1953-1981



31Q. RADIONUCLIDES CONCENTRATIONS IN THE SAVANNAH RIVER 1953-1981



31R. RADIONUCLIDES CONCENTRATIONS IN THE SAVANNAH RIVER 1953-1981

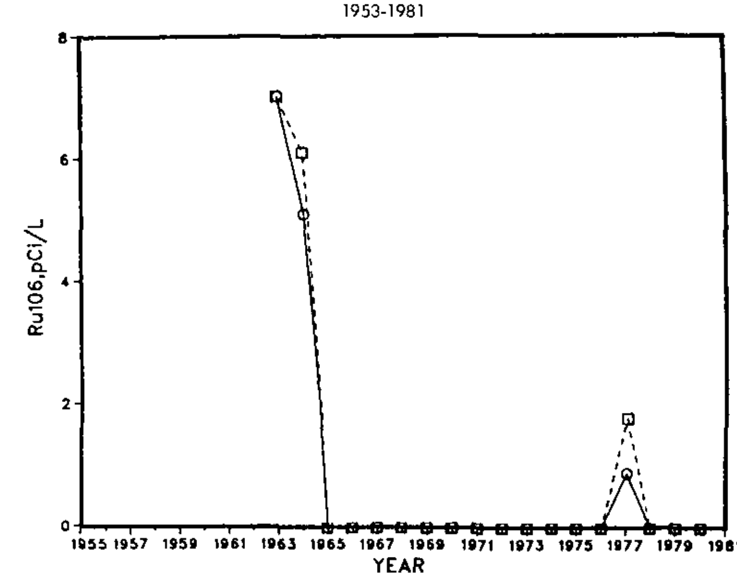


FIGURE 31. CONCENTRATIONS OF RADIONUCLIDES IN RIVER (contd)

31S. RADIONUCLIDES CONCENTRATIONS IN THE SAVANNAH RIVER
1953-1981

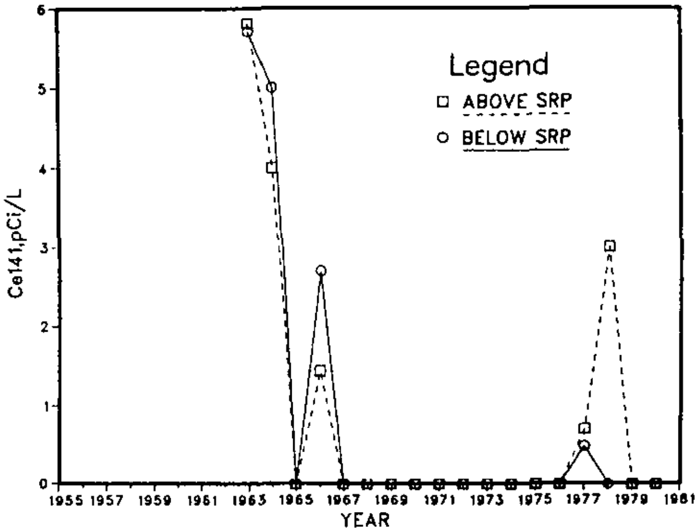


FIGURE 31. CONCENTRATIONS OF RADIONUCLIDES IN RIVER (contd)

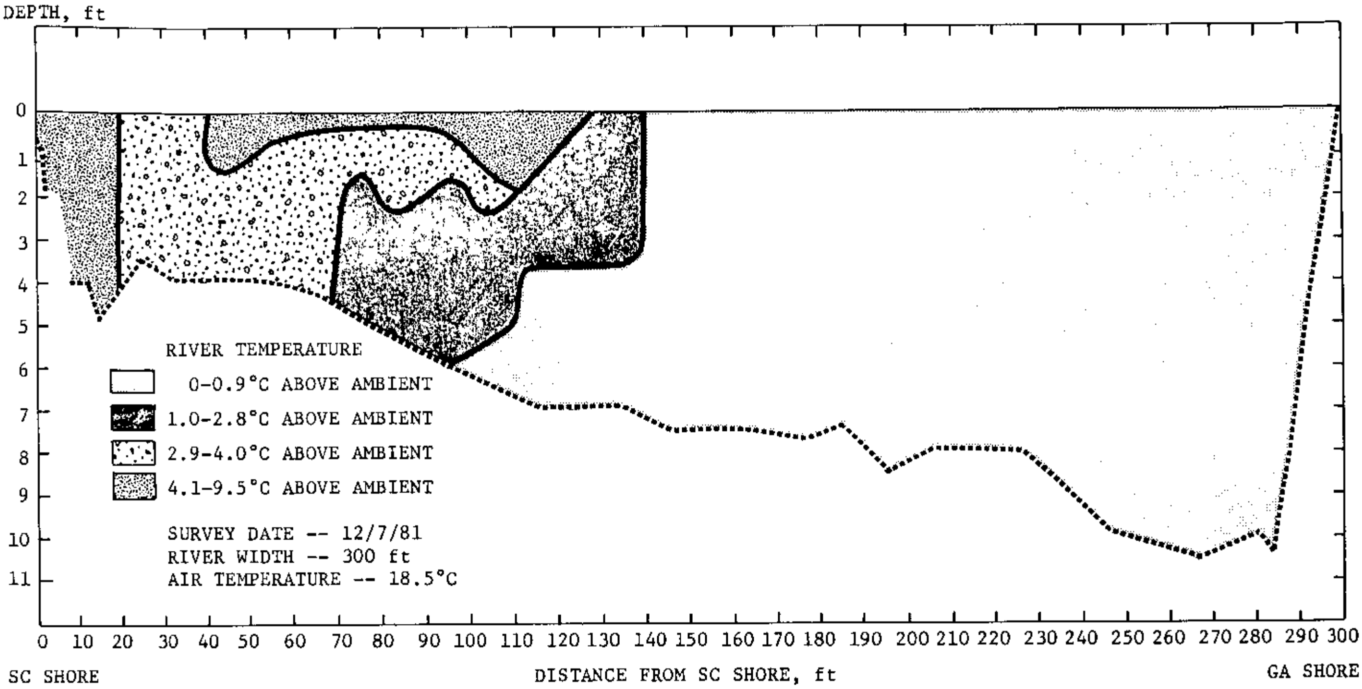


FIGURE 32. SAVANNAH RIVER TEMPERATURE PROFILE 100 YARDS BELOW FOUR MILE CREEK

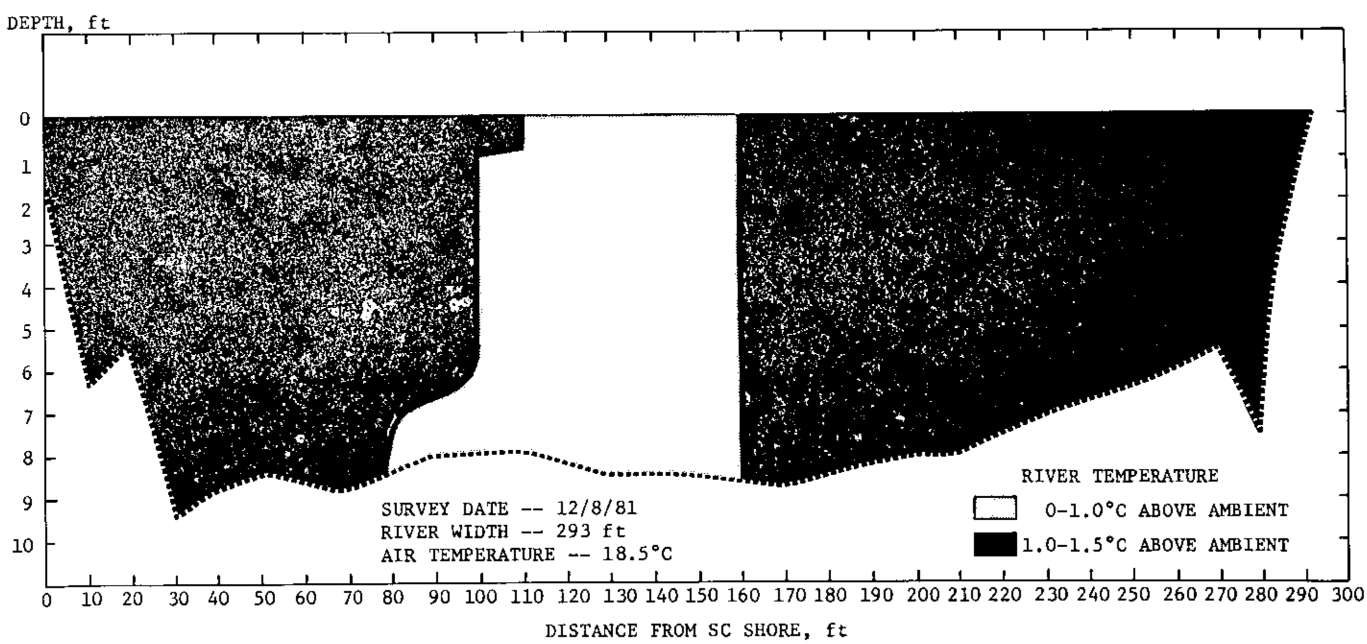


FIGURE 33. SAVANNAH RIVER TEMPERATURE PROFILE — 0.7 MILE BELOW MOUTH OF FOUR MILE CREEK

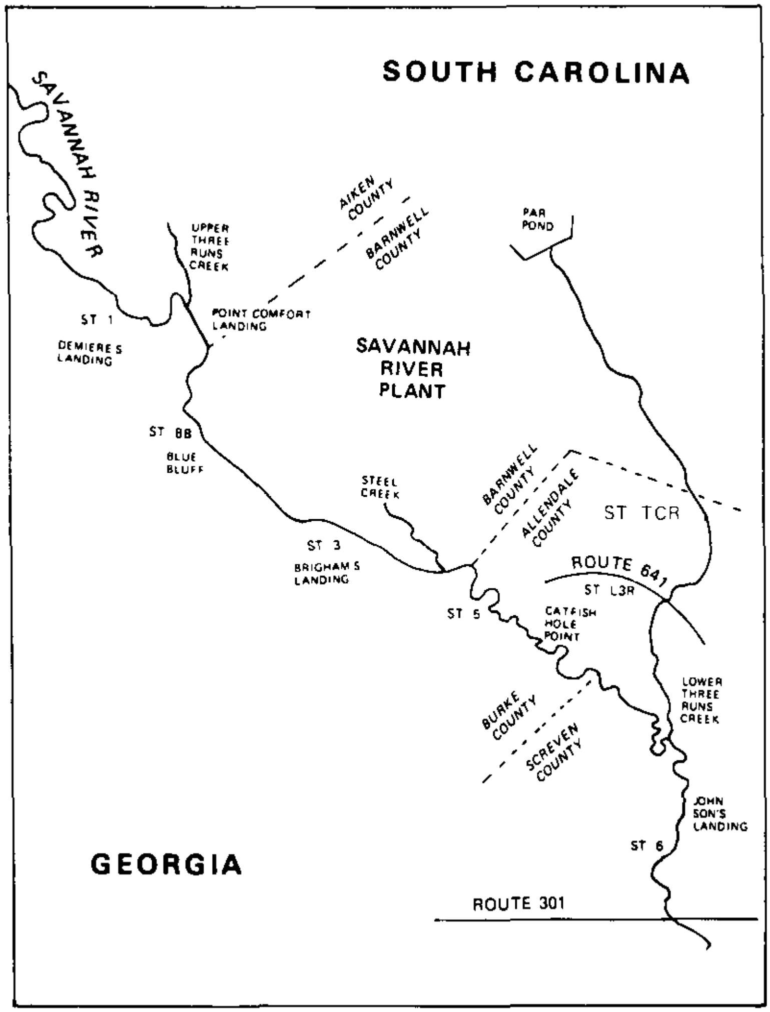


FIGURE 34. ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA SAMPLE LOCATIONS

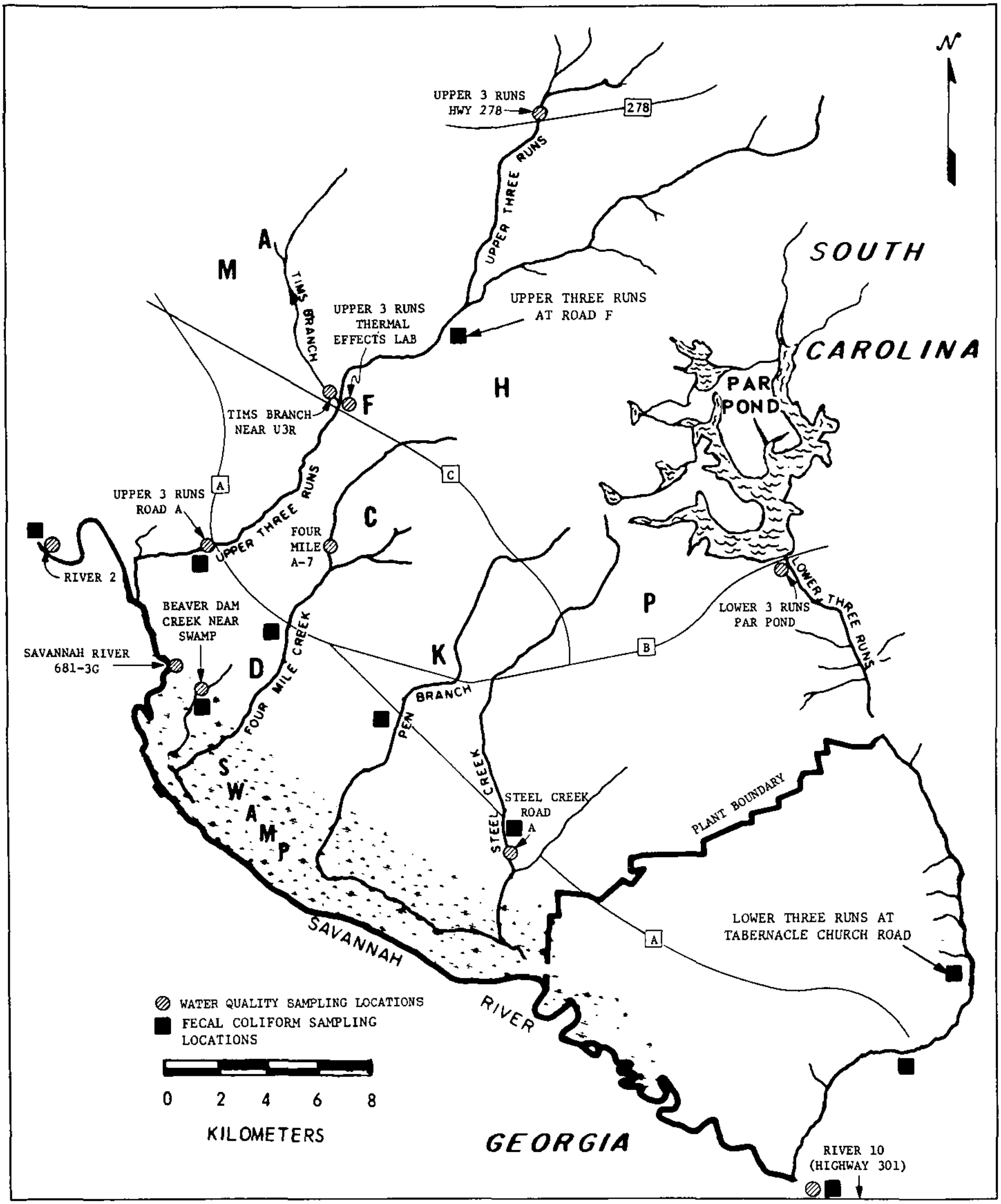


FIGURE 35. WATER QUALITY AND FECAL COLIFORM SAMPLING LOCATIONS

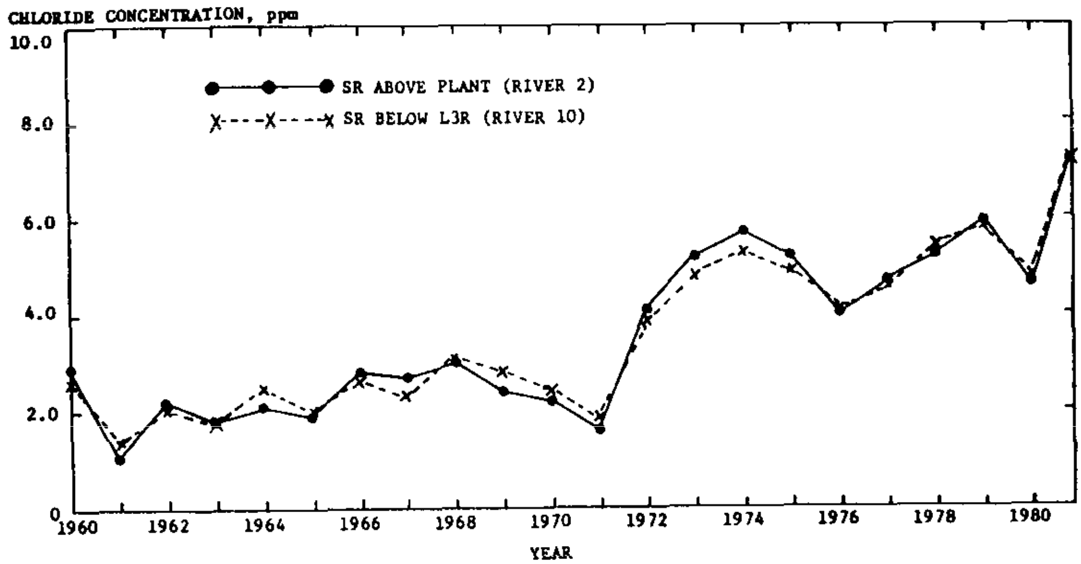


FIGURE 36. CHLORIDE CONCENTRATIONS IN THE SAVANNAH RIVER

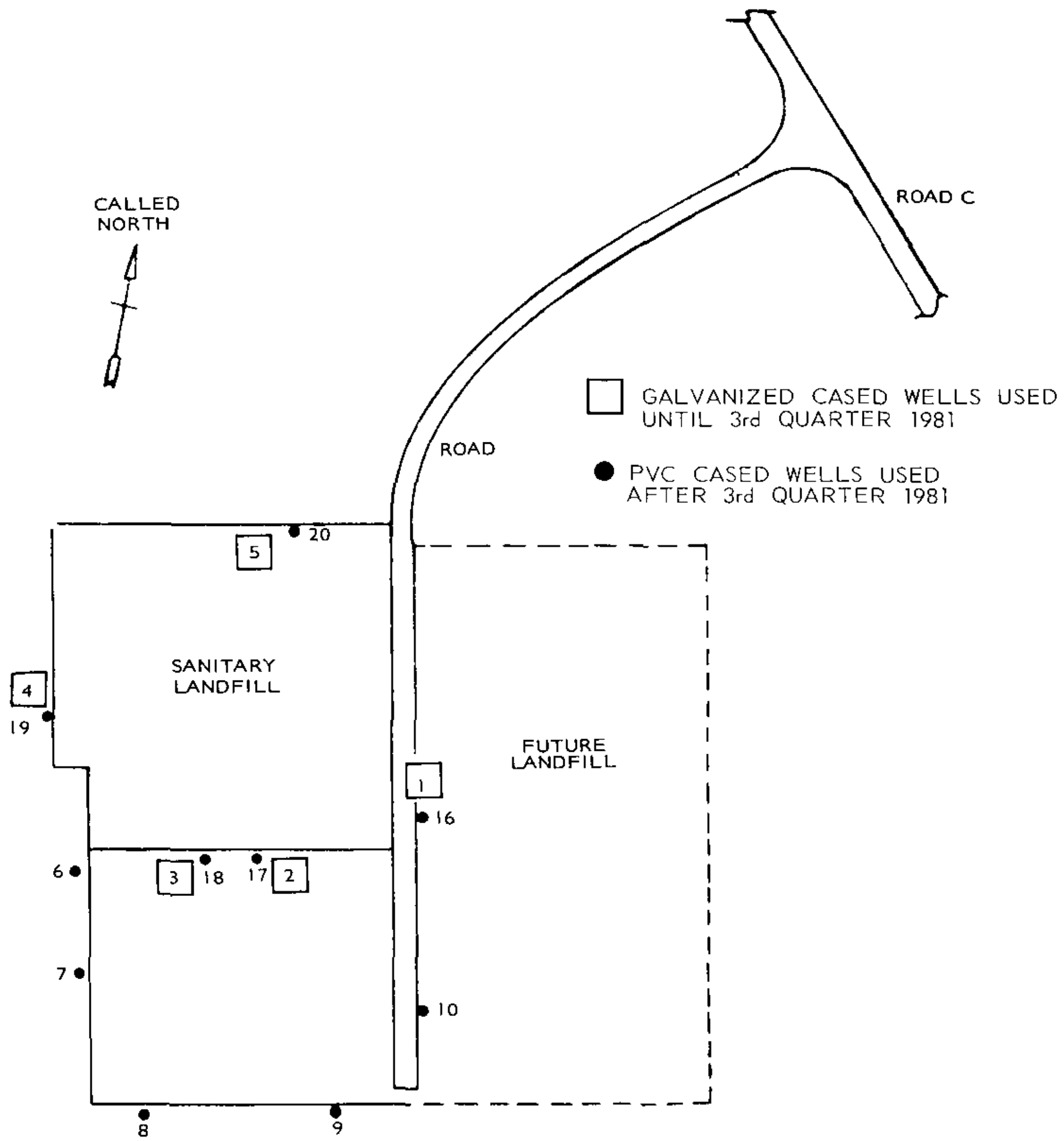


FIGURE 37. SANITARY LANDFILL WELL LOCATIONS

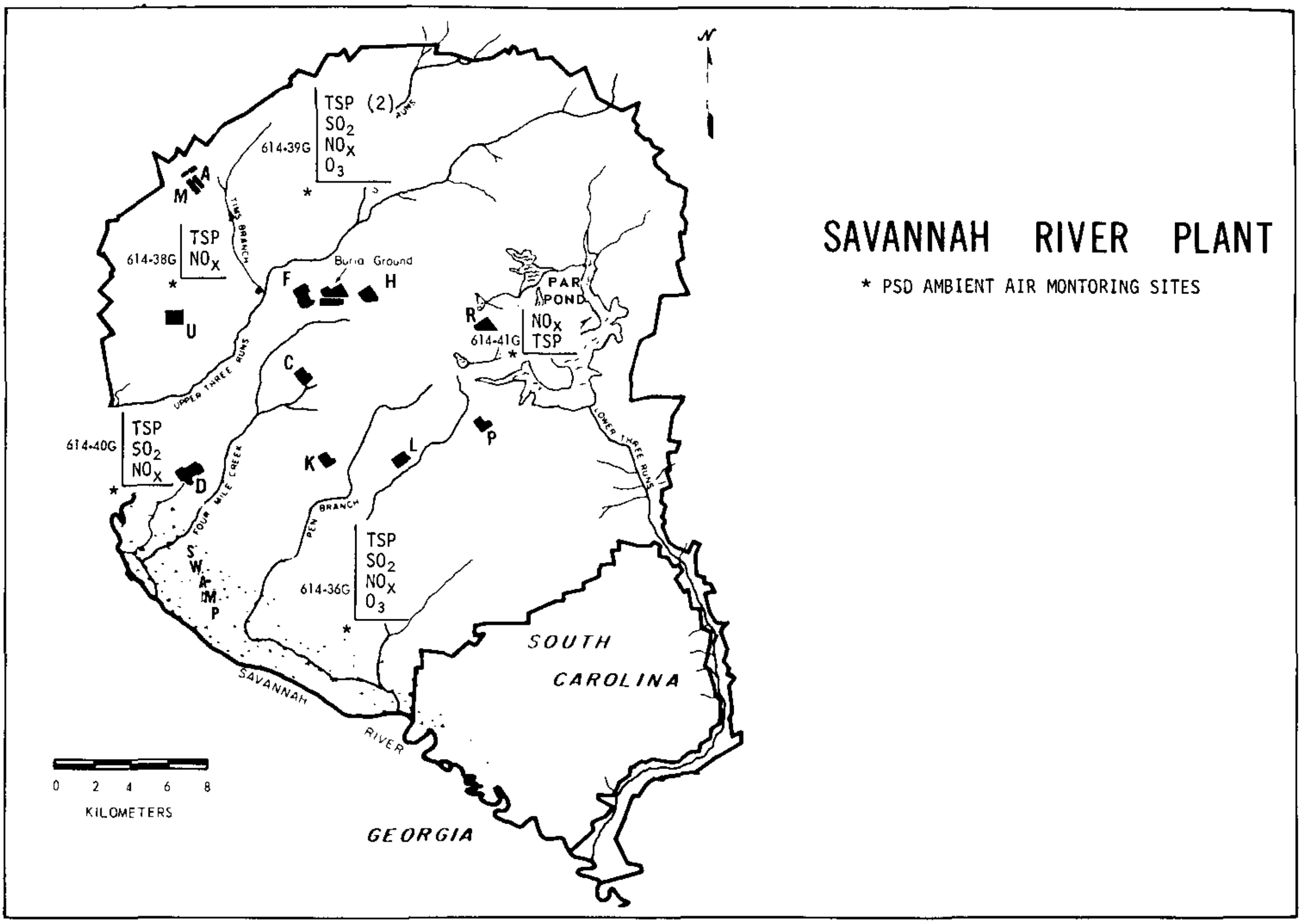


FIGURE 38. PSD AIR MONITORING SITES AND PARAMETERS

LIST OF TABLES

Tables in this report contain data from the routine SRP Environmental Monitoring Program unless otherwise noted. No attempt has been made to include all data for environmental research programs. Variations from year-to-year reflect changes in the routine environmental monitoring program or the inability to obtain samples from a specific location, such as a well that becomes dry and cannot be sampled.

LIST OF TABLES (Contd)

TABLE 1

RADIOACTIVITY IN AIR

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
	ALPHA , PCI/CU M E-2						
ON PLANT							
A AREA	41	0.27	±0.15	0.00	±0.02	0.12	±0.12
DUNBARTON	42	0.25	±0.11	0.01	±0.04	0.11	±0.12
F AREA	42	0.31	±0.13	-0.01	±0.02	0.09	±0.14
H AREA	42	0.27	±0.10	0.03	±0.05	0.12	±0.12
PAR POND	43	0.20	±0.17	-0.02	±0.02	0.06	±0.10
WILLISTON GATE	34	0.18	±0.09	0.00	±0.02	0.08	±0.10
AVERAGE						0.09	±0.12
PLANT PERIMETER							
ALLENDALE GATE	41	0.19	±0.07	0.00	±0.01	0.10	±0.08
A-14	41	0.23	±0.11	-0.02	±0.03	0.09	±0.10
BARNWELL GATE	44	0.35	±0.19	0.00	±0.01	0.09	±0.12
D AREA	41	0.13	±0.06	-0.02	±0.03	0.03	±0.06
DARK HORSE	40	0.23	±0.11	0.02	±0.03	0.11	±0.10
EAST TALATHA	42	0.23	±0.09	0.00	±0.01	0.10	±).10
GREENPOND	41	0.35	±0.15	0.03	±0.04	0.12	±0.12
HIGHWAY 21/167	44	0.25	±0.15	0.00	±0.04	0.09	±0.10
JACKSON	42	0.19	±0.08	0.03	±0.05	0.09	±0.08
PATTERSONS MILL	42	0.19	±0.07	0.01	±0.04	0.09	±0.08
TALATHA GATE	41	0.26	±0.12	0.01	±0.02	0.10	±0.12
WEST JACKSON	40	0.23	±0.11	0.03	±0.02	0.09	±0.10
WINDSOR ROAD	42	0.22	±0.10	0.01	±0.04	0.10	±0.10
AVERAGE						0.09	±0.11
25 MILE RADIUS							
AIKEN AIRPORT	42	0.19	±0.10	0.04	±0.05	0.09	±0.06
AIKEN STATE PARK	41	0.22	±0.07	0.03	±0.04	0.10	±0.08
ALLENDALE	42	0.35	±0.18	0.01	±0.04	0.08	±0.12
AUGUSTA	43	0.22	±0.11	0.00	±0.03	0.10	±0.10
HIGHWAY 301	43	0.22	±0.09	0.03	±0.05	0.09	±0.08
LANGLEY	43	0.25	±0.11	0.03	±0.05	0.10	±0.10
LEES	38	0.26	±0.12	-0.09	±0.13	0.08	±0.14
OLAR	42	0.24	±0.11	0.02	±0.04	0.11	±0.10
PERKINS	42	0.26	±0.02	-0.01	±0.01	0.09	±0.10
SOUTH RICHMOND	43	0.23	±0.09	0.00	±0.01	0.12	±0.10
SPRINGFIELD	41	0.43	±0.34	0.02	±0.04	0.11	±0.14
WAYNESBORO	43	0.18	±0.01	-0.02	±0.02	0.08	±0.08
AVERAGE						0.09	±0.11
100 MILE RADIUS							
COLUMBIA	51	0.35	±0.15	0.01	±0.03	0.16	±0.14
GREENVILLE	52	0.24	±0.11	0.03	±0.04	0.11	±0.10
MACON	40	0.22	±0.10	0.01	±0.03	0.10	±0.08
SAVANNAH	51	0.27	±0.10	0.00	±0.18	0.12	±0.12
AVERAGE						0.12	±0.12

- INSUFFICIENT DATA

TABLE 1
RADIOACTIVITY IN AIR, CONTD

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
	NONVOL BETA , PCI/CU M E-2						
ON PLANT							
A AREA	41	43	±1.4	2.1	±0.82	10	±20
DUNBARTON	42	47	±1.3	1.3	±1.0	9.7	±20
F AREA	42	34	±1.1	-0.41	±0.77	7.9	±17
H AREA	42	44	±1.4	1.7	±0.93	11	±20
PAR POND	42	25	±1.3	-0.17	±0.68	6.2	±15
WILLISTON GATE	34	31	±1.7	1.1	±0.81	7.0	±15
AVERAGE						8.7	±18
PLANT PERIMETER							
ALLENDALE GATE	41	55	±1.6	0.16	±0.44	10	±22
A-14	41	45	±1.3	-0.05	±0.89	9.8	±20
BARNWELL GATE	44	51	±1.5	-0.04	±0.76	11	±22
D AREA	41	36	±1.1	-0.45	±0.70	5.7	±18
DARK HORSE	40	39	±1.3	1.7	±0.79	10	±21
EAST TALATHA	42	48	±1.4	-0.02	±0.33	9.7	±20
GREENPOND	42	40	±2.5	1.3	±0.77	11	±19
HIGHWAY 21/167	44	43	±1.2	2.1	±0.72	10	±19
JACKSON	42	44	±1.3	1.2	±0.88	9.7	±19
PATTERSONS MILL	41	37	±1.2	1.6	±0.73	8.6	±16
TALATHA GATE	41	34	±1.1	1.8	±0.43	8.4	±15
WEST JACKSON	40	43	±1.2	1.4	±0.80	8.7	±18
WINDSOR ROAD	42	41	±1.3	1.9	±0.52	10	±19
AVERAGE						9.4	±19
25 MILE RADIUS							
AIKEN AIRPORT	42	45	±1.4	1.0	±0.72	9.4	±18
AIKEN STATE PARK	41	39	±1.2	2.1	±0.84	9.9	±18
ALLENDALE	42	74	±3.5	0.78	±0.79	8.7	±26
AUGUSTA	43	35	±1.4	-0.38	±0.73	7.8	±16
HIGHWAY 301	43	44	±1.5	0.89	±0.57	9.4	±19
LANGLEY	43	40	±2.0	0.72	±0.79	9.6	±19
LEES	38	44	±1.4	-1.4	±3.0	9.8	±19
OLAR	42	45	±1.3	1.8	±0.85	11	±20
PERKINS	42	47	±1.5	0.38	±0.75	9.2	±20
SOUTH RICHMOND	43	40	±1.4	2.0	±0.93	8.6	±16
SPRINGFIELD	41	42	±1.3	1.5	±0.77	9.6	±18
WAYNESBORO	43	47	±1.5	0.29	±0.75	8.8	±19
AVERAGE						9.3	±19
100 MILE RADIUS							
COLUMBIA	51	54	±2.1	0.27	±0.70	11	±22
GREENVILLE	51	43	±1.9	1.6	±0.83	11	±19
MACON	40	31	±1.7	0.36	±0.90	10	±17
SAVANNAH	50	40	±1.7	1.2	±0.63	11	±20
AVERAGE						11	±20

- INSUFFICIENT DATA

TABLE 1
RADIOACTIVITY IN AIR, CONTD

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
	BE-7, PCI/CU M E-2						
MONTHLY COMPOSITE							
3/700 AREA	12	66	±29	0.87	±23	24	±38
F AREA	12	59	±26	2.8	±19	20	±33
H AREA	12	55	±42	4.4	±23	26	±33
ON PLANT	12	34	±13	2.4	±7.5	16	±20
PLANT PERIMETER	12	44	±3.9	0.55	±1.7	18	±23
25 MILE RADIUS	12	34	±3.1	0.00	±2.1	18	±20
100 MILE RADIUS	12	53	±14	0.00	±11	21	±34

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
	SR-89, 90, PCI/CU M E-2						
MONTHLY COMPOSITE							
3/700 AREA	12	0.54	±0.26	-0.08	±0.15	0.18	±0.42
F-AREA	12	0.62	±0.22	-0.11	±0.19	0.14	±0.46
H AREA	12	0.43	±0.25	-0.21	±0.13	0.11	±0.34
ON PLANT	12	0.43	±0.11	-0.03	±0.09	0.09	±0.30
PLANT PERIMETER	12	0.27	±0.02	-0.01	±0.02	0.08	±0.18
25 MILE RADIUS	12	0.29	±0.02	-0.07	±0.18	0.06	±0.20
100 MILE RADIUS COMP	12	0.28	±0.07	-0.02	±0.04	0.08	±0.20

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
	ZR-95, NB-95, PCI/CU M E-2						
MONTHLY COMPOSITE							
3/700 AREA	12	36	±2.8	0.00	±2.0	8.1	±23
F AREA	12	30	±2.4	0.00	±1.1	6.3	±19
H AREA	12	36	±2.8	0.00	±1.5	8.4	±23
ON PLANT	12	20	±1.0	0.00	±0.48	6.2	±16
PLANT PERIMETER	12	23	±0.63	0.00	±0.11	6.7	±18
25 MILE RADIUS	12	22	±0.52	0.00	±0.48	6.1	±15
100 MILE RADIUS	12	31	±1.1	0.00	±0.32	7.7	±21

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
	RU-106, PCI/CU M E-2						
MONTHLY COMPOSITE							
3/700 AREA	12	9.9	±12	0.00	±11	1.5	±5.5
F AREA	12	7.3	±11	0.00	±9.4	1.5	±4.4
H AREA	12	13	±12	0.00	±13	1.7	±7.6
ON PLANT	12	6.0	±3.5	0.00	±4.6	1.1	±3.9
PLANT PERIMETER	12	9.8	±1.2	0.00	±1.3	1.8	±5.8
25 MILE RADIUS	12	7.4	±0.95	0.00	±1.4	1.7	±4.4
100 MILE RADIUS	12	10	±3.1	0.00	±3.1	1.7	±6.2

TABLE 1
RADIOACTIVITY IN AIR, CONTD

LOCATION	I-131 , PCI/CU M E-2						
	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
MONTHLY COMPOSITE							
3/700 AREA	12	32	±170	0.00	±420	8.2	±23
F AREA	12	76	±310	0.00	±150	9.6	±44
H AREA	12	59	±210	0.00	±430	7.2	±34
ON PLANT	12	6.4	±48	0.00	±160	1.2	±4.1
PLANT PERIMETER	12	0.09	±2.7	0.00	±42	0.01	±0.04
25 MILE RADIUS	12	0.00	±2.7	0.00	±47	0.00	-
100 MILE RADIUS	12	6.9	±57	0.00	±65	0.90	±4.1

- INSUFFICIENT DATA

LOCATION	CS-137 , PCI/CU M E-2						
	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
MONTHLY COMPOSITE							
3/700 AREA	12	1.8	±1.4	0.00	±1.2	0.38	±0.94
F AREA	12	1.7	±1.3	0.00	±0.81	0.67	±1.3
H AREA	12	4.3	±1.5	0.06	±0.86	1.2	±2.5
ON PLANT	12	0.84	±0.43	0.01	±0.38	0.26	±0.54
PLANT PERIMETER	12	0.97	±0.21	0.00	±0.10	0.25	±0.52
25 MILE RADIUS	12	0.72	±0.16	0.00	±0.46	0.24	±0.42
100 MILE RADIUS	12	1.1	±0.40	0.00	±0.53	0.27	±0.68

LOCATION	CE-144 , PCI/CU M E-2						
	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
MONTHLY COMPOSITE							
3/700 AREA	12	17	±6.1	0.00	±4.0	4.0	±11
F AREA	12	14	±54	0.00	±4.8	2.3	±8.1
H AREA	12	14	±6.0	0.00	±4.4	3.6	±10
ON PLANT	12	8.6	±1.9	0.00	±2.1	2.3	±6.6
PLANT PERIMETER	12	12	±0.86	0.00	±0.61	2.7	±7.7
25 MILE RADIUS	12	23	±1.4	0.00	±0.95	4.1	±13
100 MILE RADIUS	12	14	±1.8	0.00	±1.2	3.6	±9.6

LOCATION	PU-238 , ACI/CUBIC M						
	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
MONTHLY COMPOSITE							
3/700 AREA	7	7.8	±4.5	-0.40	±0.99	4.2	-
F-AREA	7	130	±17	0.71	±1.7	30	-
H AREA	8	120	±11	-14	±10	34	±90
ON PLANT COMP	8	27	±27	0.19	±0.11	5.2	±18
PLANT PERIMETER	9	9.6	±1.0	0.02	±0.04	2.2	±5.9
25 MILE RADIUS	9	4.7	±0.71	0.13	±0.15	1.6	±3.6
100 MILE RADIUS	9	3.4	±1.4	-11	±0.21	0.05	±3.4

- INSUFFICIENT DATA

LOCATION	PU-239 , ACI/CUBIC M						
	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
MONTHLY COMPOSITE							
3/700 AREA	7	54	±8.1	-0.45	±0.77	18	-
F-AREA	7	98	±9.5	2.3	±4.9	26	-
H AREA	8	49	±6.9	1.8	±0.85	25	±33
ON PLANT	8	26	±12	0.68	±0.21	13	±16
PLANT PERIMETER	9	31	±1.1	0.90	±0.66	12	±22
25 MILE RADIUS	9	36	±1.5	0.92	±0.40	11	±24
100 MILE RADIUS	9	45	±3.2	6.3	±0.17	16	±24

- INSUFFICIENT DATA

TABLE 1
RADIOACTIVITY IN AIR, CONTD

LOCATION	H-3, PCI/CU M						
	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	ARITHMETIC 2 STD DEV
ON PLANT							
A AREA	21	160	±9.5	16	±1.8	60	±86
DUNBARTON FIRE TOWER	24	980	±17	14	±5.5	140	±370
F AREA	23	1700	±22	67	±2.4	290	±670
H AREA	22	5900	±38	140	±3.8	1600	±3000
PAR POND DAM	26	180	±5.7	19	±4.5	77	±95
WILLISTON GATE	20	350	±12	7.1	±7.8	81	±140
AVERAGE						370	±1600
PLANT PERIMETER							
ALLENDALE GATE	25	120	±2.8	0.00	±7.2	37	±55
A-14	27	140	±5.3	7.9	±1.7	63	±65
BARNWELL GATE	26	160	±5.5	0.00	±7.4	56	±80
D AREA	25	290	±7.9	38	±2.3	130	±160
DARK HORSE	22	150	±8.1	0.00	±4.2	54	±66
EAST TALATHA	23	120	±6.3	12	±1.8	46	±51
GREEN POND	24	140	±6.4	4.5	±8.7	51	±81
HIGHWAY 21/167	26	110	±9.2	3.1	±3.9	46	±63
JACKSON	23	88	±8.8	5.0	±1.6	35	±51
PATTERSONS MILL RD	25	240	±11	6.5	±7.6	50	±95
TALATHA GATE	22	170	±9.5	9.9	±1.3	60	±86
WEST JACKSON	23	170	±10	12	±3.8	50	±84
WINDSOR ROAD	21	96	±7.4	3.4	±2.3	38	±52
AVERAGE						55	±93
25-MILE RADIUS							
AIKEN AIRPORT	26	80	±5.4	0.00	±7.7	19	±40
AIKEN STATE PARK	26	50	±8.8	0.00	±3.4	17	±25
ALLENDALE	24	53	±8.5	0.00	±7.9	18	±29
AUGUSTA	23	46	±9.4	0.00	±7.5	13	±23
HIGHWAY 301	23	44	±8.0	0.00	±8.5	14	±20
LANGLEY	25	92	±8.5	0.00	±7.5	20	±38
LEES	21	50	±8.9	0.00	±8.0	15	±30
OLAR	24	38	±4.2	0.00	±1.9	16	±21
PERKINS	25	59	±8.2	0.00	±7.5	14	±28
SOUTH RICHMOND	25	60	±5.2	0.00	±7.5	16	±30
SPRINGFIELD	24	34	±2.3	0.00	±1.9	17	±20
WAYNESBORO	24	78	±8.5	0.00	±7.5	20	±40
AVERAGE						17	±30
100-MILE RADIUS							
COLUMBIA	4	20	±3.4	0.00	±2.3	14	-
GREENVILLE	2	17	±2.0	12	±1.7	14	-
MACON	4	20	±7.6	1.8	±1.2	13	-
SAVANNAH	4	3.7	±4.1	0.00	±1.9	1.9	-
AVERAGE						11	±16

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TABLE 2

TRITIUM CONCENTRATIONS IN ATMOSPHERIC MOISTURE

LOCATION	H-3, PCI/ML						
	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
ON PLANT							
A-AREA	23	14	±0.57	1.6	±0.45	5.6	±6.3
DUNBARTON FIRE TOWER	25	50	±0.86	1.0	±0.41	14	±22
F-AREA	24	120	±1.3	11	±0.56	28	±48
H-AREA	23	330	±2.0	12	±0.57	130	±180
PAR POND	27	25	±0.71	1.1	±0.44	8.9	±12
WILLISTON GATE	21	23	±0.63	0.40	±0.44	9.4	±13
AVERAGE						33	±120
PLANT PERIMETER							
ALLENDALE GATE	26	29	±0.69	0.00	±0.41	4.7	±11
A-14	27	22	±0.64	1.9	±0.41	8.2	±12
BARNWELL GATE	27	19	±0.60	0.00	±0.42	6.6	±11
D-AREA	26	27	±0.72	2.8	±0.43	13	±12
DARK HORSE	23	15	±0.55	0.00	±0.48	5.6	±8.2
EAST TALATHA	24	8.6	±0.47	1.6	±0.46	4.4	±3.3
GREENPOND	25	13	±0.58	0.22	±0.43	5.0	±5.7
HIGHWAY 21/167	27	12	±0.57	0.29	±0.37	5.0	±6.4
JACKSON	24	9.0	±0.52	0.62	±0.40	3.6	±4.2
PATTERSON'S MILL RD	26	18	±0.63	0.37	±0.43	6.1	±9.4
TALATHA GATE	23	9.6	±0.51	1.9	±0.42	5.4	±5.0
WEST JACKSON	24	10	±0.55	1.2	±0.45	5.1	±5.5
WINDSOR ROAD	22	7.3	±0.56	0.58	±0.40	3.9	±3.8
AVERAGE						5.8	±9.4
25 MILE RADIUS							
AIKEN AIRPORT	27	7.8	±0.53	0.00	±0.39	2.3	±4.0
AIKEN STATE PARK	27	3.5	±0.44	0.00	±0.50	1.6	±1.7
ALLENDALE	25	8.5	±0.52	0.00	±0.40	2.3	±4.4
AUGUSTA	24	2.9	±0.43	0.00	±0.38	1.2	±1.6
HIGHWAY 301	25	3.9	±0.46	0.00	±0.40	1.4	±2.1
LANGLEY	26	5.3	±0.49	0.00	±0.38	1.9	±2.4
LEES	22	4.8	±0.45	0.00	±0.41	1.5	±2.7
OLAR	25	7.7	±0.51	0.00	±0.39	2.0	±3.8
PERKINS	26	7.8	±0.50	0.00	±0.38	1.6	±3.3
SOUTH RICHMOND	26	5.4	±0.46	0.00	±0.38	1.6	±2.4
SPRINGFIELD	26	7.3	±0.48	0.00	±0.38	1.7	±2.9
WAYNESBORO	25	7.0	±0.52	0.00	±0.38	2.1	±3.3
AVERAGE						1.8	±3.0
100 MILE RADIUS							
COLUMBIA, SC	4	2.9	±0.51	0.00	±0.39	1.4	-
GREENVILLE, SC	2	3.6	±0.43	3.1	±0.45	3.4	-
MACON, GA	4	3.9	±0.54	0.59	±0.39	1.8	-
SAVANNAH, GA	4	0.43	±0.46	0.00	±0.39	0.21	-
AVERAGE						1.7	±2.8

- INSUFFICIENT DATA

TABLE 3
RADIOACTIVITY DEPOSITED IN RAINWATER

LOCATION	NO. OF SAMPLE	ALPHA NCI/SQ M E-2	NONVOL BETA NCI/SQ M	SR-90 NCI/SQ M E-2	BE-7 NCI/SQ M	CS-137 NCI/SQ M	I-131 NCI/SQ M	RU-106 NCI/SQ M	ZR-95, NB-95 NCI/SQ M	CE-144 NCI/SQ M
ON PLANT										
A AREA	12	8.1	9.3	96	32	0.30	<0.30	<0.54	9.3	4.6
DUNBARTON FIRE TOWER	12	3.8	8.8	97	43	0.27	<0.32	<0.53	6.8	2.9
F AREA	12	2.7	5.7	20	14	0.26	<0.29	<0.54	2.9	1.9
H AREA	12	5.1	6.8	50	21	0.66	<0.30	<0.54	4.0	1.9
PAR POND DAM	13	1.9	5.2	71	19	0.20	<0.26	<0.53	3.4	2.3
WILLISTON GATE	12	7.0	7.7	40	21	0.15	<0.30	<0.53	6.3	3.0
AVG[a] →		4.8	7.3	62	25	0.31	0.00	0.00	5.4	2.8
2 STD DEV →		±4.9	±3.3	±58	±21	±0.36	±0.00	±0.00	±4.9	±2.0
PLANT PERIMETER										
ALLENDALE GATE	13	2.7	7.4	79	27	0.19	<0.25	<0.53	5.1	2.7
A-14	13	6.0	5.2	69	22	0.16	<0.25	<0.54	1.9	1.2
BARNWELL GATE	13	2.6	6.0	42	28	0.13	<0.27	<0.54	2.7	2.0
D AREA	13	4.1	6.3	0	19	0.14	<0.25	<0.53	3.6	2.1
DARK HORSE	12	4.3	6.3	30	23	0.09	<0.30	<0.53	4.3	1.9
EAST TALATHA	12	2.6	7.7	78	30	0.23	0.17	<0.54	5.7	3.1
GREEN POND	12	6.3	7.7	85	29	0.28	<0.30	<0.54	5.3	3.0
HIGHWAY 21/167	13	<0.29	6.6	59	27	0.26	<0.26	<0.53	5.0	2.9
JACKSON	13	3.6	6.7	20	28	0.27	<0.27	<0.53	5.4	2.3
PATTERSONS MILL RD	13	1.6	5.0	86	21	0.13	<0.32	<0.77	1.7	1.7
TALATHA GATE	12	3.4	7.5	20	30	0.32	<0.30	<0.53	6.1	3.0
WEST JACKSON	13	2.2	7.3	65	21	0.24	<0.33	<0.53	4.9	2.1
WINDSOR ROAD	12	3.1	5.5	70	20	<0.08	<0.30	<0.53	4.1	2.3
AVG[a] →		3.5	6.6	54	25	0.20	0.17	0.00	4.3	2.3
2 STD DEV →		±3.4	±1.9	±52	±7.8	±0.18	±0.10	±0.00	±2.9	±1.2
25-MILE RADIUS										
AIKEN AIRPORT	11	3.0	6.1	94	19	0.12	<0.33	<0.81	1.9	1.3
AIKEN STATE PARK	11	1.9	2.9	70	13	0.10	<0.29	<0.53	3.3	2.1
ALLENDALE	11	2.2	3.7	62	11	<0.08	<0.28	<0.53	1.6	1.0
AUGUSTA	13	2.8	4.8	54	19	0.15	<0.23	<0.53	3.7	1.4
HIGHWAY 301	13	5.7	6.3	20	26	0.13	<0.25	<0.53	4.8	2.2
LANGLEY	13	4.2	7.5	10	28	0.09	<0.23	<0.53	3.8	1.1
LEES	11	3.8	3.1	69	7.7	<0.08	<0.28	<0.53	1.5	0.30
OLAR	11	1.3	6.3	83	24	0.24	<0.29	<0.53	5.0	2.4
PERKINS	12	3.9	4.5	70	14	<0.08	<0.23	<0.53	3.7	0.82
SOUTH RICHMOND	13	2.2	9.5	60	26	0.13	<0.24	<0.54	2.7	2.3
SPRINGFIELD	11	2.2	6.0	61	22	0.33	<0.29	<0.53	5.1	2.2
WAYNESBORO	13	3.1	8.0	85	25	<0.08	<0.26	<0.53	5.5	1.8
AVG[a] →		3.0	5.7	61	20	0.16	0.00	0.00	3.6	1.6
2 STD DEV →		±2.4	±4.0	±60	±14	±0.20	±0.00	±0.00	±2.8	±1.4
100-MILE RADIUS										
COLUMBIA, SC	4	4.8	6.1	73	25	<0.16	<0.41	<0.55	3.3	0.67
GREENVILLE, SC	4	0.65	5.6	10	27	0.37	<5.1	<0.57	5.5	2.5
MACON, GA	4	3.7	4.9	36	16	0.15	<0.15	<0.55	4.3	2.4
SAVANNAH, GA	4	1.1	4.0	37	16	0.13	<0.49	<0.54	1.8	<0.32

VALUE SHOWN WITH < SYMBOL IS THE MINIMUM DETECTABLE VALUE FOR A MONTLY SAMPLE.
[a]ONLY VALUES ABOVE THE MINIMUM LEVEL OF DETECTION ARE AVERAGED.

TABLE 3
RADIOACTIVITY DEPOSITED IN RAINWATER CONTD

PLUTONIUM IN RAINWATER

LOCATION	NO. OF SAMPLE	PCI/SQ M PU-238	PCI/SQ M PU-239
ON PLANT			
A AREA	10	2.1	0.4
F AREA	10	4.8	4.7
H AREA	10	8.0	7.6
ON PLANT COMP	10	3.1	2.2
AVG →		4.5	3.7
2 STD DEV →			
COMPOSITES			
PLANT PERIMETER COMP	10	8.3	1.0
25-MILE RADIUS COMP	10	6.0	7.5
AVG →		7.2	4.3
2 STD DEV →		±3.2	±9.2
100-MILE RADIUS			
COLUMBIA, SC	3	0.55	0.37
GREENVILLE, SC	3	0.81	0.45
SAVANNAH, GA	4	0.97	0.07
MACON, GA	3	1.90	1.50
AVG →		1.1	0.60
2 STD DEV →		±1.1	±1.3

VALUE SHOWN WITH < SYMBOL IS THE MINIMUM DETECTABLE VALUE FOR A MONTLY SAMPLE.

TABLE 3
RADIOACTIVITY IN RAINWATER, CONTD

	H-3, PCI/ML						
LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	ARITHMETIC 2 STD DEV
ON PLANT							
A AREA	23	5.0	±0.44	0.00	±0.40	1.3	±2.4
DUNBARTON FIRE TOWER	23	59	±0.53	0.00	±0.40	8.9	±2.7
F AREA	22	45	±0.57	1.40	±0.40	12	±20
H AREA	23	130	±0.84	0.50	±0.40	43	±67
PAR POND DAM	21	19	±0.48	0.00	±0.40	4.5	±8.8
WILLISTON GATE	18	7.9	±0.45	0.00	±0.40	2.9	±4.5
AVERAGE							
PLANT PERIMETER							
ALLENDALE GATE	19	7.1	±0.47	0.00	±0.39	1.3	±3.3
A-14	20	12	±0.53	0.00	±0.46	4.5	±7.6
BARNWELL GATE	19	12	±0.56	0.00	±0.45	3.1	±6.1
D AREA	19	36	±0.75	0.00	±0.34	8.1	±19
DARK HORSE	22	4.3	±0.45	0.00	±0.40	1.7	±2.8
EAST TALATHA	22	3.5	±0.44	0.00	±0.40	1.2	±2.3
GREEN POND	22	8.6	±0.51	0.00	±0.38	1.4	±3.8
HIGHWAY 21/167	20	5.4	±0.46	0.00	±0.40	1.9	±2.9
JACKSON	16	3.4	±0.46	0.00	±0.39	1.3	±2.5
PATTERSONS MILL RD	22	4.2	±0.51	0.00	±0.43	1.3	±2.4
TALATHA GATE	23	5.4	±0.47	0.00	±0.34	1.5	±2.7
WEST JACKSON	24	22	±0.63	0.00	±0.38	3.5	±10
WINDSOR ROAD	21	10	±0.56	0.00	±0.39	2.0	±4.6
AVERAGE						2.5	±7.7
25-MILE RADIUS							
AIKEN AIRPORT	21	2.2	±0.48	0.00	±0.37	0.55	±1.2
AIKEN STATE PARK	26	1.7	±0.57	0.00	±0.39	0.52	±0.98
ALLENDALE	24	5.7	±0.49	0.00	±0.39	0.77	±2.7
AUGUSTA	21	1.1	±0.39	0.00	±0.40	0.30	±0.84
HIGHWAY 301	23	1.8	±0.40	0.00	±0.39	0.30	±0.84
LANGLEY	23	2.5	±0.44	0.00	±0.39	0.49	±1.4
LEES	24	2.1	±0.44	0.00	±0.45	0.62	±1.1
OLAR	23	2.0	±0.42	0.00	±0.39	0.54	±1.2
PERKINS	21	3.4	±0.45	0.00	±0.38	1.0	±2.0
SOUTH RICHMOND	22	4.2	±0.45	0.00	±0.40	0.79	±2.5
SPRINGFIELD	23	1.5	±0.47	0.00	±0.38	0.68	±1.0
WAYNESBORO	19	3.6	±0.45	0.00	±0.40	0.70	±2.1
AVERAGE						0.60	±1.6

TABLE 4
TLD GAMMA RADIATION MEASUREMENTS

LOCATION	NO. OF SAMPLES	TLD, MR/24 HRS MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	ARITHMETIC 2 STD DEV
700-A AREA							
TECHNICAL AREA 1	3	0.37	±0.03	0.35	±0.03	0.36	-
TECHNICAL AREA 2	2	0.40	±0.03	0.34	±0.03	0.37	-
TECHNICAL AREA 3	3	0.30	±0.03	0.25	±0.02	0.27	-
TECHNICAL AREA 4	3	0.66	±0.05	0.41	±0.03	0.56	-
AVERAGE						0.39	-
100-C AREA							
C-AREA CORNER 1	2	0.18	±0.02	0.18	±0.02	0.18	-
C-AREA CORNER 2	2	0.20	±0.02	0.20	±0.02	0.20	-
C-AREA CORNER 3	3	0.28	±0.03	0.24	±0.02	0.26	-
C-AREA CORNER 4	2	0.25	±0.02	0.24	±0.02	0.25	-
AVERAGE						0.23	-
CENTRAL SHOPS							
CENTRAL SHOPS 1	2	0.26	±0.02	0.24	±0.02	0.25	-
CENTRAL SHOPS 2	2	0.32	±0.03	0.31	±0.03	0.32	-
AVERAGE						0.28	-
400-D AREA							
D-AREA CORNER 1	3	0.26	±0.02	0.22	±0.02	0.24	-
D-AREA CORNER 2	2	0.18	±0.02	0.18	±0.02	0.18	-
AVERAGE						0.22	-
200-F AREA							
F-AREA CORNER 1	2	0.39	±0.03	0.28	±0.03	0.34	-
F-AREA CORNER 2	3	0.25	±0.02	0.20	±0.02	0.23	-
F-AREA CORNER 3	2	0.85	±0.05	0.36	±0.03	0.61	-
F-AREA CORNER 4	3	0.79	±0.05	0.70	±0.05	0.74	-
AVERAGE						0.48	-
200-H AREA							
H-AREA CORNER 1	3	0.39	±0.03	0.30	±0.03	0.35	-
H-AREA CORNER 2	3	2.16	±0.06	1.14	±0.06	1.61	-
H-AREA CORNER 3	3	0.24	±0.02	0.22	±0.02	0.23	-
H-AREA CORNER 4	2	0.69	±0.05	0.54	±0.04	0.62	-
AVERAGE						0.71	-
100-K AREA							
K-AREA CORNER 1	3	0.25	±0.02	0.25	±0.02	0.25	-
K-AREA CORNER 2	3	0.25	±0.02	0.20	±0.02	0.22	-
K-AREA CORNER 3	3	0.24	±0.02	0.23	±0.02	0.24	-
K-AREA CORNER 4	3	0.47	±0.03	0.45	±0.03	0.46	-
AVERAGE						0.29	-
300-M AREA							
M-AREA CORNER 1	3	0.31	±0.03	0.22	±0.02	0.26	-
M-AREA CORNER 2	3	0.23	±0.02	0.20	±0.02	0.21	-
M-AREA CORNER 3	3	0.57	±0.04	0.50	±0.04	0.53	-
M-AREA CORNER 4	2	0.31	±0.03	0.28	±0.03	0.30	-
AVERAGE						0.33	-
100-P AREA							
P-AREA CORNER 1	3	0.26	±0.02	0.22	±0.02	0.24	-
P-AREA CORNER 2	3	0.23	±0.02	0.18	±0.02	0.20	-
P-AREA CORNER 3	3	0.24	±0.02	0.22	±0.02	0.23	-
P-AREA CORNER 4	3	0.26	±0.02	0.20	±0.02	0.23	-
AVERAGE						0.23	-
100-L AREA							
L-AREA CORNER 1	3	0.25	±0.02	0.20	±0.02	0.22	-
L-AREA CORNER 2	3	0.24	±0.02	0.20	±0.02	0.21	-
L-AREA CORNER 3	3	0.25	±0.02	0.19	±0.02	0.23	-
L-AREA CORNER 4	3	0.24	±0.02	0.19	±0.02	0.22	-
AVERAGE						0.22	-

TABLE 4
TLD GAMMA RADIATION MEASUREMENTS, CONTD

LOCATION	NO. OF SAMPLES	TLD, MR/24 HRS MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
ON PLANT							
A AREA	4	0.25	±0.02	0.18	±0.02	0.22	-
DUNBARTON	4	0.24	±0.02	0.22	±0.02	0.23	-
F-AREA MONITOR STA	4	0.49	±0.04	0.40	±0.03	0.45	-
H-AREA MONITOR STA	4	0.88	±0.06	0.43	±0.03	0.63	-
PAR POND	4	0.29	±0.03	0.23	±0.02	0.26	-
WILLISTON GATE	4	0.18	±0.02	0.14	±0.01	0.17	-
AVERAGE						0.32	±0.36
PLANT PERIMETER							
ALLENDALE GATE	4	0.17	±0.02	0.13	±0.01	0.15	-
A-14	4	0.22	±0.02	0.17	±0.02	0.19	-
BARNWELL GATE	4	0.22	±0.02	0.18	±0.02	0.20	-
D AREA	4	0.22	±0.02	0.16	±0.02	0.19	-
DARK HORSE	4	0.17	±0.02	0.12	±0.01	0.15	-
EAST TALATHA	4	0.18	±0.02	0.13	±0.01	0.15	-
GREEN POND	4	0.18	±0.02	0.14	±0.01	0.16	-
HIGHWAY 21/167	4	0.19	±0.02	0.16	±0.02	0.17	-
JACKSON	4	0.23	±0.02	0.17	±0.02	0.21	-
PATTERSONS MILL	4	0.18	±0.02	0.13	±0.01	0.16	-
TALATHA GATE	4	0.19	±0.02	0.16	±0.02	0.18	-
WEST JACKSON	4	0.28	±0.03	0.24	±0.02	0.25	-
WINDSOR ROAD	4	0.18	±0.02	0.14	±0.01	0.16	-
AVERAGE						0.17	±0.07
25-MILE RADIUS							
AIKEN AIRPORT	4	0.20	±0.02	0.19	±0.02	0.20	-
AIKEN STATE PARK	4	0.16	±0.02	0.14	±0.01	0.15	-
ALLENDALE	4	0.21	±0.02	0.17	±0.02	0.19	-
AUGUSTA	4	0.21	±0.02	0.16	±0.02	0.19	-
HIGHWAY 301	4	0.26	±0.02	0.20	±0.02	0.23	-
LANGLEY	3	0.19	±0.02	0.15	±0.02	0.17	-
LEES	4	0.18	±0.02	0.15	±0.02	0.16	-
OLAR	4	0.19	±0.02	0.16	±0.02	0.17	-
PERKINS	4	0.20	±0.02	0.18	±0.02	0.19	-
SOUTH RICHMOND	4	0.22	±0.02	0.16	±0.01	0.19	-
SPRINGFIELD	4	0.22	±0.02	0.19	±0.02	0.21	-
WAYNESBORO	4	0.25	±0.02	0.19	±0.02	0.22	-
AVERAGE						0.19	±0.05
100-MILE RADIUS							
COLUMBIA	4	0.18	±0.02	0.16	±0.02	0.17	-
GREENVILLE	4	0.38	±0.03	0.27	±0.02	0.34	-
MACON	3	0.28	±0.03	0.26	±0.02	0.27	-
SAVANNAH	4	0.19	±0.02	0.17	±0.01	0.18	-
AVERAGE						0.24	±0.15
NEAR ALLIED GENERAL							
ALLIED GENERAL AG 1	2	0.17	±0.02	0.17	±0.02	0.17	-
ALLIED GENERAL AG 2	2	0.16	±0.01	0.13	±0.01	0.14	-
ALLIED GENERAL AG 3	2	0.16	±0.01	0.13	±0.01	0.14	-
ALLIED GENERAL AG 4	2	0.16	±0.01	0.13	±0.01	0.14	-
AVERAGE						0.15	-
NEAR VOGTLE							
PUMPHOUSE ROAD 1	2	0.18	±0.02	0.16	±0.01	0.17	-
PUMPHOUSE ROAD 2	2	0.20	±0.02	0.20	±0.02	0.20	-
PUMPHOUSE ROAD 3	2	0.14	±0.01	0.13	±0.01	0.14	-
PUMPHOUSE ROAD 4	2	0.15	±0.01	0.14	±0.01	0.14	-
PUMPHOUSE ROAD 5	2	0.21	±0.02	0.20	±0.02	0.20	-
PUMPHOUSE ROAD 6	2	0.22	±0.02	0.20	±0.02	0.21	-
AVERAGE						0.18	-

- INSUFFICIENT DATA

TABLE 5
RADIOACTIVITY IN DRINKING WATER

LOCATION	NO. OF SAMPLES	ALPHA, PCI/L MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
ON PLANT							
A AREA	2	0.66	±0.46	0.47	±0.40	0.57	-
ALLENDALE GATE	2	0.33	±0.35	-0.07	±0.13	0.13	-
BARNWELL GATE	2	0.07	±0.23	0.00	±0.19	0.04	-
C AREA	2	0.46	±0.39	0.00	±0.19	0.23	-
CENTRAL SHOPS	2	0.33	±0.35	0.13	±0.26	0.23	-
CLASSIFICATION YARD	2	1.3	±0.63	0.73	±0.48	1.0	-
TNX	2	0.26	±0.37	0.07	±0.23	0.17	-
D AREA	2	0.13	±0.26	0.00	±0.19	0.07	-
F AREA	2	2.0	±0.76	0.98	±0.54	1.5	-
FIRING RANGE	2	3.3	±0.96	0.00	±0.19	1.6	-
FORESTRY BLDG	2	3.1	±0.93	0.65	±0.45	1.9	-
681 1 G	2	0.47	±0.40	0.26	±0.32	0.37	-
681 3G	2	0.79	±0.49	0.74	±0.48	0.77	-
H AREA	2	2.0	±0.76	1.6	±0.67	1.8	-
JACKSON GATE	2	0.80	±0.50	0.73	±0.48	0.77	-
K AREA	2	0.46	±0.40	0.07	±0.23	0.27	-
P AREA	2	0.13	±0.26	0.07	±0.23	0.10	-
PAR POND PUMP HOUSE	0	0.00	±0.63	0.00	±0.48	0.00	-
ROBBINS STATION	2	0.20	±0.30	0.00	±0.19	0.10	-
TALATHA GATE	2	2.8	±0.89	2.2	±0.79	2.5	-
TC	2	2.2	±0.79	0.79	±0.49	1.5	-
THERMAL EFFECTS LAB	2	0.40	±0.37	0.13	±0.27	0.27	-
WILLISTON GATE	2	0.20	±0.30	0.07	±0.23	0.14	-
AVERAGE						0.70	±1.8
OFF PLANT							
AIKEN	2	1.4	±0.64	0.84	±0.50	1.1	-
ALLENDALE	2	0.39	±0.37	0.19	±0.29	0.29	-
AUGUSTA	2	0.58	±0.43	0.19	±0.29	0.39	-
BARNWELLN	2	0.39	±0.37	0.00	±0.18	0.20	-
BATH	2	0.32	±0.34	0.13	±0.26	0.23	-
BLACKVILLE	2	0.00	±0.55	0.00	±0.18	0.00	-
CLEARWATER	2	0.32	±0.34	0.32	±0.34	0.32	-
JACKSON	2	0.58	±0.43	0.46	±0.39	0.52	-
LANGLEY	2	0.78	±0.49	0.65	±0.45	0.72	-
NEW ELLENTON	2	0.71	±0.47	0.20	±0.29	0.46	-
NORTH AUGUSTA	2	0.19	±0.29	0.06	±0.23	0.13	-
SARDIS	2	0.00	±0.37	-0.06	±0.13	0.03	-
WAYNESBORO	2	0.26	±0.32	0.00	±0.18	0.13	-
WILLISTON	2	1.0	±0.55	0.45	±0.39	0.75	-
AVERAGE						0.37	±0.71
TREATMENT PLANTS							
SAVANNAH RAW	11	0.32	±0.34	-0.13	±0.18	0.09	±0.26
SAVANNAH FINISHED	12	0.33	±0.40	-0.13	±0.18	0.03	±0.24
BEAUFORT RAW	12	0.19	±0.39	-0.07	±0.23	0.06	±0.16

- INSUFFICIENT DATA

TABLE 5
RADIOACTIVITY IN DRINKING WATER, CONTD

LOCATION	NONVOL BETA, PCI/L NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
ON PLANT							
A AREA	2	2.2	±5.9	-3.4	±5.4	0.60	-
ALLENDALE GATE	2	0.00	±5.8	-2.1	±5.7	1.80	-
BARNWELL GATE	2	1.1	±5.8	-0.65	±5.5	0.22	-
C AREA	2	4.4	±5.8	-2.0	±5.5	1.2	-
CENTRAL SHOPS	2	0.00	±5.6	-3.1	±5.4	2.90	-
CLASSIFICATION YARD	2	1.5	±5.6	-3.5	±5.7	0.98	-
TNX	2	2.6	±5.6	2.2	±5.9	2.4	-
D AREA	2	2.0	±5.6	0.11	±5.8	1.0	-
F AREA	2	8.4	±6.1	3.7	±5.9	6.1	-
FIRING RANGE	2	8.3	±5.9	-2.4	±5.7	2.9	-
FORESTRY BLDG	2	9.5	±6.2	8.4	±5.9	8.9	-
681-1G	2	8.2	±5.9	2.7	±5.9	5.5	-
681-3G	2	3.7	±5.7	0.54	±5.9	2.1	-
H AREA	2	8.7	±6.0	7.9	±5.8	8.3	-
JACKSON GATE	2	0.00	±5.9	-2.1	±5.5	1.50	-
K AREA	2	3.4	±5.9	-2.0	±5.5	0.71	-
P AREA	2	2.8	±5.9	-1.9	±5.5	0.49	-
PAR POND PUMP HOUSE	0	0.00	±5.6	0.00	±5.7	0.00	-
ROBBINS STATION	2	3.8	±5.7	-2.1	±5.7	0.87	-
TALATHA GATE	2	13	±6.7	8.0	±5.8	11	-
TC	2	7.2	±5.8	2.2	±5.9	4.7	-
THERMAL EFFECTS LAB	2	0.00	±6.0	-6.2	±5.6	3.70	-
WILLISTON GATE	2	0.65	±5.8	-1.6	±5.5	0.49	-
AVERAGE						1.9	±8.3
OFF PLANT							
AIKEN	1	0.22	±5.6	0.22	±5.6	0.22	-
ALLENDALE	2	0.44	±5.9	-0.65	±5.6	0.11	-
AUGUSTA	2	0.87	±5.6	-2.5	±5.8	0.82	-
BARNWELLN	2	2.5	±5.9	-2.1	±5.5	0.22	-
BATH	2	2.1	±5.8	-2.3	±5.5	0.11	-
BLACKVILLE	2	0.11	±5.7	-1.5	±5.6	0.71	-
CLEARWATER	2	0.00	±6.0	-6.7	±5.6	4.40	-
JACKSON	2	7.1	±5.9	2.7	±5.7	4.9	-
LANGLEY	2	4.6	±6.0	2.6	±5.7	3.6	-
NEW ELLENTON	2	9.8	±6.0	3.8	±5.8	6.8	-
NORTH AUGUSTA	2	2.9	±6.0	-0.33	±5.6	1.3	-
SARDIS	2	0.98	±5.9	-0.11	±5.6	0.44	-
WAYNESBORO	2	0.00	±5.9	-3.6	±5.5	2.20	-
WILLISTON	2	0.65	±5.6	-0.44	±5.8	0.11	-
AVERAGE						0.66	±5.6
TREATMENT PLANTS							
SAVANNAH RAW	11	4.4	±5.9	-0.22	±5.7	2.6	±2.9
SAVANNAH FIN COMP	12	5.9	±5.6	-6.2	±6.1	0.59	±5.5
BEAUFORT RAW COMP	12	3.8	±6.2	-3.3	±5.6	0.73	±3.5

- INSUFFICIENT DATA

TABLE 5
RADIOACTIVITY IN DRINKING WATER, CONTD

LOCATION	NO. OF SAMPLES	H-3, PCI/ML MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
ON PLANT							
A AREA	2	0.00	±0.39	0.00	±0.38	0.00	-
ALLENDALE GATE	2	0.06	±0.43	0.00	±0.38	0.03	-
BARNWELL GATE	2	0.63	±0.42	0.00	±0.38	0.32	-
C AREA	2	0.99	±0.40	0.40	±0.42	0.70	-
CENTRAL SHOPS	2	0.30	±0.42	0.06	±0.38	0.18	-
CLASSIFICATION YARD	2	0.15	±0.38	0.00	±0.42	0.08	-
TNX	2	0.00	±0.41	0.00	±0.38	0.00	-
D AREA	2	0.81	±0.39	0.56	±0.42	0.69	-
F AREA	2	0.30	±0.38	0.00	±0.41	0.15	-
FIRING RANGE	2	1.7	±0.40	1.7	±0.44	1.7	-
FORESTRY BLDG	2	1.0	±0.44	0.84	±0.39	0.94	-
681 1G	2	0.00	±0.42	0.00	±0.38	0.00	-
681 3G	2	0.00	±0.42	0.00	±0.38	0.00	-
H AREA	2	0.21	±0.38	0.00	±0.42	0.11	-
JACKSON GATE	2	0.03	±0.42	0.00	±0.38	0.02	-
K AREA	2	0.46	±0.42	0.30	±0.38	0.38	-
P AREA	2	0.63	±0.39	0.00	±0.43	0.32	-
PAR POND PUMP HOUSE	1	0.16	±0.41	0.16	±0.41	0.16	-
ROBBINS STATION	2	0.89	±0.42	0.18	±0.38	0.54	-
TALATHA GATE	2	1.9	±0.41	1.4	±0.45	1.7	-
TC	2	2.1	±0.41	0.33	±0.42	1.2	-
THERMAL EFFECTS LAB	2	0.22	±0.43	0.00	±0.38	0.11	-
WILLISTON GATE	2	0.21	±0.38	0.00	±0.42	0.11	-
AVERAGE						0.40	±1.1
OFF PLANT							
AIKEN STREAM & WELL	2	0.66	±0.42	0.00	±0.39	0.33	-
ALLENDALE WELL	2	0.20	±0.41	0.00	±0.39	0.10	-
AUGUSTA RIVER	2	0.40	±0.42	0.15	±0.39	0.28	-
BARNWELL WELL	2	0.00	±0.41	0.00	±0.39	0.00	-
BATH WELL	2	0.53	±0.41	0.00	±0.39	0.27	-
BLACKVILLE WELL	2	0.23	±0.41	0.00	±0.39	0.12	-
CLEARWATER LAKE	2	0.73	±0.42	0.03	±0.39	0.38	-
JACKSON WELL	2	0.53	±0.42	0.00	±0.39	0.27	-
LANGLEY WELL	2	0.23	±0.41	0.00	±0.39	0.12	-
NEW ELLENTON WELL	2	0.43	±0.41	0.00	±0.39	0.22	-
NORTH AUGUSTA RIVER	2	0.40	±0.42	0.09	±0.39	0.25	-
SARDIS WELL	2	0.24	±0.39	0.20	±0.41	0.22	-
WAYNESBORO STREAM	2	0.21	±0.39	0.13	±0.41	0.17	-
WILLISTON WELL	2	0.30	±0.41	0.00	±0.39	0.15	-
AVERAGE						0.20	±0.44
TREATMENT PLANTS							
SAVANNAH RAW	11	4.6	±0.55	1.6	±0.41	3.3	±1.9
SAVANNAH FIN COMP	11	4.2	±0.55	1.9	±0.41	3.3	±1.3
BEAUFORT RAW COMP	12	4.0	±0.54	0.01	±0.46	2.3	±2.2

- INSUFFICIENT DATA

TABLE 6

RADIOACTIVITY IN PLANT STREAM WATER

		ALPHA	, PCI/L				
LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
TIMS BRANCH							
TB-2 A EFFLUENT	51	3.7	±1.0	0.00	±0.33	0.79	±1.5
TB-2A BELOW 773-A SB	51	2.1	±0.79	0.00	±0.26	0.57	±0.90
TB-3 M EFFLUENT	51	3700	±140	160	±29	930	±1400
TB-5 NEAR ROAD C	51	3.2	±0.95	0.07	±0.23	1.1	±1.2
700-A1 OUTFALL	51	0.91	±0.52	-0.07	±0.23	0.34	±0.50
UPPER THREE RUNS							
U3R-2 F STORM SEWER	51	96	±5.0	3.0	±0.90	19	±39
U3R-3 ROAD C	50	2.3	±0.83	0.00	±0.19	0.88	±0.86
U3R-4 ROAD A	51	2.7	±0.87	-0.07	±0.30	0.75	±1.1
BEAVER DAM CREEK							
400-D EFFLUENT	51	1.8	±0.70	-0.07	±0.30	0.60	±1.0
FOUR MILE CREEK							
BURIAL GROUND DITCH	35	1.4	±0.64	0.07	±0.30	0.59	±0.70
FM-1B COOL TOWER EFF	51	4.7	±1.1	0.80	±0.57	2.8	±1.9
H H-3 FAC OUTFALL 50	51	12	±1.8	0.39	±0.37	1.9	±3.8
FM-1C H EFFLUENT	51	3.4	±0.98	0.19	±0.34	0.82	±1.3
FM-2 ROAD 4	51	3.6	±0.98	0.20	±0.40	1.2	±1.4
FM-2B ABOVE F EFF	50	2.4	±0.85	0.13	±0.26	0.95	±0.94
FM-3 F EFFLUENT	51	12	±3.2	0.13	±0.37	2.8	±6.3
FM-3A BELOW F EFF	51	3.2	±0.94	0.06	±0.29	1.2	±1.5
FM-4 ROAD C	51	1.8	±0.71	0.19	±0.39	0.81	±0.76
FM-6 ROAD A	50	0.65	±0.45	-0.13	±0.19	0.13	±0.34
FM-A7 ROAD A-7	47	3.9	±1.1	0.06	±0.29	0.76	±1.2
INDIAN GRAVE BRANCH							
IGB-1 ROAD 6-4	4	0.33	±0.40	0.00	±0.19	0.18	-
IGB-5 400' N OF 6-2	2	0.20	±0.35	0.20	±0.35	0.20	-
IGB-7 ROAD 6-2	2	0.54	±0.50	0.33	±0.40	0.44	-
IGB-13	4	0.20	±0.36	0.00	±0.33	0.10	-
IGB-21 800' S OF 6-1	4	0.40	±0.42	0.13	±0.38	0.28	-
PEN BRANCH							
PB-1 K SEC EFFLUENT	51	1.1	±0.60	-0.13	±0.19	0.17	±0.46
PB-3 ROAD A	50	0.40	±0.33	-0.13	±0.18	0.06	±0.20
STEEL CREEK							
SC-1 P SEC EFFLUENT	51	0.91	±0.49	-0.13	±0.18	0.18	±0.50
SC-5 2 MI BELOW RD A	51	0.58	±0.43	-0.20	±0.23	0.08	±0.30
SC-6 MOUTH	46	0.54	±0.50	-0.13	±0.19	0.10	±0.26
PAR POND							
PP-2 PUMPHOUSE	51	1.4	±0.61	-0.20	±0.23	0.10	±0.52
LOWER THREE RUNS CK							
L3R-1 TRIBUTARY	5	2.3	±0.81	0.99	±0.58	1.8	-
L3R-1A ROAD B	46	0.65	±0.45	-0.13	±0.18	0.08	±0.36
L3R-2 PATTERSON'S M	45	1.2	±0.60	-0.13	±0.27	0.20	±0.56
L3R-3 ROAD A	49	1.2	±0.60	-0.13	±0.19	0.17	±0.48
SAVANNAH RIVER SWAMP							
THX 1	51	2.1	±0.79	-0.07	±0.30	0.57	±1.2

- INSUFFICIENT DATA

TABLE 6
RADIOACTIVITY IN PLANT STREAM WATER, CONTD

LOCATION	NO. OF SAMPLES	U/PU, PCI/L MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
TIMS BRANCH							
TB-2 A EFFLUENT	52	2.0	±1.1	-0.15	±0.53	0.60	±1.1
TB-2A BELOW 773-A SB	51	3.8	±1.5	-0.24	±0.34	0.75	±1.7
TB-3 M EFFLUENT	51	6900	±210	180	±33	1200	±2200
UPPER THREE RUNS							
U3R-4 ROAD A	52	1.4	±1.1	-0.30	±0.43	0.22	±0.68
FOUR MILE CREEK							
FM-6 ROAD A	51	1.2	±0.96	-0.37	±0.43	0.18	±0.60
PEN BRANCH							
PB-3 ROAD A	49	1.1	±0.93	-0.25	±0.35	0.21	±0.62
STEEL CREEK							
SC-5 2 MI BELOW RD A	52	2.0	±1.3	-0.25	±0.35	0.15	±0.66
SC-6 MOUTH	47	2.4	±1.3	-0.26	±0.37	0.17	±0.86
LOWER THREE RUNS CK							
L3R-2 PATTERSON'S M	43	0.77	±0.81	-0.26	±0.37	0.16	±0.48
SAVANNAH RIVER SWAMP							
TNX 1	52	13	±2.6	-0.26	±0.37	0.72	±3.8

TABLE 6
RADIOACTIVITY IN PLANT STREAM WATER, CONTD

	NONVOL BETA , PCI/L					
LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
TIMS BRANCH							
TB-2 A EFFLUENT	52	13	±5.9	-6.1	±6.3	2.6	±7.5
TB-2A BELOW 773-A SB	52	17	±6.3	-4.5	±5.5	2.5	±7.7
TB-3 M EFFLUENT	51	4900	±270	32	±150	1100	±1600
TB-5 NEAR ROAD C	52	11	±6.6	-2.5	±5.5	3.9	±6.8
700-A1 OUTFALL	52	13	±6.0	-4.9	±5.5	2.4	±7.5
UPPER THREE RUNS							
U3R-2 F STORM SEWER	51	1000	±22	21	±6.3	180	±390
U3R-3 ROAD C	51	12	±6.2	-3.7	±5.8	3.4	±6.3
U3R-4 ROAD A	52	13	±6.4	-6.9	±5.4	1.9	±7.8
BEAVER DAM CREEK							
400-D EFFLUENT	52	27	±6.6	-3.6	±5.8	4.2	±11
FOUR MILE CREEK							
BURIAL GROUND DITCH	36	28	±6.9	-4.9	±6.4	8.9	±15
FM-1B COOL TOWER EFF	51	130	±9.5	26	±6.5	64	±51
H H-3 FAC OUTFALL 50	52	65	±7.7	0.00	±5.6	18	±32
FM-1C H EFFLUENT	51	220	±12	8.5	±5.9	30	±59
FM-2 ROAD 4	51	1500	±26	10	±6.5	96	±420
FM-2B ABOVE F EFF	50	560	±17	17	±6.1	97	±210
FM-3 F EFFLUENT	51	1800	±32	5.9	±5.8	230	±730
FM-3A BELOW F EFF	51	500	±16	1.9	±6.4	94	±180
FM-4 ROAD C	51	1100	±23	20	±6.3	98	±310
FM-6 ROAD A	51	23	±6.5	-6.8	±6.3	3.6	±9.7
FM-A7 ROAD A-7	47	160	±11	57	±8.0	92	±48
INDIAN GRAVE BRANCH							
IGB-1 ROAD 6-4	4	4.9	±6.2	-2.1	±6.1	2.0	-
IGB-5 400' N OF 6-2	2	2.9	±6.3	-3.6	±5.9	0.35	-
IGB-7 ROAD 6-2	2	3.4	±5.7	2.4	±6.3	2.9	-
IGB-13	4	5.8	±6.2	-0.70	±6.2	2.1	-
IGB-21 800' S OF 6-1	4	8.1	±6.3	-1.7	±5.5	2.0	-
PEN BRANCH							
PB-1 K SEC EFFLUENT	52	22	±6.7	-4.9	±5.9	2.6	±8.1
PB-3 ROAD A	51	9.7	±6.0	-4.6	±6.4	1.2	±5.8
STEEL CREEK							
SC-1 P SEC EFFLUENT	52	16	±6.5	-4.1	±6.0	6.3	±8.4
SC-5 2 MI BELOW RD A	52	14	±6.2	-2.0	±6.0	6.4	±6.8
SC-6 MOUTH	47	15	±6.4	-5.2	±5.8	2.4	±5.7
PAR POND							
PP-2 PUMPHOUSE	51	14	±6.8	-0.36	±6.5	7.4	±6.7
LOWER THREE RUNS CK							
L3R-1 TRIBUTARY	6	9.1	±5.9	0.44	±5.6	4.5	-
L3R-1A ROAD B	46	12	±6.0	0.11	±5.5	4.9	±5.7
L3R-2 PATTERSON'S M	46	11	±6.3	-5.3	±5.5	2.1	±7.0
L3R-3 ROAD A	50	12	±6.2	-3.2	±5.4	4.5	±7.3
SAVANNAH RIVER SWAMP							
THX 1	52	14	±6.1	-5.8	±6.3	3.4	±9.6

- INSUFFICIENT DATA

TABLE 6
RADIOACTIVITY IN PLANT STREAM WATER, CONTD

LOCATION	NO. OF SAMPLES	H-3, PCI/ML MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
TIMS BRANCH							
TB-2 A EFFLUENT	50	9.4	±1.4	-1.1	±1.1	0.59	±3.0
TB-2A BELOW 773-A SB	49	12	±1.4	-0.72	±0.99	0.74	±3.7
TB-5 NEAR ROAD C	50	8.5	±1.5	1.0	±1.2	2.9	±2.2
700-A1 OUTFALL	50	11	±1.3	-1.3	±1.0	0.76	±3.4
UPPER THREE RUNS							
U3R-4 ROAD A	50	11	±1.3	-0.70	±1.3	2.6	±3.3
BEAVER DAM CREEK							
400-D EFFLUENT	49	160	±3.7	1.6	±1.2	38	±84
FOUR MILE CREEK							
BURIAL GROUND DITCH	36	200	±4.1	5.3	±1.3	62	±83
FM-1B COOL TOWER EFF	51	45	±2.1	1.3	±1.2	5.4	±13
H H-3 FAC OUTFALL 50	50	330	±5.4	6.2	±1.2	64	±140
FM-1C H EFFLUENT	51	780	±7.8	7.2	±1.3	60	±230
FM-2 ROAD 4	51	210	±4.1	17	±1.5	66	±75
FM-2B ABOVE F EFF	51	1100	±9.0	56	±2.4	800	±380
FM-3 F EFFLUENT	51	34	±1.9	-0.06	±1.1	5.1	±13
FM-3A BELOW F EFF	51	1800	±12	360	±5.3	1100	±640
FM-4 ROAD C	51	1100	±9.2	480	±6.1	760	±290
FM-6 ROAD A	50	650	±7.1	19	±1.6	61	±190
FM-A7 ROAD A-7	47	930	±8.9	430	±5.8	680	±250
INDIAN GRAVE BRANCH							
IGB-1 ROAD 6-4	3	12	±1.4	7.3	±1.3	9.2	-
IGB-5 400' N OF 6-2	2	17	±1.5	11	±1.5	14	-
IGB-7 ROAD 6-2	2	100	±3.1	96	±2.9	100	-
IGB-13	3	1400	±10	760	±7.7	1100	-
IGB-21 800' S OF 6-1	49	15000	±33	1100	±9.1	5700	±4300
PEN BRANCH							
PB-1 K SEC EFFLUENT	48	71	±2.5	-0.23	±1.2	3.6	±21
PB-3 ROAD A	51	260	±4.6	8.5	±1.3	35	±77
STEEL CREEK							
SC-1 P SEC EFFLUENT	50	130	±3.3	4.2	±1.2	26	±38
SC-5 2 MI BELOW RD A	51	100	±3.0	9.8	±1.4	23	±38
SC-6 MOUTH	46	49	±2.2	13	±1.5	26	±17
PAR POND							
PP-2 PUMPHOUSE	50	27	±1.8	11	±1.4	17	±5.3
LOWER THREE RUNS CK							
L3R-1 TRIBUTARY	5	1.3	±1.1	0.55	±1.0	0.95	-
L3R-1A ROAD B	47	20	±1.7	9.9	±1.4	16	±4.9
L3R-2 PATTERSON'S M	46	13	±1.4	1.5	±1.1	6.4	±4.7
L3R-3 ROAD A	47	8.3	±1.3	0.30	±1.1	3.1	±3.3
SAVANNAH RIVER SWAMP							
TNX 1	50	2.6	±1.1	-2.4	±1.2	0.32	±1.4

- INSUFFICIENT DATA

TABLE 6
RADIOACTIVITY IN PLANT STREAM WATER, CONTD

LOCATION	SR-89, 90, PCI/L NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
FOUR MILE CREEK							
FM-1B COOL TOWER EFF	50	15	±8.1	-5.0	±5.9	0.93	±7.4
FM-1C H EFFLUENT	49	15	±6.9	-6.3	±7.3	0.91	±6.3
FM-2 ROAD 4	47	30	±7.0	-5.2	±4.7	3.3	±13
FM-2B ABOVE F EFF	50	97	±9.0	-2.7	±5.8	9.6	±36
FM-3 F EFFLUENT	51	130	±9.7	-2.9	±4.9	20	±53
FM-3A BELOW F EFF	50	130	±9.7	-4.5	±7.4	10	±40
FM-4 ROAD C	51	44	±7.4	-2.1	±5.0	8.1	±17
FM-6 ROAD A	51	15	±7.5	-5.7	±7.5	1.1	±5.8
FM-A7 ROAD A-7	47	68	±8.2	11	±6.4	29	±21
INDIAN GRAVE BRANCH							
IGB-1 ROAD 6-4	4	0.58	±5.9	-3.0	±5.8	0.80	-
IGB-5 400' N OF 6-2	2	0.23	±5.9	-1.5	±5.9	0.64	-
IGB-7 ROAD 6-2	2	0.00	±5.9	-4.4	±5.8	4.10	-
IGB-13	4	1.5	±7.5	-5.8	±5.7	2.10	-
IGB-21 800' S OF 6-1	4	4.6	±6.1	-2.7	±5.9	1.1	-
PEN BRANCH							
PB-3 ROAD A	50	4.5	±5.0	-7.0	±7.5	1.10	-
STEEL CREEK							
SC-5 2 MI BELOW RD A	51	3.7	±6.1	-4.9	±5.8	0.83	±1.4
SC-6 MOUTH	26	3.0	±5.2	-6.0	±7.7	0.47	±2.0
PAR POND							
PP-2 PUMPHOUSE	51	6.1	±6.1	-4.8	±7.0	0.08	±3.7
LOWER THREE RUNS CK							
L3R-1A ROAD B	46	8.5	±7.7	-8.2	±7.5	0.15	±5.5
L3R-2 PATTERSON'S M	49	15	±8.3	-5.8	±7.0	0.14	±5.6
L3R-3 ROAD A	51	3.4	±6.0	-6.4	±7.7	0.88	±0.62

- INSUFFICIENT DATA

LOCATION	CHEM. CS, PCI/L NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
UPPER THREE RUNS							
U3R-4 ROAD A	50	9.5	±7.5	-8.3	±6.6	0.37	±4.8
FOUR MILE CREEK							
FM-1C H EFFLUENT	48	21	±6.7	1.8	±6.4	7.8	±8.7
FM-2 ROAD 4	47	2300	±33	5.8	±6.5	84	±680
FM-3 F EFFLUENT	51	460	±17	-2.7	±6.5	50	±190
FM-4 ROAD C	51	960	±21	2.0	±6.6	47	±270
FM-6 ROAD A	51	8.1	±5.3	-6.2	±6.4	0.11	±3.8
FM-A7 ROAD A-7	47	60	±7.8	3.0	±6.6	17	±25
PEN BRANCH							
PB-3 ROAD A	50	5.1	±8.2	-6.5	±6.4	0.29	±3.9
STEEL CREEK							
SC-5 2 MI BELOW RD A	51	12	±7.4	-0.51	±6.6	5.0	±6.2
SC-6 MOUTH	26	5.7	±7.0	-3.5	±6.3	0.74	±4.0
PAR POND							
PP-2 PUMPHOUSE	51	17	±5.6	1.0	±6.7	7.2	±8.6
LOWER THREE RUNS CK							
L3R-2 PATTERSON'S M	48	40	±6.1	-6.4	±6.6	2.8	±13
L3R-3 ROAD A	51	8.0	±8.2	-3.1	±6.8	1.3	±4.1

TABLE 6
RADIOACTIVITY IN PLANT STREAM WATER, CONTD

	S-35, PCI/L					
LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
FOUR MILE CREEK FM-6 ROAD A	12	2.9	±3.7	-6.3	±6.1	0.98	±1.2
PEN BRANCH PB-3 ROAD A	12	4.3	±3.8	-5.8	±4.7	0.57	±2.5
STEEL CREEK SC-5 2 MI BELOW RD A	12	4.9	±4.5	-18	±5.7	1.30	±3.1
LOWER THREE RUNS CK L3R-2 PATTERSON'S M	12	5.0	±3.8	-4.8	±4.7	0.72	±2.8

- INSUFFICIENT DATA

LOCATION	SR-90, PCI/L NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
FOUR MILE CREEK FM-6 ROAD A	11	4.1	±1.9	-2.9	±2.8	1.1	±3.1
PEN BRANCH PB-3 ROAD A	11	1.6	±2.9	-0.86	±1.3	0.39	±1.5
STEEL CREEK SC-5 2 MI BELOW RD A	11	1.8	±1.1	-1.4	±2.8	0.45	±1.4
LOWER THREE RUNS CK L3R-2 PATTERSON'S M	11	7.1	±3.1	-0.75	±1.7	0.96	±4.2

- INSUFFICIENT DATA

LOCATION	MN-54, PCI/L NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
FOUR MILE CREEK FM-6 ROAD A	12	6.0	±30	0.00	±5.0	0.87	±3.5
PEN BRANCH PB-3 ROAD A	12	4.2	±30	0.00	±5.0	0.86	±2.8
STEEL CREEK SC-5 2 MI BELOW RD A	12	2.4	±5.0	0.00	±5.1	0.57	±1.5
LOWER THREE RUNS CK L3R-2 PATTERSON'S M	12	6.2	±30	0.00	±13	0.68	±3.5

TABLE 6

RADIOACTIVITY IN PLANT STREAM WATER, CONTD

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
			CR-51, PCI/L				
FOUR MILE CREEK FM-6 ROAD A	12	55	±75	0.00	±460	7.2	±34
PEN BRANCH PB-3 ROAD A	12	20	±57	0.00	±73	3.1	±13
STEEL CREEK SC-5 2 MI BELOW RD A	12	17	±57	0.00	±75	1.4	±10
LOWER THREE RUNS CK L3R-2 PATTERSON'S M	12	26	±470	0.00	±570	5.9	±20
			CO-60, PCI/L				
FOUR MILE CREEK FM-6 ROAD A	12	66	±190	0.00	±31	9.8	±38
PEN BRANCH PB-3 ROAD A	12	43	±190	0.00	±32	7.4	±29
STEEL CREEK SC-5 2 MI BELOW RD A	12	15	±190	0.00	±31	2.9	±9.5
LOWER THREE RUNS CK L3R-2 PATTERSON'S M	12	35	±190	0.00	±42	4.9	±20
			ZN-65, PCI/L				
FOUR MILE CREEK FM-6 ROAD A	12	5.5	±22	0.00	±23	0.66	±3.1
PEN BRANCH PB-3 ROAD A	12	3.9	±22	0.00	±22	0.37	±2.2
STEEL CREEK SC-5 2 MI BELOW RD A	12	7.4	±22	0.00	±23	0.89	±4.2
LOWER THREE RUNS CK L3R-2 PATTERSON'S M	12	3.9	±23	0.00	±39	1.3	±3.1

TABLE 6
RADIOACTIVITY IN PLANT STREAM WATER, CONTD

LOCATION	ZR-95, NB-95, PCI/L						
	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
FOUR MILE CREEK FM-6 ROAD A	12	10	±44	0.00	±7.2	1.5	±6.0
PEN BRANCH PB-3 ROAD A	12	5.6	±21	0.00	±7.1	0.79	±3.4
STEEL CREEK SC-5 2 MI BELOW RD A	12	0.66	±6.5	0.00	±6.7	0.08	±0.38
LOWER THREE RUNS CK L3R-2 PATTERSON'S M	12	2.4	±6.6	0.00	±19	0.28	±1.4

LOCATION	RU-103, 106, PCI/L						
	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
FOUR MILE CREEK FM-6 ROAD A	12	210	±780	0.00	±130	34	±120
PEN BRANCH PB-3 ROAD A	12	150	±290	0.00	±140	27	±120
STEEL CREEK SC-5 2 MI BELOW RD A	12	150	±270	0.00	±140	14	±38
LOWER THREE RUNS CK L3R-2 PATTERSON'S M	12	200	±300	0.00	±140	24	+150

LOCATION	I-131, PCI/L						
	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
FOUR MILE CREEK FM-6 ROAD A	12	28	±150	0.00	±97	6.2	±20
PEN BRANCH PB-3 ROAD A	12	120	±690	0.00	±52	18	±72
STEEL CREEK SC-5 2 MI BELOW RD A	12	24	±97	0.00	±680	6.7	±17
LOWER THREE RUNS CK L3R-2 PATTERSON'S M	12	18	±50	0.00	±880	1.9	±10

- INSUFFICIENT DATA

TABLE 6
RADIOACTIVITY IN PLANT STREAM WATER, CONTD

LOCATION	CS-134 , PCI/L NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
FOUR MILE CREEK FM-6 ROAD A	12	5.8	±21	0.00	±21	0.77	±3.5
PEN BRANCH PB-3 ROAD A	12	7.6	±21	0.00	±21	1.2	±4.5
STEEL CREEK SC-5 2 MI BELOW RD A	12	7.2	±21	0.00	±120	1.4	±4.4
LOWER THREE RUNS CK L3R-2 PATTERSON'S M	12	24	±28	0.00	±28	3.2	±13

LOCATION	CS-137 , PCI/L NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
FOUR MILE CREEK FM-6 ROAD A	12	1.8	±5.1	0.00	±4.5	0.58	±1.3
PEN BRANCH PB-3 ROAD A	12	1.1	±4.2	0.00	±25	0.40	±0.92
STEEL CREEK SC-5 2 MI BELOW RD A	12	12	±25	0.02	±4.1	3.8	±6.0
LOWER THREE RUNS CK L3R-2 PATTERSON'S M	12	3.7	±4.3	0.00	±17	1.5	±2.8

LOCATION	CE-141, 144 , PCI/L NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
FOUR MILE CREEK FM-6 ROAD A	12	15	±22	0.00	±24	2.7	±11
PEN BRANCH PB-3 ROAD A	12	24	±51	0.00	±24	4.4	±19
STEEL CREEK SC-5 2 MI BELOW RD A	12	12	±46	0.00	±24	1.6	±10
LOWER THREE RUNS CK L3R-2 PATTERSON'S M	12	11	±46	0.00	±24	1.1	±10

- INSUFFICIENT DATA

TABLE 7
RADIOACTIVITY IN RIVER WATER

LOCATION	ALPHA, PCI/L NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
SAVANNAH RIVER							
R-2 DISSOLVED	50	0.45	±0.39	-0.20	±0.23	0.08	±0.26
R-2 SUSPENDED	44	0.40	±0.42	-0.13	±0.18	0.06	±0.22
R-4 ABOVE 4 MILE CK	50	0.48	±0.45	-0.13	±0.19	0.08	±0.30
R-8 BELOW STEEL CK	49	0.47	±0.35	-0.13	±0.18	0.07	±0.28
R-9 BELOW L3R CREEK	51	0.32	±0.39	-0.13	±0.19	0.05	±0.18
R-10 DISSOLVED	50	0.33	±0.30	-0.07	±0.30	0.06	±0.18
R-10 SUSPENDED	35	0.52	±0.45	-0.20	±0.23	0.05	±0.26
CONTROL							
EDISTO RIVER	41	2.2	±0.82	0.46	±0.48	1.1	±0.88

LOCATION	NONVOL BETA, PCI/L NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
SAVANNAH RIVER							
R-2 DISSOLVED	51	8.6	±6.1	-6.8	±5.7	0.10	±4.6
R-2 SUSPENDED	44	5.9	±5.9	-6.2	±5.6	1.50	-
R-4 ABOVE 4 MILE CK	51	5.6	±6.0	-3.1	±5.4	0.79	±3.9
R-8 BELOW STEEL CK	49	8.8	±6.3	-7.9	±5.9	0.43	±4.7
R-9 BELOW L3R CREEK	52	8.7	±6.3	-5.2	±5.5	0.25	±4.1
R-10 DISSOLVED	50	9.9	±6.1	-5.2	±6.1	0.05	±4.1
R-10 SUSPENDED	36	3.2	±5.7	-8.7	±5.2	1.90	-
CONTROL							
EDISTO RIVER	41	17	±6.3	-2.1	±5.7	5.4	±8.0

LOCATION	H-3, PCI/ML NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
SAVANNAH RIVER							
R-2 ABOVE PLANT	52	1.1	±0.43	0.00	±0.39	0.21	±0.50
R-4 ABOVE 4 MILE CK	52	12	±0.56	0.61	±0.39	2.9	±4.0
R-10 HIGHWAY 301	52	9.2	±0.56	1.6	±0.42	4.1	±3.4
CONTROL							
EDISTO RIVER	37	1.9	±0.42	0.00	±0.38	0.37	±0.94

LOCATION	SR-89, 90, PCI/L NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
SAVANNAH RIVER							
R-2 ABOVE PLANT	46	4.0	±1.8	-2.2	±2.3	0.12	±2.0
R-4 ABOVE 4 MILE CK	48	2.6	±6.1	-1.7	±1.6	0.03	±1.5
R-8 BELOW STEEL CK	55	1.6	±2.6	-2.9	±2.6	0.28	±0.46
R-9 BELOW L3R CREEK	55	0.93	±2.0	-2.6	±2.4	0.22	±0.52
R-10 HIGHWAY 301	51	3.9	±2.6	-2.5	±2.5	0.21	±1.9

- INSUFFICIENT DATA

TABLE 7
RADIOACTIVITY IN RIVER WATER, CONTD

	S-35 , PCI/L						
LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
R-2 ABOVE PLANT	12	2.8	±3.8	-8.1	±6.0	2.20	-
R-10 HIGHWAY 301	12	0.86	±2.7	-15	±5.8	2.40	-

	CR-51 , PCI/L						
LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
R-2 ABOVE PLANT	48	13	±16	0.00	±10	0.76	±4.8
R-4 ABOVE 4 MILE CK	49	18	±38	0.00	±20	1.1	±6.4
R-10 HIGHWAY 301	51	14	±25	0.00	±17	1.2	±5.3

	MN-54 , PCI/L						
LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
R-2 ABOVE PLANT	49	1.9	±9.6	0.00	±1.5	0.20	±0.66
R-4 ABOVE 4 MILE CK	49	2.0	±14	0.00	±2.4	0.20	±0.72
R-10 HIGHWAY 301	51	0.72	±4.9	0.00	±1.7	0.15	±0.40

	CO-60 , PCI/L						
LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
R-2 ABOVE PLANT	49	15	±63	0.00	±8.1	1.9	±6.1
R-4 ABOVE 4 MILE CK	49	8.6	±37	0.00	±9.3	1.3	±3.8
R-10 HIGHWAY 301	51	8.3	±37	0.00	±11	1.3	±3.8

	ZN-65 , PCI/L						
LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
R-2 ABOVE PLANT	49	3.0	±4.9	0.00	±5.5	0.27	±1.3
R-4 ABOVE 4 MILE CK	49	2.0	±14	0.00	±5.3	0.21	±0.84
R-10 HIGHWAY 301	51	4.4	±11	0.00	±7.8	0.25	±1.3

- INSUFFICIENT DATA

TABLE 7
RADIOACTIVITY IN RIVER WATER, CONTD

ZR-95, NB-95, PCI/L

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
R-2 ABOVE PLANT	49	2.2	±11	0.00	±1.4	0.21	±0.86
R-4 ABOVE 4 MILE CK	49	1.3	±1.9	0.00	±2.8	0.15	±0.48
R-10 HIGHWAY 301	51	0.93	±1.3	0.00	±1.7	0.16	±0.48

RU-103, 106, PCI/L

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
R-2 ABOVE PLANT	49	39	±61	0.00	±45	6.2	±19
R-4 ABOVE 4 MILE CK	49	51	±150	0.00	±62	5.4	±18
R-10 HIGHWAY 301	51	55	±150	0.00	±39	4.9	±18

I-131, PCI/L

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
R-2 ABOVE PLANT	49	7.8	±29	0.00	±4.4	0.61	±2.6
R-4 ABOVE 4 MILE CK	49	12	±39	0.00	±36	0.65	±3.5
R-10 HIGHWAY 301	51	3.7	±9.6	0.00	±1.9	0.56	±2.0

CS-134, PCI/L

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
R-2 ABOVE PLANT	49	2.6	±9.7	0.00	±5.3	0.29	±1.3
R-4 ABOVE 4 MILE CK	49	2.6	±10	0.00	±5.1	0.29	±1.3
R-10 HIGHWAY 301	51	4.5	±18	0.00	±7.3	0.39	±2.1

CS-137, PCI/L

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
R-2 ABOVE PLANT	49	1.3	±2.0	0.00	±1.3	0.20	±0.60
R-4 ABOVE 4 MILE CK	49	1.7	±12	0.00	±1.2	0.25	±0.72
R-10 HIGHWAY 301	51	0.92	±3.2	0.00	±1.6	0.23	±0.52

CE-141, 144, PCI/L

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
R-2 ABOVE PLANT	49	14	±15	0.00	±6.0	0.98	±5.1
R-4 ABOVE 4 MILE CK	49	15	±72	0.00	±10	1.0	±5.4
R-10 HIGHWAY 301	50	9.2	±12	0.00	±5.3	0.68	±3.4

TABLE 8

TRITIUM BALANCE IN EFFLUENT WATER -- 1981

	Curies
Liquid Effluent Releases	
Reactor cooling water (C- and K-Areas heat exchanger leakage)	5,814
Reactor process sewers	813
Par Pond overflow	264
D-Area effluent	2,702
F-Area effluent	10
H-Area effluent	65
Measured Migration from Seepage Basins	
F-Area seepage basins to Four Mile Creek	1,106
H-Area seepage basins and solid waste storage facility to Four Mile Creek	6,235
K-Area containment basin to Pen Branch	8,909
Total tritium released plus measured migration from seepage basins	25,918[a]
Total tritium measured in streams before entering river	24,424[a]
Total plant-contributed tritium measured in transport in Savannah River below SRP at Highway 301 (downstream measurement minor upstream measurement)	25,143[a]

[a]Differences in values are caused by statistical uncertainties associated with flow and tritium measurements (maximum difference 6%).

TABLE 9

TRITIUM BALANCE SUMMARY, 1964 to 1981

Measured in Effluent Water, Ci

Year	Releases[b]	Streams at Rd A	River at Hwy 301[c]
1964	120,000	131,600	140,000
1965	108,400	109,200	100,200
1966	84,900	97,800	78,300
1967	70,600	77,000	68,500
1968	63,800	67,200	61,800
1969	64,600	64,000	58,100
1970	36,900	43,200	31,800
1971	38,200	44,700	39,100
1972	46,800	47,300	45,300
1973	71,100	62,800	61,100
1974	59,900	54,600	46,000
1975	55,600	50,000	49,500
1976	59,600	47,400	51,100
1977	43,800	39,700	42,500
1978	37,560	35,300	36,600
1979	29,430	27,130	30,640
1980	24,930	28,800	30,660
1981	23,850	22,800	25,140
TOTAL	1,039,970	1,050,530	996,340

[a]Some data reflect small corrections of transcription errors discovered in values contained in reports prior to 1980.
[b]Includes direct releases to streams, migration from F-, H-, and K-Area seepage basins to streams and Par Pond overflow to Lower Three Runs Creek.
[c]Corrected for tritium in river water above plant.

TABLE 10

RADIOACTIVITY IN SEEPAGE BASIN WATER

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
ALPHA, PCI/ML							
200-F							
F SEEPAGE BASIN 1	7	2.5	±0.83	0.20	±0.34	1.3	-
F SEEPAGE BASIN 2	7	2.1	±0.79	0.52	±0.45	1.4	-
F SEEPAGE BASIN 3	7	1.6	±0.66	0.79	±0.49	1.2	-
200-H							
H SEEPAGE BASIN 1	7	0.19	±0.29	0.00	±0.26	0.09	-
H SEEPAGE BASIN 2	7	0.71	±0.50	-0.13	±0.18	0.11	-
H SEEPAGE BASIN 3	6	0.20	±0.35	-0.13	±0.18	0.03	-
H SEEPAGE BASIN 4	7	0.13	±0.32	-0.13	±0.18	0.01	-
PCI/L							
300-M							
300-M	7	76	±4.5	4.6	±1.1	29	-
700-A							
A AREA 1	7	210	±24	29	±9.5	120	-
TNX							
TNX 904-76G	5	110	±17	0.00	±2.6	29	-
TNX 904-102G	10	5.4	±4.6	-1.3	±2.7	1.3	±4.1
REACTOR AREAS							
100P SEEPAGE BASIN	6	69	±14	3.3	±3.9	20	-
100C SEEPAGE BASIN	6	140	±19	1.3	±2.6	31	-

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
NONVOL BETA, PCI/ML							
200-F							
F SEEPAGE BASIN 1	7	210	±11	16	±6.7	110	-
F SEEPAGE BASIN 2	7	180	±11	27	±7.0	76	-
F SEEPAGE BASIN 3	7	95	±9.1	27	±6.5	69	-
200-H							
H SEEPAGE BASIN 1	7	150	±9.9	26	±6.5	89	-
H SEEPAGE BASIN 2	7	76	±8.1	14	±6.5	47	-
H SEEPAGE BASIN 3	6	44	±7.2	10	±6.3	21	-
H SEEPAGE BASIN 4	7	78	±8.2	20	±6.7	46	-
PCI/ L							
300-M							
300-M	7	700	±18	50	±7.6	250	-
700-A							
A AREA 1	7	200	±80	140	±81	170	-
TNX							
TNX 904-76G	5	750	±81	-15	±55	310	-
TNX 904-102G	10	70	±59	-33	±57	19	±68
REACTOR AREAS							
100P SEEPAGE BASIN	6	2500	±120	530	±74	1500	-
100C SEEPAGE BASIN	6	4800	±160	440	±71	1400	-

- INSUFFICIENT DATA

TABLE 10

RADIOACTIVITY IN SEEPAGE BASIN WATER, CONTD

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
H-3, PCI/ML							
200-F							
F SEEPAGE BASIN 1	7	41000	±250	7700	±110	27000	-
F SEEPAGE BASIN 2	7	32000	±220	15000	±150	26000	-
F SEEPAGE BASIN 3	7	29000	±210	19000	±170	22000	-
200-H							
H SEEPAGE BASIN 1	7	190000	±540	20000	±170	110000	-
H SEEPAGE BASIN 2	7	110000	±420	51000	±280	79000	-
H SEEPAGE BASIN 3	6	55000	±300	8300	±110	31000	-
H SEEPAGE BASIN 4	7	110000	±410	43000	±260	74000	-
700-A							
A AREA 1	7	400	±35	130	±25	210	-
TNX							
TNX 904-76G	5	11	±1.4	0.32	±0.97	5.3	-
TNX 904-102G	10	13	±1.4	0.70	±1.2	4.0	±6.9
REACTOR AREAS							
100P SEEPAGE BASIN	5	710	±2.5	110	±0.93	340	-
100C SEEPAGE BASIN	6	650	±2.2	130	±0.98	330	-

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
CR-51, PCI/ML							
200-F							
F SEEPAGE BASIN 1	7	0.98	±4.0	0.00	±1.2	0.18	-
F SEEPAGE BASIN 2	7	1.5	±2.6	0.00	±0.48	0.51	-
F SEEPAGE BASIN 3	7	1.7	±2.8	0.00	±0.84	0.60	-
200-H							
H SEEPAGE BASIN 1	7	41	±4.0	6.1	±0.99	15	-
H SEEPAGE BASIN 2	7	17	±3.2	1.2	±2.8	7.1	-
H SEEPAGE BASIN 3	6	1.6	±2.8	0.00	±2.5	0.70	-
H SEEPAGE BASIN 4	7	12	±3.0	2.2	±0.60	5.7	-
REACTOR AREAS							
100P SEEPAGE BASIN	7	17	±1.1	0.19	±0.47	3.1	-
100C SEEPAGE BASIN	6	6.1	±0.77	0.02	±0.42	2.4	-

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
CO-58, 60, PCI/ML							
200-F							
F SEEPAGE BASIN 1	7	1.2	±3.9	0.00	±5.8	0.41	-
F SEEPAGE BASIN 2	7	0.40	±4.2	0.00	±4.1	0.13	-
F SEEPAGE BASIN 3	7	1.8	±4.1	0.00	±4.2	0.54	-
200-H							
H SEEPAGE BASIN 1	7	7.5	±4.2	0.00	±1.2	2.0	-
H SEEPAGE BASIN 2	7	6.3	±4.0	0.00	±0.81	1.9	-
H SEEPAGE BASIN 3	6	3.3	±3.6	0.33	±0.76	1.2	-
H SEEPAGE BASIN 4	7	6.3	±4.0	0.05	±0.80	2.8	-
REACTOR AREAS							
100P SEEPAGE BASIN	7	0.67	±0.72	0.00	±0.72	0.23	-
100C SEEPAGE BASIN	6	0.46	±0.74	0.00	±0.71	0.14	-

\- INSUFFICIENT DATA

TABLE 10
RADIOACTIVITY IN SEEPAGE BASIN WATER, CONTD

	SR-89, 90 , PCI/ML						
LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
200-F							
F SEEPAGE BASIN 1	7	3.2	±0.34	0.06	±0.30	0.82	-
F SEEPAGE BASIN 2	7	2.2	±0.31	0.05	±0.30	0.78	-
F SEEPAGE BASIN 3	7	1.9	±0.37	-0.02	±0.30	0.69	-
200-H							
H SEEPAGE BASIN 1	7	38	±0.87	0.78	±0.23	11	-
H SEEPAGE BASIN 2	7	22	±0.77	0.86	±0.26	6.8	-
H SEEPAGE BASIN 3	6	2.7	±0.33	0.34	±0.21	1.7	-
H SEEPAGE BASIN 4	7	21	±0.76	1.2	±0.27	5.6	-

	ZR-95, NB-95, PCI/ML						
LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
200-F							
F SEEPAGE BASIN 1	7	8.6	±1.2	0.34	±0.12	2.6	-
F SEEPAGE BASIN 2	7	2.4	±0.72	0.38	±0.17	1.2	-
F SEEPAGE BASIN 3	7	1.4	±0.71	0.25	±0.13	0.59	-
200-H							
H SEEPAGE BASIN 1	7	0.60	±0.68	0.00	±0.16	0.17	-
H SEEPAGE BASIN 2	7	0.95	±0.66	0.00	±0.18	0.22	-
H SEEPAGE BASIN 3	6	0.26	±0.57	0.00	±0.13	0.05	-
H SEEPAGE BASIN 4	7	0.80	±0.64	0.00	±0.15	0.16	-
REACTOR AREAS							
100P SEEPAGE BASIN	7	0.07	±0.11	0.00	±0.14	0.01	-
100C SEEPAGE BASIN	6	0.04	±0.12	0.00	±0.11	0.02	-

	RU-103 , PCI/ML						
LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
200-F							
F SEEPAGE BASIN 1	7	23	±2.2	0.00	±3.0	5.9	-
F SEEPAGE BASIN 2	7	14	±1.8	0.00	±2.8	3.8	-
F SEEPAGE BASIN 3	7	8.5	±1.7	0.00	±2.2	3.4	-
200-H							
H SEEPAGE BASIN 1	7	7.0	±1.8	0.00	±0.40	1.5	-
H SEEPAGE BASIN 2	7	3.8	±1.6	0.00	±0.48	0.75	-
H SEEPAGE BASIN 3	6	1.2	±1.3	0.00	±0.29	0.38	-
H SEEPAGE BASIN 4	7	3.9	±1.6	0.00	±0.39	1.1	-
REACTOR AREAS							
100P SEEPAGE BASIN	7	0.23	±0.26	0.00	±0.35	0.07	-
100C SEEPAGE BASIN	6	0.13	±0.28	0.00	±0.26	0.04	-

- INSUFFICIENT DATA

TABLE 10
RADIOACTIVITY IN SEEPAGE BASIN WATER, CONTD

LOCATION	RU-106, PCI/ML NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
200-F							
F SEEPAGE BASIN 1	7	130	±15	2.6	±1.9	43	-
F SEEPAGE BASIN 2	7	110	±14	3.0	±1.9	30	-
F SEEPAGE BASIN 3	7	51	±12	3.4	±2.0	25	-
200-H							
H SEEPAGE BASIN 1	7	30	±12	0.00	±11	10	-
H SEEPAGE BASIN 2	7	13	±11	0.00	±10	5.0	-
H SEEPAGE BASIN 3	6	3.6	±9.8	0.00	±9.0	1.6	-
H SEEPAGE BASIN 4	7	8.5	±11	0.00	±10	2.1	-
REACTOR AREAS							
100P SEEPAGE BASIN	7	0.50	±1.9	0.00	±1.8	0.15	-
100C SEEPAGE BASIN	6	0.24	±1.8	0.00	±1.7	0.09	-

LOCATION	SB-124, 125, PCI/ML NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
200-F							
F SEEPAGE BASIN 1	7	0.00	±1.8	0.00	±0.31	0.00	-
F SEEPAGE BASIN 2	7	0.00	±1.8	0.00	±0.15	0.00	-
F SEEPAGE BASIN 3	7	0.00	±1.8	0.00	±0.19	0.00	-
200-H							
H SEEPAGE BASIN 1	7	4.6	±0.96	0.00	±0.17	1.3	-
H SEEPAGE BASIN 2	7	3.8	±0.91	0.00	±0.18	0.94	-
H SEEPAGE BASIN 3	6	0.90	±0.71	0.00	±1.1	0.34	-
H SEEPAGE BASIN 4	7	3.0	±0.88	0.00	±0.17	1.1	-
REACTOR AREAS							
100P SEEPAGE BASIN	7	0.16	±0.13	0.03	±0.16	0.09	-
100C SEEPAGE BASIN	6	0.10	±0.13	0.00	±0.13	0.05	-

LOCATION	I-131, PCI/ML NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
200-F							
F SEEPAGE BASIN 1	7	0.22	±0.73	0.00	±0.64	0.08	-
F SEEPAGE BASIN 2	7	0.34	±2.4	0.00	±0.72	0.07	-
F SEEPAGE BASIN 3	7	0.37	±1.6	0.00	±0.36	0.09	-
200-H							
H SEEPAGE BASIN 1	7	0.20	±0.56	0.00	±0.35	0.07	-
H SEEPAGE BASIN 2	7	0.20	±0.82	0.00	±0.13	0.08	-
H SEEPAGE BASIN 3	6	0.20	±0.34	0.00	±0.28	0.05	-
H SEEPAGE BASIN 4	7	0.23	±0.38	0.00	±0.30	0.10	-
REACTOR AREAS							
100P SEEPAGE BASIN	7	0.90	±0.31	0.00	±0.16	0.16	-
100C SEEPAGE BASIN	6	0.45	±0.09	0.00	±0.08	0.08	-

- INSUFFICIENT DATA

TABLE 10
RADIOACTIVITY IN SEEPAGE BASIN WATER, CONTD

LOCATION	CS-134, PCI/ML NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
200-F							
F SEEPAGE BASIN 1	7	0.68	±2.4	0.00	±0.45	0.10	-
F SEEPAGE BASIN 2	7	0.12	±1.6	0.00	±0.30	0.02	-
F SEEPAGE BASIN 3	7	0.00	±1.6	0.00	±0.35	0.00	-
200-H							
H SEEPAGE BASIN 1	7	1.7	±0.47	0.00	±0.33	0.26	-
H SEEPAGE BASIN 2	7	0.36	±1.5	0.00	±0.34	0.09	-
H SEEPAGE BASIN 3	6	0.57	±1.5	0.00	±0.30	0.10	-
H SEEPAGE BASIN 4	7	0.11	±0.32	0.00	±0.32	0.02	-
REACTOR AREAS							
100P SEEPAGE BASIN	7	0.11	±0.30	0.00	±0.28	0.04	-
100C SEEPAGE BASIN	6	0.06	±0.28	0.00	±0.27	0.02	-

LOCATION	CS-137, PCI/ML NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
200-F							
F SEEPAGE BASIN 1	7	4.7	±0.88	0.16	±0.08	2.4	-
F SEEPAGE BASIN 2	7	4.0	±0.79	0.17	±0.09	2.0	-
F SEEPAGE BASIN 3	7	3.7	±0.57	0.22	±0.10	2.1	-
200-H							
H SEEPAGE BASIN 1	7	28	±0.41	2.4	±0.14	12	-
H SEEPAGE BASIN 2	7	50	±1.2	2.3	±0.13	12	-
H SEEPAGE BASIN 3	6	17	±0.74	1.3	±0.11	4.7	-
H SEEPAGE BASIN 4	7	59	±1.3	1.7	±0.12	13	-
REACTOR AREAS							
100-P SEEPAGE BASIN	7	2.3	±0.13	0.11	±0.08	1.1	-
100-C SEEPAGE BASIN	6	1.7	±0.12	0.00	±0.07	0.35	-

LOCATION	CE-141, 144, PCI/ML NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
200-F							
F SEEPAGE BASIN 1	7	8.6	±2.5	0.15	±1.5	3.1	-
F SEEPAGE BASIN 2	7	8.3	±1.8	0.18	±0.29	3.0	-
F SEEPAGE BASIN 3	7	8.9	±1.8	0.13	±0.29	3.5	-
200-H							
H SEEPAGE BASIN 1	7	43	±2.6	0.39	±0.33	9.6	-
H SEEPAGE BASIN 2	7	10	±1.8	0.42	±0.32	3.5	-
H SEEPAGE BASIN 3	6	2.9	±1.3	0.00	±3.0	0.87	-
H SEEPAGE BASIN 4	7	31	±2.1	0.30	±0.29	6.9	-
REACTOR AREAS							
100P SEEPAGE BASIN	7	0.58	±0.38	0.00	±0.30	0.19	-
100C SEEPAGE BASIN	6	0.33	±0.24	0.00	±0.33	0.19	-

LOCATION	PH NO. OF SAMPLES	MAXIMUM	MINIMUM
200-F			
F SEEPAGE BASIN 1	7	6.7	1.8
F SEEPAGE BASIN 2	7	3.3	1.8
F SEEPAGE BASIN 3	7	2.2	2.1
200-H			
H SEEPAGE BASIN 1	7	7.8	2.0
H SEEPAGE BASIN 2	7	5.7	2.5
H SEEPAGE BASIN 3	6	9.0	3.1
H SEEPAGE BASIN 4	7	5.6	2.7
700-A			
A AREA 1	7	7.5	4.5

- INSUFFICIENT DATA

TABLE 11
RADIOACTIVITY IN 200-F WELLS

LOCATION	ALPHA, PCI/L NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
F SEEPAGE BASIN WELLS							
F SEEPAGE BASIN WELL 1	7	5200	±370	340	±99	2700	-
F TANK FARM WELLS							
TK FARM WELL FTF 1	7	2.1	±0.86	0.25	±0.44	1.2	-
TK FARM WELL FTF 2	13	1.0	±0.63	0.08	±0.28	0.43	±0.54
TK FARM WELL FTF 3	13	1.2	±0.70	0.08	±0.43	0.52	±0.74
TK FARM WELL FTF 4	13	1.1	±0.63	0.16	±0.40	0.52	±0.62
TK FARM WELL FTF 5	13	0.97	±0.61	-0.16	±0.32	0.17	±0.56
TK FARM WELL FTF 6	13	1.8	±0.81	0.17	±0.41	0.88	±1.0
TK FARM WELL FTF 7	13	2.8	±0.99	-0.17	±0.33	0.75	±1.9
TK FARM WELL FTF 8	11	4.7	±1.3	0.65	±0.51	1.8	±2.4
TK FARM WELL FTF 9	13	2.5	±0.95	0.16	±0.40	1.5	±1.2
TK FARM WELL FTF 10	11	5.1	±1.3	0.75	±0.56	2.3	±2.6
TK FARM WELL FTF 11	11	9.8	±1.8	2.1	±0.90	6.2	±4.7
TK FARM WELL FTF 12	13	0.74	±0.59	-0.25	±0.29	0.10	±0.50
TK FARM WELL FTF 13	13	0.85	±0.59	0.16	±0.40	0.42	±0.44
TK FARM WELL FTF 14	6	2.7	±0.99	1.1	±0.63	1.7	-

LOCATION	NONVOL BETA, PCI/L NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
F SEEPAGE BASIN WELLS							
F SEEPAGE BASIN WELL 1	7	330,000	±3800	41,000	±1500	160,000	-
F TANK FARM WELLS							
TK FARM WELL FTF 1	7	18	±7.8	5.3	±7.2	10	-
TK FARM WELL FTF 2	13	20	±7.7	-1.1	±7.3	7.8	±14.0
TK FARM WELL FTF 3	13	13	±8.2	-3.3	±6.9	5.0	±9.1
TK FARM WELL FTF 4	13	27	±7.9	-0.54	±7.0	6.6	±15.0
TK FARM WELL FTF 5	13	1300	±28.0	15	±7.6	510	±860
TK FARM WELL FTF 6	13	25000	±120.0	-13	±7.1	10000	±18000.0
TK FARM WELL FTF 7	13	1200	±27.0	16	±7.6	270	±900.0
TK FARM WELL FTF 8	11	38	±8.8	2.6	±7.1	11	±21.0
TK FARM WELL FTF 9	13	110	±10.0	-0.14	±7.4	15	±57.0
TK FARM WELL FTF 10	11	58	±9.7	9.9	±8.0	24	±29.0
TK FARM WELL FTF 11	11	50	±9.4	10	±7.5	31	±30.0
TK FARM WELL FTF 12	13	19	±7.7	-0.82	±7.0	6.8	±12.0
TK FARM WELL FTF 13	13	23	±7.8	-3.8	±7.5	3.0	±15.0
TK FARM WELL FTF 14	6	15	±7.6	-2.7	±7.0	4.4	-

LOCATION	H-3, PCI/ML NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
F SEEPAGE BASIN WELLS							
F SEEPAGE BASIN WELL 1	7	35,000	±230	7,800	±110	24,000	-
F TANK FARM WELLS							
TK FARM WELL FTF 1	7	14	±1.5	5.6	±1.2	8.8	-
TK FARM WELL FTF 2	13	3.7	±1.2	-0.44	±1.2	0.93	±2.5
TK FARM WELL FTF 3	13	7.4	±1.3	4.3	±1.3	5.6	±2.0
TK FARM WELL FTF 4	13	12	±1.5	5.7	±1.4	9.0	±3.9
TK FARM WELL FTF 5	12	730	±7.9	38	±2.0	400	±490
TK FARM WELL FTF 6	13	370	±5.7	12	±1.4	150	±230
TK FARM WELL FTF 7	13	67	±2.7	5.6	±1.3	18	±40
TK FARM WELL FTF 8	12	11	±1.4	6.8	±1.2	8.1	±2.6
TK FARM WELL FTF 9	13	15	±1.5	6.6	±1.3	9.3	±4.3
TK FARM WELL FTF 10	13	13	±1.6	7.0	±1.3	10	±3.3
TK FARM WELL FTF 11	12	21	±1.8	12	±1.4	18	±6.4
TK FARM WELL FTF 12	13	37	±1.9	19	±1.6	26	±8.7
TK FARM WELL FTF 13	13	14	±1.4	9.4	±1.4	11	±2.4
TK FARM WELL FTF 14	7	28	±1.8	17	±1.5	22	-

LOCATION	PH NO. OF SAMPLES	MAXIMUM	MINIMUM
F SEEPAGE BASIN WELL			
F SEEP BASIN WELL 1	7	2.9	1.2
F TANK FARM WELLS			
TK FARM WELL FTF 1	9	7.0	6.3
TK FARM WELL FTF 2	11	7.1	6.1
TK FARM WELL FTF 3	11	7.8	6.0
TK FARM WELL FTF 4	11	7.6	5.9
TK FARM WELL FTF 5	11	7.8	6.3
TK FARM WELL FTF 6	8	7.2	5.4
TK FARM WELL FTF 7	11	10	6.2
TK FARM WELL FTF 8	11	8.9	6.4
TK FARM WELL FTF 9	11	8.0	6.3
TK FARM WELL FTF 10	11	7.9	6.9
TK FARM WELL FTF 11	10	8.9	4.7
TK FARM WELL FTF 12	11	12	11
TK FARM WELL FTF 13	11	10	9.2
TK FARM WELL FTF 14	10	9.1	8.3

- INSUFFICIENT DATA

TABLE 11
RADIOACTIVITY IN 200-F WELLS, CONTD

	CR-51		, PCI/ML			
LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
F SEEPAGE BASIN WELL F SEEP BASIN WELL 1	7	3.7	±6.1	0.00	±0.80	0.67	-

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
	CO-60, PCI/ML						
F SEEPAGE BASIN WELL F SEEP BASIN WELL 1	7	1.2	±1.2	0.00	±1.2	0.25	-

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
	SR-89, 90, PCI/L						
F SEEPAGE BASIN WELL F SEEP BASIN WELL 1	5	2900	±690	120	±730	1200	-

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
	ZR-95, NB-95, PCI/ML						
F SEEPAGE BASIN WELL F SEEP BASIN WELL 1	7	4.1	±0.42	0.09	±0.12	2.4	-

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
	RU-103, PCI/ML						
F SEEPAGE BASIN WELL F SEEP BASIN WELL 1	7	28	±3.1	1.1	±0.29	6.9	-

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
	RU-106, PCI/ML						
F SEEPAGE BASIN WELL F SEEP BASIN WELL 1	7	160	±17	3.0	±2.0	45	-

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
	SB-125, PCI/ML						
F SEEPAGE BASIN WELL F SEEP BASIN WELL 1	7	0.06	±0.35	0.00	±0.23	0.01	-

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
	I-131, PCI/ML						
F SEEPAGE BASIN WELL F SEEP BASIN WELL 1	7	0.13	±0.32	0.00	±0.21	0.04	-

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
	CS-134, PCI/ML						
F SEEPAGE BASIN WELL F SEEP BASIN WELL 1	7	0.38	±0.51	0.00	±0.37	0.06	-

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
	CS-137, PCI/ML						
F SEEPAGE BASIN WELL F SEEP BASIN WELL 1	7	16	±0.38	0.62	±0.10	4.3	-

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
	CE-144, PCI/ML						
F SEEPAGE BASIN WELL F SEEP BASIN WELL 1	7	6.2	±2.7	0.00	±0.82	1.6	-

- INSUFFICIENT DATA

TABLE 12

RADIOACTIVITY IN 200-H WELLS

LOCATION	NO. OF SAMPLES	ALPHA, PCI/L MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
241-H WELL							
241-H WELL	7	1.4	±0.71	0.00	±0.32	0.58	-
HP WELLS							
H AREA HP 1	3	0.41	±0.44	0.24	±0.36	0.30	-
H AREA HP 5	2	0.57	±0.49	0.25	±0.37	0.41	-
H AREA HP 8	7	1.1	±0.64	0.16	±0.40	0.56	-
HPM WELLS							
H AREA HPM 1	4	1.8	±0.80	0.25	±0.37	1.2	-
H AREA HPM 2	4	1.6	±0.76	0.25	±0.44	1.1	-
H AREA HPM 3	3	1.1	±0.69	0.25	±0.44	0.66	-
H AREA HPM 4	3	1.5	±0.74	0.91	±0.59	1.3	-
H AREA HPM 6	4	1.6	±0.80	0.74	±0.55	1.0	-
H AREA HPM 8	4	1.6	±0.80	0.89	±0.59	1.2	-
H AREA HPM 9	4	1.4	±0.72	0.25	±0.44	0.92	-
H AREA HPM 10	6	1.3	±0.73	0.17	±0.41	0.63	-
H AREA HPM 11	3	0.73	±0.54	0.41	±0.49	0.57	-
H AREA HPM 12	6	0.97	±0.61	0.17	±0.34	0.42	-
H TANK FARM WELLS							
TK FARM WELL HTF 1	13	1.1	±0.63	0.08	±0.37	0.43	±0.54
TK FARM WELL HTF 2	13	1.1	±0.65	0.08	±0.43	0.46	±0.68
TK FARM WELL HTF 3	13	0.65	±0.51	-0.08	±0.29	0.31	±0.46
TK FARM WELL HTF 4	13	1.8	±0.80	-0.08	±0.29	0.58	±0.92
TK FARM WELL HTF 5	13	0.99	±0.66	0.08	±0.36	0.55	±0.52
TK FARM WELL HTF 6	13	1.7	±0.84	0.16	±0.40	1.0	±0.94
TK FARM WELL HTF 7	13	0.89	±0.59	0.08	±0.44	0.47	±0.50
TK FARM WELL HTF 8	13	1.6	±0.76	-0.08	±0.29	0.75	±0.94
TK FARM WELL HTF 9	13	0.92	±0.69	0.41	±0.49	0.58	±0.28
TK FARM WELL HTF 10	13	5.9	±1.4	-0.08	±0.29	0.78	±3.1
TK FARM WELL HTF 11	13	0.76	±0.56	-0.08	±0.16	0.31	±0.62
TK FARM WELL HTF 12	13	1.3	±0.74	-0.08	±0.28	0.37	±0.80
TK FARM WELL HTF 13	13	1.3	±0.73	0.08	±0.29	0.81	±0.70
TK FARM WELL HTF 14	13	1.5	±0.73	0.16	±0.32	0.77	±0.80
TK FARM WELL HTF 15	13	1.5	±0.78	0.24	±0.43	0.82	±0.80
TK FARM WELL HTF 16	13	1.6	±0.80	0.17	±0.33	0.97	±0.94
TK FARM WELL HTF 17	13	1.7	±0.84	0.33	±0.41	0.82	±0.72

LOCATION	NO. OF SAMPLES	NONVOL BETA, PCI/L MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
241-H WELL							
241-H WELL	6	49	±8.6	5.6	±7.2	21	-
HP WELLS							
H AREA HP 1	3	1100	±25	650	±20	920	-
H AREA HP 5	2	120	±11	66	±9.1	94	-
H AREA HP 8	6	1400	±28	530	±18	1000	-
HPM WELLS							
H AREA HPM 1	4	18	±7.6	11	±7.2	15	-
H AREA HPM 2	4	34	±8.1	19	±7.5	29	-
H AREA HPM 3	3	120	±12	30	±7.9	65	-
H AREA HPM 4	3	42	±9.3	20	±7.6	31	-
H AREA HPM 6	4	250	±15	75	±9.4	130	-
H AREA HPM 8	4	89	±11	73	±9.4	80	-
H AREA HPM 9	4	15	±8.4	2.2	±6.9	7.3	-
H AREA HPM 10	6	82	±9.5	13	±7.4	47	-
H AREA HPM 11	3	63	±9.0	32	±8.0	49	-
H AREA HPM 12	6	82	±9.7	55	±8.8	70	-
H TANK FARM WELLS							
TK FARM WELL HTF 1	13	24	±8.2	-4.2	±6.9	5.9	±15
TK FARM WELL HTF 2	13	20	±8.1	-1.4	±7.3	4.6	±12
TK FARM WELL HTF 3	13	49	±8.7	3.5	±7.4	25	±30
TK FARM WELL HTF 4	13	56	±9.2	-1.9	±7.5	10	±38
TK FARM WELL HTF 5	13	46	±8.9	-3.8	±7.7	7.5	±25
TK FARM WELL HTF 6	13	72	±9.4	3.0	±7.5	38	±39
TK FARM WELL HTF 7	13	17	±7.9	-0.68	±7.0	6.5	±11
TK FARM WELL HTF 8	13	7.1	±8.1	-0.68	±7.1	4.0	±5.2
TK FARM WELL HTF 9	13	16	±7.8	-5.3	±7.6	6.2	±11
TK FARM WELL HTF 10	13	68	±9.6	-4.5	±7.1	4.9	±38
TK FARM WELL HTF 11	13	17	±8.0	-5.9	±6.9	1.4	±10
TK FARM WELL HTF 12	13	12	±7.7	-7.7	±7.5	0.67	±8.4
TK FARM WELL HTF 13	13	8.3	±8.0	-3.7	±7.0	3.4	±6.4
TK FARM WELL HTF 14	13	13	±8.3	-0.60	±7.6	4.3	±7.8
TK FARM WELL HTF 15	13	8.6	±8.1	-3.7	±7.0	4.3	±7.4
TK FARM WELL HTF 16	13	11	±7.6	-5.4	±7.4	2.9	±9.3
TK FARM WELL HTF 17	13	9.1	±7.5	-3.5	±6.9	2.7	±7.3

- INSUFFICIENT DATA

TABLE 12

RADIOACTIVITY IN 200-H WELLS, CONTD

LOCATION		NO. OF SAMPLES	H-3, PCI/ML MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
BURIAL GROUNDS								
H AREA	H BG 10	8	27000	±140	11000	±94	19000	±9400
241-H WELL								
241-H WELL		7	440	±5.9	380	±5.6	410	-
HP WELLS								
H AREA	HP 1	5	85	±2.8	31	±1.9	52	-
H AREA	HP 5	5	32	±2.0	14	±1.5	26	-
H AREA	HP 8	7	85	±2.8	21	±1.7	41	-
H TANK FARM WELLS								
TK FARM WELL	HTF 1	13	47	±2.3	32	±1.9	40	±9.4
TK FARM WELL	HTF 2	13	43	±2.2	26	±1.7	34	±13
TK FARM WELL	HTF 3	12	39	±2.2	25	±1.7	31	±8.2
TK FARM WELL	HTF 4	13	39	±2.2	24	±1.7	32	±8.7
TK FARM WELL	HTF 5	13	35	±2.1	24	±1.7	30	±7.0
TK FARM WELL	HTF 6	13	31	±2.0	21	±1.6	26	±6.1
TK FARM WELL	HTF 7	13	5.8	±1.2	2.5	±1.3	4.0	±1.9
TK FARM WELL	HTF 8	13	44	±2.3	13	±1.4	36	±16
TK FARM WELL	HTF 9	13	15	±1.6	8.6	±1.3	11	±4.3
TK FARM WELL	HTF 10	13	78	±2.8	42	±2.1	61	±19
TK FARM WELL	HTF 11	13	90	±3.0	56	±2.3	72	±19
TK FARM WELL	HTF 12	13	270	±4.9	150	±3.5	220	±68
TK FARM WELL	HTF 13	13	12	±1.4	7.1	±1.3	9.0	±2.9
TK FARM WELL	HTF 14	13	52	±2.4	31	±1.9	41	±12
TK FARM WELL	HTF 15	13	160	±3.6	100	±3.0	130	±35
TK FARM WELL	HTF 16	13	42	±2.2	28	±1.8	34	±8.0
TK FARM WELL	HTF 17	12	120	±3.2	74	±2.6	93	±27

- INSUFFICIENT DATA

LOCATION		NO. OF SAMPLES	PH MAXIMUM	MINIMUM
H TANK FARM WELLS				
TK FARM WELL	HTF 1	13	7.9	6.7
TK FARM WELL	HTF 2	13	7.2	6.5
TK FARM WELL	HTF 3	14	7.2	6.6
TK FARM WELL	HTF 4	13	7.6	6.0
TK FARM WELL	HTF 5	13	7.0	5.6
TK FARM WELL	HTF 6	13	7.0	5.0
TK FARM WELL	HTF 7	13	6.9	5.2
TK FARM WELL	HTF 8	13	7.1	4.4
TK FARM WELL	HTF 9	13	7.0	5.3
TK FARM WELL	HTF 10	13	6.9	5.2
TK FARM WELL	HTF 11	13	7.1	5.8
TK FARM WELL	HTF 12	13	7.2	5.3
TK FARM WELL	HTF 13	13	7.3	4.7
TK FARM WELL	HTF 14	12	7.1	4.9
TK FARM WELL	HTF 15	13	6.9	4.5
TK FARM WELL	HTF 16	13	7.1	4.7
TK FARM WELL	HTF 17	13	7.7	5.1

TABLE 13

RADIOACTIVITY IN REACTOR AREAS SEEPAGE BASIN WELLS

LOCATION	NO. OF SAMPLES	ALPHA , PCI/L MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
R SEEPAGE BASIN WELL[a]							
R SB WELL A 7	1	0.42	±0.38	0.42	±0.38	0.42	-
R SB WELL A 8	0						
R SB WELL A 9	0						-
R SB WELL A 10	1	0.00	±0.38	-0.17	±0.34	0.17	-
R SB WELL B 7	4	0.67	±0.53	0.00	±0.42	0.29	-
R SB WELL B 8	4	1.0	±0.63	0.08	±0.37	0.50	-
R SB WELL B 9	4	0.59	±0.50	0.00	±0.24	0.27	-
R SB WELL C 2	1	0.51	±0.59	0.51	±0.59	0.51	-
R SB WELL C 3	1	0.08	±0.45	0.08	±0.45	0.08	-
R SB WELL C 4	0						
R SB WELL C 5	1	0.08	±0.17	0.08	±0.17	0.08	-
R SB WELL C 6	1	0.00	±0.17	-0.17	±0.34	0.17	-
R SB WELL C 7	1	0.76	±0.66	0.76	±0.66	0.76	-
R SB WELL C 8	1	0.25	±0.51	0.25	±0.51	0.25	-
R SB WELL C 9	1	0.00	±0.51	-0.25	±0.29	0.25	-
R SB WELL D 1	5	0.66	±0.57	0.00	±0.33	0.31	-
R SB WELL D 2A	4	0.34	±0.34	-0.17	±0.24	0.19	-
R SB WELL D 2B	0						-
R SB WELL D 2C	4	0.81	±0.56	0.00	±0.42	0.43	-
R SB WELL D 3	1	0.00	±0.34	-0.08	±0.38	0.08	-
R SB WELL D 4	4	1.1	±0.65	0.16	±0.32	0.55	-
R SB WELL D 5	5	1.2	±0.72	-0.25	±0.29	0.51	-
R SB WELL D 6	5	0.74	±0.59	-0.08	±0.38	0.32	-
R SB WELL D 7	5	1.2	±0.67	-0.08	±0.38	0.45	-
R SB WELL D 8	5	0.57	±0.49	0.00	±0.33	0.36	-
R SB WELL D 9	5	0.89	±0.59	0.25	±0.29	0.51	-
R SB WELL D 10	5	1.3	±0.69	0.25	±0.29	0.60	-
R SB WELL D 11	5	0.58	±0.55	0.08	±0.37	0.36	-
R SB WELL E 1A	4	0.84	±0.58	-0.17	±0.24	0.52	-
R SB WELL E 1B	1	0.08	±0.37	0.08	±0.37	0.08	-
R SB WELL E 1C	4	1.8	±0.80	0.08	±0.37	0.69	-
R SB WELL E 2	3	0.51	±0.42	0.17	±0.41	0.31	-
R SB WELL E 3	5	1.0	±0.63	0.33	±0.47	0.69	-
R SB WELL E 4A	4	2.7	±0.96	0.68	±0.54	1.5	-
R SB WELL E 4B	0						-
R SB WELL E 4C	4	0.73	±0.54	0.34	±0.42	0.52	-
R SB WELL E 5	4	0.75	±0.56	0.00	±0.33	0.37	-
R SB WELL E 7	4	0.67	±0.53	0.00	±0.33	0.29	-
R SB WELL E 8	4	1.8	±0.82	0.17	±0.41	0.92	-
R SB WELL E 9	4	2.1	±0.87	0.16	±0.32	0.73	-
R SB WELL E 10	4	0.67	±0.53	0.00	±0.23	0.32	-
R SB WELL E 11	4	1.7	±0.78	0.51	±0.42	1.0	-
R SB WELL E 12	4	0.84	±0.58	0.00	±0.33	0.44	-
R SB WELL E 13	6	3.1	±1.0	1.2	±0.67	1.8	-
R SB WELL E 18	4	0.34	±0.34	0.00	±0.33	0.17	-
R SB WELL E 19	4	1.6	±0.77	0.50	±0.53	0.96	-
R SB WELL E 6[b]	1	o.51	±0.49				
REACTOR AREA WELLS							
C SEEP BASIN WELL 1	3	0.32	±0.40	0.00	±0.33	0.21	-
C SEEP BASIN WELL 2	3	1.2	±0.67	0.81	±0.56	1.0	-
C SEEP BASIN WELL 3	3	0.58	±0.55	0.16	±0.32	0.38	-
C SEEP BASIN WELL 4	3	0.16	±0.32	-0.08	±0.16	0.00	-
C SEEP BASIN WELL 5	3	0.24	±0.36	0.00	±0.23	0.08	-
C SEEP BASIN WELL 6	3	0.97	±0.61	0.49	±0.46	0.71	-
REACTOR AREA WELLS							
K CONT BASIN WELL 1	8	1.3	±0.69	0.16	±0.40	0.74	±0.84
K CONT BASIN WELL 8	8	1.1	±0.65	0.25	±0.44	0.75	±0.66
K CONT BASIN WELL 13	9	2.1	±0.86	0.41	±0.43	0.99	±1.0
K CONT BASIN WELL 14	9	1.6	±0.76	0.25	±0.50	0.85	±0.94
K CONT BASIN WELL 15	8	3.4	±1.1	0.66	±0.57	1.6	±1.8
REACTOR AREA WELLS							
P SEEP BASIN WELL 1	3	0.99	±0.66	0.41	±0.43	0.60	-
P SEEP BASIN WELL 2	3	1.5	±0.77	0.89	±0.59	1.3	-
P SEEP BASIN WELL 3	3	0.41	±0.43	0.32	±0.40	0.38	-
P SEEP BASIN WELL 4	3	0.24	±0.36	0.08	±0.37	0.16	-
P SEEP BASIN WELL 5	3	0.66	±0.57	0.57	±0.49	0.63	-
P SEEP BASIN WELL 6	3	0.41	±0.49	0.08	±0.28	0.24	-
P SEEP BASIN WELL 7	3	0.49	±0.52	0.32	±0.40	0.41	-

- INSUFFICIENT DATA

[a]WELLS SAMPLED LESS THAN FOUR TIMES WERE DRY DURING PART OR ALL OF THE YEAR.

[b]WELL E-6 PLACED BACK INTO SERVICE IN MARCH AFTER LODGED "PULLER" WAS REMOVED BUT WAS DRY UNTIL OCTOBER.

TABLE 13

RADIOACTIVITY IN REACTOR AREAS SEEPAGE BASIN WELLS, CONTD

LOCATION		NO. OF SAMPLES	NONVOL BETA, PCI/L: MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
R SEEPAGE BASIN WELL[a]								
R SB WELL	A 7	1	6.0	±7.8	6.0	±7.8	6.0	-
R SB WELL	A 8	0						-
R SB WELL	A 9	0						-
R SB WELL	A 10	1	2.9	±7.8	2.9	±7.8	2.9	-
R SB WELL	B 7	4	11	±7.5	7.8	±7.2	9.5	-
R SB WELL	B 8	4	18	±8.3	-4.1	±6.9	7.4	-
R SB WELL	B 9	4	6.4	±7.7	-4.0	±6.9	0.67	-
R SB WELL	C 2	1	1.5	±7.8	1.5	±7.8	1.5	-
R SB WELL	C 3	1	0.00	±7.8	-2.1	±7.6	2.10	-
R SB WELL	C 4	0	0.00	±7.8	0.00	±7.6	0.00	-
R SB WELL	C 5	1	5.7	±7.8	5.7	±7.8	5.7	-
R SB WELL	C 6	1	0.90	±7.8	0.90	±7.8	0.90	-
R SB WELL	C 7	1	5.1	±7.9	5.1	±7.9	5.1	-
R SB WELL	C 8	1	0.00	±7.9	0.00	±7.7	0.00	-
R SB WELL	C 9	1	5.6	±7.9	5.6	±7.9	5.6	-
R SB WELL	D 1	5	41	±8.9	21	±7.7	27	-
R SB WELL	D 2A	4	370	±17	240	±14	290	-
R SB WELL	D 2B	0	0.00	±7.9	0.00	±7.9	0.00	-
R SB WELL	D 2C	4	4100	±48	1100	±26	2900	-
R SB WELL	D 3	1	3.8	±7.9	3.8	±7.9	3.8	-
R SB WELL	D 4	4	320	±15	120	±11	240	-
R SB WELL	D 5	5	770	±22	360	±16	610	-
R SB WELL	D 6	5	300	±15	220	±13	250	-
R SB WELL	D 7	5	1000	±25	130	±11	530	-
R SB WELL	D 8	5	530	±19	110	±10	350	-
R SB WELL	D 9	5	14	±7.5	-1.6	±7.4	5.3	-
R SB WELL	D 10	5	72	±9.5	13	±7.5	47	-
R SB WELL	D 11	5	44	±8.5	17	±7.7	27	-
R SB WELL	E 1A	4	100	±11	37	±8.8	63	-
R SB WELL	E 1B	1	8.3	±7.4	8.3	±7.4	8.3	-
R SB WELL	E 1C	4	32	±8.8	-0.27	±6.9	10	-
R SB WELL	E 2	3	35	±8.9	8.2	±7.4	22	-
R SB WELL	E 3	5	31	±8.1	10	±7.3	20	-
R SB WELL	E 4A	4	250	±15	110	±10	210	-
R SB WELL	E 4B	0						-
R SB WELL	E 4C	4	690	±21	570	±19	610	-
R SB WELL	E 5	4	59	±9.1	24	±8.4	46	-
R SB WELL	E 7	4	1.5	±7.6	-4.0	±6.8	1.30	-
R SB WELL	E 8	4	16	±8.1	2.0	±7.0	8.6	-
R SB WELL	E 9	4	7.8	±7.9	-2.5	±7.0	3.2	-
R SB WELL	E 10	4	11	±8.0	-3.1	±7.0	4.2	-
R SB WELL	E 11	4	2400	±37	410	±15	1000	-
R SB WELL	E 12	4	220	±14	120	±11	180	-
R SB WELL	E 13	6	320	±15	170	±12	250	-
R SB WELL	E 18	4	10	±8.0	-6.7	±6.8	3.1	-
R SB WELL	E 19	4	75	±9.6	58	±9.5	68	-
R SB WELL	E-6[b]	1	28600	±600				
REACTOR AREA WELLS								
C SEEP BASIN WELL	1	3	3.8	±7.1	-4.6	+7.6	1.60	-
C SEEP BASIN WELL	2	3	12	±7.4	5.2	±7.2	7.7	-
C SEEP BASIN WELL	3	3	0.00	±7.4	-5.4	±7.5	3.80	-
C SEEP BASIN WELL	4	3	3.9	±7.9	0.00	±7.0	2.4	-
C SEEP BASIN WELL	5	3	3.1	±7.2	-7.5	±7.4	1.70	-
C SEEP BASIN WELL	6	3	8.2	±7.3	-4.9	±7.5	1.4	-
REACTOR AREA WELLS								
K CONT BASIN WELL	1	8	20	±7.7	-5.5	±6.6	2.3	±15
K CONT BASIN WELL	8	8	13	±8.2	-0.14	±7.1	5.7	±9.3
K CONT BASIN WELL	13	8	36	±8.2	3.4	±7.1	16	±20
K CONT BASIN WELL	14	9	30	±8.3	2.2	±7.0	11	±18
K CONT BASIN WELL	15	8	50	±8.7	28	±7.8	40	±14
REACTOR AREA WELLS								
P SEEP BASIN WELL	1	3	11	±7.4	-0.72	±7.7	3.3	-
P SEEP BASIN WELL	2	3	26	±8.0	4.4	±7.2	13	-
P SEEP BASIN WELL	3	3	1.2	±7.0	-3.3	±7.6	0.88	-
P SEEP BASIN WELL	4	3	1.6	±7.1	-2.9	±6.9	0.84	-
P SEEP BASIN WELL	5	3	6.0	±7.2	-1.2	±7.7	1.5	-
P SEEP BASIN WELL	6	3	2.0	±7.8	-9.1	±6.7	2.00	-
P SEEP BASIN WELL	7	3	0.00	±7.8	-4.9	±6.8	4.40	-

\- INSUFFICIENT DATA

[a]WELLS SAMPLED LESS THAN FOUR TIMES WERE DRY DURING THE FIRST PART OF THE YEAR.

[b]WELL E-6 PLACED BACK INTO SERVICE IN MARCH AFTER LODGED "PULLER" WAS REMOVED BUT WAS DRY UNTIL OCTOBER.

TABLE 13
RADIOACTIVITY IN REACTOR AREAS SEEPAGE BASIN WELLS, CONTD

	H-3, PCI/ML						
LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
REACTOR AREA WELLS							
C SEEP BASIN WELL 1	2	37	±2.1	33	±1.9	35	-
C SEEP BASIN WELL 2	2	61	±2.4	44	±2.2	52	-
C SEEP BASIN WELL 3	2	930	±8.5	660	±7.2	790	-
C SEEP BASIN WELL 4	2	80	±2.8	44	±2.1	62	-
C SEEP BASIN WELL 5	2	480	±6.1	450	±6.0	460	-
C SEEP BASIN WELL 6	2	3500	±5.2	6.8	±10	1700	-
REACTOR AREA WELLS							
K CONT BASIN WELL 1	8	1400	±35	87	±13	670	±990
K CONT BASIN WELL 8	8	57000	±700	37000	±560	49000	±16000
K CONT BASIN WELL 13	7	120000	±950	31000	±500	72000	-
K CONT BASIN WELL 14	6	110000	±950	34000	±480	61000	-
K CONT BASIN WELL 15	8	150000	±1100	80000	±810	120000	±56000
REACTOR AREA WELLS							
P SEEP BASIN WELL 1	2	280000	±660	40000	±610	260000	-
P SEEP BASIN WELL 2	2	200000	±550	60000	±490	180000	-
P SEEP BASIN WELL 3	2	190000	±540	40000	±460	160000	-
P SEEP BASIN WELL 4	2	31	±1.8	21	±1.8	26	-
P SEEP BASIN WELL 5	2	37	±2.1	28	±1.8	32	-
P SEEP BASIN WELL 6	2	290000	±660	60000	±630	270000	-
P SEEP BASIN WELL 7	2	160000	±490	50000	±480	160000	-

- INSUFFICIENT DATA

TABLE 14

RADIOACTIVITY IN ZW AND Z WELLS

LOCATION		NO. OF SAMPLES	ALPHA, PCI/L MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
ZW WELLS								
ZW WELL	1	0	0.00	±0.00	0.00	±0.00	0.00	-
ZW WELL	2	1	0.16	±0.40	0.16	±0.40	0.16	-
ZW WELL	3	1	0.41	±0.49	0.41	±0.49	0.41	-
ZW WELL	4	1	0.74	±0.59	0.74	±0.59	0.74	-
ZW WELL	5	1	0.16	±0.40	0.16	±0.40	0.16	-
ZW WELL	6	1	0.58	±0.55	0.58	±0.55	0.58	-
ZW WELL	7	1	0.00	±0.55	-0.16	±0.23	0.16	-
ZW WELL	8	1	0.00	±0.55	0.00	±0.33	0.00	-
ZW WELL	9	1	1.2	±0.72	1.2	±0.72	1.2	-
ZW WELL	10	1	2.5	±0.96	2.5	±0.96	2.5	-

LOCATION		NO. OF SAMPLES	NONVOL BETA, PCI/L MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
ZW WELLS								
ZW WELL	1	0	0.00	±0.96	0.00	±0.96	0.00	-
ZW WELL	2	1	2.6	±7.8	2.6	±7.8	2.6	-
ZW WELL	3	1	0.14	±7.7	0.14	±7.7	0.14	-
ZW WELL	4	1	2.6	±7.8	2.6	±7.8	2.6	-
ZW WELL	5	1	0.00	±7.8	-1.9	±7.6	1.90	-
ZW WELL	6	1	0.00	±7.8	-5.1	±7.5	5.10	-
ZW WELL	7	1	3.2	±7.8	3.2	±7.8	3.2	-
ZW WELL	8	1	1.6	±7.7	1.6	±7.7	1.6	-
ZW WELL	9	1	1.7	±7.7	1.7	±7.7	1.7	-
ZW WELL	10	1	5.8	±7.9	5.8	±7.9	5.8	-

LOCATION		NO. OF SAMPLES	H-3, PCI/ML MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
ZW WELLS								
ZW WELL	1	0	0.00	±1.3	0.00	±1.3	0.00	-
ZW WELL	2	1	250	±4.5	250	±4.5	250	-
ZW WELL	3	1	9.1	±1.4	9.1	±1.4	9.1	-
ZW WELL	4	1	5.5	±1.3	5.5	±1.3	5.5	-
ZW WELL	5	1	18	±1.6	18	±1.6	18	-
ZW WELL	6	1	44	±2.1	44	±2.1	44	-
ZW WELL	7	1	110	±3.0	110	±3.0	110	-
ZW WELL	8	1	17	±1.6	17	±1.6	17	-
ZW WELL	9	1	97	±2.9	97	±2.9	97	-
ZW WELL	10	1	29	±1.8	29	±1.8	29	-
Z WELLS								
Z WELL	1	1	17	±1.6	17	±1.6	17	-
Z WELL	2	1	26	±1.8	26	±1.8	26	-
Z WELL	3	1	1300	±9.8	1300	±9.8	1300	-
Z WELL	8	2	820	±8.0	760	±7.7	790	-
Z WELL	9	1	67	±2.5	67	±2.5	67	-
Z WELL	11	1	120	±3.3	120	±3.3	120	-
Z WELL	12	1	20	±1.6	20	±1.6	20	-
Z WELL	13	1	20	±1.6	20	±1.6	20	-
Z WELL	15	1	28	±1.8	28	±1.8	28	-
Z WELL	17	1	13	±1.5	13	±1.5	13	-
Z WELL	18	1	8.5	±1.3	8.5	±1.3	8.5	-

- INSUFFICIENT DATA

TABLE 15

RADIOACTIVITY IN TRANSPORT FOUR MILE CREEK, Ci[a]

		Tritium	Sr-90	Cs-137[b]
FM-1C	H-Area effluent at Road E	65	0.001	0.009
FM-1B	Cooling tower effluent below H-Area retention basin	10	0.002	0.022
FM-2	0.5 mile downstream from Road E	290	0.010	0.125
FM-2B	Above entry of F-Area effluent	4,240	0.050	0.125
FM-3	F-Area effluent at Road E	10	0.039	0.092
FM-4	Below F-Area effluent at Road C	6,320	0.064	0.311
FM-A7	Downstream at Road A-7	7,430	0.312	0.168

[a]See table 8 for migration of tritium from seepage basins.
[b]Values for FM-1C and FM-3 represent releases from H- and F-Areas, respectively. Other values represent desorption of CS-137 from streambed.

TABLE 16

MEASURED MIGRATION AND RELEASES OF RADIOACTIVITY TO SEEPAGE BASINS

	F Area		H Area		K Area	
	Release	Migration	Release	Migration	Release	Migration
	Tritium, Ci					
1978	4,760	3,450	8,890	5,460	9,020	11,500
1979	5,970	2,160	7,510	6,690	8,580	10,400
1980	5,320	1,507	8,020	5,315	9,170	7,580
1981	7,580	1,100	13,380	4,200	5,050	8,910
	Sr-90, Ci					
1978	0.052	0.45	1.994	0.021	0.0002	-
1979	0.060	0.44	2.612	0.030	0.0002	-
1980	0.032	0.38	0.113	0.010	-	-
1981	0.258	0.25	0.733	0.05	-	-

- Less than the minimum amount detectable.

TABLE 17

RADIOACTIVITY IN SOLID WASTE STORAGE FACILITY WELLS

LOCATION	NO. OF SAMPLES	ALPHA, PCI/L MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	ARITHMETIC 2 STD DEV
PERIMETER WELLS							
BG WELL 26	4	2.6	±0.95	1.3	±0.73	1.8	-
BG WELL 27	4	1.3	±0.69	0.32	±0.46	0.67	-
BG WELL 28	4	6.2	±1.5	0.57	±0.54	2.1	-
BG WELL 29	4	1.5	±0.73	0.65	±0.56	0.98	-
BG WELL 30	2	1.1	±0.69	0.97	±0.65	1.1	-
BG WELL 31	4	2.1	±0.87	0.32	±0.46	1.6	-
BG WELL 32	3	2.0	±0.83	1.5	±0.78	1.7	-
BG WELL 33	3	1.9	±0.84	1.5	±0.76	1.7	-
BG WELL 34	3	1.7	±0.78	1.1	±0.67	1.4	-
BG WELL 35	3	0.99	±0.70	0.81	±0.56	0.92	-
BG WELL 36	3	0.89	±0.63	0.73	±0.54	0.81	-
BG WELL 37	3	3.6	±1.1	2.8	±1.0	3.1	-
BG WELL 38	3	1.4	±0.71	1.1	±0.69	1.3	-
BG WELL 39	3	3.7	±1.1	1.7	±0.81	2.7	-
BG WELL 40	3	1.1	±0.65	0.41	±0.49	0.71	-
BG WELL 41	3	1.8	±0.83	0.81	±0.61	1.3	-
BG WELL 42	3	4.8	±1.3	3.5	±1.1	4.2	-
BG WELL 43	3	1.1	±0.69	0.89	±0.63	0.97	-
BG WELL 51	4	0.91	±0.59	0.24	±0.43	0.63	-
BG WELL 52	3	1.3	±0.69	0.41	±0.49	0.92	-
BG WELL 53	3	1.5	±0.76	0.73	±0.54	1.0	-
BG WELL 54	3	1.4	±0.74	0.24	±0.36	0.81	-
BG WELL 55	3	4.1	±1.2	3.0	±1.0	3.5	-
BG WELL 56	4	2.9	±1.0	1.5	±0.78	2.2	-
BG WELL 57	4	1.4	±0.71	0.32	±0.46	0.94	-
BG WELL 58	4	1.9	±0.84	1.2	±0.74	1.5	-
BG WELL 59	4	0.65	±0.56	0.00	±0.23	0.43	-
BG WELL 60	4	1.7	±0.81	0.99	±0.62	1.3	-
BG WELL 61	4	1.5	±0.73	0.57	±0.54	1.0	-
BG WELL 62	4	1.7	±0.78	0.24	±0.43	1.0	-
BG WELL 63	4	1.1	±0.67	0.74	±0.55	0.92	-
BG WELL 64	4	1.2	±0.67	0.65	±0.56	0.96	-
BG WELL 65	4	1.5	±0.74	0.32	±0.46	0.77	-
BG WELL 66	4	0.89	±0.59	0.32	±0.46	0.67	-
BG WELL 67	4	1.3	±0.69	0.49	±0.51	0.92	-
INSIDE FENCES							
*A-1	6	1	-	<0.5	-	<0.5	-
*A-3	6	5	-	<0.5	-	1	-
*A-5	6	10	-	3	-	5	-
*A-7	6	5	-	2	-	3	-
*A-9	6	3	-	<0.5	-	1	-
*A-11	6	4	-	1	-	2	-
*A-19	6	18	-	1	-	6	
*A-21	6	1	-	<0.5	-	<0.5	-
*A-23	6	5	-	<0.5	-	2	-
*A-32	6	6	-	<0.5	-	2	-
*A-34	6	3	-	1.0	-	2	-
A-36	4	1.1	±0.65	0.24	±0.36	0.75	-
*C-1	6	1	-	<0.5	-	1	-
*C-3	6	5	-	<0.5	-	2	-
*C-5	3	3	-	1	-	2	-
*C-7	6	2	-	<0.5	-	1	-
C-9	4	1.2	±0.67	0.24	±0.36	0.67	-
C-11	4	2.0	±0.84	0.49	±0.46	1.0	-
*C-13	6	8	-	<0.5	-	5	-
*C-15	6	11	-	3	-	7	-
*C-17	6	12	-	3	-	7	-
C-19	4	1.2	±0.67	0.08	±0.28	0.57	-
*C-21	6	7	-	<0.5	-	3	-
C-23	4	0.73	±0.54	0.24	±0.36	0.49	-
*C-30	6	3	-	<0.5	-	2	-
C-32	4	2.2	±0.88	1.4	±0.71	1.6	-
*C-34	4	1	-	<0.5	-	1	-
C-36	4	0.57	±0.49	0.32	±0.40	0.43	-

* Research wells monitored by SRL. Included in this table for completeness of data reporting.

\- Statistical counting error (CT ERR) of SRL research wells are similar to those for other wells. Insufficient data for standard deviation (STD DEV) calculation.

TABLE 17
RADIOACTIVITY IN SOLID WASTE STORAGE FACILITY WELLS, CONTD

LOCATION	ALPHA, PCI/L						
	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	ARITHMETIC 2 STD DEV
*E-1	6	7	-	<0.5	-	1	-
*E-3	6	2	-	<0.5	-	1	-
*E-5	6	2	-	1	-	1	-
*E-7	6	5	-	<0.5	-	2	-
E-9	4	0.81	±0.56	-0.08	±0.16	0.28	-
*E-13	6	6	-	1	-	3	-
*E-15	2	3	-	1	-	2	-
*E-17	2	3	-	2	-	3	-
*E-19	6	3	-	<0.5	-	1	-
E-21	4	0.97	±0.61	0.57	±0.49	0.67	-
*E-23	6	2	-	<0.5	-	1	-
E-30	4	1.8	±0.80	0.73	±0.54	1.2	-
*E-32	6	5	-	<0.5	-	3	-
E-34	4	1.1	±0.65	0.24	±0.36	0.57	-
*E-36	6	4	-	1	-	3	-
*G-1	6	5	-	<0.5	-	1	-
*G-3	6	5	-	<0.5	-	2	-
*G-5	6	8	-	<0.5	-	4	-
*G-7	6	3	-	<0.5	-	1	-
*G-9	6	9	-	1	-	4	-
*G-13	6	7	-	1	-	5	-
G-15	4	0.73	±0.54	0.41	±0.43	0.57	-
*G-17	6	5	-	<0.5	-	1	-
G-19	4	0.97	±0.61	0.41	±0.43	0.61	-
*G-21	5	157	-	9	-	63	-
G-23	4	0.73	±0.54	-0.08	±0.16	0.35	-
G-28	4	1.1	±0.63	0.57	±0.49	0.77	-
*G-30	6	3	-	<0.5	-	1	-
*G-32	6	3	-	<0.5	-	1	-
*G-34	6	3	-	<0.5	-	2	-
G-36	4	0.32	±0.40	0.8	±0.28	0.26	-
*I-1	6	12	-	<0.5	-	7	-
*I-5	6	2	-	<0.5	-	1	-
*I-7	6	2	-	<0.5	-	1	-
*I-9	6	3	-	<0.5	-	1	
*I-13	6	66	-	23	-	35	-
*I-15	6	10	-	1	-	5	-
*I-17	6	13	-	3	-	7	-
*22.04	6	57	-	<0.5	-	11	-
*22.06	6	6	-	<0.5	-	3	-
*22.08	6	6	-	<0.5	-	3	-
*22.10	6	4	-	<0.5	-	2	-
*22.12	6	11	-	<0.5	-	4	-
*22.16	6	8	-	<0.5	-	3	-
*22.18	6	20	-	2	-	8	-
*22.20	6	4	-	<0.5	-	1	-
*22.22	6	4	-	<0.5	-	1	-
*24.02	6	5	-	1	-	3	-
*24.04	5	7	-	1	-	3	-
*24.06	5	5	-	<0.5	-	1	-
*24.08	6	2	-	<0.5	-	1	-
*24.10	6	4	-	<0.5	-	2	-
*24.20	6	5	-	<0.5	-	2	-
*24.22	6	8	-	2	-	5	-
*26.20	6	8	-	1	-	4	-
*26.22	5	12	-	2	-	5	-
*28.18	6	6	-	2	-	4	-
*28.20	6	7	-	<0.5	-	2	-
*28.22	6	11	-	5	-	7	-
TRANS U PAD SUMPS							
TRANSU STG PD SUMP 1	3	0.50	±0.58	0.16	±0.33	0.28	-
TRANSU STG PD SUMP 2	4	12	±6.1	5.9	±4.3	7.4	-

- INSUFFICIENT DATA

* Research wells monitored by SRL. Included in this table for completeness of data reporting.
- Statistical counting error (CT ERR) of SRL research wells are similar to those for other wells. Insufficient data for standard deviation (STD DEV) calculation.

TABLE 17
RADIOACTIVITY IN SOLID WASTE STORAGE FACILITY WELLS, CONTD

LOCATION	NONVOL BETA, PCI/L						
	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	ARITHMETIC 2 STD DEV
PERIMETER WELLS							
BG WELL 26	4	28	±8.3	6.1	±7.7	13	-
BG WELL 27	4	13	±7.5	-0.14	±7.5	5.0	-
BG WELL 28	4	22	±8.2	2.5	±7.4	11	-
BG WELL 29	4	19	±7.7	-0.95	±6.9	9.0	-
BG WELL 30	2	6.8	±7.7	3.7	±7.1	5.3	-
BG WELL 31	4	16	±7.6	-1.4	±6.9	7.2	-
BG WELL 32	3	9.4	±7.8	3.8	±7.1	6.4	-
BG WELL 33	3	11	±7.4	-1.6	±6.9	6.5	-
BG WELL 34	3	20	±7.7	1.1	±7.5	9.0	-
BG WELL 35	3	8.7	±7.7	0.14	±6.9	3.9	-
BG WELL 36	3	5.9	±7.2	-4.4	±6.8	1.3	-
BG WELL 37	3	21	±7.8	10	±7.8	14	-
BG WELL 38	3	2.2	±7.0	-1.6	±7.4	0.00	-
BG WELL 39	3	38	±8.4	8.0	±7.3	19	-
BG WELL 40	3	6.5	±7.7	1.5	±7.0	4.6	-
BG WELL 41	3	18	±7.7	0.27	±7.0	8.3	-
BG WELL 42	3	26	±7.9	23	±7.8	25	-
BG WELL 43	3	6.3	±7.7	1.4	±7.1	4.0	-
BG WELL 51	4	0.95	±7.5	-3.8	±7.2	1.80	-
BG WELL 52	3	21	±7.8	3.8	±7.6	11	-
BG WELL 53	3	10	±7.4	-3.0	±6.8	3.7	-
BG WELL 54	3	5.2	±7.2	2.9	±7.1	4.1	-
BG WELL 55	3	26	±8.0	19	±8.1	23	-
BG WELL 56	4	13	±7.9	1.5	±32	7.3	-
BG WELL 57	4	5.0	±7.5	-0.68	±7.4	1.6	-
BG WELL 58	4	19	±7.7	5.2	±7.1	12	-
BG WELL 59	4	4.8	±7.1	-6.1	±6.8	1.2	-
BG WELL 60	4	10	±7.7	0.82	±7.0	6.5	-
BG WELL 61	4	11	±7.7	-0.14	±7.0	3.4	-
BG WELL 62	4	11	±7.4	2.0	±7.0	5.8	-
BG WELL 63	4	11	±7.9	3.5	±7.4	7.0	-
BG WELL 64	4	11	±7.7	7.8	±7.3	9.8	-
BG WELL 65	4	9.8	±7.7	4.1	±7.1	6.8	-
BG WELL 66	4	9.0	±7.8	1.6	±7.0	4.8	-
BG WELL 67	4	4.9	±7.5	2.5	±7.6	3.2	-
INSIDE FENCES							
*A-1	6	<7	-	<7	-	<7	-
*A-3	6	102	-	26.0	-	61	-
*A-5	6	24	-	<7	-	9	-
*A-7	6	56	-	<7	-	17	-
*A-9	6	37	-	<7	-	7	-
*A-11	6	41	-	<7	-	7	-
*A-19	6	109	-	<7	-	36	-
*A-21	5	17	-	<7	-	<7	-
*A-23	6	41	-	<7	-	7	-
*A-32	6	46	-	<7	-	10	-
*A-34	6	41	-	<7	-	15	-
A-36	4	16	± 7.8	1.1	±7.0	7.6	-
*C-1	6	49	-	<7	-	21	-
*C-3	6	47	-	<7	-	12	-
*C-5	4	28	-	<7	-	7	-
*C-7	6	25	-	<7	-	<7	-
C-9	4	7.9	± 7.5	0.82	±7.1	3.8	-
C-11	4	18	± 7.6	-0.87	±7.7	4.4	-
*C-13	6	118	-	<7	-	28	-
*C-15	6	58	-	<7	-	26	-
*C-17	6	37	-	<7	-	<7	-
C-19	4	6.8	± 7.2	-2.9	±6.9	1.5	-
*C-21	6	137	-	<7	-	23	-
C-23	4	3.0	± 7.3	-3.2	±7.6	0.25	-
*C-30	6	49	-	<7	-	26	-
C-32	4	22	± 8.0	3.8	±7.2	11	-
*C-34	4	167	-	72	-	112	-
C-36	4	10	± 7.6	0.00	±7.0	3	-

* Research wells monitored by SRL. Included in this table for completeness of data reporting.
\- Statistical counting error (CT ERR) of SRL research wells are similar to those for other wells. Insufficient data for standard deviation (STD DEV) calculation.

TABLE 17
RADIOACTIVITY IN SOLID WASTE STORAGE FACILITY WELLS, CONTD

LOCATION	NO. OF SAMPLES	NONVOLATILE BETA, PCI/L MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	ARITHMETIC 2 STD DEV
*E-1	6	57	-	<7	-	13	-
*E-3	6	97	-	<7	-	30	-
*E-5	6	26	-	<7	-	14	-
*E-7	6	65	-	<7	-	19	-
E-9	4	0.41	± 7.3	-7.0	±8.8	1.90	-
*E-13	6	72	-	<7	-	16	-
*E-15	2	50	-	<7	-	25	-
*E-17	2	3	-	<7	-	<7	-
*E-19	6	158	-	<7	-	29	-
E-21	4	8.9	±7.3	-5.1	±7.5	1.6	-
*E-23	6	45	-	<7	-	9	-
E-30	4	140	±11	4.5	±7.9	39	-
*E-32	6	60	-	<7	-	12	-
E-34	4	32	±8.3	17	±8.4	23	-
*E-36	6	32	-	<7	-	17	-
*G-1	6	14	-	<7	-	<7	-
*G-3	6	20	-	<7	-	8	-
*G-5	5	32	-	<7	-	9	-
*G-7	6	34	-	<7	-	11	-
*G-9	6	57	-	<7	-	24	-
*G-13	6	75	-	<7	-	37	-
G-15	4	0.00	±8.3	-3.7	±7.1	-1.9	-
*G-17	6	47	-	<7	-	24	-
G-19	4	13	±7.7	0.00	±7.7	4.4	-
*G-21	6	10633	-	331	-	3226	-
G-23	4	5.3	±7.3	-4.8	±7.6	1.5	-
G-28	4	4.8	±7.1	-0.68	±7.0	3.1	-
*G-30	6	56	-	<7	-	12	-
*G-32	6	46	-	<7	-	14	-
*G-34	6	12	-	<7	-	<7	-
G-36	4	0.00	±-7.1	-8.1	±7.4	4.80	-
*I-1	6	55	-	11	-	37	-
*I-5	6	22	-	<7	-	<7	-
*I-7	6	27	-	<7	-	9	-
*I-9	6	37	-	<7	-	<7	-
*I-13	6	337	-	127	-	221	-
*I-15	6	62	-	<7	-	30	-
*I-17	6	40	-	<7	-	18	-
22.04	6	306	-	<7	-	60	-
22.06	6	52	-	<7	-	20	-
22.08	6	31	-	<7	-	8	-
22.10	6	28	-	<7	-	10	-
22.12	5	45	-	<7	-	14	-
22.16	6	85	-	<7	-	31	-
22.18	6	152	-	<7	-	44	-
22.20	6	62	-	<7	-	17	-
22.22	6	15	-	<7	-	<7	-
24.02	6	41	-	<7	-	10	-
24.04	5	81	-	<7	-	31	-
24.06	5	10	-	<7	-	<7	-
24.08	6	26	-	<7	-	10	-
24.10	6	67	-	<7	-	16	-
24.20	5	3	-	<7	-	<7	-
24.22	6	57	-	<7	-	22	-
26.20	6	36	-	<7	-	11	-
26.22	5	7	-	<7	-	<7	-
28.18	6	51	-	<7	-	14	-
28.20	6	92	-	17	-	46	-
28.22	6	156	-	<7	-	34	-
TRANS U PAD SUMPS							
TRANSU STG PD SUMP 1	3	410	±71	29	±8.6	170	-
TRANSU STG PD SUMP 2	4	120	±60	56	±65	81	-

- INSUFFICIENT DATA

* Research wells monitored by SRL. Included in this table for completeness of data reporting.
- Statistical counting error (CT ERR) of SRL research wells are similar to those for other wells. Insufficient data for standard deviation (STD DEV) calculation.

TABLE 17
RADIOACTIVITY IN SOLID WASTE STORAGE FACILITY WELLS, CONTD

	H-3, PCI/ML						
LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	ARITHMETIC 2 STD DEV
PERIMETER WELLS							
BG WELL 26	5	26	±1.7	22	±1.8	24	-
BG WELL 27	5	42	±2.0	35	±2.0	38	-
BG WELL 28	5	37	±1.9	27	±1.9	33	-
BG WELL 29	5	61	±2.4	35	±1.9	45	-
BG WELL 30	3	51	±2.2	38	±2.1	43	-
BG WELL 31	5	23	±1.6	12	±1.4	19	-
BG WELL 32	28	25	±1.7	14	±1.5	19	±6.2
BG WELL 33	27	29	±1.8	17	±1.5	20	±4.9
BG WELL 34	27	170	±3.8	25	±1.7	99	±82.0
BG WELL 35	28	98	±2.9	13	±1.5	68	±33.0
BG WELL 36	28	22	±1.7	15	±1.5	18	±3.9
BG WELL 37	4	22	±1.6	17	±1.6	19	-
BG WELL 38	4	21	±1.7	17	±1.6	19	-
BG WELL 39	4	20	±1.6	14	±1.5	17	-
BG WELL 40	4	12	±1.4	1.9	±1.2	4.6	-
BG WELL 41	4	12	±1.4	10	±1.4	11	-
BG WELL 42	4	44	±2.2	20	±1.6	27	-
BG WELL 43	4	46	±2.1	31	±1.9	41	-
BG WELL 51	5	32	±1.8	22	±1.7	27	-
BG WELL 52	8	140	±3.7	14	±1.5	23	-
BG WELL 53	8	26	±1.7	14	±1.5	17	-
BG WELL 54	8	2400	±18	14	±1.5	500	-
BG WELL 55	8	4200	±12	31	±2.0	1500	-
BG WELL 56	9	15500	±36	530	±6.7	3600	-
BG WELL 57	9	7700	±26	250	±3.8	2750	-
BG WELL 58	9	820	±8.3	10	±1.4	40	-
BG WELL 59	9	60	±3.0	10	±1.4	45	-
BG WELL 60	5	37	±2.1	29	±1.8	35	-
BG WELL 61	5	28	±1.9	14	±1.4	25	-
BG WELL 62	5	39	±2.0	29	±1.9	33	-
BG WELL 63	5	35	±1.9	26	±1.8	31	-
BG WELL 64	5	51	±2.2	41	±2.0	47	-
BG WELL 65	5	54	±2.4	46	±2.1	49	-
BG WELL 66	5	67	±2.7	56	±2.3	62	-
BG WELL 67	5	97	±2.9	75	±2.6	87	-
BG WELL 68	7	22	±1.6	19	±1.6	20	-
BG WELL 69	6	19000	±170	890	±45	4100	-
BG WELL 70	6	910	±43	99	±26	370	-
BG WELL 71	5	25	±11	18	±12	23	-
BG WELL 72	5	570	±23	230	±17	410	-
BG WELL 73	7	33	±1.9	25	±1.7	29	-
BG WELL 74	7	35	±2.0	21	±1.7	28	-
BG WELL 75	7	64	±2.5	23	±1.7	40	-
BG WELL 76	7	54	±2.3	41	±2.1	47	-
BG WELL 77	7	4500	±19	3400	±16	4100	-
BG WELL 78	7	2300	±14	1500	±11.0	1900	-
BG WELL 79	7	850	±8.1	280	±4.7	570	-
BG WELL 80	7	85	±2.8	32	±1.9	59	-
BG WELL 81	7	53	±2.3	19	±1.6	27	-
BG WELL 82	7	52	±2.3	24	±1.7	40	-
BG WELL 83	7	27	±1.8	19	±1.6	22	-
INSIDE FENCES							
*A-1	6	8430	-	1900	-	3660	-
*A-3	6	47120	-	23190	-	31930	-
*A-5	6	229790	-	81460	-	120780	-
*A-7	6	5580	-	3050	-	4000	-
*A-9	6	60	-	20	-	30	-
*A-11	6	250	-	10	-	90	-
*A-19	6	130	-	30	-	100	-
*A-21	5	110	-	90	-	100	-
*A-23	6	540	-	290	-	400	-
*A-32	6	110	-	70	-	90	-
*A-34	6	70	-	50	-	60	-
A-36	4	330	± 30	270	±4.7	310	-

* Research wells monitored by SRL. Included in this table for completeness of data reporting.
\- Statistical counting error (CT ERR) of SRL research wells are similar to those for other wells. Insufficient data for standard deviation (STD DEV) calculation.

TABLE 17

RADIOACTIVITY IN SOLID WASTE STORAGE FACILITY WELLS, CONTD

	H-3, PCI/ML					ARITHMETIC	
LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	MEAN	2 STD DEV
*C-1	6	12190	-	2800	-	10100	-
*C-3	6	859130	-	200200	-	619460	-
*C-5	3	79860	-	62540	-	70280	-
*C-7	6	729990	-	226260	-	333620	-
C-9	4	13000	-	8000	±120	10000	-
C-11	4	21	±140	9.9	±1.5	15	-
*C-13	6	50	±1.7	30	-	40	-
*C-15	6	40	-	20	-	30	-
*C-17	6	40	-	30	-	30	-
C-19	4	45	-	28	±1.9	35	-
*C-21	6	6170	±22	4000	-	4770	-
C-23	5	68000	±320	39000	±240	52000	-
*C-30	6	380	-	150	-	230	-
C-32	4	800	±40	580	±38	720	-
*C-34	4	280	-	170	-	200	-
C-36	4	430	±33	100	±27	280	-
*E-1	6	3100	-	790	-	2170	-
*E-3	6	65020	-	43560	-	57730	-
*E-5	6	81670	-	30890	-	47720	-
*E-7	6	19000	-	9100	-	12220	-
E-9	4	360	±34	18	±21	110	-
*E-13	6	30	-	20	-	20	-
*E-15	3	60	-	40	-	50	-
*E-19	6	610	-	500	-	540	-
E-21	4	36	±22	22	±1.8	28	-
*E-23	6	250	-	140	-	180	-
E-30	4	140	±26	87	±27	120	-
*E-32	6	380	-	240	-	290	-
E-34	4	550	±35	270	±4.6	350	-
*E-36	6	690	-	360	-	530	-
*G-1	6	15410	-	670	-	7580	-
*G-3	6	1700	-	720	-	1170	-
*G-5	5	1090	-	730	-	910	-
*G-7	6	34550	-	24400	-	30210	-
*G-9	6	52960	-	9710	-	27280	-
*G-13	6	356900	-	168430	-	248720	-
G-15	5	28000	±210	10000	±130	19000	-
*G-17	6	9020	-	5300	-	6640	-
G-19	4	69	±2.5	46	±22	59	-
*G-21	6	480000	-	162450	-	291950	-
G-23	4	2100	±62	380	±31	1100	-
G-28	4	52	±2.3	42	±2.2	49	-
*G-30	6	6670	-	2940	-	5080	-
*G-32	6	248250	-	176290	-	223710	-
*G-34	6	4330230	-	2359020	-	3289840	-
G-36	4	870	±8.2	550	±6.6	750	-
*I-1	6	80410	-	67750	-	50310	-
*I-5	6	3210	-	2580	-	1570	-
*I-7	6	469230	-	161560	-	87560	-
*I-9	6	2780	-	1630	-	1100	-
*I-13	6	5480	-	2550	-	40	-
*I-15	6	530	-	220	-	40	-
*I-17	6	90	-	110	-	40	-
*22.04	6	2340	-	830	-	10	-
*22.06	6	4430	-	1590	-	170	-
*22.08	6	10810	-	5390	-	270	-
*22.10	6	310	-	140	-	40	-
*22.12	6	40	-	20	-	<5	-
*22.16	6	30	-	20	-	10	-
*22.18	6	40	-	30	-	30	-
*22.20	6	30	-	30	-	30	-
*22.22	6	30	-	20	-	20	-
*24.02	6	30	-	20	-	<5	-
*24.04	6	90	-	40	-	<5	-
*24.06	5	690	-	450	-	330	-
*24.08	6	50	-	30	-	10	-
*24.10	6	30	-	20	-	<5	-
*24.20	6	230	-	110	-	<5	-
*24.22	6	240	-	60	-	<5	-
*26.20	6	300	-	80	-	<5	-
*26.22	5	140	-	40	-	<5	-
*28.18	6	50	-	20	-	<5	-
*28.20	6	110	-	50	-	<5	-
*28.22	6	8260	-	4000	-	50	-
TRANS U PAD SUMPS							
TRANSU STG PD SUMP 1	4	43	±2.1	14	±1.4	32	-
TRANSU STG PD SUMP 2	3	13000	±31.0	7200	±23	9500	-

- INSUFFICIENT DATA

* Research wells monitored by SRL. Included in this table for completeness of data reporting.

- Statistical counting error (CT ERR) of SRL research wells are similar to those for other wells. Insufficient data for standard deviation (STD DEV) calculation.

TABLE 18

F-AREA DRY MONITOR WELL RADIATION LEVELS

(May and July 1981)

Well	Date of First Measurement	Location	Surveyed, ft	June 1908 Thyac Results, [a]
FDM-1	9/11/75	N Building 242-F evaporator	0-23	Background[b]
FDM-2	9/11/75	SE Building 242-F evaporator	0-21	Background[b]
FDM-3	9/11/75	DB 1	0-35	Background[b]
FDM-4	9/11/75	DB 1	0-24	Elevated between 20 and 21 ft; maximum 1500 c/m at 21 ft
FDM-5	9/11/75	DB 1	0-35	Background[b]
FDM-6	9/11/75	DB 1	0-25	Background[b]
FDM-7	9/11/75	DB 1	0-35	Elevated between 12 and 14 ft; maximum 400 c/m at 13 ft
FDM-8	9/11/75	DB 1	0-35	Background[b]
FDM-9	9/19/75	DB 1	0-35	Background[b]
FDM-10	9/19/75	DB 1	0-35	Background[b]
FDM-11	9/18/75	DB 1	0-35	Background[b]

[a]4,000 c/m = 1 mR/hr (radium equivalent).

[b]Surface readings ranged from 1,000 to 6,000 c/m.

H-AREA DRY MONITOR (DM) WELL RADIATION LEVELS

(November 1981)

Well	Date of First Measurement	Location	Depth Surveyed, ft	Thyac Results, [a]c/m
HDM-1	8/22/75	NW DB 1	0-23.5	Background[b]
HDM-2	9/25/75	N DB 1	0-23.5	Elevated at 20 and 21 ft; max 25,000 c/m at 21 ft
HDM-3	8/22/75	NE DB 1	0-22.5	Background[b]
HDM-4	8/22/75	E DB 1	0-23.5	Background[b]
HDM-5	8/13/75	SE DB 1	0-23.5	Background[b]
HDM-6	8/22/75	S DB 1	0-23.5	Background[b]
HDM-7	8/22/75	S DB 1	0-23.5	Background[b]
HDM-8	8/22/75	S DB 1	0-24.0	Background[b]
HDM-9	8/22/75	SW DB 1	0-24.0	Background[b]
11A	5/24/76	NW DB 2	0-9	Background[b]
13A	5/24/76	N DB 2	0-25	Background[b]
15A	5/24/76	NE DB 2	0-10	Background[b]
16A	5/24/76	F DB 2	0-16	Background[b] except 20,000 and 25,000 c/m at 2 and 4 ft
20A	5/24/76	W DB 2	0-13	Background[b]

[a]4,000 c/m - 1 mR/hr (radium equivalent).

[b]Surface readings ranges from 1,000 to 20,000 c/m.

TABLE 18
F-AREA TANK 8 DRY MONITOR (DM) WELL RADIATION LEVELS (contd)
(July, 1981)

Wells	Date of First Measurement	Depth Surveyed, ft	Results (Thyac, c/m[a] or High Range Monitor R/hr,)
RP-2	10/02/75	0-3	Elevated between 6 ft through 36 ft; >80,000 c/m between 13 ft through 26 ft maximum 90 R/hr at 14 ft
RP-3	10/02/75	0-36	Elevated between 7 ft through 36 ft; >80,000 c/m between 14 ft through 28 ft maximum 83 R/hr at 17 ft
RP-4	10/02/75	0-35	Elevated between 14 ft through 23 ft; maximum >80,000 c/m between 16 ft through 21 ft
RP-5	10/02/75	0-35	Elevated between 11 ft through 26 ft; >80,000 c/m between 15 ft through 19 ft maximum 19 R/hr at 17 ft
RP-6	10/02/75	0-36	Elevated between 12 ft through 26 ft; >80,000 c/m between 15 ft through 25 ft maximum 115 R/hr at 17 ft
RP-7	10/02/75	0-36	Elevated between 15 ft through 28 ft; maximum 0.2 R/hr at 19 ft through 21 ft
RP-8	10/02/75	0-36	Elevated between 14 ft through 21 ft; maximum 40,000 c/m at 17 ft
RP-9	10/02/75	0-36	Elevated between 12 ft through 15 ft; maximum 2500 c/m at 14 ft
RP-10	8/22/77	0-36	Elevated between 26 ft through 36 ft; maximum 15,000 c/m at 33 ft
RP-11	8/22/77	0-35	Elevated between 5 ft through 35 ft; maximum 24 R/hr at 17 ft
RP-12	3/10/77	0-36	Elevated between 17 ft through 36 ft; maximum 1500 c/m at 33 ft through 36 ft
RP-13	3/10/77	0-36	Elevated between 15 ft through 21 ft; maximum 0.2 R at 17 and 18 ft
RP-14	3/10/77	0-36	Background
RP-15	3/10/77	0-36	Background
RP-16	3/10/77	0-36	Elevated between 13 ft through 34 ft; maximum 5.6 R/hr at 19 ft
RP-17	3/10/77	0-36	Elevated between 8 ft through 36 ft; maximum 37 R/hr at 16 ft
RP-18	3/10/77	0-13	Elevated between 10 ft through 12 ft; maximum 0.2 R/hr at 12 ft
RP-19	3/10/77	0-36	Elevated between 15 ft through 19 ft; maximum 25,000 c/m at 17 and 18 ft
RP-20	3/10/77	0-36	Background
RP-21	3/10/77	0-36	Background
RP-22	3/10/77	0-36	Background
RP-23	3/10/77	0-36	Background
RP-24	8/23/77	0-36	Elevated between 10 ft through 15 ft; maximum 25,000 c/m at 13 ft
RP-25	8/23/77	0-36	Elevated between 13 ft through 30 ft; maximum 9 R/hr at 15 ft
RP-26	8/23/77	0-36	Elevated between 7 ft through 30 ft; maximum 29 R/hr at 17 ft
RP-27	8/23/77	0-36	Background
RP-28	8/23/77	0-36	Background
RP-29	8/23/77	0-36	Background
RP-30	8/23/77	0-36	Elevated between 14 ft through 33 ft; maximum 2.7 R/hr at 19 ft
RP-31	8/23/77	0-36	Elevated between 14 ft through 28 ft; maximum 0.9 R/hr at 19 ft
RP-32	8/23/77	0-36	Elevated between 9 ft through 30 ft; maximum 14 R/hr at 17 ft
RP-33	8/23/77	0-36	Elevated between 12 ft through 20 ft; maximum 0.9 R/hr at 15 ft
RP-34	8/23/77	0-36	Elevated between 12 ft through 19 ft; maximum 20,000 c/m at 16 ft
RP-35	8/23/77	0-36	Background
RP-36	8/23/77	0-36	Elevated between 11 ft through 15 ft; maximum 20,000 c/m at 14 ft
RP-37	8/23/77	0-36	Elevated between 10 ft through 15 ft; maximum 20,000 c/m at 14 ft
RP-39	8/23/77	0-36	Elevated between 10 ft through 36 ft; maximum 15 R/hr at 19 ft
RP-40	8/23/77	0-36	Elevated between 15 ft through 36 ft; maximum 0.2 R/hr at 19 ft through 21 ft

[a]4,000 c/m = 1 mR/hr (radium equivalent).

TABLE 19
RADIOACTIVITY IN SOIL (0-5 cm depth)

	Concentration, pCi/g (dry weight)			Deposition, mCi/km^2		
F Area[a]	Cs-137[b]	Pu-238[d]	Pu-239[d]	Cs-137	Pu-238	Pu-239
2,000 ft east	0.70 ± 0.02	0.004 ± 0.010	0.019 ± 0.023	52.5 ± 1.5	0.30 ± 0.75	1.42 ± 1.72
2,000 ft west	0.84 ± 0.03	0.008 ± 0.007	0.054 ± 0.063	63.0 ± 2.2	0.60 ± 0.52	4.05 ± 4.72
2,000 ft north	0.65 ± 0.02	0.016 ± 0.035	0.038 ± 0.030	48.8 ± 1.5	1.20 ± 2.62	2.85 ± 2.25
2,000 ft south	0.46 ± 0.01	0.001 ± 0.003	0.011 ± 0.002	34.5 ± 0.8	0.08 ± 0.22	0.82 ± 0.15
Average[c]	0.66 ± 0.31	0.007 ± 0.013	0.030 ± 0.039	49.7 ± 23.6	0.54 ± 0.97	2.28 ± 2.90
H Area[a]						
2,000 ft east	0.62 ± 0.02	0.008 ± 0.003	0.027 ± 0.005	46.5 ± 1.5	0.06 ± 0.22	2.02 ± 0.38
2,000 ft west	0.67 ± 0.02	0.040 ± 0.003	0.048 ± 0.008	50.2 ± 1.5	3.0 ± 0.52	3.60 ± 0.60
2,000 ft north	1.23 ± 0.02	0.017 ± 0.011	0.087 ± 0.045	92.2 ± 1.5	1.28 ± 0.82	6.52 ± 3.38
2,000 ft south	0.39 ± 0.02	0.012 ± 0.005	0.013 ± 0.003	29.2 ± 1.5	0.90 ± 0.38	0.98 ± 0.22
Average[c]	0.73 ± 0.71	0.019 ± 0.029	0.044 ± 0.064	54.5 ± 53.5	1.44 ± 2.15	3.28 ± 4.83
Plant Perimeter[e]						
Northeast quadrant	0 ± 0.02	0.002 ± 0.001	0.016 ± 0.001	0 ± 1.5	0.15 ± 0.08	1.2 ± 0.08
Northwest quadrant	0.54 ± 0.01	0.002 ± 0.002	0.010 ± 0.001	40.5 ± 0.8	0.15 ± 0.15	0.75 ± 0.08
Southeast quadrant	0.71 ± 0.02	0.002 ± 0.006	0.017 ± 0.004	53.2 ± 1.5	0.15 ± 0.45	1.28 ± 0.30
Average[c]	0.42 ± 0.74	0.002 ± 0.0	0.014 ± 0.008	31.2 ± 55.6	0.15 ± 0.0	1.08 ± 0.57
100-Mile Radius						
Clinton, SC	0.58 ± 0.03	0.001 ± 0.002	0.010 ± 0.006	43.5 ± 2.2	0.08 ± 0.15	0.80 ± 0.45
Savannah, GA	0.54 ± 0.01	0.001 ± 0.002	0.009 ± 0.002	40.5 ± 0.8	0.08 ± 0.15	0.68 ± 0.15
Average	0.56	0.001	0.010	42.0	0.08	0.74

[a] F- and H-Area samples were collected 2,000 ft from the 195-ft stack.

[b] The ± value represents the two sigma statistical counting error.

[c] The ± value is the two sigma standard deviation of the mean.

[d] The ± value represents the two sigma standard deviation of triplicate sample analyses for individual values.

[e] Samples from southwest quadrant were not analyzed in 1981.

TABLE 20
RADIOACTIVITY IN SOIL -- SUMMARY, mCi/km^2
(0-5 cm depth)

	F Area		H Area		Plant Perimeter		100-Mile Radius	
	Max	Avg	Max	Avg	Max	Avg	Max	Avg
^{90}Sr								
1973[a]	-	-	-	-	208	79	127	120
1976	12	7	32	21	9	6	31	25
1977	30	17	55	25	15	8	19	14
1978	24	11	11	4	15	8	21	11
1979	13	5	16	6	13	7	13	9
1980	16	10	18	11	15	8	12	9
1981	c	c	c	c	c	c	c	c
^{137}Cs								
1973[a]	-	-	-	-	99	78	114	105
1974	-	-	-	-	135	73	59[b]	59
1975	100	69	113	85	99	88	90	72
1976	107	70	137	103	76	63	91	74
1977	90	60	150	95	65	52	55	54
1978	114	91	91	46	91	57	61	57
1979	75	47	82	58	68	54	60	52
1980	45	34	60	45	52	32	32	22
1981	63	50	92	55	53	31	43	42
^{238}Pu								
1973[a]	-	-	-	-	0.21	0.08	0.21	0.12
1974	-	-	-	-	0.37	0.11	0.13[b]	0.13
1975	1.1	0.71	6.9	2.6	0.08	0.07	0.03	0.02
1976	1.1	0.61	4.3	2.2	0.10	0.07	0.07	0.06
1977	1.4	0.77	6.3	2.8	0.10	<0.07	0.04	0.04
1978	2.9	1.52	4.7	2.3	0.14	0.12	0.08	0.06
1979	1.2	0.77	3.7	1.6	0.15	0.10	0.08	0.08
1980	2.6	1.35	2.7	2.1	0.38	0.22	0.08	0.08
1981	1.2	0.54	1.3	1.4	0.15	0.15	0.08	0.08
^{239}Pu								
1973[a]	-	-	-	-	2.4	1.8	1.7	1.7
1974	-	-	-	-	2.1	1.2	1.3[b]	1.3
1975	19.2	9.9	10.6	8.8	1.4	1.1	0.8	0.7
1976	10.2	5.5	10.0	7.5	1.5	1.3	1.5	1.1
1977	13.2	6.3	11.9	8.3	1.9	1.2	1.6	1.2
1978	28.0	10.9	12.1	9.5	2.4	1.9	1.3	1.1
1979	11.9	4.7	5.8	3.5	1.4	1.2	0.3	0.2
1980	10.8	6.3	6.6	4.6	2.2	1.2	0.4	0.1
1981	4.1	2.3	6.5	3.3	1.3	1.1	0.8	0.7

\- Samples not collected.

[a] 15 cm deep cores taken in 1973. No ^{90}Sr analyses in 1974 and 1975.
[b] 1974 deposition in 25-mile radius soil: ^{238}Pu, 0.4; ^{239}Pu, 2.0; and ^{137}Cs, 83.
[c] Analysis not performed.

TABLE 21
RADIOACTIVITY IN VEGETATION

LOCATION	NO. OF SAMPLES	ALPHA, PCI/G MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	ARITHMETIC 2 STD DEV
200-F VEGETATION							
F 13 1 MI S OF 200-F	8	0.45	±0.28	-0.03	±0.12	0.20	±0.36
F 21 1 MI E OF 200-F	8	0.36	±0.25	-0.07	±0.10	0.13	±0.26
200-H VEGETATION							
H 10 1 MI S OF 200-H	8	0.78	±0.34	0.03	±0.11	0.31	±0.60
H 22 1 MI N OF 200-H	8	0.37	±0.28	-0.03	±0.11	0.16	±0.32
PLANT PER VEGETATION							
PP 2 GREENPOND	8	0.57	±0.32	0.00	±0.09	0.14	±0.36
PP 3 AIKEN GATE	7	0.58	±0.29	0.06	±0.13	0.23	-
PP 6 WILLISTON GATE	7	0.26	±0.23	0.10	±0.17	0.19	-
PP 8 PATTERSONS MILL	8	0.52	±0.29	0.06	±0.13	0.24	±0.30
PP 10 ALLENDALE GATE	8	0.20	±0.22	0.00	±0.13	0.09	±0.14
PP 12 NEAR 400-D	10	0.16	±0.17	-0.03	±0.12	0.05	±0.12
PP 14 NEAR 1G PUMP H	11	0.47	±0.30	-0.03	±0.12	0.09	±0.28
25 MR VEGETATION							
25 MR 2 AUGUSTA	7	0.49	±0.28	0.00	±0.16	0.12	-
25 MR 3 LANGLEY	7	0.19	±0.21	-0.03	±0.12	0.03	-
25 MR 5 AIKEN ST PK	5	0.60	±0.33	0.03	±0.11	0.19	-
25 MR 8 OLAR	5	0.26	±0.21	-0.03	±0.06	0.08	-
25 MR 10 ALLENDALE	5	0.74	±0.35	-0.03	±0.07	0.19	-
25 MR 12 PERKINS	7	0.23	±0.22	0.03	±0.11	0.09	-
25 MR 14 WAYNESBORO	7	0.19	±0.21	0.00	±0.09	0.11	-
100 MR VEGETATION							
COLUMBIA	4	0.13	±0.16	-0.03	±0.06	0.08	-
GREENVILLE	3	0.26	±0.23	-0.07	±0.13	0.13	-
MACON	4	0.16	±0.17	0.00	±0.13	0.10	-
SAVANNAH	4	0.13	±0.18	0.06	±0.13	0.09	-

LOCATION	NO. OF SAMPLES	NONVOL BETA, PCI/G MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	ARITHMETIC 2 STD DEV
200-F VEGETATION							
F 13 1 MI S OF 200-F	8	20	±3.6	1.8	±2.9	11	±12
F 21 1 MI E OF 200-F	8	27	±3.8	7.9	±3.0	16	±13
200-H VEGETATION							
H 10 1 MI S OF 200-H	8	17	±3.4	7.2	±3.0	13	±5.6
H 22 1 MI N OF 200-H	8	28	±3.9	7.5	±3.1	15	±16
PLANT PER VEGETATION							
PP 2 GREENPOND	8	27	±3.7	6.1	±3.0	13	±14
PP 3 AIKEN GATE	7	31	±3.9	3.2	±2.9	14	-
PP 6 WILLISTON GATE	7	22	±3.6	3.4	±2.9	14	-
PP 8 PATTERSONS MILL	8	31	±3.8	5.5	±3.0	15	±15
PP 10 ALLENDALE GATE	8	26	±3.7	6.2	±3.2	13	±15
PP 12 NEAR 400-D	10	15	±3.4	1.1	±2.8	9.5	±7.7
PP 14 NEAR 1G PUMP H	11	19	±3.5	0.87	±2.8	11	±12
25 MR VEGETATION							
25 MR 2 AUGUSTA	7	42	±4.2	0.76	±2.9	20	-
25 MR 3 LANGLEY	7	29	±3.8	7.8	±3.0	15	-
25 MR 5 AIKEN ST PK	5	88	±5.2	7.0	±3.1	32	-
25 MR 8 OLAR	5	25	±3.7	9.2	±3.3	15	-
25 MR 10 ALLENDALE	5	19	±3.5	5.9	±3.1	11	-
25 MR 12 PERKINS	7	22	±3.6	5.6	±3.2	11	-
25 MR 14 WAYNESBORO	7	28	±3.8	3.2	±2.9	16	-
100 MR VEGETATION							
COLUMBIA	4	23	±3.6	6.9	±3.1	15	-
GREENVILLE	3	31	±3.8	1.3	±2.8	17	-
MACON	4	19	±3.4	6.5	±3.0	14	-
SAVANNAH	3	13	±3.2	4.9	±3.0	7.8	-

- INSUFFICIENT DATA

TABLE 21
RADIOACTIVITY IN VEGETATION, CONTD

	H-3, PCI/ML (FREE WATER)						
LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	ARITHMETIC 2 STD DEV
200-F VEGETATION							
F 13 1 MI S OF 200-F	6	170	±1.5	15	±0.59	74	-
F 21 1 MI E OF 200-F	6	70	±0.98	3.8	±0.44	20	-
200-H VEGETATION							
H 10 1 MI S OF 200-H	5	180	±1.5	11	±0.55	84	-
H 22 1 MI N OF 200-H	7	52	±0.91	9.5	±0.46	24	-
PLANT PER VEGETATION							
PP 2 GREENPOND	6	7.0	±0.55	1.4	±0.39	3.5	-
PP 3 AIKEN GATE	5	3.4	±0.50	1.7	±0.40	2.4	-
PP 6 WILLISTON GATE	5	13	±0.61	2.0	±0.49	7.6	-
PP 8 PATTERSONS MILL	7	7.5	±0.56	0.43	±0.41	3.6	-
PP 10 ALLENDALE GATE	6	5.8	±0.50	0.00	±0.40	1.8	-
PP 12 NEAR 400-D	9	22	±0.70	1.7	±0.49	8.3	±13
PP 14 NEAR 1G PUMP H	7	16	±0.65	2.9	±0.46	6.2	-
25 MR VEGETATION							
25 MR 2 AUGUSTA	5	1.7	±0.41	0.17	±0.38	0.86	-
25 MR 3 LANGLEY	4	1.8	±0.47	0.17	±0.38	0.94	-
25 MR 5 AIKEN ST PK	4	1.1	±0.39	0.00	±0.38	0.64	-
25 MR 8 OLAR	4	8.4	±0.57	0.32	±0.38	2.7	-
25 MR 10 ALLENDALE	5	1.4	±0.49	0.25	±0.43	0.80	-
25 MR 12 PERKINS	4	6.8	±0.47	0.00	±0.38	1.9	-
25 MR 14 WAYNESBORO	5	1.3	±0.47	0.13	±0.39	0.66	-
100 MR VEGETATION							
COLUMBIA	3	0.40	±0.39	0.03	±0.47	0.16	-
GREENVILLE	3	0.60	±0.39	0.00	±0.42	0.23	-
MACON	4	0.19	±0.39	0.00	±0.38	0.05	-
SAVANNAH	4	2.2	±0.41	0.00	±0.42	0.84	-

	BE-7, PCI/G						
LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	ARITHMETIC 2 STD DEV
SPECIFIC NUCLIDES							
200-F & 200-H	6	19	±13	2.6	±11	8.5	-
PLANT PERIMETER	8	20	±10	2.2	±15	11	±13
25-MILE RADIUS	8	13	±11	1.8	±11	7.2	±7.8
COLUMBIA	2	6.0	±14	3.6	±6.5	4.8	-
GREENVILLE	3	21	±17	0.00	±38	8.4	-
MACON	3	5.8	±8.6	1.7	±6.2	3.8	-
SAVANNAH	4	9.1	±10	0.00	±34	4.7	-

	K-40, PCI/G						
LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	ARITHMETIC 2 STD DEV
SPECIFIC NUCLIDES							
200-F & 200-H	6	8.6	±5.0	1.2	±6.2	4.5	-
PLANT PERIMETER	8	13	±8.2	1.2	±4.8	6.7	±10
25-MILE RADIUS	8	13	±20	0.00	±6.4	6.7	±10
COLUMBIA	2	14	±4.9	12	±8.9	13	-
GREENVILLE	3	25	±7.3	9.3	±6.7	15	-
MACON	3	22	±6.0	8.0	±6.1	15	-
SAVANNAH	4	20	±6.1	0.23	±5.1	8.4	-

- INSUFFICIENT DATA

TABLE 21
RADIOACTIVITY IN VEGETATION, CONTD

MN-54, PCI/G

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	ARITHMETIC 2 STD DEV
SPECIFIC NUCLIDES							
200-F & 200-H	6	0.08	±0.64	0.00	±0.43	0.01	-
PLANT PERIMETER	8	0.22	±1.6	0.00	±0.50	0.08	±0.20
25-MILE RADIUS	8	0.38	±1.7	0.00	±0.65	0.07	±0.28
COLUMBIA	2	0.00	±1.7	0.00	±0.46	0.00	-
GREENVILLE	3	0.00	±0.36	0.00	±1.5	0.00	-
MACON	3	0.07	±0.36	0.00	±0.60	0.04	-
SAVANNAH	4	0.00	±1.7	0.00	±25	0.00	-

RU-103, 106, PCI/G

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	ARITHMETIC 2 STD DEV
SPECIFIC NUCLIDES							
200-F & 200-H	6	3.0	±6.3	0.00	±3.3	0.77	-
PLANT PERIMETER	8	0.90	±4.5	0.00	±4.2	0.33	±0.90
25-MILE RADIUS	8	0.66	±5.8	0.00	±4.4	0.26	±0.62
COLUMBIA	2	0.00	±5.8	0.00	±3.6	0.00	-
GREENVILLE	3	2.8	±7.2	0.00	±5.1	0.94	-
MACON	3	1.5	±2.5	0.00	±4.7	0.51	-
SAVANNAH	4	0.51	±4.6	0.00	±2.3	0.13	-

I-131, PCI/G

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	ARITHMETIC 2 STD DEV
SPECIFIC NUCLIDES							
200-F & 200-H	6	270	±410	0.00	±87	49	-
PLANT PERIMETER	8	250	±470	0.00	±130	49	±180
25-MILE RADIUS	8	270	±540	0.00	±120	45	±180
COLUMBIA	2	6.0	±7.2	4.5	±29	5.2	-
GREENVILLE	3	82	±330	0.00	±180	28	-
MACON	3	8.8	±18	0.00	±70	2.9	-
SAVANNAH	4	310	±410	0.00	±26	78	-

CS-134, 137, PCI/G

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	ARITHMETIC 2 STD DEV
SPECIFIC NUCLIDES							
200-F & 200-H	6	0.74	±0.51	0.00	±0.66	0.47	-
PLANT PERIMETER	8	0.68	±1.8	0.00	±0.64	0.31	±0.46
25-MILE RADIUS	8	0.78	±2.0	0.00	±0.69	0.24	±0.48
COLUMBIA	2	0.26	±0.45	0.00	±0.85	0.13	-
GREENVILLE	3	0.14	±0.67	0.00	±0.63	0.05	-
MACON	3	0.49	±0.61	0.34	±0.52	0.43	-
SAVANNAH	4	1.4	±0.31	0.00	±1.9	0.46	-

CE-141, 144, PCI/G

LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	ARITHMETIC 2 STD DEV
SPECIFIC NUCLIDES							
200-F & 200-H	6	13	±3.7	0.00	±2.7	3.9	-
PLANT PERIMETER	8	12	±3.2	0.00	±2.7	2.6	±8.3
25-MILE RADIUS	8	8.0	±3.8	0.00	±11	3.7	±5.4
COLUMBIA	2	4.0	±2.3	0.00	±4.6	2.0	-
GREENVILLE	3	6.8	±3.7	0.00	±5.3	2.5	-
MACON	3	2.5	±1.6	0.24	±2.6	1.5	-
SAVANNAH	4	2.1	±1.5	0.00	±4.3	0.93	-

\- INSUFFICIENT DATA

TABLE 22

RADIOACTIVITY IN SOLID WASTE STORAGE FACILITY VEGETATION, pCi/g (Dry Weight)
(Inside Fences)

Sample Number	Alpha	Nonvolatile Beta	K-40	Cs-137
1	<0.18	12	<9.7	<1.0
1A	0.32	14	<7.9	<0.8
2	<0.16	25	<8.2	<0.8
3	0.55	44	<14	5.5
4	0.19	9.3	9.0	0.9
4A	<0.18	9.8	13	<0.9
5	<0.09	8.5	24	<1.2
6	<0.13	20	12	<0.8
7	<0.18	21	36	<0.5
8	<0.09	24	<8.9	<0.9
8A	0.13	18	<7.1	<0.7
9	0.42	199[a]	12	5.1
9A	0.29	12	<7.7	<0.8
11	0.26	259[a]	15	2.4
12	0.29	330[a]	9.2	3.8
13	0.16	20	<8.1	8.2
14	<0.06	15	<8.2	<0.8
15	<0.11	12	<13	<1.3
16	<0.17	11	<10	<0.9
17	0.62	16	<13	<1.3
18	0.26	19	<23	<1.4
19A	0.23	20	<25	<1.3
20	0.23	11	<10	<1.1
20A	0.39	8.1	10	<0.9
21	<0.19	26	<8.6	<0.9
22	<0.09	12	<6.2	<0.6
23	<0.11	15	<13	5.0
23A	0.32	11	11	<0.8
24	0.32	18	21	5.1
25	0.16	8.4	<10	<1.0
26	0.32	8.1	<10	<1.0
27	0.19	6.1	<7.6	<0.8
28	0.48	12	5.0	0.5
29	<0.15	5.9	<8.1	<0.8
30	0.32	9.6	<6.7	<0.7
31	<0.15	9.0	<7.1	<0.7
32	0.06	7.1	<12	<1.3
25-Mile radius (Reference)	0.60[b]	88[b]	25[c]	1.4[d]

[a] Primarily Sr-90.

[b] Maximum 1981 values found in 25-mile radius samples collected near Highway 78 between Williston and Aiken.

[c] Maximum 1981 offsite value found at Greenville, SC.

[d] Maximum 1981 offsite value found at Savannah, GA.

TABLE 22
RADIOACTIVITY IN SOLID WASTE STORAGE FACILITY VEGETATION, CONTD
(Outside Fences)

LOCATION	ALPHA, PCI/G NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
BURIAL G. VEGETATION							
BURIAL GROUND 1	8	0.75	±0.34	0.03	±0.11	0.27	±0.46
BURIAL GROUND 2	7	0.94	±0.37	-0.03	±0.12	0.35	-
BURIAL GROUND 3	9	0.58	±0.30	0.03	±0.11	0.17	±0.36
BURIAL GROUND 4	8	0.78	±0.34	0.00	±0.14	0.27	±0.54
BURIAL GROUND 5	8	0.84	±0.36	-0.03	±0.15	0.27	±0.60
BURIAL GROUND 6	8	0.65	±0.32	0.00	±0.09	0.15	±0.42
BURIAL GROUND 7	9	0.62	±0.31	0.03	±0.11	0.16	±0.38
BURIAL GROUND 8	8	0.58	±0.30	-0.03	±0.15	0.15	±0.38
BURIAL GROUND 9	8	0.78	±0.34	0.03	±0.18	0.26	±0.64
BURIAL GROUND 10	8	0.65	±0.32	-0.03	±0.06	0.29	±0.50
BURIAL GROUND 11	8	1.0	±0.38	-0.10	±0.12	0.28	±0.76
BURIAL GROUND 12	8	0.78	±0.34	-0.07	±0.10	0.28	±0.60
BURIAL GROUND 13	8	0.88	±0.37	0.03	±0.11	0.29	±0.60
AVERAGE						0.24	±0.54

LOCATION	NONVOL BETA, PCI/G NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
BURIAL G. VEGETATION							
BURIAL GROUND 1	8	18	±3.4	5.7	±3.0	13	±8.0
BURIAL GROUND 2	7	27	±3.7	10	±3.3	19	
BURIAL GROUND 3	9	24	±3.6	6.6	±3.2	15	±12
BURIAL GROUND 4	8	26	±3.7	0.11	±2.8	11	±15
BURIAL GROUND 5	8	37	±3.9	7.7	±3.1	18	±19
BURIAL GROUND 6	8	23	±3.8	5.9	±3.0	14	±10
BURIAL GROUND 7	9	17	±3.6	6.8	±3.0	13	±7.5
BURIAL GROUND 8	8	23	±3.8	7.4	±3.0	13	±12
BURIAL GROUND 9	8	22	±3.6	6.0	±3.2	14	±12
BURIAL GROUND 10	8	21	±3.5	6.2	±3.0	16	±12
BURIAL GROUND 11	8	24	±3.6	3.3	±2.9	13	±14
BURIAL GROUND 12	8	35	±3.9	2.1	±3.1	15	±20
BURIAL GROUND 13	8	27	±3.9	2.9	±2.9	16	±16
AVERAGE						15	±13

LOCATION	BE-7, PCI/G NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
BURIAL G. VEGETATION							
BURIAL GROUND 1	8	21	±11	4.7	±13	10	±12
BURIAL GROUND 2	8	26	±12	0.04	±8.5	9.8	±18
BURIAL GROUND 3	8	14	±7.3	0.00	±9.5	5.4	±9.1
BURIAL GROUND 4	8	20	±12	1.4	±4.8	8.9	±12
BURIAL GROUND 5	8	16	±7.4	2.9	±5.9	7.8	±9.5
BURIAL GROUND 6	8	20	±14	1.6	±4.8	12	±13
BURIAL GROUND 7	8	17	±13	0.00	±4.9	11	±11
BURIAL GROUND 8	8	16	±13	0.00	±19	6.6	±9.8
BURIAL GROUND 9	8	19	±11	1.1	±4.8	12	±12
BURIAL GROUND 10	8	20	±14	0.00	±33	6.8	±13
BURIAL GROUND 11	8	5.9	±12	0.00	±20	2.3	±5.0
BURIAL GROUND 12	8	3.9	±12	0.00	±28	1.2	±3.0
BURIAL GROUND 13	8	16	±9.0	0.00	±1.3	7.4	±10
AVERAGE						7.8	±12

LOCATION	K-40, PCI/G NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
BURIAL G. VEGETATION							
BURIAL GROUND 1	8	12	±5.1	0.00	±7.1	5.3	±8.1
BURIAL GROUND 2	8	14	±9.6	2.8	±6.0	6.7	±8.9
BURIAL GROUND 3	8	14	±4.7	0.00	±4.9	4.8	±9.7
BURIAL GROUND 4	8	14	±5.1	0.00	±8.0	5.6	±8.3
BURIAL GROUND 5	8	14	±5.1	0.47	±3.5	6.0	±9.4
BURIAL GROUND 6	8	19	±5.5	0.32	±6.1	6.9	±13
BURIAL GROUND 7	8	9.7	±5.2	0.00	±8.3	4.4	±7.1
BURIAL GROUND 8	8	9.0	±8.7	0.00	±8.4	5.3	±7.5
BURIAL GROUND 9	8	8.5	±4.9	0.00	±7.4	3.3	±5.8
BURIAL GROUND 10	8	5.3	±4.8	0.00	±45	2.4	±3.9
BURIAL GROUND 11	8	10	±5.0	0.00	±30	4.3	±8.9
BURIAL GROUND 12	8	16	±5.3	0.00	±7.4	4.8	±12
BURIAL GROUND 13	8	15	±5.2	0.00	±1.1	5.8	±12
AVERAGE						5.0	±9.0

- INSUFFICIENT DATA

TABLE 22

RADIOACTIVITY IN SOLID WASTE STORAGE FACILITY VEGETATION, CONTD

(Outside Fences)

	MN-54, PCI/G					
LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
BURIAL G. VEGETATION							
BURIAL GROUND 1	8	0.17	±0.44	0.00	±0.95	0.03	±0.12
BURIAL GROUND 2	8	0.25	±1.8	0.00	±1.1	0.03	±0.18
BURIAL GROUND 3	8	0.10	±0.99	0.00	±0.74	0.02	±0.06
BURIAL GROUND 4	8	0.06	±0.43	0.00	±0.97	0.01	±0.04
BURIAL GROUND 5	8	0.23	±1.4	0.00	±1.3	0.05	±0.16
BURIAL GROUND 6	8	0.14	±1.6	0.00	±0.94	0.04	±0.12
BURIAL GROUND 7	8	0.15	±1.1	0.00	±0.91	0.04	±0.10
BURIAL GROUND 8	8	0.24	±0.70	0.00	±1.0	0.04	±0.18
BURIAL GROUND 9	8	0.12	±0.38	0.00	±0.85	0.02	±0.10
BURIAL GROUND 10	8	0.17	±0.49	0.00	±1.0	0.03	±0.12
BURIAL GROUND 11	8	0.03	±0.43	0.00	±1.7	0.00	±0.02
BURIAL GROUND 12	8	0.00	±0.43	0.00	±0.64	0.00	-
BURIAL GROUND 13	8	0.15	±0.39	0.00	±0.73	0.03	±0.12
AVERAGE						0.02	±0.11

	ZR-95, NB-95, PCI/G						
LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
BURIAL G. VEGETATION							
BURIAL GROUND 1	8	6.7	±0.74	0.02	±0.94	2.7	±4.8
BURIAL GROUND 2	8	9.1	±1.8	0.00	±0.96	2.5	±6.3
BURIAL GROUND 3	8	6.4	±1.1	0.00	±2.4	1.9	±4.7
BURIAL GROUND 4	8	5.1	±1.1	0.00	±0.43	2.1	±3.9
BURIAL GROUND 5	8	7.4	±1.4	0.02	±0.53	2.8	±5.9
BURIAL GROUND 6	8	8.8	±1.5	0.00	±0.43	2.9	±6.8
BURIAL GROUND 7	8	5.2	±1.2	0.00	±0.98	2.1	±3.7
BURIAL GROUND 8	8	10	±0.92	0.01	±0.94	3.0	±6.5
BURIAL GROUND 9	8	5.2	±0.73	0.00	±0.98	2.7	±4.7
BURIAL GROUND 10	8	3.8	±1.1	0.00	±1.0	1.9	±3.2
BURIAL GROUND 11	8	6.3	±1.8	0.17	±0.93	2.2	±5.0
BURIAL GROUND 12	8	4.8	±1.4	0.00	±0.93	1.4	±3.3
BURIAL GROUND 13	8	4.4	±0.70	0.00	±0.45	2.0	±3.1
AVERAGE						2.3	±4.7

	RU-103, 106, PCI/G						
LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
BURIAL G. VEGETATION							
BURIAL GROUND 1	8	1.6	±3.8	0.00	±4.8	0.30	±1.0
BURIAL GROUND 2	8	1.3	±3.3	0.00	±3.0	0.41	±0.98
BURIAL GROUND 3	8	10	±3.6	0.00	±3.1	2.2	±6.8
BURIAL GROUND 4	8	1.6	±2.2	0.00	±3.5	0.57	±1.3
BURIAL GROUND 5	8	3.5	±9.5	0.00	±3.7	1.0	±2.2
BURIAL GROUND 6	8	2.0	±5.5	0.00	±3.7	0.54	±1.3
BURIAL GROUND 7	8	2.8	±4.0	0.00	±7.0	0.86	±2.1
BURIAL GROUND 8	8	4.2	±3.5	0.00	±3.8	1.7	±2.9
BURIAL GROUND 9	8	2.4	±3.8	0.00	±4.1	0.64	±1.7
BURIAL GROUND 10	8	1.6	±3.7	0.00	±7.6	0.52	±1.1
BURIAL GROUND 11	8	41	±5.5	0.00	±10	8.0	±31
BURIAL GROUND 12	8	47	±9.4	0.00	±6.4	11	±37
BURIAL GROUND 13	8	9.7	±4.6	0.00	±3.1	2.7	±6.8
AVERAGE						2.4	±14

	CS-137, PCI/G						
LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
BURIAL G. VEGETATION							
BURIAL GROUND 1	8	1.3	±0.78	0.35	±0.58	0.65	±0.64
BURIAL GROUND 2	8	1.3	±1.3	0.19	±0.48	0.73	±0.94
BURIAL GROUND 3	8	0.90	±0.71	0.00	±1.2	0.31	±0.58
BURIAL GROUND 4	8	2.0	±0.36	0.14	±1.0	0.81	±1.2
BURIAL GROUND 5	8	2.1	±0.55	0.31	±0.49	0.75	±1.1
BURIAL GROUND 6	8	1.0	±0.54	0.00	±0.50	0.42	±0.60
BURIAL GROUND 7	8	6.5	±0.71	0.33	±0.48	1.2	±4.3
BURIAL GROUND 8	8	1.3	±0.48	0.00	±0.42	0.72	±1.1
BURIAL GROUND 9	8	1.8	±0.56	0.27	±0.49	0.89	±1.2
BURIAL GROUND 10	8	2.1	±1.7	0.06	±0.47	0.73	±1.3
BURIAL GROUND 11	8	0.33	±0.47	0.00	±1.3	0.14	±0.30
BURIAL GROUND 12	8	3.9	±1.3	0.00	±1.1	0.83	±2.6
BURIAL GROUND 13	8	1.2	±0.53	0.00	±0.50	0.45	±1.0
AVERAGE						0.66	±1.6

	CE-141, 144, PCI/G						
LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
BURIAL G. VEGETATION							
BURIAL GROUND 1	8	11	±2.9	0.00	±5.3	4.3	±7.8
BURIAL GROUND 2	8	15	±3.6	0.00	±6.4	4.2	±9.8
BURIAL GROUND 3	8	10	±2.3	0.00	±3.0	3.5	±8.6
BURIAL GROUND 4	8	7.7	±2.7	0.00	±2.4	2.9	±6.3
BURIAL GROUND 5	8	9.2	±2.2	0.00	±5.8	4.2	±6.5
BURIAL GROUND 6	8	10	±3.7	0.00	±4.3	4.2	±8.1
BURIAL GROUND 7	8	26	±3.8	0.00	±2.6	6.4	±18
BURIAL GROUND 8	8	15	±2.5	0.00	±2.2	3.6	±9.9
BURIAL GROUND 9	8	8.9	±2.7	0.00	±4.3	4.6	±6.6
BURIAL GROUND 10	8	14	±3.0	0.00	±8.6	3.1	±9.2
BURIAL GROUND 11	8	6.5	±3.6	0.00	±6.5	1.8	±4.3
BURIAL GROUND 12	8	4.9	±5.3	0.00	±6.3	1.6	±4.3
BURIAL GROUND 13	8	6.7	±2.5	0.00	±2.2	3.2	±5.3
AVERAGE						3.6	±8.5

- INSUFFICIENT DATA

TABLE 22A

RADIOACTIVITY IN STEEL CREEK VEGETATION

	ALPHA , PCI/G						
LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
STEEL CK. VEGETATION							
STEEL CREEK 0	11	0.84	±0.50	-0.13	±0.18	0.33	±0.70
STEEL CREEK 1	11	0.79	±0.49	-0.20	±0.23	0.25	±0.64
STEEL CREEK 2	11	0.91	±0.52	-0.13	±0.27	0.33	±0.62
STEEL CREEK 3	11	0.54	±0.50	-0.07	±0.30	0.23	±0.34
STEEL CREEK 4	11	0.98	±0.54	-0.07	±0.30	0.40	±0.60
STEEL CREEK 5	11	1.2	±0.66	0.00	±0.19	0.44	±0.74
STEEL CREEK 6	10	1.3	±0.62	-0.13	±0.18	0.41	±0.90
STEEL CREEK 7	10	0.74	±0.48	0.00	±0.33	0.29	±0.44
STEEL CREEK 8	10	0.74	±0.55	0.00	±0.19	0.33	±0.46
STEEL CREEK 9	10	2.1	±0.76	0.19	±0.29	0.62	±1.2
AVERAGE						0.36	±0.69

	NONVOL BETA , PCI/G						
LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
STEEL CK. VEGETATION							
STEEL CREEK 0	11	1400	±26	110	±8.8	400	±810
STEEL CREEK 1	11	680	±19	66	±7.7	270	±440
STEEL CREEK 2	11	590	±18	28	±6.7	190	±300
STEEL CREEK 3	11	430	±15	39	±6.8	160	±280
STEEL CREEK 4	11	530	±17	52	±7.4	210	±300
STEEL CREEK 5	11	370	±15	41	±7.1	160	±190
STEEL CREEK 6	10	280	±13	2.1	±5.8	79	±160
STEEL CREEK 7	10	110	±9.6	-0.11	±5.7	56	±73
STEEL CREEK 8	10	230	±11	20	±6.3	110	±140
STEEL CREEK 9	10	230	±11	24	±6.5	120	±140
AVERAGE						170	±390

	K-40 , PCI/G						
LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
STEEL CK. VEGETATION							
STEEL CREEK 0	11	30	±17	0.00	±9.4	2.7	±18
STEEL CREEK 1	11	8.8	±7.3	0.00	±8.3	1.4	±6.4
STEEL CREEK 2	11	24	±6.2	0.00	±9.4	3.7	±14
STEEL CREEK 3	11	18	±6.8	0.00	±7.4	2.2	±11
STEEL CREEK 4	11	18	±6.3	0.00	±7.9	3.0	±13
STEEL CREEK 5	11	17	±7.1	0.00	±11	3.2	±13
STEEL CREEK 6	10	18	±13	0.00	±9.5	5.2	±13
STEEL CREEK 7	10	24	±13	0.00	±5.5	6.6	±19
STEEL CREEK 8	10	11	±6.8	0.00	±8.9	2.6	±8.7
STEEL CREEK 9	10	12	±6.5	0.00	±7.0	2.2	±9.2
AVERAGE						3.3	±13

	CO-60 , PCI/G						
LOCATION	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
STEEL CK. VEGETATION							
STEEL CREEK 0	11	16	±0.83	0.00	±5.3	1.5	±9.9
STEEL CREEK 1	11	2.7	±0.81	0.00	±4.7	0.25	±1.6
STEEL CREEK 2	11	5.4	±0.52	0.00	±5.1	0.49	±3.2
STEEL CREEK 3	11	5.1	±0.63	0.00	±4.0	0.46	±3.0
STEEL CREEK 4	11	5.0	±0.52	0.00	±4.3	0.46	±3.0
STEEL CREEK 5	11	5.5	±0.65	0.00	±5.9	0.55	±3.3
STEEL CREEK 6	10	2.9	±0.69	0.00	±2.5	0.75	±2.1
STEEL CREEK 7	10	12	±0.66	0.00	±3.1	1.3	±7.5
STEEL CREEK 8	10	3.5	±0.75	0.00	±4.9	0.60	±2.3
STEEL CREEK 9	10	2.7	±0.69	0.00	±3.9	0.27	±1.7
AVERAGE						0.66	±4.5

TABLE 22A

RADIOACTIVITY IN STEEL CREEK VEGETATION, CONTD

LOCATION	ZN-65, PCI/G						
	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
STEEL CK. VEGETATION							
STEEL CREEK 0	10	50	±3.8	0.00	±5.9	19	±35
STEEL CREEK 1	10	38	±2.7	0.00	±3.1	9.7	±24
STEEL CREEK 2	10	13	±2.0	0.00	±29	6.1	±12
STEEL CREEK 3	10	61	±4.3	0.00	±3.1	14	±37
STEEL CREEK 4	10	22	±2.5	0.00	±2.8	8.7	±15
STEEL CREEK 5	10	17	±2.6	0.00	±3.6	7.4	±14
STEEL CREEK 6	9	5.4	±2.1	0.00	±2.6	1.7	±3.6
STEEL CREEK 7	9	15	±2.8	0.00	±3.0	2.5	±9.6
STEEL CREEK 8	9	22	±3.9	0.00	±2.7	6.6	±16
STEEL CREEK 9	9	17	±2.9	0.00	±3.5	7.6	±14
AVERAGE						8.3	±22

LOCATION	SR-89, 90, PCI/G						
	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
STEEL CK. VEGETATION							
STEEL CREEK 0	11	6.9	±6.3	-2.5	±7.4	0.99	±5.2
STEEL CREEK 1	11	9.9	±7.9	-4.0	±7.4	2.6	±7.6
STEEL CREEK 2	11	5.9	±7.8	-4.1	±5.9	1.2	±5.6
STEEL CREEK 3	10	6.3	±7.7	-3.7	±7.4	0.55	±4.8
STEEL CREEK 4	11	8.1	±6.3	-4.2	±7.4	1.9	±6.2
STEEL CREEK 5	11	8.6	±7.9	-3.3	±6.1	2.2	±6.3
STEEL CREEK 6	10	4.9	±6.1	-6.2	±5.9	0.54	±5.1
STEEL CREEK 7	10	5.3	±6.0	-3.9	±5.8	0.19	±4.4
STEEL CREEK 8	10	9.7	±7.9	-2.2	±6.0	2.6	±8.4
STEEL CREEK 9	10	5.3	±6.3	-2.6	±4.9	1.4	±4.7
AVERAGE						1.4	±6.0

LOCATION	RU-103, 106, PCI/G						
	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
STEEL CK. VEGETATION							
STEEL CREEK 0	11	0.00	±0.70	0.00	±6.5	0.00	-
STEEL CREEK 1	11	3.9	±5.7	0.00	±18	0.35	±2.3
STEEL CREEK 2	11	0.00	±5.7	0.00	±3.7	0.00	-
STEEL CREEK 3	11	0.00	±5.7	0.00	±4.6	0.00	-
STEEL CREEK 4	11	0.00	±5.7	0.00	±3.7	0.00	-
STEEL CREEK 5	11	0.00	±5.7	0.00	±4.6	0.00	-
STEEL CREEK 6	10	3.4	±4.8	0.00	±7.4	0.34	±2.1
STEEL CREEK 7	10	4.4	±6.5	0.00	±4.8	0.52	±2.8
STEEL CREEK 8	10	4.4	±5.1	0.00	±7.8	0.44	±2.8
STEEL CREEK 9	10	4.4	±4.9	0.00	±7.2	0.44	±2.8
AVERAGE						0.20	±1.8

LOCATION	CS-137, PCI/G						
	NO. OF SAMPLES	MAXIMUM	CT ERR 95% CL	MINIMUM	CT ERR 95% CL	ARITHMETIC MEAN	2 STD DEV
STEEL CK. VEGETATION							
STEEL CREEK 0	11	2000	±13	180	±2.4	680	±990
STEEL CREEK 1	11	920	±8.0	91	±2.9	310	±540
STEEL CREEK 2	11	270	±4.1	110	±1.8	180	±120
STEEL CREEK 3	11	1000	±10	86	±1.9	370	±580
STEEL CREEK 4	11	530	±6.1	120	±1.9	260	±270
STEEL CREEK 5	11	630	±7.8	52	±1.9	250	±340
STEEL CREEK 6	10	450	±5.6	20	±1.1	100	±270
STEEL CREEK 7	10	270	±5.1	0.47	±0.44	79	±160
STEEL CREEK 8	10	440	±6.9	38	±1.5	190	±300
STEEL CREEK 9	10	320	±5.5	47	±1.7	200	±190
AVERAGE						260	±550

TABLE 22B

SUMMARY OF CS-137 IN STEEL CREEK VEGETATION, pCi/g (DRY WEIGHT)

Sample Point	1970 Max	1970 Avg	1971 Max	1971 Avg	1972 Max	1972 Avg	1973 Max	1973 Avg
0	1,800	600	970	310	380	150	900	210
1	8,500	2,200	1,600	360	160	20	1,550	340
2	5,700	1,000	4,800	890	750	150	320	120
3	3,300	1,300	2,500	660	800	450	850	360
4	680	220	5,670	1,100	800	340	610	280
5	4,900	1,960	1,500	510	820	360	420	210
6	3,900	1,100	2,700	1,100	1,530	770	830	220
7	3,700	1,600	2,000	660	760	290	530	240
8	2,500	1,100	1,300	570	1,100	460	480	190
9	1,000	260	540	160	1,500	380	550	210
Average		1,130		630		340		240

Sample Point	1974 Max	1974 Avg	1975 Max	1975 Avg	1976 Max	1976 Avg	1977 Max	1977 Avg	1978 Max	1978 Avg
0	1,700	380	830	240	1,380	420	3,400	1,000	460	160
1	1,100	280	890	220	430	250	6,200	1,300	1,100	520
2	430	160	1,000	240	1,100	400	5,300	1,800	2,800	770
3	430	210	1,100	380	900	360	1,000	420	770	270
4	1,100	310	450	180	950	230	1,400	410	580	250
5	540	210	590	200	350	100	1,100	420	530	220
6	780	260	410	160	1,600	390	360	220	450	150
7	460	220	320	220	350	180	550	250	740	210
8	280	130	300	110	370	170	780	220	1,600	160
9	480	190	450	190	480	190	490	210	610	170
Average		235		214		270		625		290

Sample Point	1979 Max	1979 Avg	1980 Max	1980 Avg	1981 Max	1981 Avg
0	610	110	480	240	2,000	680
1	900	270	410	190	920	310
2	1,500	310	410	210	270	180
3	890	250	770	310	1,000	370
4	540	200	440	260	530	260
5	710	210	790	320	630	250
6	620	130	660	190	450	100
7	260	83	430	150	270	80
8	290	110	480	180	440	190
9	600	140	510	260	320	200
Average		180		230		260

TABLE 23

RADIOACTIVITY IN MILK

H-3, pCi/ml

NO. OF LOCATION	CT ERR SAMPLES	MAXIMUM	CT ERR 95% CL	ARITHMETIC MINIMUM	95% CL	MEAN	2 STD DEV
MILK SAMPLES							
LANGLEY, SC 10	1.7	±0.43	0.25	±0.47	1.0	±0.94	
ULMERS, SC 11	1.7	±0.52	0.00	±0.46	0.19	±1.0	
WILLISTON, SC 14	3.0	±0.42	0.00	±0.40	0.97	±1.6	
AUGUSTA, GA 8	1.1	±0.43	0.00	±0.40	0.24	±0.78	
GIRARD, GA 13	1.5	±0.48	0.00	±0.46	0.42	±0.92	
WAYNESBORO, GA	17	4.2	±0.44	0.00	±0.40	0.57	±1.9
NATIONAL DISTRIBUTOR	17	1.2	±0.40	0.00	±0.40	0.29	±0.78
Average					0.52	±0.70	

I-131, pCi/l

NO. OF LOCATION	CT ERR SAMPLES	MAXIMUM	CT ERR 95% CL	ARITHMETIC MINIMUM	95% CL	MEAN	2 STD DEV
MILK SAMPLES							
LANGLEY, SC 6	3.8	±1.4	0.00	±1.7	0.94	-	
ULMERS, SC 7	8.3	±1.4	0.00	±1.1	1.2	-	
WILLISTON, SC 10	1.4	±1.4	-1.5	±1.9	0.16	±1.1	
AUGUSTA, GA 6	1.9	±3.0	0.00	±1.7	0.72	-	
GIRARD, GA 8	9.3	±1.4	0.00	±2.2	1.3	±6.5	
WAYNESBORO, GA	9	1.4	±1.4	-2.1	±2.2	0.23	±1.5
NATIONAL DISTRIBUTOR	12	9.9	±1.5	0.00	±28.0	1.1	±5.6
Average					0.81	±0.92	

Cs-137, pCi/l

NO. OF LOCATION	CT ERR SAMPLES	MAXIMUM	CT ERR 95% CL	ARITHMETIC MINIMUM	95% CL	MEAN	2 STD DEV
MILK SAMPLES							
LANGLEY, SC 5	4.6	±2.3	-1.1	±0.97	1.6	-	
ULMERS, SC 5	13.0	±2.9	5.1	±2.7	8.1	-	
WILLISTON, SC 6	12.0	±2.8	0.76	±0.98	7.9	-	
AUGUSTA, GA 3	10.0	±2.8	0.00	±1.5	5.7	-	
GIRARD, GA 6	9.3	±3.9	-0.01	±0.00	5.9	-	
WAYNESBORO, GA	5	4.5	±2.0	-0.14	±0.98	1.7	-
NATIONAL DISTRIBUTOR	7	9.9	±2.2	-0.22	±0.80	3.4	-
Average					4.9	±5.4	

- INSUFFICIENT DATA

TABLE 24

RADIOACTIVITY IN FOOD, pCi/g

(Wet Weight)

	No. of Samples	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum	Average
			Sr-90			Zr-, Nb-95			Ru-106	
Collards	14	0.34	0.09	0.13	0.07	0.05	0.07	0.7	0.5	0.6
Plums	14	0.62	0.09	0.14	0.26	0.06	0.16	0.4	0.3	0.4
Oats, rye, & wheat	12	1.1	0.2	0.34	0.25	0.06	0.14	0.4	0.3	0.4
Corn	13	0.35	0.2	0.20	0.07	0.07	0.07	0.4	0.3	0.4
Chicken	14	a	a	a	0.07	0.03	0.04	0.6	0.3	0.4
Beef	4	a	a	a	0.08	0.04	0.05	0.6	0.3	0.4
			Cs-137			Ce-141,144		Tritium,	pCi/ml,	Free Water
Collards	14	0.10	0.03	0.05	0.32	0.18	0.26	7.9	0.4	1.8
Plums	14	0.19	0.02	0.02	0.24	0.14	0.19	6.6	0.6	2.0
Oats, rye, & wheat	12	0.03	0.02	0.03	0.22	0.14	0.14	9.3	0.4	2.4
Corn	13	0.03	0.03	0.03	0.17	0.17	0.17	3.1	0.5	1.2
Chicken	14	0.04	0.02	0.03	0.23	0.12	0.16	3.0	1.0	2.2
Beef	4	0.04	0.02	0.03	0.24	0.12	0.16	a	a	a

[a] No analysis.

TABLE 25
RADIOACTIVITY IN DEER AND HOGS

No. of Animals	Species	CS-137 Concentration, pCi/g Max	Min	Avg[a]
1,791	Deer	47	1	8 ± 10
33	Hogs	10	1	3 ± 5

[a]Average (±) 2 sigma standard deviation of the average.

TABLE 26
SUMMARY OF CS-137 IN DEER, pCi/g

Year	No of Deer Killed SRP	SCCP[a]	Average SRP	SCCP[a]	Maximum SRP	SCCP[a]
1965	198		<10		10	
1966	541		6		24	
1967	1,032		9		104[b]	
1968	669	34	11	23	74[c]	80
1969	889[d]	31	15	15	204[c]	72
1970	864	33	18	20	77[c]	57
1971	865	42	11	21	48	42
1972	808	72	8	11	38	32
1973	1,158	78	6	16	31	49
1974	1,551	89	5	9	52	23
1975	1,391	42	9	17	36	38
1976	1,357	35	11	16	41	36
1977	1,271	41	10	16	42	25
1978	1,287	36	5	11	65	21
1979	1,079	57	10	12	98	29
1980	961	51	10	9	98	32
1981	1,791	32	8	8	47	18

[a]South Carolina Coastal Plains.
[b]Killed along Four Mile Creek.
[c]Killed near Steel Creek.
[d]Approximately 20% of deer monitored before 1969; each deer monitored since 1969.

TABLE 27
RADIOACTIVITY IN DUCKS

(Wet Weight)

Common Name	Location[a]	Number of Samples	CS-137 in Flesh, pCi/g Maximum	Minimum
Horned Grebe	Par Pond WA	5	3.03 ± 0.14	1.56 ± 0.10
Ruddy	Par Pond WA	3	3.22 ± 0.13	1.42 ± 0.10
Horned Grebe	Par Pond NA	1	1.77 ± 0.11	1.77 ± 0.11
Buffle-Head	Par Pond NA	1	1.95 ± 0.11	1.95 ± 0.11
Ruddy	Par Pond NA	3	1.91 ± 0.10	0.70 ± 0.07
Ruddy	Par Pond HA	1	0.66 ± 0.07	0.66 ± 0.07
Hooded Merganser	Steel Creek	1	0.91 ± 0.07	0.91 ± 0.07

[a] WA = West Arm
NA = North Arm
HA = Hot Arm

TABLE 28

RADIOACTIVITY IN FISH FROM PONDS, STREAMS, AND THE SAVANNAH RIVER, pCi/g

Location	No. of Samples	Cs-137, pCi/g (Wet Weight) Maximum	±	CT ERR 95% CL	Minimum	±	CT ERR 95% CL	Arithmetic MEAN	2 Std Dev
SAVANNAH RIVER									
Above SRP (R-2)									
Bream	19	1.42	±	1.74	0	±	0.13	0.21	0.79
Catfish	32	5.19	±	0.46	0	±	0.11	0.31	1.78
Eel	2	0.08	±	0.13	0.04	±	0.08	0.06	-
Other species	12	0.76	±	1.21	0	±	0.01	0.21	0.58
Adjacent to SRP (R-8)									
Bream	34	2.13	±	0.31	0	±	0.12	0.32	0.85
Bass	1	0.62	±	0.05	0.62	±	0.05	0.62	-
Catfish	22	0.67	±	0.45	0	±	0.04	0.11	0.28
Carp	2	0.05	±	0.04	0	±	0.03	0.03	-
Eel	1	0.28	±	0.05	0.28	±	0.05	0.28	-
Other species	2	0.05	±	0.02	0.01	±	0.02	0.03	-
Below SRP (R-10)									
Bream	31	0.26	±	0.64	0	±	0.05	0.09	0.19
Bass	3	0.36	±	0.06	0	±	0.08	0.12	-
Catfish	13	0.22	±	0.62	0	±	0.14	0.10	0.13
Carp	2	2.88	±	0.11	0.02	±	0.05	1.45	-
Eel	1	0.06	±	0.09	0.06	±	0.09	0.06	-
Other species	18	0.16	±	0.05	0	±	0.02	0.05	0.09
Clark Hill (Control)									
Bream	16	0.23	±	0.46	0	±	0.27	0.10	0.15
Bass	6	0.05	±	0.07	0.01	±	0.07	0.03	0.03
Savannah									
Bream	3	0.01	±	0.01	0	±	0.01	0.01	-
Bass	4	0.04	±	0.08	0.01	±	0.02	0.02	-
Carp	1	0.02	±	0.02	0.02	±	0.02	0.02	-
Other Species	2	0.02	±	0.01	0.02	±	0.01	0.02	-
Between SRP and Savannah									
Bream	27	0.19	±	0.38	0	±	0.19	0.04	0.11
Bass	15	0.86	±	0.10	0	±	0.19	0.10	0.41
Carp	3	0	±	0.01	0	±	0.01	0	-
Eel	4	0.10	±	0.09	0	±	0.29	0.04	-
Mullet	14	0.12	±	0.18	0	±	0.10	0.04	0.07
Catfish	8	0.22	±	0.01	0.01	±	0.02	0.06	0.13
Other species	9	0.12	±	0.08	0	±	0.01	0.03	0.09
PONDS									
Par Pond									
Bream	3	4.6	±	0.5	3.1	±	0.3	3.8	-
Bass	2	3.5	±	0.4	1.8	±	0.4	2.7	-
Crappie	9	4.3	±	0.4	0	±	0.06	1.2	2.7
Pond B									
Bream	18	240	±	30	19	±	3	76	102
Bass	1	106	±	20	110	±	10	110	-
Catfish.	3	70	±	8	46	±	8	58	-
STREAMS									
Steel Creek (Road A)									
Bream	3	24	±	3.0	6	±	0.50	17	-
Steel Creek (Mouth)									
Bream	16	7.4	±	0.6	0.15	±	0.20	1.2	3.7
Catfish	6	3.5	±	0.4	0.03	±	0.08	0.8	-
Other	4	0.7	±	0.1	0.08	±	0.09	0.4	-
Four Mile Creek (Road 3)									
Bream	7	25	±	3.0	11	±	1.0	17	10
Catfish	1	13	±	1.3	13	±	1.0	13	-
Cassels' Pond (Four-Mile Creek 3 miles below Road A									
Bream	2	0.53	±	0.20	0.43	±	0.20	0.58	-

TABLE 28

RADIOACTIVITY IN FISH FROM PONDS, STREAMS, AND THE SAVANNAH RIVER, pCi/g, (Cont'd)

		H-3, pCi/ml						
Location	No. of Samples	Maximum	CT ERR 95% CL	Minimum	CT ERR 95% CL	Arithmetic MEAN	2 Std Dev
Above SRP							
Bream	7	3.65	± 0.43	0	± 0.57	1.60	2.91
Catfish	3	3.02	± 0.42	0.64	± 0.40	2.17	-
Other Species	5	3.44	± 0.45	0.58	± 0.40	2.11	-
Adjacent to SRP							
Bream	5	5.55	± 0.64	1.55	± 0.59	3.77	-
Bass	1	1.83	± 0.60	1.83	± 0.60	1.83	-
Catfish	1	4.49	± 0.46	4.49	± 0.46	4.49	-
Carp	1	12.04	± 0.55	12.04	± 0.55	12.04	-
Other species	1	3.17	± 0.42	3.17	± 0.42	3.17	-
Below SRP							
Bream	4	4.10	± 0.45	1.94	± 0.40	2.76	-
Catfish	1	3.06	± 0.44	3.06	± 0.44	3.06	-
Other species	9	3.63	± 0.45	1.02	± 0.39	2.86	1.63
Clarks Hill							
Bream	1	3.86	± 0.45	3.86	± 0.45	3.86	-
Bass	2	4.95	± 0.46	1.02	± 0.59	2.98	-
Other species	1	4.63	± 0.46	4.63	± 0.46	4.63	-
Between SRP and Savannah							
Bream	2	3.29	± 0.49	2.11	± 0.60	2.70	-
Bass	2	3.42	± 0.49	1.92	± 0.60	2.67	-
Catfish	2	3.22	± 0.48	2.60	± 0.48	2.91	-
Carp	2	3.45	± 0.49	1.86	± 0.60	2.66	-
Eel	1	1.77	± 0.60	1.77	± 0.60	1.77	-
Mullet	2	3.59	± 0.49	2.29	± 0.60	2.94	-
Other Species	2	2.17	± 0.60	1.52	± 0.59	1.84	-

TABLE 29
SUMMARY OF RADIOACTIVITY IN FISH

Location	Cs-137 in Flesh, Average pCi/g[a] 1971	1975	1979	1980	1981
Steel Creek at Road A	207 (181)	28 (49)	5 (21)	12 (8)	17 (3)
Steel Creek near mouth	14 (51)	1.1 (63)	1.8 (10)	0.6 (22)	0.8 (26)
Four Mile Creek at Road 3	90 (105)	32 (31)	9 (7)	10 (5)	15 (8)
Four Mile Creek at Cassel's Pond	12 (104)	1.4 (74)	1.1 (12)	0.5 (18)	0.6 (2)
Par Pond	18 (58)	15 (74)	1.0 (28)	3 (39)	2.6 (14)
Pond B	-	180 (70)	88 (16)	69 (47)	80 (22)
Lower Three Runs at Patterson's Mill	10 (69)	14 (10)	4.7 (22)	2 (6)	-
Savannah River above plant	2.1 (174)	0.1 (87)	0.6 (16)	<0.4 (42)	0.2 (65)
Savannah River adjacent to plant	3.6 (79)	0.2 (55)	0.4 (9)	<0.2 (39)	0.2 (62)
Savannah River below plant	3.0 (240)	0.2 (90)	0.2 (4)	<0.2 (32)	0.3 (68)

Location	Sr-89,90 in Bone, Average pCi/g[b] 1971	1975	1979	1980
Steel Creek at Road A	110	8	2.5	2
Steel Creek near mouth	30	9	4.3	10
Four Mile Creek at Road 3	265	520	413	350
Four Mile Creek at Cassel's Pond	98	38	17	22
Par Pond	24	12	4.5	11
Pond B	-	180	104	230
Lower Three Runs at Patterson's Mill	13	17	3.0	-
Savannah River above plant	11	4.5	2.3	4
Savannah River adjacent to plant	10	3.5	20[c]	7
Savannah River below plant	8	3.5	7.8[d]	4

- No analyses.
[a] Value in parentheses is number of fish analyzed.
[b] Monthly composite by location.
[c] Attributed primarily to one fish that had a concentration of 150 pCi/g.
[d] Only one analyses.

TABLE 30
SUMMARY OF TRITIUM IN FISH

Year	River Fish, pCi/ml (Free Water) Above Plant Max	Above Plant Avg	Adjacent to Plant Max	Adjacent to Plant Avg	Below Plant Max	Below Plant Avg
1971	7	3	15	8	11	7
1972	9	4	16	7	17	8
1973	5	2	16	6	12	6
1974	8	4	54	12	12	8
1975	33	5	6	3	12	6
1976	9	5	10	5	16	8
1977	26	8	24	11	20	13
1978	a	1	a	4	7	7
1979	3	<1	16	5	19	6
1980	7	<3	17	5	8	4
1981	4	1	12	5	4	2

[a] Fish collections in 1978 were small and in some instances only one sample for a location.

TABLE 31
RADIOACTIVITY IN ALGAE[a], pCi/g

(Dry Weight)

Location	No. of Samples	Cs-137 Maximum	CT ERR 95% CL	Minimum	CT ERR 95% CL	Average	2 STD Dev
Par Pond	23	220	±60	4	±10	65	±100
Low Three Runs Creek (Patterson's Mill)	12	270	±60	0	±10	45	±160
Steel Creek (Mouth)	26	410	±30	0	±6	33	±170

[a]Other gamma emmiters were less than the lowest detectable concentration.

Location	Cs-137 in Algae Summary, pCi/g 1978	1979	1980	1981
Par Pond	47	53	146	65
Low Three Runs Creek (Patterson's Mill)	78	96	62	45
Steel Creek (Mouth)	-	11	-	33

TABLE 32
SAVANNAH RIVER SWAMP -- STEEL CREEK
TO LITTLE HELL LANDING
TLD RADIATION MEASUREMENTS

River Mile	Trail Number	Distance From River, m	mR/Day: Average Annual[a] Results 1972 - 1980	mR/Day: September[b] 1981
141.5	1	0	0.27 ± 0.03	0.20 ± 0.02
		178	0.34 ± 0.07	0.35 ± 0.03
		358	0.52 ± 0.09	0.50 ± 0.04
		550	1.11 ± 0.21	1.13 ± 0.08
		656	1.46 ± 0.25	1.08 ± 0.08
		805	0.17 ± 0.03	0.17 ± 0.02
140.8	2	0	0.21 ± 0.03	0.24 ± 0.02
		207	0.25 ± 0.03	0.23 ± 0.02
		406	0.24 ± 0.03	0.26 ± 0.02
		598	0.25 ± 0.02	0.23 ± 0.02
		798	0.33 ± 0.04	0.35 ± 0.03
		945	0.59 ± 0.04	0.50 ± 0.04
		975	0.18 ± 0.02	0.16 ± 0.02
139.5 to 140.8	3	0	0.23 ± 0.03	0.22 ± 0.02
		281	0.25 ± 0.06	0.25 ± 0.02
		627	0.24 ± 0.01	0.21 ± 0.02
139	4	0	0.28 ± 0.02	0.26 ± 0.02
		293	0.29 ± 0.04	0.35 ± 0.03
		380	0.39 ± 0.07	0.39 ± 0.03
		515	0.39 ± 0.08	0.43 ± 0.03
		580	0.82 ± 0.10	0.82 ± 0.06
		729	0.30 ± 0.19	0.25 ± 0.02
138.5	5	0	0.23 ± 0.04	0.26 ± 0.02
		534	0.34 ± 0.04	0.36 ± 0.03
		573	0.58 ± 0.05	0.56 ± 0.04
		640	1.05 ± 0.14	1.03 ± 0.07
		773	0.25 ± 0.03	0.24 ± 0.02
137	6	0	0.24 ± 0.04	0.27 ± 0.02
		549	0.33 ± 0.03	0.35 ± 0.03
		701	0.67 ± 0.13	0.63 ± 0.05
		772	0.81 ± 0.12	0.84 ± 0.06
		817	0.25 ± 0.03	0.29 ± 0.03
136.3	7	0	0.23 ± 0.03	0.26 ± 0.02
		579	0.22 ± 0.03	0.38 ± 0.03
		793	0.71 ± 0.32	0.40 ± 0.03
		823	0.25 ± 0.01	0.27 ± 0.02
135.7	8	0	0.22 ± 0.03	0.24 ± 0.02
		168	0.25 ± 0.03	0.29 ± 0.03
		279	0.23 ± 0.04	0.27 ± 0.02
		445	0.25 ± 0.02	0.28 ± 0.03
		612	0.24 ± 0.03	0.30 ± 0.03
		814	0.37 ± 0.05	0.44 ± 0.04
		884	0.61 ± 0.04	0.57 ± 0.04
		915	0.24 ± 0.02	0.26 ± 0.02
135.5	9	0	0.24 ± 0.03	0.27 ± 0.02
		512	0.42 ± 0.06	-
		621	0.54 ± 0.11	0.56 ± 0.04
		671	0.66 ± 0.10	0.70 ± 0.05
		769	0.20 ± 0.02	0.22 ± 0.02
134.4	10	0	0.32 ± 0.11	0.45 ± 0.04
		30	0.31 ± 0.07	0.38 ± 0.03
		73	0.24 ± 0.10	0.23 ± 0.02
West Jackson (Control)			0.23 ± 0.13	0.22 ± 0.02
Allendale Gate (Control)			0.13 ± 0.02	0.12 ± 0.01

\- No analysis.

[a] The average values are accompanied by a plus or minus (±) limit value, which is the standard deviation of the average.

[b] The individual 1981 results are accompanied by a ± value, which represents the statistical counting error at the 95% confidence level.

TABLE 33

RADIOACTIVITY IN RIVER AND STREAM SEDIMENT, pCi/g

(8-cm depth)

	River Mile	Co-60 1975 - 1979 Avg	Co-60 1980	Co-60 1981	Sr-90 1975 - 1979 Avg	Sr-90 1980	Sr-90 1981	Cs-137 1975 - 1979 Avg	Cs-137 1980	Cs-137 1981
Savannah River										
Below Four Mile Creek	150.2	<0.7	--	--	0.09 ± 0.1[c]	0.06	a	0.7 ± 0.7	0.2	0.4
Above Little Hell Landing	136.6	<0.5	--	--	0.10 ± 0.13	0.07	0.08	0.8 ± 0.9	0.2	0.7
Below Little Hell Landing	134.0	<0.8	--	--	0.16 ± 0.17	0.20	0.11	3.9 ± 8.4	0.4	0.5
Above Lower Three Runs	129.5	<0.7	--	--	0.07 ± 0.08	0.15	a	0.8 ± 1.5	0.4	0.5
Highway 301	118.7	<0.7	--	--	0.09 ± 0.03	0.10	0.24	1.7 ± 3.0	1.1	--
Control above Plant Demier's Landing	160.5	<0.6	--	--	<0.1	0.06	a	0.5 ± 0.3	0.2	0.07
Plant Streams										
Four Mile at Road A-7		1.4 ± 2.3[b]	0.6	0.6	10.4 ± 12.7[b]	2.32	a	49.8 ± 70.8[b]	18.6	19.5
Four Mile at Discharge at Swamp		3.4 ± 4.9	1.9	--	0.57 ± 0.31	0.08	0.26	11.1 ± 18.3	9.1	0.4
Pen Branch Discharge at Swamp		4.5 ± 7.8	0.6	a	0.11 ± 0.03	0.24	0.27	3.6 ± 6.3	8.2	a
Steel Creek at Road B		1.2 ± 1.6	0.6	0.9	0.12 ± 0.04	0.11	0.9	32.6 ± 52.0	3.4	41.5
Steel Creek Discharge at Swamp		3.8 ± 6.4	--	1.2	0.16 ± 0.13	0.07	a	34.9 ± 56.8	10.1	2.4
Steel Creek - Pen Branch Mouth		<0.6	0.1	0.08	0.15 ± 0.16	0.16	0.3	26.6 ± 59.7	2.3	1.3
Lower Three Run's Mouth		<0.7	0.04	--	0.12 ± 0.08	0.12	a	5.3 ± 13.1	7.3	1.0
Control Upper Three Run's Mouth		<0.7	--	--	0.21 ± 0.31	0.13	0.3	0.9 ± 1.4	1.3	0.3

	River Mile	Pu-238 1975 - 1979 Avg	Pu-238 1980	Pu-238 1981	Pu-239 1975 - 1979 Avg	Pu-239 1980	Pu-239 1981
Savannah River							
Below Four Mile Creek	150.2	<0.001	0.006	0.003	0.002 ± 0.002	0.001	0.002
Above Little Hell Landing	136.2	<0.002	0.004	0.002	0.006 ± 0.007	0.012	0.010
Below Little Hell Landing	134.0	<0.002	0.008	0.001	0.017 ± 0.046	0.018	0.001
Above Lower Three Runs	129.5	<0.001	0.002	<0.003	0.003 ± 0.004	0.001	<0.003
Highway 301	118.7	<0.001	a	0.001	0.003 ± 0.005	a	0.001
Control above Plant Demier's Landing	160.5	<0.002	0.003	<0.001	0.003 ± 0.005	0.005	0.002
Plant Streams							
Four Mile at Rd A-7		0.59 ± 1.03[b]	0.313	0.008[b]	0.44 ± 0.94[b]	0.092	0.004
Four Mile Discharge at Swamp		0.13 ± 0.22	0.085	0.003	0.06 ± 0.08	0.035	0.002
Pen Branch Discharge at Swamp		0.02 ± 0.02	0.020	<0.001	0.02 ± 0.04	0.044	<0.001
Steel Creek at Rd B		0.04 ± 0.04	0.017	0.043	0.03 ± 0.04	0.001	0.039
Steel Creek Discharge at Swamp		0.08 ± 0.13	0.004	a	0.04 ± 0.01	<0.001	a
Steel Creek-Pen Branch Mouth		<0.002	<0.001	0.002	0.003 ± 0.003	<0.001	<0.001
Lower Three Runs Mouth		0.02 ± 0.04	0.002	0.001	0.02 ± 0.04	0.008	0.003
Control Upper Three Runs Mouth		0.003 ± 0.005	0.004	0.001	0.01 ± 0.02	0.029	0.004

-- Less than minimum level of detection.

[a] No analysis.
[b] Average values 1977 - 1979.
[c] Average values 1976 - 1979.

± Values are the 2 Sigma standard deviation of the mean.

TABLE 34

RADIOACTIVITY IN SEDIMENT FROM RIVER FLOOD PLAINS, pCi/g

Locations	Pu-238	Pu-239	Cs-137	Sr-90
1976 Savannah River Controls				
Demier's Landing (river mile 160.4)	0.005	0.007	0.5	0.12
Above Upper Three Runs (river mile 157.4)	0.002	0.029	1.7	-
Flowery Gap Landing (river mile) 155.5)	0.001	0.018	1.4	0.20
Above Beaver Dam Creek (river mile) 153.6	0.002	0.012	0.8	0.06
Pee Dee River Controls				
0.25 mile below I-95	0.001	0.007	0.5	0.12
1.0 mile below I-95	0.003	0.009	0.4	0.13
2.0 miles below I-95	0.001	0.003	0.1	0.10
3.0 miles below I-95	0.001	0.007	0.6	0.13
1975 Above Handcock Landing (river mile 153.3)	0.0006	0.003	0.4	--
Below Lower Three Runs Creek (river mile 128.5)	0.0007	0.0060	1.9	--
Above Highway 119 (river mile 62.3)	0.0004	0.0094	6.5	--
Above US Highway 17 (river mile 0.6)	0.0004	0.0032	1.6	--

-- No analysis. Sr-90 analyses were begun in 1976.

TABLE 35
SUMMARY OF TRITIUM IN
ENVIRONMENTAL SAMPLES FOLLOWING THE RELEASE ON MARCH 27, 1981

Type Sample	No. of Samples	H-3, pCi/ml Maximum	Minimum	Average
Foodstuff	17	8	<2	2
Soil	27	39	1	6
Vegetation	79	270	1	21
Milk	8	11	<2	5
Water	22	9	<2	2

TABLE 36
ATMOSPHERIC TRITIUM OXIDE LEVELS
FOLLOWING THE RELEASE ON MARCH 27, 1981

Location, SC	Time	Air Concentration, pCi/m^3	Atmospheric Moisture, pCi/ml
Orangeburg (front of plume)	1350	96	11
Norway (center of plume)	1404	76,522	10,270
St. Matthews (out of plume)	1516	26	4
Creston (behind plume)	1549	1,835	320
Manning (behind plume)	1655	545	87
Kingstree (in the plume)[a]	1800	9,445	1,360

[a] Thirty minutes later this concentration dropped to 104 pCi/m^3.

TABLE 37A
RADIONUCLIDES IN THE SAVANNAH RIVER, pCi/l
EXCEPT TRITIUM (pCi/ml)
FROM 1953-1981

Radionuclide	N[a]	Mean Conc.	Minimum Value	Maximum Value	Standard Deviation
		R-2 Upstream of SRP			
Alpha	23	0.477	0.010	2.550	0.507
Beta	27	8.061	1.600	25.000	6.741
Tritium	22	1.041	0.200	5.000	1.084
Ce-141	5	2.992	0.710	5.800	2.030
Cs-134	1	1.200	1.200	1.200	-
ZrNb-95	3	2.913	0.040	8.000	4.418
Ru-106	3	4.967	1.800	7.000	2.779
Cs-137	4	1.480	0.320	2.800	1.129
Zn-65	2	1.350	1.000	1.700	0.495
Sr-89,90	6	0.898	0.140	3.200	1.147
Sr-90	20	0.768	0.100	2.000	0.512
Mn-54	2	0.380	0.060	0.700	0.453
I-131	2	0.305	0.300	0.310	0.007
Ba,La-141	0	-	-	-	-
Np-239	1	1.000	1.000	1.000	-
Cr-51	1	1.200	1.200	1.200	-
S-35	1	0.000	0.000	0.000	-
Co-60	1	0.360	0.360	0.360	-
		R-10 Downstream of SRP			
Alpha	25	0.328	0.100	0.900	0.207
Beta	27	12.634	0.300	44.000	11.412
Tritium	22	7.547	3.100	14.000	3.446
Ce-141	4	3.472	0.490	5.700	2.366
Cs-134	2	0.557	0.015	1.100	0.767
Zr,Nb-95	4	2.337	0.050	7.900	3.722
Ru-106	3	4.333	0.900	7.000	3.121
Cs-137	20	1.754	0.010	7.000	2.158
Zn-65	3	1.400	1.100	1.900	0.436
Sr-89,90	15	1.109	0.200	4.600	1.150
Sr-90	20	1.554	0.220	9.000	2.160
Mn-54	2	0.510	0.020	1.000	0.693
I-131	10	3.134	0.140	10.000	3.788
Ba,La-141	3	3.100	1.700	4.400	1.353
Np-239	4	8.887	1.950	19.000	7.806
Cr-51	7	13.080	0.560	28.000	10.298
S-35	4	8.775	0.000	26.000	11.689
Co-60	1	0.370	0.370	0.370	-

[a] N -- Number of samples above detection limit.
(Refer to figure 31A.)
- Less than the lowest detectable concentration.

TABLE 37B
RADIONUCLIDES IN TRANSPORT THE SAVANNAH RIVER, Ci
FROM 1960-1978

	N[c]	Sum	Mean	Minimum Value	Maximum Value	Standard Deviation
			R-2 Upstream of SRP			
Tritium	19	142,572.000	7,503.789	3,000.000	24,406.000	4,775.979
Cs-137	3	31.700	10.567	0.200	27.900	15.107
Sr-89,90	1	0.300	0.300	0.300	0.300	-
Sr-90	15	107.430	7.162	2.970	21.400	4.774
S-35	0	-	-	-	-	-
			R-10 Downstream of SRP			
Tritium	19	1,389,892.000	73,152.211	36,345.000	167,541.000	32 458.051
Cs-137	14	121.450	8.675	0.200	32.800	10.657
Sr-89,90	8	57.700	7.212	1.300	34.400	11.107
Sr-90	15	158.350	10.557	2.800	31.400	7.454
S-35	3	237.000	79.000	26.000	171.000	79.981

TABLE 37C

RADIONUCLIDES IN THE SAVANNAH RIVER IN PCI/L EXCEPT TRITIUM IN PCI/ML)

FROM 1953-1981

YEAR	LOC*	ALPHA	BETA	TRITIUM	CE141	CS134	ZRNB	RU106	CS137	ZN65	SR8990	SR90	MN54	I131	BALA141	NP239	CR51	S35	CO
1953	2	0.20	5.00	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1953	10	0.10	5.00	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1954	2	0.90	8.00	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1954	10	0.80	8.30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1955	2	0.90	20.00	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1955	10	0.90	16.00	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1956	2	0.70	13.00	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1956	10	0.50	14.00	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1957	2	0.50	17.00	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1957	10	0.50	34.00	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1958	2	0.50	14.00	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1958	10	0.50	26.00	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1959	2	0.70	17.00	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1959	10	0.50	22.00	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1960	2	2.55	6.20	5.00	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1960	10	0.20	19.00	9.00	.	.	.	.	5.000	.	.	.	.	10.00	.	.	.	.	.
1961	2	0.20	7.00	3.00	.	.	.	.	.	.	.	2.00	.	.	.	.	.	.	.
1961	10	0.20	28.00	14.00	.	.	.	.	4.000	.	.	6.00	.	6.00	.	.	.	.	.
1962	2	0.20	25.00	2.00	.	.	.	.	2.000	.	.	2.00	.	.	.	.	.	.	.
1962	10	0.20	44.00	12.00	.	.	.	.	7.000	.	.	9.00	.	9.00	.	.	.	.	.
1963	2	0.20	21.00	0.90	5.80	.	8.00	7.0	2.800	1.7	3.20	0.90	0.70	.	.	.	.	.	.
1963	10	0.20	29.00	14.00	5.70	.	7.90	7.0	3.300	1.9	4.60	1.40	1.00	2.40	4.4	19.00	28.00	.	.
1964	2	0.30	11.00	1.40	4.00	.	0.70	6.1	0.800	.	.	1.20	.	.	.	.	.	.	.
1964	10	0.30	18.00	10.00	5.00	.	0.80	5.1	5.500	1.2	1.70	1.90	.	1.90	3.2	11.00	17.70	.	.
1965	2	0.25	7.00	1.10	0.00	.	0.00	0.0	0.000	0.0	0.00	1.30	0.00	0.00	0.0	0.00	0.00	.	0.
1965	10	0.20	10.00	10.90	0.00	.	0.00	0.0	2.050	0.0	0.00	2.10	0.00	0.60	0.0	0.00	7.10	.	0.
1966	2	0.30	6.50	1.05	1.45	.	0.00	0.0	0.000	0.0	0.00	1.00	0.00	0.30	0.0	1.00	0.00	.	0.
1966	10	0.20	13.00	11.30	2.70	.	0.60	0.0	2.700	0.0	0.90	1.65	0.00	0.40	1.7	3.60	24.20	.	0.
1967	2	.	5.00	1.00	0.00	.	0.00	0.0	0.000	0.0	0.00	0.70	0.00	0.00	0.0	0.00	0.00	.	0.
1967	10	.	7.50	9.80	0.00	.	0.00	0.0	2.050	0.0	0.90	1.15	0.00	0.60	0.0	1.95	5.95	.	0.
1968	2	.	4.00	0.75	0.00	.	0.00	0.0	0.000	0.0	.	0.60	0.00	0.00	0.0	0.00	0.00	0.00	0.
1968	10	.	10.00	9.35	0.00	.	0.00	0.0	1.150	0.0	2.60	1.00	0.00	0.00	0.0	0.00	8.05	26.00	0.
1969	2	.	4.00	0.90	0.00	.	0.00	0.0	0.000	0.0	0.00	0.75	0.00	0.00	0.0	0.00	0.00	0.00	0.
1969	10	.	6.00	7.85	0.00	.	0.00	0.0	0.650	0.0	0.40	1.05	0.00	0.30	0.0	0.00	0.00	5.05	0.
1970	2	.	4.00	0.75	0.00	.	0.00	0.0	0.000	0.0	0.00	0.65	0.00	0.00	0.0	0.00	0.00	0.00	0.
1970	10	.	6.50	5.85	0.00	.	0.00	0.0	1.200	0.0	1.40	1.05	0.00	0.00	0.0	0.00	0.00	4.05	0.
1971	2	.	4.00	0.57	0.00	.	0.00	0.0	0.000	0.0	0.00	0.60	0.00	0.00	0.0	0.00	0.00	0.00	0.
1971	10	0.20	5.50	5.55	0.00	.	0.00	0.0	0.200	0.0	0.55	0.90	0.00	0.00	0.0	0.00	0.00	0.00	0.
1972	2	.	.	0.75	0.00	.	0.00	0.0	0.000	0.0	0.00	0.60	0.00	0.00	0.0	0.00	0.00	0.00	0.
1972	10	0.20	.	6.05	0.00	.	0.00	0.0	0.050	0.0	0.50	0.75	0.00	0.00	0.0	0.00	0.00	0.00	0.
1973	2	0.40	0.00	0.43	0.00	.	0.00	0.0	0.000	0.0	0.00	0.40	0.00	0.00	0.0	0.00	0.00	0.00	0.
1973	10	0.40	0.00	6.62	0.00	.	0.00	0.0	0.020	0.0	0.20	0.50	0.00	0.00	0.0	0.00	0.00	0.00	0.
1974	2	0.36	3.52	0.47	0.00	.	0.00	0.0	0.000	0.0	0.55	0.40	0.00	0.00	0.0	0.00	0.00	0.00	0.
1974	10	0.27	3.92	5.90	0.00	.	0.00	0.0	0.010	0.0	0.64	0.50	0.00	0.00	0.0	0.00	0.00	0.00	0.
1975	2	0.38	2.50	0.49	0.00	.	0.00	0.0	0.000	0.0	0.47	0.50	0.00	0.00	0.0	0.00	0.00	0.00	0.
1975	10	0.34	2.55	4.02	0.00	.	0.00	0.0	0.015	0.0	0.50	0.50	0.00	0.00	0.0	0.00	0.00	0.00	0.
1976	2	0.41	2.99	0.46	0.00	.	0.00	0.0	0.000	0.0	0.75	0.50	0.00	0.00	0.0	0.00	0.00	0.00	0.
1976	10	0.53	3.05	4.75	0.00	.	0.00	0.0	0.015	0.0	0.87	0.50	0.00	0.00	0.0	0.00	0.00	0.00	0.
1977	2	0.33	3.20	0.50	0.71	1.2	0.04	1.8	0.320	1.0	0.28	0.34	0.06	0.31	.	.	1.20	0.00	0.
1977	10	0.29	2.11	4.80	0.49	1.1	0.05	0.9	0.140	1.1	0.36	0.29	0.02	0.14	.	.	0.56	0.00	0.
1978	2	0.33	1.74	0.39	3.00	0.0	0.00	0.0	0.000	0.0	0.14	0.40	0.00	0.00	.	.	0.00	0.00	0.
1978	10	0.21	0.3	3.9	0	0.015	0	0	0.00	0	0.51	0.30	0	0	.	.	0	0	
1979	2	0.22	1.8	0.4	0	.	0	0	0.00	0	0.00	0.43	0	0	0	0	0	0	
1979	10	0.24	3.1	3.1	0	.	0	0	0.02	0	0.00	0.32	0	0	0	0	0	0	
1980	2	0.01	1.6	0.4	0	.	0	0	0.00	0	0.00	0.10	0	0	0	0	0	0	
1980	10	0.10	2.3	3.2	0	.	0	0	0.02	0	0.00	0.22	0	0	0	0	0	0	
1981	2	0.14	1.6	0.2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
1981	10	0.11	2.0	4.1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	

* Loc 2 – Above SRP
Loc 10 – Below SRP

˙ Less than detection limit.
Refer to Figure 31A.

TABLE 37D

RADIONUCLIDES IN TRANSPORT IN THE SAVANNAH RIVER, Ci
FROM 1960-1978

Year	Loc*	Tritium	Cs-137	Sr-89,90	Sr-90	S-35
1960	2	3,000	.	.	.	.
1960	10	79,700	.	.	.	.
1961	2	8,700	.	.	.	.
1961	10	90,000	.	.	.	.
1962	2	9,900	.	.	7.56	.
1962	10	73,300	.	.	12.52	.
1963	2	8,200	27.90	.	8.10	.
1963	10	121,000	32.80	.	12.40	.
1964	2	24,406	3.60	.	21.40	.
1964	10	167,541	25.90	34.4	31.40	.
1965	2	12,240	.	.	14.00	.
1965	10	112,458	11.60	.	21.60	.
1966	2	9,205	.	0.3	8.80	.
1966	10	87,520	19.10	5.1	14.40	.
1967	2	8,442	.	.	5.40	.
1967	10	76,944	13.60	3.3	9.30	.
1968	2	6,635	.	.	4.80	.
1968	10	68,408	7.80	6.0	8.70	171
1969	2	7,342	.	.	5.90	.
1969	10	65,437	2.90	1.6	8.80	40
1970	2	4,572	.	.	3.70	.
1970	10	36,345	5.30	2.2	6.50	26
1971	2	6,214	.	.	5.20	.
1971	10	45,328	1.20	3.8	7.70	.
1972	2	6,873	.	.	5.10	.
1972	10	52,144	0.45	1.3	6.70	.
1973	2	5,600	.	.	.	.
1973	10	66,700	.	.	.	.
1974	2	4,000	.	.	.	.
1974	10	50,000	.	.	.	.
1975	2	5,660	.	.	5.18	.
1975	10	55,175	0.20	.	6.21	.
1976	2	4,058	.	.	5.52	.
1976	10	55,187	0.20	.	5.95	.
1977	2	4,028	.	.	2.97	.
1977	10	46,541	0.20	.	3.37	.
1978	2	3,497	0.20	.	3.80	.
1978	10	40,164	0.20	.	2.80	.

* 2 - Above SRP
10 - Below SRP
. Less than the detection limit.

Refer to figure 31A.

TABLE 38

DOE CONCENTRATION GUIDE FOR WATER IN UNCONTROLLED AREAS

Isotope	pCi/l
Ba-La-140	20,000
Co-60	50,000
Cr-51	2,000,000
Cs-134	40,000
Cs-137	40,000
Ce-141	90,000
H-3	3,000,000
I-131	60,000
Mn-54	100,000
Np-239	100,000
Ru-103, 106	80,000
Sr-90	40,000
Sr-89	30,000
S-35	300,000
Zn-65	200,000
Zr-Nb-95	60,000

TABLE 39

INDIVIDUAL AND POPULATION DOSES

Location/ Source	Calculated Annual Average Individual Whole Body Dose, mrems	Population	Calculated Population Dose Commitment, man-rems
SRP Boundary			
SRP atmospheric Releases	0.82 (max 1.15)	465,000 (80 km)	118
Drinking river water (Highway 301)	0.36[a]	c	c
Eating river fish[b] (adjacent to SRP, River 8)	0.18[a]	c	c
Treatment Plants Downstream of SRP			
Using water from Beaufort-Jasper treatment plant	0.21	50,000	10.5
Using water from Port Wentworth treatment plant	0.28	20,000	5.6
			16.1
Other Sources			
Natural radioactivity			
Cosmic radiation	32[d]		
External terrestrial	33[d]		
Internal terrestrial	28		
Total Natural Radioactivity	93	465,000 (80 km)	43,200
Medical radiation			
Diagnostic x-rays	77[e]		
Radiopharmacouticals	14[e]		
Total medical radiation	91	465,000 (80 km)	42,300

[a] There are no known persons at the SRP boundary who use river water and fish as a primary source of water and food.

[b] Based on a hypothetical person who eats 1.1 kg of fish per week.

[c] There are no known persons within 80 km of SRP who use river water and fish as a primary source of water and food.

[d] These values vary with location but represent an average in the vicinity of SRP.

[e] Dose is prorated over the U.S. population. This is a means of arriving at an average dose, which when multiplied by the population size, produces an estimate of population exposure. It does not mean that every member of the population received a radiation exposure from these sources.

TABLE 40
ATMOSPHERIC TRANSPORT AND DOSE -- 1981

Nuclide	Curies Released at Emission Source	Calculated Average Conc at Plant Perimeter, μCi/cm^3	Whole Body Dose to Individual at Plant Perimeter, mrems: Average	Whole Body Dose to Individual at Plant Perimeter, mrems: Maximum	Calculated Population Dose Commitment, man-rems: 80 km	Calculated Population Dose Commitment, man-rems: 100 km
Gases and Vapors						
^{3}H	4.0×10^{5}	1.1×10^{-10}	0.65	0.88	100.3	125.5
^{14}C	6.9×10^{1}	1.9×10^{-14}	0.048	0.066	7.5	9.4
^{41}Ar	6.2×10^{4}	8.1×10^{-12}	0.11	0.18	8.2	8.8
^{85m}Kr	1.3×10^{3}	2.5×10^{-13}	0.00051	0.00075	0.049	0.055
^{85}Kr	8.4×10^{5}	2.3×10^{-10}	0.0030	0.0041	0.52	0.67
^{87}Kr	8.7×10^{2}	9.6×10^{-14}	0.0016	0.0025	0.093	0.098
^{88}Kr	1.5×10^{3}	2.4×10^{-13}	0.0063	0.0094	0.54	0.59
^{131m}Xe	6.4×10^{0}	1.7×10^{-15}	<0.00001	<0.00001	0.00044	0.00054
^{133}Xe	3.9×10^{3}	1.1×10^{-12}	0.00098	0.0014	0.13	0.16
^{135}Xe	2.5×10^{3}	5.5×10^{-13}	0.0017	0.0024	0.19	0.22
^{129}I	1.6×10^{-1}	1.3×10^{-17}	0.0010	0.0015	0.11	0.13
^{131}I	4.7×10^{-2}	8.5×10^{-18}	0.00001	0.00001	0.00090	0.0010
Particulates						
$^{58,60}Co$	8.9×10^{-5}	5.2×10^{-21}	<0.00001	<0.00001	<0.00001	<0.00001
$^{89,90}Sr$	3.0×10^{-3}	1.7×10^{-19}	<0.00001	<0.00001	<0.00001	<0.00001
^{95}Zr	1.7×10^{-2}	9.9×10^{-9}	<0.00001	<0.00001	0.00001	<0.00001
^{95}Nb	6.4×10^{-2}	3.7×10^{-18}	<0.00001	<0.00001	0.00001	<0.00001
^{103}Ru	1.3×10^{-2}	7.5×10^{-19}	<0.00001	<0.00001	<0.00001	<0.00001
^{106}Ru	7.8×10^{-2}	4.5×10^{-18}	<0.00001	<0.00001	0.00001	<0.00001
^{134}Cs	6.4×10^{-4}	3.7×10^{-20}	<0.00001	<0.00001	<0.00001	<0.00001
^{137}Cs	3.1×10^{-3}	1.8×10^{-19}	<0.00001	<0.00001	0.00001	<0.00001
^{141}Ce	3.2×10^{-4}	1.9×10^{-20}	<0.00001	<0.00001	<0.00001	<0.00001
^{144}Ce	2.7×10^{-4}	1.6×10^{-18}	<0.00001	<0.00001	0.00007	0.00007
Uranium	6.1×10^{-3}	3.5×10^{-19}	<0.00001	<0.00001	0.00026	0.00029
^{238}Pu	4.6×10^{-3}	2.7×10^{-19}	0.00034	0.00045	0.031	0.035
^{239}Pu	2.8×10^{-3}	1.6×10^{-19}	0.00025	0.00034	0.023	0.026
$^{241,243}Am$	4.9×10^{-4}	2.8×10^{-20}	0.00003	0.00004	0.0030	0.0034
$^{242,244}Cm$	1.6×10^{-4}	8.3×10^{-21}	0.00001	0.00001	0.0048	0.00054
		Totals	0.823	1.148	117.6	145.6

TABLE 41
RIVER TRANSPORT AND DOSE -- 1981

Nuclide	Curies Released at Emission Source[a]	Average Conc In River, μCi/ml	Calculated Individual Dose Commitment, mrems: Whole Body	Bone	Lower Large Intestine	Thyroid	Calculated Population Dose Commitment, man-rems
^{3}H	2.4×10^{4}	2.4×10^{-6}[b]	0.21				10.5
		3.2×10^{-6}[c]	0.28				5.6
$^{58,60}Co$	2.5×10^{-4}	4.2×10^{-14}	<0.00001		<0.00001		0.00001
$^{89,90}Sr$	3.5×10^{-1}	5.9×10^{-11}	0.00009	0.039			0.0066
^{129}I	2.2×10^{-2}	3.7×10^{-12}	0.00002			0.035	0.0014
^{137}Cs	2.2×10^{-1}	3.7×10^{-11}	0.001		0.00074		0.07
Uranium	1.7×10^{-1}	2.9×10^{-11}	<0.00001				0.0004
^{239}Pu	7.6×10^{-3}	1.3×10^{-12}	0.00001	0.0006			0.00098
			0.21[d] 0.28[e]	0.040	0.00075	0.035	16.2

[a] Includes direct releases to streams and ground water migration from earthen seepage basins.
[b] Beaufort-Jasper concentrations are measured values.
[c] Port Wentworth concentrations are measured values.
[d] Summation for Beaufort-Jasper.
[e] Summation for Port Wentworth.

TABLE 42

1981 AVERAGE SO_2 EMISSIONS RATE

Pulverized coal boilers (4)[a]	2.17 lb/10^6 Btu
Stoker coal boilers (15)[b]	1.50 lb/10^6 Btu

[a] Based on sulfur content of 1.56%.
[b] Based on sulfur content of 0.97%.

TABLE 43

1981 GEORGIA AND 1980 SOUTH CAROLINA AMBIENT AIR QUALITY MEASUREMENTS, $\mu g/m^3$

	Suspended Particulates							Sulfur Dioxide						Nitrogen Dioxide			
				Exceeds Std							Exceeds Std						Exceeds Std
Location[a]	No. of obs	24 hr Max	Geom Mean	GA 150 (24 hr)	SC 250 (24 hr)	GA 75 (yr)	SC 60 (yr)	No. of obs	24 hr Max	Arith Mean	GA-SC 1300 (3 hr)	GA-SC 365 (24 hr)	GA-SC 80 (yr)	No. of obs	24 hr Max	Arith Mean	GA-SC 100 (yr)
South Carolina																	
1	47	130	48		No		No	0	-	-	0	0	No	9	40	9	No
2	59	128	53		No		No	1,389	12	3	0	0	No	0	-	-	-
3	54	94	46		No		No	0	-	-	-	-	-	0	-	-	-
Georgia																	
1	56	91	49.5	0		No		-	-	-	-	-	-	37	74	36.1	No
2	56	106	47.6	0		No		-	-	-	-	-	-	-	-	-	-
3	52	121	48.0	0		No		-	-	-	-	-	-	36	76	32.8	No
4	56	114	51.3	0		No		-	-	-	-	-	-	-	-	-	-
5	59	111	56.5	0		No		-	-	-	-	-	-	-	-	-	-
6	48	113	51.4	-		-		6,070	51	16.2	0	0	No	-	-	-	-

[a] South Carolina locations: (1) Fire Station, Beech Island; (2) Police Department, North Augusta; (3) County Health Department, Orangeburg; Georgia locations (1) Sandbar Ferry Jr. High School, Augusta; (2) Student Center, Medical College, Augusta; (3) Water Treatment Plant, Augusta; (4) Bungalow Road School, Augusta; (5) Clara Jenkins School, Augusta; (6) City Hall, Wrens, GA for Suspended Particulates; Regional Youth Development Center, Augusta, GA for Sulfur Dioxide.
- No analysis.

TABLE 44

SOUTH CAROLINA EMISSION STANDARDS

Fly ash -- 0.6 lb/10^6 Btu heat input
SO_2 -- 3.5 lb/10^6 Btu heat input

SOUTH CAROLINA AND GEORGIA AMBIENT AIR STANDARDS FOR PARTICULATES, SO_2, NO_x

	South Carolina	Georgia
Suspended particulates, $\mu g/m^3$		
24 hours	250	150
Annual geometric mean.	60	75
SO_2, $\mu g/m^3$		
1 hour	a	a
3 hours	1,300	1,300
24 hours	365	365
Annual	80	80
NO_x, $\mu g/m^3$		
24 hours	a	a
Annual	100	100

[a] No standard.

TABLE 45

AVERAGE TEMPERATURES IN FOUR MILE CREEK -- DECEMBER 1981

Date	Time	Temperature °C ±2 Sigma Std. Dev.
12/7/81	8:50 am	27.3 ± 0.3
	5:10 pm	28.5 ± 0.4
12/8/81	8:50 am	18.1 ± 0.4
	3:30 pm	28.2 ± 0.2

TABLE 46

SAVANNAH RIVER AND FOUR MILE CREEK FLOW DATA

Location	Date	Time	Total Flow, ft^3 sec
River			
50 yd above Four Mile Creek (ambient temperature)	12/7/81	10:30 am	3,640
		4:10 pm	3,310
	12/8/81	8:05 am	2,540
		2:15 pm	2,870
100 yd below Four Mile Creek	12/7/81	2:10 pm	3,470
0.7 mile below Four Mile Creek	12/8/81	10:04 am	2,850
Four Mile Creek			
100 ft upstream from river	12/7/81	8:50 am	170
		5:09 pm	170
	12/8/81	8:50 am	150
		3:30 pm	170

TABLE 47
SAVANNAH RIVER WATER QUALITY - 681-5G[a]

Date	Time	Water[b] Temp Cent	Air[b] Temp Cent	Dissolved Oxygen[b] MG/L	Turb-idity JTU	Conductivity at 25C MICROMHOS/cm
01/06/81	1415	8.0	6.0	10.8	7	73
02/10/81	1235	8.0	19.0	10.1	8	91
03/10/81	1345	11.0	24.0	9.8	10	80
04/07/81	1315	16.0	23.0	9.1	6	78
05/05/81	1330	18.0	29.0	8.4	9	89
06/09/81	1315	23.0	29.0	7.1	13	89
06/30/81	1300	23.0	31.0	7.0	9	92
08/18/81	1235	24.0	23.0	6.0	10	91
09/08/81	1350	24.0	34.0	6.8	5	86
10/06/81	1115	21.0	31.0	7.3	5	93
11/03/81	1250	18.0	25.0	7.5	5	97
12/01/81	1300	14.0	16.0	9.5	8	145

DATE	BOD[d] 5 DAY MG/L	LAB PH	Total Alkalinity $CaCO_3$ MG/L	Ammonia Total MG/L	Nitrate + Nitrite N-Total MG/L	Total Phosphorus P-WET MG/L	T ORG C[e] C MG/L	Fecal Coliform Count/ 100ML
01/06/81	0.7	7.3	19	0.20	0.32	0.09	4.0	---
02/10/81	1.0	7.0	20	0.34	0.32	0.09	5.0	4,300
03/10/81	1.5	7.3	21	0.23	0.27	0.08	2.0	430
04/07/81	1.2	7.0	19	0.25	0.33	0.08	7.2	390
05/05/81	1.5	6.8	23	0.18	0.40	0.09	5.0	70
06/09/81	1.8	6.5	18	0.25	0.33	0.17	7.0	430
06/30/81	1.4	7.0	20	0.18	0.37	0.09	4.0	90
08/18/81	1.5	6.8	20	0.18	0.50	0.14	4.5	430
09/08/81	0.9	7.0	23	0.16	0.37	0.12	3.8	---
10/06/81	1.0	6.8	21	0.14	0.32	0.10	3.0	150
11/03/81	1.0	7.1	22	0.18	0.36	0.12	4.0	230
12/01/81	1.5	7.1	28	0.14	0.96	0.13	8.2	230

[a]Analyzed by the Georgia Department of Natural Resources.
[b]Measured at sample site by SRP.
[c]Jackson turbidity units.
[d]Biochemical oxygen demand.
[e]Total organic carbon.

RIVER 2 ABOVE PLANT

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARTHIMETIC MEAN	ARTHIMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
WATER VOLUME	LITERS		4.388E+12(TOTAL)					
TEMPERATURE	DEG C	10	25	12	19	±9.5 6	19	(1.3)
PH	PH	10	7.0	5.9				
DISSOLVED O	MG/L	10	11	8.4	9.4	±1.0 9	9.3	(1.1)
ALKALINITY	MG/L	10	24	1.0	9.7	±21 2	4.4	(4.3)
HARDNESS	MG/L	10	80	14	35	±47 5	28	(2.0)
CONDUCTIVITY	UMH/CM	10	120	53	88	±37 3	86	(1.3)
SUSP SOLIDS	MG/L	10	30	4.0	14	±19 4	12	(2.0)
VOLTL SOLIDS	MG/L	10	32	16	24	±8.5 0	24	(1.2)
T DIS SOLIDS	MG/L	10	80	37	58	±23 5	57	(1.2)
FIXD RESIDUE	MG/L	10	76	6.0	38	±38 2	33	(2.0)
BOD	MG/L	10	3.0	<1	1.3	±2.5 3	2.0	(1.5)
LIGNIN	MG/L	10	15	4.0	10	±6.7 0	9.6	(1.5)
CHLORIDE CL	MG/L	10	8.8	4.8	7.2	±2.8 4	7.0	(1.2)
NITRITE N	MG/L	10	.10	<0.02	.03	±0.069	.03	(2.0)
NITRATE N	MG/L	10	3.3	.10	.83	±1.9 7	.53	(2.7)
SULFATE SO-4	MG/L	10	10	5.0	7.6	±3.4 1	7.4	(1.3)
SULFIDE S	MG/L	10	2.0	<1	.20	±1.3 5	2.0	-
TOTL PHOSP P	MG/L	10	2.0	<0.02	.60	±1.3 4	.53	(2.4)
ALUMINUM AL	MG/L	10	1.0	<0.5	.15	±0.685	.71	-
AMMONIA NH-4	MG/L	10	.20	.04	.09	±0.091	.08	(1.6)
CALCIUM CA	MG/L	10	4.0	<0.1	2.7	±2.1 7	2.9	(1.2)
SODIUM NA	MG/L	10	15	8.5	12	±5.0 5	11	(1.2)
TOTL IRON FE	MG/L	10	.70	<0.1	.17	±0.463	.30	(1.7)

RIVER 10 BELOW PLNT

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARTHIMETIC MEAN	ARTHIMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
WATER VOLUME	LITERS		5.266E+12(TOTAL)					
TEMPERATURE	DEG C	10	26	12	20	±10 8	20	(1.3)
PH	PH	10	7.1	5.9				
DISSOLVED O	MG/L	10	11	8.2	9.2	±2.0 0	9.2	(1.1)
ALKALINITY	MG/L	10	24	1.0	9.3	±20 4	4.3	(4.2)
HARDNESS	MG/L	10	120	14	39	±66 7	30	(2.1)
CONDUCTIVITY	UMH/CM	10	110	53	85	±33 7	84	(1.3)
SUSP SOLIDS	MG/L	10	25	6.0	14	±14 5	13	(1.7)
VOLTL SOLIDS	MG/L	10	33	19	24	±8.9 4	24	(1.2)
T DIS SOLIDS	MG/L	10	70	52	61	±12 7	61	(1.1)
FIXD RESIDUE	MG/L	10	67	20	41	±27 7	39	(1.4)
BOD	MG/L	10	4.0	<1	1.5	±2.5 9	2.0	(1.5)
LIGNIN	MG/L	10	13	.20	8.7	±7.7 9	6.4	(3.5)
CHLORIDE CL	MG/L	10	7.2	5.4	6.5	±1.2 9	6.5	(1.1)
NITRITE N	MG/L	10	.04	<0.02	.01	±0.023	.02	(1.7)
NITRATE N	MG/L	10	2.8	.10	.70	±1.5 5	.48	(2.4)
SULFATE SO-4	MG/L	10	10	4.0	7.3	±3.9 2	7.1	(1.3)
SULFIDE S	MG/L	10	<1	<1	<1			
T PHOSP PO-4	MG/L	10	2.8	<0.02	.99	±2.3 9	.69	(3.7)
ALUMINUM AL	MG/L	10	1.0	<0.5	.15	±0.685	.71	-
AMMONIA NH-4	MG/L	10	.10	<0.1	.06	±0.086	.08	(1.3)
CALCIUM CA	MG/L	10	4.0	<0.1	3.0	±2.3 3	3.4	(1.2)
SODIUM NA	MG/L	10	16	8.0	11	±4.6 2	11	(1.2)
TOTL IRON FE	MG/L	10	.60	<0.1	.16	±0.449	.37	(1.5)

- INSUFFICIENT DATA

TABLE 47
PLANT STREAM WATER QUALITY, CONTD

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARTHIMETIC MEAN	ARTHIMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
UPPER 3 RUNS HY 278								
WATER VOLUME	LITERS		8.37CE+10(TOTAL)					
TEMPERATURE	DEG C	10	25	10	18	±11 9	17	(1.4)
PH	PH	10	7.3	5.1				
DISSOLVED O	MG/L	10	12	5.4	8.0	±4.6 7	7.7	(1.3)
ALKALINITY	MG/L	10	4.0	1.0	2.2	±1.6 8	2.1	(1.4)
SUSP SOLIDS	MG/L	10	18	1.0	4.9	±10 8	3.5	(2.2)
VOLTL SOLIDS	MG/L	10	38	2.0	13	±20 8	9.6	(2.3)
T DIS SOLIDS	MG/L	10	39	13	21	±15 0	19	(1.4)
TOTAL SOLIDS	MG/L	10	57	14	25	±24 7	24	(1.5)
FIXD RESIDUE	MG/L	10	19	9.0	13	±6.6 3	12	(1.3)
COD	MG/L	10	18	<5	4.5	±12 3	7.8	(1.8)
CHLORIDE CL	MG/L	10	5.8	1.3	2.8	±2.9 5	2.5	(1.6)
NITRITE N	MG/L	10	.01	<0.02	.00	±0.016	.01	-
NITRATE N	MG/L	10	.39	<0.02	.22	±0.206	.24	(1.3)
SULFATE SO-4	MG/L	10	2.0	<2	.40	±1.7 7	2.0	-
ORTHOPHOSP P	MG/L	9	<0.02	<0.02	<0.02			
TOTL PHOSP P	MG/L	9	.02	<0.02	.00	±0.028	.02	-
ALUMINUM AL	MG/L	10	<0.5	<0.5	<0.5			
AMMONIA N	MG/L	9	.04	.01	.02	±0.020	.02	(1.7)
CALCIUM CA	MG/L	10	9.0	<0.1	1.4	±5.4 1	.74	(2.8)
SODIUM NA	MG/L	10	2.2	1.0	1.7	±1.0 0	1.7	(1.4)
TOTL IRON FE	MG/L	10	.20	<0.1	.05	±0.170	.16	-
LEAD PB	MG/L	10	<0.5	<0.5	<0.5			
U3R THERMAL EFF LAB								
WATER VOLUME	LITERS		1.612E+11(TOTAL)					
TEMPERATURE	DEG C	10	24	6.0	15	±13 1	14	(1.6)
PH	PH	10	6.8	4.6				
DISSOLVED O	MG/L	10	13	4.5	7.9	±5.4 4	7.5	(1.4)
ALKALINITY	MG/L	10	6.0	3.0	4.3	±1.7 7	4.2	(1.2)
SUSP SOLIDS	MG/L	10	40	1.0	7.9	±24 6	4.2	(3.0)
VOLTL SOLIDS	MG/L	10	33	4.0	15	±16 9	13	(1.8)
T DIS SOLIDS	MG/L	10	40	20	28	±13 0	27	(1.3)
TOTAL SOLIDS	MG/L	10	54	22	32	±18 4	31	(1.3)
FIXD RESIDUE	MG/L	10	27	9.0	17	±10 9	16	(1.4)
COD	MG/L	10	42	<5	8.7	±25 4	9.4	(2.0)
CHLORIDE CL	MG/L	10	4.7	1.4	2.6	±2.2 4	2.4	(1.5)
NITRITE N	MG/L	10	.01	<0.02	.00	±0.016	.01	-
NITRATE N	MG/L	10	.18	.12	.15	±0.047	.15	(1.1)
SULFATE SO-4	MG/L	10	3.0	<2	1.1	±2.4 4	2.2	(1.2)
ORTHOPHOSP P	MG/L	9	.02	<0.02	.00	±0.013	.02	-
TOTL PHOSP P	MG/L	9	.04	<0.02	.01	±0.038	.02	(1.4)
ALUMINUM AL	MG/L	10	<0.5	<0.5	<0.5			
AMMONIA N	MG/L	9	.03	.01	.01	±0.014	.01	(1.5)
CALCIUM CA	MG/L	10	3.5	1.0	2.2	±1.6 6	2.0	(1.5)
SODIUM NA	MG/L	10	3.0	1.0	1.9	±1.5 7	1.8	(1.5)
TOTL IRON FE	MG/L	10	.40	<0.1	.11	±0.285	.21	(1.5)
LEAD PB	MG/L	10	<0.5	<0.5	<0.5			
UPPER 3 RUNS ROAD A								
WATER VOLUME	LITERS		1.960E+11(TOTAL)					
TEMPERATURE	DEG C	10	24	5.8	15	±14 2	13	(1.7)
PH	PH	10	7.6	5.2				
DISSOLVED O	MG/L	10	13	5.2	7.9	±5.2 3	7.6	(1.4)
ALKALINITY	MG/L	10	20	2.0	6.0	±10 6	5.0	(1.8)
SUSP SOLIDS	MG/L	10	28	3.0	7.8	±16 3	5.7	(2.1)
VOLTL SOLIDS	MG/L	10	49	4.0	18	±25 9	15	(1.9)
T DIS SOLIDS	MG/L	10	60	23	34	±25 3	32	(1.4)
TOTAL SOLIDS	MG/L	10	80	27	42	±39 0	39	(1.5)
FIXD RESIDUE	MG/L	10	49	13	24	±20 1	23	(1.4)
COD	MG/L	10	55	5.0	16	±40 3	10	(2.5)
CHLORIDE CL	MG/L	10	5.6	1.8	3.2	±2.5 9	3.0	(1.5)
NITRITE N	MG/L	10	.01	<0.02	.00	±0.018	.01	-
NITRATE N	MG/L	10	.18	.10	.14	±0.056	.14	(1.2)
SULFATE SO-4	MG/L	10	5.0	<2	2.2	±3.1 8	2.6	(1.5)
ORTHOPHOSP P	MG/L	9	.04	<0.02	.01	±0.039	.03	-
TOTL PHOSP P	MG/L	9	.06	<0.02	.03	±0.046	.03	(1.6)
ALUMINUM AL	MG/L	10	<0.5	<0.5	<0.5			
AMMONIA N	MG/L	9	.03	<0.1	.02	±0.029	.02	(1.4)
CALCIUM CA	MG/L	10	3.0	2.0	2.4	±1.0 6	2.3	(1.2)
SODIUM NA	MG/L	10	3.0	1.0	2.0	±1.6 1	1.8	(1.6)
TOTL IRON FE	MG/L	10	.40	<0.1	.16	±0.273	.22	(1.5)
LEAD PB	MG/L	10	<0.5	<0.5	<0.5			

- INSUFFICIENT DATA

TABLE 47
PLANT STREAM WATER QUALITY, CONTD

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARTHIMETIC MEAN	ARTHIMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
TIMS BRANCH ROAD C								
WATER VOLUME	LITERS		3.820E+09(TOTAL)					
TEMPERATURE	DEG C	10	24	4.0	15	±14 7	13	(1.9)
PH	PH	10	7.8	4.0				
DISSOLVED O	MG/L	10	14	5.0	7.9	±5.2 3	7.5	(1.4)
ALKALINITY	MG/L	10	10	4.0	6.8	±3.5 2	6.6	(1.3)
SUSP SOLIDS	MG/L	10	49	2.0	12	±28 8	7.5	(2.6)
VOLTL SOLIDS	MG/L	10	43	9.0	18	±21 5	16	(1.6)
T DIS SOLIDS	MG/L	10	48	19	29	±18 8	28	(1.3)
TOTAL SOLIDS	MG/L	10	88	24	40	±43 4	37	(1.6)
FIXD RESIDUE	MG/L	10	57	9.0	22	±27 5	20	(1.7)
COD	MG/L	10	12	<5	5.3	±10 4	8.5	(1.4)
CHLORIDE CL	MG/L	10	4.9	1.8	2.8	±2.3 0	2.7	(1.5)
NITRITE N	MG/L	10	.01	<0.02	.00	±0.016	.01	-
NITRATE N	MG/L	10	.24	.05	.15	±0.124	.13	(1.7)
SULFATE SO-4	MG/L	10	2.0	<2	.20	±1.3 5	2.0	-
ORTHOPHOSP P	MG/L	9	.03	<0.02	.01	±0.024	.02	(1.2)
TOTL PHOSP P	MG/L	9	.05	.02	.03	±0.039	.03	(1.6)
ALUMINUM AL	MG/L	10	<0.5	<0.5	<0.5			
AMMONIA N	MG/L	9	.03	.01	.02	±0.012	.02	(1.4)
CALCIUM CA	MG/L	10	4.0	.80	1.4	±2.0 4	1.2	(1.7)
SODIUM NA	MG/L	10	5.2	.60	2.8	±2.7 2	2.4	(1.8)
TOTL IRON FE	MG/L	10	.80	<0.1	.39	±0.656	.52	(1.5)
LEAD PB	MG/L	10	<0.5	<0.5	<0.5			
FOUR MILE CK RD A-7								
WATER VOLUME	LITERS		1.184E+10(TOTAL)					
TEMPERATURE	DEG C	10	26	3.4	16	±17 9	13	(2.1)
PH	PH	10	7.6	5.0				
DISSOLVED O	MG/L	10	14	5.2	7.8	±5.2 8	7.5	(1.4)
ALKALINITY	MG/L	10	15	6.0	12	±5.9 7	11	(1.3)
SUSP SOLIDS	MG/L	10	42	2.0	7.7	±24 5	4.5	(2.5)
VOLTL SOLIDS	MG/L	10	43	18	27	±15 1	26	(1.3)
T DIS SOLIDS	MG/L	10	78	44	64	±19 8	64	(1.2)
TOTAL SOLIDS	MG/L	10	86	58	72	±15 2	72	(1.1)
FIXD RESIDUE	MG/L	10	52	37	45	±9.0 9	45	(1.1)
COD	MG/L	10	11	<5	5.7	±8.6 4	7.9	(1.3)
CHLORIDE CL	MG/L	10	6.6	2.8	4.2	±2.3 4	4.0	(1.4)
NITRITE N	MG/L	10	.01	<0.02	.00	±0.016	.01	-
NITRATE N	MG/L	10	6.3	2.5	3.8	±2.1 7	3.7	(1.3)
SULFATE SO-4	MG/L	10	13	4.0	7.3	±5.1 2	6.9	(1.4)
ORTHOPHOSP P	MG/L	9	.02	<0.02	.00	±0.013	.02	-
TOTL PHOSP P	MG/L	9	.05	<0.02	.01	±0.034	.03	(1.6)
ALUMINUM AL	MG/L	10	<0.5	<0.5	<0.5			
AMMONIA N	MG/L	9	.08	.01	.03	±0.057	.03	(2.0)
CALCIUM CA	MG/L	10	6.0	.50	4.3	±3.3 7	3.7	(2.1)
SODIUM NA	MG/L	10	23	10	15	±9.1 2	15	(1.3)
TOTL IRON FE	MG/L	10	.50	<0.1	.13	±0.341	.23	(1.8)
LEAD PB	MG/L	10	<0.5	<0.5	<0.5			
STEEL CREEK ROAD A								
WATER VOLUME	LITERS		3.810E+10(TOTAL)					
TEMPERATURE	DEG C	10	28	4.4	18	±16 4	16	(1.8)
PH	PH	10	7.2	5.9				
DISSOLVED O	MG/L	10	13	4.8	7.9	±5.6 3	7.5	(1.4)
ALKALINITY	MG/L	10	24	16	21	±5.5 4	20	(1.2)
SUSP SOLIDS	MG/L	10	40	2.0	10	±22 6	7.4	(2.2)
VOLTL SOLIDS	MG/L	10	49	8.0	21	±22 1	19	(1.6)
T DIS SOLIDS	MG/L	10	68	4.5	49	±35 9	41	(2.2)
TOTAL SOLIDS	MG/L	10	110	42	64	±35 4	62	(1.3)
FIXD RESIDUE	MG/L	10	59	29	42	±17 2	42	(1.2)
COD	MG/L	10	14	5.0	10	±6.0 6	9.7	(1.4)
CHLORIDE CL	MG/L	10	7.7	3.7	5.8	±2.3 5	5.6	(1.2)
NITRITE N	MG/L	10	.01	<0.02	.00	±0.010	.01	-
NITRATE N	MG/L	10	.35	.08	.17	±0.179	.15	(1.6)
SULFATE SO-4	MG/L	10	4.0	<2	2.4	±2.4 8	2.6	(1.4)
ORTHOPHOSP P	MG/L	9	<0.02	<0.02	<0.02			
TOTL PHOSP P	MG/L	9	.05	<0.02	.02	±0.036	.02	(1.4)
ALUMINUM AL	MG/L	10	<0.5	<0.5	<0.5			
AMMONIA N	MG/L	9	.05	.01	.03	±0.032	.03	(1.9)
CALCIUM CA	MG/L	10	15	5.0	9.7	±7.1 1	9.1	(1.5)
SODIUM NA	MG/L	10	11	2.0	6.0	±5.6 7	5.3	(1.8)
TOTL IRON FE	MG/L	10	.45	<0.1	.15	±0.321	.21	(1.8)
LEAD PB	MG/L	10	<0.5	<0.5	<0.5			

- INSUFFICIENT DATA

TABLE 47
PLANT STREAM WATER QUALITY, CONTD

BEAVER DAM AT SWAMP

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARTHIMETIC MEAN	ARTHIMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
WATER VOLUME	LITERS		8.490E+10(TOTAL)					
TEMPERATURE	DEG C	10	37	16	27	±13 2	26	(1.3)
PH	PH	10	9.6	5.4				
DISSOLVED O	MG/L	10	11	4.2	7.0	±4.7 6	6.7	(1.4)
ALKALINITY	MG/L	10	22	9.0	19	±7.6 4	18	(1.3)
SUSP SOLIDS	MG/L	10	600	16	100	±360 5	48	(3.0)
VOLTL SOLIDS	MG/L	10	140	19	46	±76 8	37	(1.9)
T DIS SOLIDS	MG/L	10	180	68	88	±67 2	84	(1.3)
TOTAL SOLIDS	MG/L	10	780	89	190	±420 6	140	(1.9)
FIXD RESIDUE	MG/L	10	640	62	140	±350 2	100	(2.0)
COD	MG/L	10	270	8.0	41	±160 4	18	(2.9)
CHLORIDE CL	MG/L	10	13	5.2	8.3	±4.1 2	8.1	(1.3)
NITRITE N	MG/L	10	.04	<0.02	.02	±0.036	.02	(1.7)
NITRATE N	MG/L	10	.52	.27	.37	±0.139	.37	(1.2)
SULFATE SO-4	MG/L	10	22	6.0	9.7	±9.8 5	8.9	(1.5)
ORTHOPHOSP P	MG/L	9	.11	<0.02	.07	±0.071	.08	(1.5)
TOTL PHOSP P	MG/L	9	.40	.06	.17	±0.229	.14	(1.9)
ALUMINUM AL	MG/L	10	1.0	<0.5	.10	±0.632	1.0	-
AMMONIA N	MG/L	9	.31	.08	.19	±0.150	.17	(1.5)
CALCIUM CA	MG/L	10	9.0	.40	5.0	±6.2 5	3.7	(2.6)
SODIUM NA	MG/L	10	21	11	16	±7.5 5	15	(1.3)
TOTL IRON FE	MC/L	10	.23	<0.1	.07	±0.160	.13	(1.4)
LEAD PB	MC/L	10	<0.5	<0.5	<0.5			

SAVANNAH RIVER -3 3

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARTHIMETIC MEAN	ARTHIMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
WATER VOLUME	LITERS		5.580E+12(TOTAL)					
TEMPERATURE	DEG C	10	27	8.7	18	±14 9	17	(1.6)
PH	PH	10	7.0	5.6				
DISSOLVED O	MG/L	10	12	4.4	7.4	±5.0 5	7.1	(1.4)
ALKALINITY	MG/L	10	24	6.0	19	±11 4	17	(1.5)
SUSP SOLIDS	MG/L	10	49	2.0	14	±27 4	10	(2.5)
VOLTL SOLIDS	MG/L	10	63	12	23	±29 3	21	(1.5)
T DIS SOLIDS	MG/L	10	96	25	65	±40 5	61	(1.5)
TOTAL SOLIDS	MG/L	10	120	37	79	±44 3	76	(1.4)
FIXD RESIDUE	MG/L	10	79	19	55	±36 0	52	(1.5)
COD	MG/L	10	20	5.0	12	±8.9 7	11	(1.5)
CHLORIDE CL	MG/L	10	12	1.5	7.4	±5.5 4	6.7	(1.8)
NITRITE N	MG/L	10	.05	<0.02	.02	±0.032	.02	(1.7)
NITRATE N	MG/L	10	1.0	.27	.41	±0.437	.38	(1.5)
SULFATE SO-4	MG/L	10	11	2.0	5.5	±5.2 5	5.0	(1.6)
ORTHOPHOSP P	MG/L	9	.13	<0.02	.08	±0.098	.09	(1.6)
TOTL PHOSP P	MG/L	9	.10	.02	.11	±0.090	.10	(1.9)
ALUMINUM AL	MG/L	10	1.0	<0.5	.10	±0.632	1.0	-
AMMONIA N	MG/L	9	.36	.07	.21	±0.198	.19	(1.7)
CALCIUM CA	MG/L	10	9.0	3.0	5.5	±4.6 1	5.0	(1.6)
SODIUM NA	MG/L	10	23	9.0	15	±8.4 3	14	(1.3)
TOTL IRON FE	MG/L	10	3.0	.30	.97	±1.5 3	.79	(1.9)
LEAD PB	MG/L	10	.67	<0.5	.07	±0.424	.67	-

L3R BELOW PAR POND

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARTHIMETIC MEAN	ARTHIMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
WATER VOLUME	LITERS		1.931E+10(TOTAL)					
TEMPERATURE	DEG C	10	23	15	19	±6.1 0	19	(1.2)
PH	PH	10	7.8	5.7				
DISSOLVED O	MG/L	10	7.0	3.0	4.2	±2.3 0	4.1	(1.3)
ALKALINITY	MG/L	10	38	15	30	±16 2	29	(1.4)
SUSP SOLIDS	MG/L	10	44	<1	16	±23 7	16	(1.6)
VOLTL SOLIDS	MG/L	10	61	10	23	±29 2	20	(1.6)
T DIS SOLIDS	MG/L	10	86	18	52	±35 7	48	(1.5)
TOTAL SOLIDS	MG/L	10	110	32	68	±48 6	64	(1.4)
FIXD RESIDUE	MG/L	10	77	22	45	±33 6	42	(1.5)
COD	MG/L	10	58	<5	12	±34 7	10	(2.2)
CHLORIDE CL	MG/L	10	8.5	5.0	6.6	±2.1 4	6.5	(1.2)
NITRITE N	MG/L	10	.01	<0.02	.00	±0.016	.01	-
NITRATE N	MG/L	10	1.0	.01	.15	±0.601	.06	(3.7)
SULFATE SO-4	MG/L	10	5.0	<2	1.0	±3.5 8	3.1	-
ORTHOPHOSP P	MG/L	9	.07	<0.02	.02	±0.052	.04	(1.6)
TOTL PHOSP P	MG/L	9	.10	<0.02	.05	±0.074	.05	(1.8)
ALUMINUM AL	MG/L	10	<0.5	<0.5	<0.5			
AMMONIA N	MG/L	9	1.0	.01	.62	±0.769	.32	(6.0)
CALCIUM CA	MG/L	10	12	.70	5.2	±6.9 0	4.1	(2.3)
SODIUM NA	MG/L	10	13	<0.1	7.2	±8.0 9	7.3	(1.6)
TOTL IRON FE	MG/L	10	12	<0.1	2.1	±8.7 7	2.7	-
LEAD PB	MG/L	10	<0.5	<0.5	<0.5			

- INSUFFICIENT DATA

TABLE 48
FECAL COLIFORM BACTERIA IN
SAVANNAH RIVER AND PLANT STREAMS, count/100 ml

	No. of Samples	Weekly		Monthly Geometric Mean[a]	
		Max	Min	Max	Min
River 2, above plant	49	1,100	0	310	19
River 10, below plant	49	700	0	130	9
Upper Three Runs Creet at Road F	48	800	0	210	8
Upper Three Runs Creek at Road A	48	1,400	0	190	8
Beaver Dam Creek near swamp	47	1,240	0	520	14
Four Mile Creek at Road A	48	1,700	0	520	9
Pen Branch at Road A	47	1,000	0	90	0
Steel Creek at Road A	47	1,480	6	340	26
Lower Three Runs Creek at Road A	47	1,520	0	350	38
Lower Three Runs Creek at Tabernacle Church Road	49	1,000	0	330	19

[a]Maximum monthly geometric mean of weekly values.

TABLE 49

MERCURY IN FISH FLESH, 1981

Location	Species	Number of Samples	μg of Hg/g of Flesh Maximum	Average
River				
Clark Hill	Bass	1	0.06	0.06
	Bream	1	0.09	0.09
	Crappie	1	0.32	0.32
Average				0.16
Above plant (River 2)	Bream	5	0.07	0.03
	Catfish	10	0.07	0.04
	Crappie	1	0.17	0.17
	Eel	1	0.19	0.19
	Jack	2	0.32	0.20
	Mud	1	0.24	0.24
	Sucker	1	0.97	0.97
Average				0.12
Adjacent to plant (River 8)	Bass	1	0.32	0.32
	Bream	6	0.45	0.16
	Catfish	6	0.12	0.05
	Carp	1	0.50	0.50
	Sucker	1	0.97	0.97
Average				0.20
Below SRP (River 10)	Bream	7	0.19	0.12
	Catfish	3	0.16	0.10
	Crappie	3	0.27	0.23
	Jack	1	0.49	0.49
	Mud	2	3.45	1.92
	Sucker	2	1.07	0.55
Average				0.40
FISH FROM GEORGIA DEPARTMENT OF NATURAL RESOURCES				
Between SRP and Savannah (obtained from Georgia Department of Natural Resources)	Bass	5	0.23	0.09
	Bream	4	0.20	0.07
	Catfish	6	0.08	0.05
	Carp	1	0.20	0.20
	Crappie	3	0.03	0.03
	Mud	1	0.19	0.19
	Eel	4	0.12	0.09
	Mullet	5	0.01	<0.01
	Sucker	1	0.70	0.70
Average				0.09
Onsite				
Par Pond	Bream	1	2.38	2.38
	Catfish	1	0.17	0.17
	Crappie	2	0.77	0.64
Pond B	Bream	4	1.07	0.70
	Catfish	1	0.12	0.12
Steel Creek	Bream	5	0.67	0.33
	Catfish	4	0.77	0.34
	Sucker	2	0.93	0.66
Average				0.55

TABLE 50

AVERAGE CONCENTRATIONS OF MERCURY IN FISH, μg/g

	River Above SRP			River Below SRP			All On Plant Sources		
	Bass	Bream	Catfish	Bass	Bream	Catfish	Bass	Bream	Catfish
1971	0.3	0.3	0.3	a	0.4	0.4	1.2	0.7	0.5
1972	1.4	0.4	0.6	a	0.4	0.7	1.4	0.7	0.6
1973	1.1	0.6	0.3	2.8	0.4	0.4	2.5	0.5	0.7
1974	0.8	0.3	0.2	1.1	0.4	0.5	1.6	0.7	0.7
1975	0.2	0.1	0.2	0.4	0.2	0.3	0.8	0.4	0.7
1976	0.2	0.2	0.2	0.4	0.4	0.4	2.8	0.4	0.2
1977	a	0.6	1.5	0.5	0.4	0.6	1.0	0.4	0.4
1978	0.4	0.3	a	a	a	0.2	0.3	0.3	a
1979	0.2	0.2	0.2	a	a	0.2	0.6	0.3	0.4
1980	0.2	0.2	0.3	0.2	0.2	0.3	0.6	0.3	0.3
1981	a	<0.1	<0.1	a	0.1	0.1	a	0.7	0.3

[a]No analysis.

TABLE 51

PESTICIDES, HERBICIDES AND PCB's ANALYSES AND DETECTION LIMITS

Pesticides	Water, μg/l	Sediment, μg/kg[a]
γ-BHC (Lindane)	0.004	0.20
Heptachlor	0.004	0.21
Aldrin	0.004	0.18
Heptachlor Epoxide	0.003	0.16
Endosulfan I	0.005	0.23
Endosulfan II[b]	0.05	0.23
p, p'-DDE	0.005	0.26
Perthane	0.006	0.32
p, p'-DDD	0.007	0.33
p, p'-DDT	0.019	0.96
Ethyl trithion	0.002	0.11
Mirex	0.003	0.14
Methoxychlor	0.016	0.80
Chlordane	0.005	0.25
PCB 1016	0.040	2.0
PCB 1221	0.10	5.0
PCB 1232	0.10	5.0
PCB 1242	0.050	2.5
PCB 1248	0.078	3.9
PCB 1254	0.067	3.4
PCB 1260	0.076	3.8
PCN 1031	0.077	3.84
PCN 1000	0.12	5.81
PCN 1001	0.070	3.52
PCN 1099	0.068	3.41
PCN 1013	0.070	3.50
PCN 1014	0.058	2.92
PCN 1051	0.036	1.81
Ethion	0.002	0.09
Diazinon	0.11	0.54
Methyl parathion	0.23	1.1
Malathion	0.16	0.79
Ethyl parathion	0.01	0.06
Dieldrin	0.04	0.20
Endrin	0.07	0.34
2, 4-D	1.89	110[a]
Silvex	0.62	36[a]
2, 4, 5-T	0.66	36[a]
2, 4-DB	2.9	160[a]

[a]Sediment detection levels for herbicides are reported in terms of dry weight. To determine herbicide detection levels for individuals samples, divide the values above by the percent solids (as a decimal).

[b]This analysis was added in 1981. Methyl trithion was deleted from the list.

TABLE 52

PERTICIDES, HERBICIDES, AND PCB's IN RIVER AND STREAM WATER[a]

	Concentration, μg/l	
	γ - BHC	Heptachlor
River 2 (above plant)	<0.004[a]	<0.003
River 10 at Highway 301 (below plant)	0.004	<0.003
Upper Three Runs (control)	0.004	<0.003
Upper Three Runs at Road A	<0.004	<0.003
Four Mile Creek at Road A	<0.004	<0.003
Pen Branch at Road A	0.006	<0.003
Steel Creek at Road A	<0.004	0.011
Par Pond pumphouse	0.005	<0.003
Lower Three Runs at Road A	0.012	<0.003
Blank	0.005	<0.003

[a]Parameters not listed were less than the detection limit.

TABLE 53

PESTICIDES, HERBICIDES, AND PCB's IN RIVER AND STREAM SEDIMENTS, µg/kg[a]

River 2 (Above Plant)	1976	1977	1978	1979	1980	1981
DDD	4.6	1.9	-	-	0.2	<0.33
DDE	2.2	0.5	0.5	0.2	<0.1	<0.26
DDT	-	3.5	-	1.3	<0.1	<0.96
Dieldrin	-	2.0	0.1	-	<0.1	<0.20
PCB	-	8.0	-	15.0	<1.0	-
Chlordane	-	-	-	-	<1.0	<0.25
Endrin	-	-	-	-	<0.1	<0.34
Endosulfan	-	-	-	-	-	<0.23
Diazinon	-	-	-	-	-	<0.54
γ-BHC	b	b	b	b	b	<0.20

River 10 at Highway 301 (Below Plant)	1976	1977	1978	1979	1980	1981
DDD	2.1	-	-	-	0.6	<0.33
DDE	2.3	-	-	0.5	<0.1	<0.26
DDT	0.6	-	0.2	0.8	0.4	<0.96
Dieldrin	-	-	0.2	-	<0.1	<0.20
PCB	-	-	-	-	3.0	-
Chlordane	-	-	1.0	-	1.0	<0.25
Endrin	-	-	-	-	0.1	<0.34
Endosulfan	-	-	-	-	-	<0.23
Diazinon	-	-	-	-	-	<0.54
γ-BHC	b	b	b	b	b	0.22

Upper Three Runs (Control)	1976	1977	1978	1979	1980	1981
DDD	-	-	74.0	12.0	1.7	<0.33
DDE	-	-	74.0	5.3	1.5	<0.26
DDT	15.0	-	49.0	1.1	0.8	<0.96
Dieldrin	-	-	-	-	-	<0.20
PCB	-	-	-	13.0	-	-
Chlordane	1,400.0	-	-	4.0	-	<0.25
Endrin	-	-	-	-	-	<0.34
Endosulfan	-	-	-	-	-	<0.23
Diazinon	-	-	-	-	-	17.0
γ-BHC	b	b	b	b	b	<0.20

Upper Three Runs at Road A	1976	1977	1978	1979	1980	1981
DDD	-	-	2.5	0.2	0.4	<0.33
DDE	-	-	2.3	-	0.5	<0.26
DDT	-	-	15.0	-	0.2	<0.96
Dieldrin	-	-	-	-	-	<0.02
PCB	-	-	-	-	-	-
Chlordane	-	-	-	-	-	<0.25
Endrin	-	-	-	-	-	<0.34
Endosulfan	-	-	-	-	-	<0.23
Diazinon	-	-	-	-	-	<0.54
γ-BHC	b	b	b	b	b	<0.20

Four Mile Creek at Road A	1976	1977	1978	1979	1980	1981
DDD	-	-	-	0.2	-	<0.33
DDE	3.6	-	-	0.3	0.6	<0.26
DDT	-	-	-	-	-	<0.96
Dieldrin	-	-	-	-	0.2	<0.20
PCB	14.0	-	-	5.0	6.0	-
Chlordane	-	-	-	-	-	<0.25
Endrin	-	-	-	-	-	<0.34
Endosulfan	-	-	-	0.2	-	<0.23
Diazinon	-	-	-	-	-	<0.54
γ-BHC	b	b	b	b	b	<0.22

Pen Branch at Road A	1976	1977	1978	1979	1980	1981
DDD	1.9	2.8	-	0.1	0.2	<0.33
DDE	2.6	0.4	-	0.5	1.2	1.52
DDT	-	-	-	-	-	<0.96
Dieldrin	7.5	2.6	-	0.2	0.9	<0.20
PCB	15.0	-	-	9.0	21	-
Chlordane	10.0	1.0	-	1.0	1.0	<0.25
Endrin	-	-	-	-	-	<0.34
Endosulfan	-	-	-	-	-	<0.23
Diazinon	-	-	-	-	-	<0.54
γ-BHC	b	b	b	b	b	<0.33

Steel Creek at Road A	1976	1977	1978	1979	1980	1981
DDD	-	-	-	-	-	<0.33
DDE	-	-	-	-	-	<0.26
DDT	-	-	-	-	-	<0.96
Dieldrin	-	-	-	-	-	<0.20
PCB	-	-	-	1.0	-	-
Chlordane	-	-	-	-	-	<0.25
Endrin	-	-	-	-	-	<0.34
Endosulfan	-	-	-	-	-	<0.23
Diazinon	-	-	-	-	-	<0.54
γ-BHC	b	b	b	b	b	<0.20

Par Pond Pumphouse	1976	1977	1978	1979	1980	1981
DDD	-	-	0.1	-	-	<0.33
DDE	-	-	-	-	-	<0.27
DDT	-	-	-	-	-	<0.96
Dieldrin	-	-	-	-	-	<0.20
PCB	-	-	-	1.0	-	-
Chlordane	-	-	-	-	-	<0.25
Endrin	-	-	-	-	-	<0.34
Endosulfan	-	-	-	-	-	<0.23
Diazinon	-	-	-	-	-	<0.54
γ-BHC	b	b	b	b	b	<0.20

Lower Three Runs at Road A	1976	1977	1978	1979	1980	1981
DDD	-	-	0.2	22.0	43	<0.33
DDE	4.9	-	0.3	34.0	16	18.4
DDT	2.7	-	-	13.0	32	<0.96
Dieldrin	0.3	-	-	-	1.8	<0.20
PCB	-	-	-	7.0	10	-
Chlordane	-	-	-	-	46	<0.25
Endrin	0.6	-	-	-	0.8	<0.34
Endosulfan	-	-	-	-	-	<0.23
Diazinon	-	-	-	-	-	<0.54
γ-BHC	b	b	b	b	b	<0.20

[a] Parameters not listed were less than the detection limit.
[b] Not analyzed.
- Not detected.

TABLE 54

PESTICIDES, HERBICIDES, AND PCB's IN[a] CHEMICAL, METAL, AND PESTICIDE WELL WATER

CMP Well Number	γ-BHC	Aldrin	Chlordane
1	0.006	<0.004	<0.005
2	<0.004	<0.004	<0.005
3	0.28	0.011	<0.005
4	<0.004	<0.004	<0.005
5	<0.004	<0.004	<0.005
6	<0.004	<0.004	11.1
7	<0.004	<0.004	<0.005

[a]Parameters not listed were less than the detection limit.

TABLE 55

SANITARY LANDFILL WELL QUARTERLY ANALYSES

FIRST QUARTER 1981

Analysis WELL	1	2	3	4	5	6	7	8	9	10
Alkalinity (mg/l $CaCO_3$)	4	106	17	16	9	30	48	30	37	40
Chloride (mg/l Cl^-)	6.2	24.9	2.0	3.5	2.6	2.1	2.5	5.6	3.5	3.1
Nitrate (mg/l Total NO_3/NO_2)	2.81	0.04	0.22	0.09	0.34	0.34	0.12	0.08	0.14	0.09
pH (field only)	5.2	6.8	7.3	7.2	7.4	7.0	7.0	6.6	6.8	6.8
Specific conductance (μmhos/cm)	53	264	32	37	27	96	179	217	193	251
Temperature (°C in field)	-	16	18	17	17	15	16	15	17	-
Total dissolved solids (mg/l)	69	93	25	28	30	71	124	149	139	93
Total Organic carbon (mg/l)	9.8	5.6	7.7	3.5	3.7	a	a	a	a	a
Water surface elevation (ft above mean sea level)	147.7	158.6	155.8	145.2	147.2	17.0[b]	18.5[b]	19.9[b]	25.2[b]	23.0[b]

[a] Analyses not available this quarter.

[b] Elevations shown as depth (ft) below the top of well casing.

SECOND QUARTER 1981

Analysis WELL	1	2	3	4	5	6	7	8	9	10
Alkalinity (mg/l $CaCO_3$)	4	116	21	17	10	8	18	5	4	43
Chloride (mg/l Cl^-)	5.8	30.6	2.7	2.9	3.8	4.9	15.6	6.8	2.0	2.0
Nitrate (mg/l Total (NO_3/NO_2)	2.62	0.02	0.08	0.10	0.09	0.19	0.07	0.42	0.62	0.09
pH (field only)	6.4	7.2	6.6	6.6	6.8	5.9	6.2	6.3	6.0	7.0
Specific conductance (μmhos/cm)	47	297	41	37	28	38	94	36	19	130
Temperature (°C in lab)	21	21	21	21	21	21	21	21	21	21
Total dissolved solids (mg/l)	50	139	28	26	29	33	65	34	28	91
Total organic carbon (mg/l)	17.7	21.1	10.8	17.3	8.4	23.9	15.2	9.1	10.0	19.0
Water surface elevation (ft above mean sea level)	155.2	155.7	154.6	156.1	159.7	154.8	152.7	150.7	150.2	152.0

TABLE 55
SANITARY LANDFILL WELL QUARTERLY ANALYSES, CONTD

THIRD QUARTER 1981

Analysis / WELL	1	2	3	4	5	6	7	8	9	10
Alkalinity (mg/l $CaCO_3$	3	120	14	16	6	4	6	5	3	9
Chloride (mg/l Cl^-)	5.6	17.3	1.9	2.2	2.6	1.9	3.0	4.9	2.0	1.4
Nitrate (mg/l Total (NO_2/NO_2)	2.9	0.05	0.06	0.04	0.14	0.07	0.07	0.14	0.55	0.20
pH (Lab only)	6.5	7.3	6.6	6.8	6.8	6.0	6.6	6.7	6.0	7.2
Specific conductance (μ mhos/cm)	47	231	26	30	17	13	17	24	12	20
Temperature (°C in field)	24.5	27.9	27.0	26.4	23.7	19.5	19.5	20.2	19.5	18.8
Total dissolved solids (mg/l)	76	169	31	45	30	22	24	34	24	43
Total organic carbon (mg/l)	5.8	10.4	2.0	1.9	2.0	3.8	2.0	9.3	3.6	1.2
Water surface elevation (ft above mean sea level)	155.2	154.4	154.6	155.7	158.9	153.6	151.8	149.9	149.4	151.6

FOURTH QUARTER 1981

Analysis / WELL	16	17	18	19	20	6	7	8	9	10
Alkalinity (mg/l $CaCO_3$)	11	9	4	4	11	3	7	8	4	4
Chloride (mg/l Cl^-)	6.5	7.9	6.1	1.6	1.3	5.0	8.9	8.6	2.5	2.3
Nitrate (mg/l Total (NO_3/NO_2)	.51	.08	.17	.70	.34	2.1	1.9	.19	.52	.14
pH (Lab only)	6.2	6.0	5.8	6.1	6.4	5.8	5.6	6.5	6.4	5.8
Specific conductance (μ mhos/cm)	48	42	28	15	26	38	56	45	18	13
Temperature (°C in field)	19.5	19.5	20.2	19.5	18.8	20.0	19.5	19.8	18.0	19.6
Total dissolved solids (mg/l)	46	44	33	25	43	50	58	38	25	21
*Total organic carbon (mg/l)	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
**Water surface elevation (ft above mean sea level)	153.6	151.8	149.9	149.4	151.6	24.4	24.2	21.1	21.4	22.5

*Acid contamination suspected.
**Wells 16 through 20 are depth measurements.

Analysis / Well	6	7	8	9	10	(1) 16	(2) 17	(3) 18	(4) 19	(5) 20
Cadmium (mg/l)[a]	<.0005	<.0005	<.0005	<.0005	<.0005	.001	.002	.002	.0005	.001
Chromium (mg/l)[a]	<.0005	<.0005	<.0005	<.0005	.018	<.005	<.005	<.005	<.005	<.005
Lead (mg/l)[a]	.005	.008	<.005	<.005	.012	.005	.009	.005	.011	.024
Mercury (mg/l)[a]	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002
Arsenic (mg/l)	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005
Barium (mg/l)	.02	.03	.02	.02	.04	.03	.06	.01	.01	.04
Selenium (mg/l)	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
Silver (mg/l)	<.001	<.001	<.001	<.001	<.001	.001	<.001	<.001	<.001	<.001
Fluoride (mg/l)	<0.1	0.15	0.48	0.45	0.38	.075	.088	.075	.265	.050
PCB's (μg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<.1	<.1	<.1	<.1	<.1
Endrin (μg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<.01	<.01	<.01	<.01	<.01
Lindane (μg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<.01	<.01	<.01	<.01	<.01
Methozychlor (μg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<.01	<.01	<.01	<.01	<.01
Toxaphene (μg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<.2	<.2	<.2	<.2	<.2
2-4-D (μg/l)	<1.0	2.03	1.15	<1.0	<1.0	.29	1.62	.31	.38	.82
2,4,5-TP Silvex (μg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	.19	.36	.13	.17	.13

[a] From wells 16 through 20 samples; all other analyses for wells 1 through 5.

TABLE 56
DOMESTIC WASTE PERMIT
87A ANALYSIS REQUIREMENTS

Quarterly Requirements	40 CFR Part 257 Standard[a]	Annual Requirements	40 CFR Part 257 Standard
Total Dissolved Solids	500 mg/l	Cadmium	0.010 mg/l
pH	b	Chromium	0.05 mg/l
Chloride	250 mg/l	Lead	0.05 mg/l
Temperature		Mercury	0.002 mg/l
Total Organic Carbon	b	Arsenic	0.05 mg/l
Alkalinity	b	Barium	1.0 mg/l
Nitrate	10 mg/l	Selenium	0.01 mg/l
Specific Conductivity	b	Silver	0.05 mg/l[c]
Water level of each well		Fluoride	1.6 mg/l[c]
		PCB's	-
		Endrin	0.2μg/l
		Lindane	4 μg/l
		Methoxychlor	100 μ/l
		Toxaphene	5 μg/l
		2-4-D	100 μg/l
		2,4,5-TP Silvex	10 μg/l

[a]Proposed secondary drinking water standards.
[b]Drinking water standards do not exist for these parameters.
[c]Based on a temperture range of 21.5° to 26.2°C.

TABLE 57
GROUNDWATER MONITORING LOCATIONS AND WASTE PARAMETERS

Facility	No. of Wells	Waste Parameters
M-Area Seepage Basin	8	pH Specific Conductivity Total Dissolved Solids Color Silver Arsenic Barium Beryllium Cadmium Chromium Copper Iron Mercury Manganese Nickel Lead Sellenium Chloride Zinc Nitrate Sulfate Alpha Radioactivity Nonvolatile Beta Activity
H-Area Seepage Basin	7[a]	
F-Area Seepage Basin	4[a]	
709-G Waste Facility (Central Shops)	1	
788-3A CSRCB	4	
189-P CSRCB	4	
189-K CSRCB	4[a]	
189-C CSRCB	3[a]	
289-H CSRCB	4[a]	
489-D CSRCB	5	
904-76G (Old TNX Basin)	4	
904-102G (New TNX Basin)	4	
Chemical - Metal - Pesticide (CMP Wells)	7	

[a]Well installations incomplete; sampling for the above waste parameters to begin in 1982.

TABLE 58

WATER QUALITY IN GROUNDWATER

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARTHIMETIC MEAN	ARTHIMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
M SEEP BASIN WELL 1								
PH	PH	2	9.8	6.5				
SPEC COND	UMH/CM	2	390	380	390	-	390	-
TOT D SOLIDS	MG/L	2	210	210	210	-	210	-
COLOR	P-CO U	2	7.5	3.0	5.3	-	4.7	-
CHLORIDE	MG/L	2	5.2	5.0	5.1	-	5.1	-
NITRATE	MG/L	2	.31	.12	.22	-	.19	-
SULFATE	MG/L	2	69	43	56	-	54	-
COPPER	MG/L	2	.04	.03	.04	-	.04	-
MANGANESE	MG/L	2	.02	<0.005	.01	-	.02	-
MERCURY	UG/L	2	.40	<0.01	.20	-	.40	-
IRON	MG/L	2	.40	.30	.35	-	.35	-
LEAD	MG/L	2	1.2	.88	1.0	-	1.0	-
SILVER	MG/L	2	<1	<1	<1			
ARSENIC	MG/L	2	<0.1	<0.1	<0.1			
BARIUM	MG/L	2	.02	.01	.02	-	.02	-
BERYLLIUM	MG/L	2	<1	<1	<1			
CADMIUM	MG/L	2	.02	.01	.01	-	.01	-
CHROMIUM	MG/L	2	<1	<1	<1			
NICKEL	MG/L	2	.01	.00	.01	-	.01	-
SELENIUM	MG/L	2	<1	<1	<1			
ZINC	MG/L	2	98	54	.76	-	73	-
M SEEP BASIN WELL 2								
PH	PH	2	7.7	7.2				
SPEC COND	UMH/CM	2	680	610	640	-	640	-
TOT D SOLIDS	MG/L	2	450	430	440	-	440	-
COLOR	P-CO U	2	6.5	5.0	5.8	-	5.7	-
CHLORIDE	MG/L	2	5.6	3.2	4.4	-	4.2	-
NITRATE	MG/L	2	1.6	.08	.83	-	.36	-
SULFATE	MG/L	2	62	51	57	-	56	-
COPPER	MG/L	2	.04	.02	.03	-	.03	-
MANGANESE	MG/L	2	1.0	.82	.91	-	.91	-
MERCURY	UG/L	2	1.4	.10	.75	-	.37	-
IRON	MG/L	2	7.5	4.7	6.1	-	5.9	-
LEAD	MG/L	2	.18	.05	.11	-	.09	-
SILVER	MG/L	2	<1	<1	<1			
ARSENIC	MG/L	2	.01	<0.1	.01	-	.01	-
BARIUM	MG/L	2	.17	.14	.16	-	.15	-
BERYLLIUM	MG/L	2	.00	<1	.00	-	.00	-
CADMIUM	MG/L	2	.04	.02	.03	-	.03	-
CHROMIUM	MG/L	2	.04	.02	.03	-	.03	-
NICKEL	MG/L	2	.02	.01	.02	-	.01	-
SELENIUM	MG/L	2	<1	<1	<1			
ZINC	MG/L	2	3.8	1.8	2.8	-	2.6	-
M SEEP BASIN WELL 3								
PH	PH	2	8.2	6.9				
SPEC COND	UMH/CM	2	1200	1200	1200	-	1200	-
TOT D SOLIDS	MG/L	2	980	810	890	-	890	-
COLOR	P-CO U	2	28	25	26	-	26	-
CHLORIDE	MG/L	2	8.7	8.0	8.3	-	8.3	-
NITRATE	MG/L	2	130	98	110	-	110	-
SULFATE	MG/L	2	40	15	28	-	25	-
COPPER	MG/L	2	.12	.05	.08	-	.07	-
MANGANESE	MG/L	2	3.0	2.7	2.8	-	2.8	-
MERCURY	UG/L	2	.20	<0.01	.10	-	.20	-
IRON	MG/L	2	26	6.7	16	-	13	-
LEAD	MG/L	2	1.1	.65	.88	-	.85	-
SILVER	MG/L	2	<1	<1	<1			
ARSENIC	MG/L	2	.01	.01	.01	-	.01	-
BARIUM	MG/L	2	.93	.88	.91	-	.91	-
BERYLLIUM	MG/L	2	.01	.00	.01	-	.01	-
CADMIUM	MG/L	2	.18	.12	.15	-	.14	-
CHROMIUM	MG/L	2	.17	.06	.12	-	.10	-
NICKEL	MG/L	2	.17	.10	.13	-	.13	-
SELENIUM	MG/L	2	<1	<1	<1			
ZINC	MG/L	2	42	22	32	-	30	-
M SEEP BASIN WELL 4								
PH	PH	2	8.2	6.5				
SPEC COND	UMH/CM	2	260	240	250	-	250	-
TOT D SOLIDS	MG/L	2	180	180	180	-	180	-
COLOR	P-CO U	2	7.5	2.0	4.8	-	3.9	-
CHLORIDE	MG/L	2	4.7	4.2	4.4	-	4.4	-
NITRATE	MG/L	2	7.6	7.6	7.6	-	7.6	-
SULFATE	MG/L	2	27	12	20	-	18	-
COPPER	MG/L	2	.04	.04	.04	-	.04	-
MANGANESE	MG/L	2	1.0	.52	.76	-	.72	-
MERCURY	UG/L	2	1.7	<0.01	.85	-	1.7	-
IRON	MG/L	2	17	8.4	13	-	12	-
LEAD	MG/L	2	1.6	.32	.97	-	.72	-
SILVER	MG/L	2	<1	<1	<1			
ARSENIC	MG/L	2	.01	<0.1	.01	-	.01	-
BARIUM	MG/L	2	.22	21	.22	-	.22	-
BERYLLIUM	MG/L	2	.00	<1	<1	-	.00	-
CADMIUM	MG/L	2	.07	.05	.06	-	.06	-
CHROMIUM	MG/L	2	.04	.03	.04	-	.04	-
NICKEL	MG/L	2	.03	.03	.03	-	.03	-
SELENIUM	MG/L	2	<1	<1	<1			
ZINC	MG/L	2	23	20	21	-	21	-

- INSUFFICIENT DATA

TABLE 58
WATER QUALITY IN GROUNDWATER, CONTD

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARTHIMETIC MEAN	ARTHIMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
M SEEP BASIN WELL 5								
PH	PH	5	7.8	5.9				
SPEC COND	UMH/CM	5	450	<1	90	-	450	-
TOT D SOLIDS	MG/L	5	420	<1	84	-	420	-
COLOR	P-CO U	5	41	<1	8.2	-	41	-
CHLORIDE	MG/L	5	4.6	<0.1	.92	-	4.6	-
NITRATE	MG/L	5	3.4	<0.02	.68	-	3.4	-
SULFATE	MG/L	5	22	<2	4.3	-	22	-
COPPER	MG/L	5	.03	<1	.01	-	.03	-
MANGANESE	MG/L	5	2.3	<0.005	.45	-	2.3	-
MERCURY	UG/L	5	.10	<0.01	.02	-	.10	-
IRON	MG/L	5	27	<0.1	5.3	-	27	-
LEAD	MG/L	5	.65	<0.5	.13	-	.65	-
SILVER	MG/L	5	<1	<1	<1			
ARSENIC	MG/L	5	.03	<0.1	.01	-	.03	-
BARIUM	MG/L	5	.56	<1	.11	-	.56	-
BERYLLIUM	MG/L	5	.00	<1	.00	-	.00	-
CADIUM	MG/L	5	.01	<1	.00	-	.01	-
CHROMIUM	MG/L	5	.04	<1	.01	-	.04	-
NICKEL	MG/L	5	.05	<1	.01	-	.05	-
SELENIUM	MG/L	5	<1	<1	<1			
ZINC	MG/L	5	33	<1	6.5	-	33	-
M SEEP BASIN WELL 6								
PH	PH	1	7.0	7.0				
SPEC COND	UMH/CM	5	380	<1	75	-	380	-
TOT D SOLIDS	MG/L	5	260	<1	51	-	260	-
COLOR	P-CO U	1	10	10	10	-	10	-
CHLORIDE	MG/L	5	4.7	<0.1	.93	-	4.7	-
NITRATE	MG/L	5	.46	<0.02	.09	-	.46	-
SULFATE	MG/L	5	33	<2	6.5	-	33	-
COPPER	MG/L	5	.07	<1	.01	-	.07	-
MANGANESE	MG/L	5	5.5	<0.005	1.1	-	5.5	-
MERCURY	UG/L	5	.15	<0.01	.03	-	.15	-
IRON	MG/L	5	34	<0.1	6.7	-	34	-
LEAD	MG/L	5	1.4	<0.5	.28	-	1.4	-
SILVER	MG/L	5	<1	<1	<1			
ARSENIC	MG/L	5	.03	<0.1	.01	-	.03	-
BARIUM	MG/L	5	1.2	<1	.24	-	1.2	-
BERYLLIUM	MG/L	5	.01	<1	.00	-	.01	-
CADMIUM	MG/L	5	.03	<1	.01	-	.03	-
CHROMIUM	MG/L	5	.03	<1	.01	-	.03	-
NICKEL	MG/L	5	.25	<1	.05	-	.25	-
SELENIUM	MG/L	5	<1	<1	<1			
ZINC	MG/L	5	180	<1	35	-	180	-
M SEEP BASIN WELL 7								
PH	PH	1	6.9	6.9				
SPEC COND	UMH/CM	5	240	<1	48	-	240	-
TOT D SOLIDS	MG/L	5	180	<1	36	-	180	-
COLOR	P-CO U	1	15	15	15	-	15	-
CHLORIDE	MG/L	5	3.2	<0.1	.64	-	3.2	-
NITRATE	MG/L	5	.33	<0.02	.07	-	.33	-
SULFATE	MG/L	5	12	<2	2.3	-	12	-
COPPER	MG/L	5	.01	<1	.00	-	.01	-
MANGANESE	MG/L	5	.75	<0.005	.15	-	.75	-
MERCURY	UG/L	5	<0.01	<0.01	<0.01			
IRON	MG/L	5	6.0	<0.1	1.2	-	6.0	-
LEAD	MG/L	5	.04	<0.5	.01	-	.04	-
SILVER	MG/L	5	<1	<1	<1			
ARSENIC	MG/L	5	.01	<0.1	.00	-	.01	-
BARIUM	MG/L	5	.11	<1	.02	-	.11	-
BERYLLIUM	MG/L	5	.00	<1	<1	-	.00	-
CADMIUM	MG/L	5	.01	<1	.00	-	.01	-
CHROMIUM	MG/L	5	.01	<1	.00	-	.01	-
NICKEL	MG/L	5	.45	<1	.09	-	.45	-
SELENIUM	MG/L	5	<1	<1	<1			
ZINC	MG/L	5	6.0	<1	1.2	-	6.0	-
M SEEP BASIN WELL 8								
PH	PH	1	8.2	8.2				
SPEC COND	UMH/CM	5	370	<1	75	-	370	-
TOT D SOLIDS	MG/L	5	270	<1	53	-	270	-
COLOR	P-CO U	1	23	23	23	-	23	-
CHLORIDE	MG/L	5	5.0	<0.1	1.0	-	5.0	-
NITRATE	MG/L	5	.40	<0.02	.08	-	.40	-
SULFATE	MG/L	5	26	<2	5.2	-	26	-
COPPER	MG/L	5	.02	<1	.00	-	.02	-
MANGANESE	MG/L	5	.65	<0.005	.13	-	.65	-
MERCURY	UG/L	5	<0.01	<0.01	<0.01			
IRON	MG/L	5	18	<0.1	3.6	-	18	-
LEAD	MG/L	5	.17	<0.5	.03	-	.17	-
SILVER	MG/L	5	<1	<1	<1			
ARSENIC	MG/L	5	.02	<0.1	.00	-	.02	-
BARIUM	MG/L	5	.12	<1	.02	-	.12	-
BERYLLIUM	MG/L	5	.00	<1	<1	-	.00	-
CADMIUM	MG/L	5	.01	<1	.00	-	.01	-
CHROMIUM	MG/L	5	.04	<1	.01	-	.04	-
NICKEL	MG/L	5	.49	<1	.10	-	.49	-
SELENIUM	MG/L	5	<1	<1	<1			
ZINC	MG/L	5	4.5	<1	.90	-	4.5	-

\- INSUFFICIENT DATA

TABLE 58

WATER QUALITY IN GROUNDWATER, CONTD

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARTHIMETIC MEAN	ARTHIMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
788-3A CSRCB 1								
PH	PH	4	6.4	5.6				
SPEC COND	UMH/CM	3	<1	<1	<1			
TOT D SOLIDS	MG/L	3	<1	<1	<1			
COLOR	P-CO U	3	<1	<1	<1			
CHLORIDE	MG/L	4	3.4	<0.1	.85	-	3.4	-
NITRATE	MG/L	3	<0.02	<0.02	<0.02			
SULFATE	MG/L	3	<2	<2	<2			
COPPER	MG/L	3	<1	<1	<1			
MANGANESE	MG/L	3	<0.005	<0.005	<0.005			
MERCURY	UG/L	3	<0.01	<0.01	<0.01			
IRON	MG/L	3	<0.1	<0.1	<0.1			
LEAD	MG/L	3	<0.5	<0.5	<0.5			
SILVER	MG/L	3	<1	<1	<1			
ARSENIC	MG/L	3	<0.1	<0.1	<0.1			
BARIUM	MG/L	3	<1	<1	<1			
BERYLLIUM	MG/L	3	<1	<1	<1			
CADMIUM	MG/L	3	<1	<1	<1			
CHROMIUM	MG/L	3	<1	<1	<1			
NICKEL	MG/L	3	<1	<1	<1			
SELENIUM	MG/L	3	<1	<1	<1			
ZINC	MG/L	3	<1	<1	<1			
788-3A WELL 2								
PH	PH	2	6.4	5.9				
SPEC COND	UMH/CM	2	100	83	93	-	93	-
TOT D SOLIDS	MG/L	2	66	62	64	-	64	-
COLOR	P-CO U	2	13	5.0	8.8	-	7.9	-
CHLORIDE	MG/L	2	3.2	2.3	2.7	-	2.7	-
NITRATE	MG/L	2	.08	.07	.08	-	.08	-
SULFATE	MG/L	2	17	8.5	13	-	12	-
COPPER	MG/L	2	.02	.01	.01	-	.01	-
MANGANESE	MG/L	2	.19	.07	.13	-	.12	-
MERCURY	UG/L	2	.20	.10	.15	-	.14	-
IRON	MG/L	2	2.8	.80	1.8	-	1.5	-
LEAD	MG/L	2	.15	.06	.10	-	.09	-
SILVER	MG/L	2	<1	<1	<1			
ARSENIC	MG/L	2	<0.1	<0.1	<0.1			
BARIUM	MG/L	2	.05	.04	.05	-	.05	-
BERYLLIUM	MG/L	2	<1	<1	<1			
CADMIUM	MG/L	2	.02	.01	.01	-	.01	-
CHROMIUM	MG/L	2	.01	.01	.01	-	.01	-
NICKEL	MG/L	2	.02	.01	.01	-	.01	-
SELENIUM	MG/L	2	<1	<1	<1			
ZINC	MG/L	2	4.5	.95	2.7	-	2.1	-
788-3A WELL 3								
PH	PH	2	6.5	6.1				
SPEC COND	UMH/CM	2	280	220	250	-	250	-
TOT D SOLIDS	MG/L	2	190	140	160	-	160	-
COLOR	P-CO U	2	150	43	96	-	80	-
CHLORIDE	MG/L	2	3.2	2.7	3.0	-	2.9	-
NITRATE	MG/L	2	.57	.32	.45	-	.43	-
SULFATE	MG/L	2	40	23	31	-	30	-
COPPER	MG/L	2	.02	.01	.01	-	.01	-
MANGANESE	MG/L	2	3.9	.86	2.4	-	1.8	-
MERCURY	UG/L	2	.20	.10	.15	-	.14	-
IRON	MG/L	2	68	4.0	36	-	16	-
LEAD	MG/L	2	.12	.10	.11	-	.11	-
SILVER	MG/L	2	<1	<1	<1			
ARSENIC	MG/L	2	.01	<0.1	.01	-	.01	-
BARIUM	MG/L	2	.36	.06	.21	-	.15	-
BERYLLIUM	MG/L	2	.00	<1	.00	-	.00	-
CADMIUM	MG/L	2	.01	.01	.01	-	.01	-
CHROMIUM	MG/L	2	.01	.01	.01	-	.01	-
NICKEL	MG/L	2	.03	.02	.02	-	.02	-
SELENIUM	MG/L	2	<1	<1	<1			
ZINC	MG/L	2	9.3	6.5	7.9	-	7.8	-
788-3A CSRCB 4								
PH	PH	5	5.8	5.2				
SPEC COND	UMH/CM	5	170	<1	48	-	110	-
TOT D SOLIDS	MG/L	5	110	<1	54	-	86	-
COLOR	P-CO U	5	8.0	<1	3.1	-	7.8	-
CHLORIDE	MG/L	5	3.8	<0.1	1.4	-	3.4	-
NITRATE	MG/L	5	.37	<0.02	.08	-	.12	-
SULFATE	MG/L	5	41	<2	9.9	-	19	-
COPPER	MG/L	5	.02	<1	.01	-	.02	-
MANGANESE	MG/L	5	.16	<0.005	.05	-	.11	-
MERCURY	UG/L	5	.20	<0.01	.06	-	.14	-
IRON	MG/L	5	3.3	<0.1	.78	-	1.4	-
LEAD	MG/L	5	.07	<0.5	.03	-	.06	-
SILVER	MG/L	5	<1	<1	<1			
ARSENIC	MG/L	5	<0.1	<0.1	<0.1			
BARIUM	MG/L	5	.07	<1	.02	-	.06	-
BERYLLIUM	MG/L	5	<1	<1	<1			
CADMIUM	MG/L	5	.01	<1	.00	-	.01	-
CHROMIUM	MG/L	5	.01	<1	.00	-	.01	-
NICKEL	MG/L	5	.02	<1	.01	-	.02	-
SELENIUM	MG/L	5	<1	<1	<1			
ZINC	MG/L	5	2.0	<1	.77	-	1.9	-

- INSUFFICIENT DATA

TABLE 58
WATER QUALITY IN GROUNDWATER, CONTD

CHE MET PEST WELL 1

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARTHIMETIC MEAN	ARTHIMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
PH	PH	2	5.5	4.5				
SPEC COND	UMH/CM	2	23	20	21	-	21	-
TOT D SOLIDS	MG/L	2	32	24	28	-	28	-
COLOR	P-CO U	2	5.0	3.5	4.3	-	4.2	-
CHLORIDE	MG/L	2	2.3	1.5	1.9	-	1.8	-
NITRATE	MG/L	2	.56	.10	.33	-	.24	-
SULFATE	MG/L	2	<2	<2	<2			
COPPER	MG/L	2	.02	.00	.01	-	.01	-
MANGANESE	MG/L	2	.14	.10	.12	-	.12	-
MERCURY	UG/L	2	<0.01	<0.01	<0.01			
IRON	MG/L	2	42	28	35	-	34	-
LEAD	MG/L	2	1.6	.65	1.1	-	1.0	-
SILVER	MG/L	2	<1	<1	<1			
ARSENIC	MG/L	2	<0.1	<0.1	<0.1			
BARIUM	MG/L	2	.05	.02	.03	-	.03	-
BERYLLIUM	MG/L	2	<1	<1	<1			
CADMIUM	MG/L	2	.03	.01	.02	-	.01	-
CHROMIUM	MG/L	2	<1	<1	<1			
NICKEL	MG/L	2	.01	<1	.01	-	.01	-
SELENIUM	MG/L	2	<1	<1	<1			
ZINC	MG/L	2	2.4	2.2	2.3	-	2.3	-

CHE MET PEST WELL 2

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARTHIMETIC MEAN	ARTHIMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
PH	PH	2	5.8	5.7				
SPEC COND	UMH/CM	2	95	93	94	-	94	-
TOT D SOLIDS	MG/L	2	66	57	62	-	61	-
COLOR	P-CO U	2	5.0	5.0	5.0	-	5.0	-
CHLORIDE	MG/L	2	2.7	2.1	2.4	-	2.4	-
NITRATE	MG/L	2	.14	.10	.12	-	.12	-
SULFATE	MG/L	2	2.0	<2	1.0	-	2.0	-
COPPER	MG/L	2	.04	.03	.03	-	.03	-
MANGANESE	MG/L	2	.13	.05	.09	-	.08	-
MERCURY	UG/L	2	.20	<0.01	.10	-	.20	-
IRON	MG/L	2	10	1.2	5.6	-	3.5	-
LEAD	MG/L	2	1.2	.78	1.0	-	.98	-
SILVER	MG/L	2	<1	<1	<1			
ARSENIC	MG/L	2	.00	<0.1	.00	-	.00	-
BARIUM	MG/L	2	.05	.04	.04	-	.04	-
BERYLLIUM	MG/L	2	<1	<1	<1			
CADMIUM	MG/L	2	.02	.01	.02	-	.02	-
CHROMIUM	MG/L	2	.04	.01	.03	-	.02	-
NICKEL	MG/L	2	.03	.01	.02	-	.02	-
SELENIUM	MG/L	2	<1	<1	<1			
ZINC	MG/L	2	56	48	52	-	52	-

CHE MET PEST WELL 3

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARTHIMETIC MEAN	ARTHIMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
PH	PH	3	5.9	4.1				
SPEC COND	UMH/CM	3	25	22	23	-	23	-
TOT D SOLIDS	MG/L	3	31	23	28	-	28	-
CHLORIDE	MG/L	3	2.9	2.4	2.6	-	2.6	-
NITRATE	MG/L	3	.27	.09	.15	-	.13	-
SULFATE	MG/L	3	1.0	<2	.33	-	1.0	-
COPPER	MG/L	3	.01	.01	.01	-	.01	-
MANGANESE	MG/L	3	.19	.18	.18	-	.18	-
MERCURY	UG/L	3	<0.01	<0.01	<0.01			
IRON	MG/L	3	65	44	51	-	50	-
LEAD	MG/L	3	.98	.46	.81	-	.76	-
SILVER	MG/L	3	<1	<1	<1			
ARSENIC	MG/L	3	<0.1	<0.1	<0.1			
BARIUM	MG/L	3	.03	.02	.03	-	.03	-
BERYLLIUM	MG/L	3	<1	<1	<1			
CADMIUM	MG/L	3	.01	.01	.01	-	.01	-
CHROMIUM	MG/L	3	.01	.01	.01	-	.01	-
NICKEL	MG/L	3	.00	<1	.00	-	.00	-
SELENIUM	MG/L	3	<1	<1	<1			
ZINC	MG/L	3	2.0	1.1	1.4	-	1.3	-

- INSUFFICIENT DATA

TABLE 58
WATER QUALITY IN GROUNDWATER, CONTD

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARTHIMETIC MEAN	ARTHIMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
CHE MET PEST WELL 4								
PH	PH	2	5.2	4.9				
SPEC COND	UMH/CM	2	36	34	35	-	35	-
SUSP SOLIDS	MG/L	0						
TOT D SOLIDS	MG/L	2	30	28	29	-	29	-
COLOR	P-CO U	2	3.5	2.0	2.8	-	2.7	-
CHLORIDE	MG/L	2	4.6	3.5	4.0	-	4.0	-
NITRATE	MG/L	2	.10	.08	.09	-	.09	-
SULFATE	MG/L	2	1.5	<2	.75	-	1.5	-
COPPER	MG/L	2	.01	.01	.01	-	.01	-
MANGANESE	MG/L	2	.34	.29	.32	-	.31	-
MERCURY	UG/L	2	<0.01	<0.01	<0.01			
IRON	MG/L	2	29	28	29	-	29	-
LEAD	MG/L	2	2.8	1.6	2.2	-	2.1	-
SILVER	MG/L	2	<1	<1	<1			
ARSENIC	MG/L	2	<0.1	<0.1	<0.1			
BARIUM	MG/L	2	.03	.03	.03	-	.03	-
BERYLLIUM	MG/L	2	<1	<1	<1			
CADMIUM	MG/L	2	.02	.02	.02	-	.02	-
CHROMIUM	MG/L	2	.01	.01	.01	-	.01	-
NICKEL	MG/L	2	.02	.01	.01	-	.01	-
SELENIUM	MG/L	2	<1	<1	<1			
ZINC	MG/L	2	10	8.4	9.2	-	9.1	-
CHE MET PEST WELL 5								
PH	PH	2	5.7	4.8				
SPEC COND	UMH/CM	2	32	31	32	-	32	-
TOT D SOLIDS	MG/L	2	27	22	24	-	24	-
COLOR	P-CO U	2	6.5	2.0	4.3	-	3.6	-
CHLORIDE	MG/L	2	3.4	2.3	2.8	-	2.8	-
NITRATE	MG/L	2	.07	.05	.06	-	.06	-
SULFATE	MG/L	2	1.0	<2	.50	-	1.0	-
COPPER	MG/L	2	.01	.01	.01	-	.01	-
MANGANESE	MG/L	2	.20	.02	.11	-	.06	-
MERCURY	UG/L	2	<0.01	<0.01	<0.01			
IRON	MG/L	2	3.2	2.0	2.6	-	2.5	-
LEAD	MG/L	2	.22	.08	.15	-	.14	-
SILVER	MG/L	2	<1	<1	<1			
ARSENIC	MG/L	2	<0.1	<0.1	<0.1			
BARIUM	MG/L	2	.05	.03	.04	-	.04	-
BERYLLIUM	MG/L	2	<1	<1	<1			
CADMIUM	MG/L	2	.01	.01	.01	-	.01	-
CHROMIUM	MG/L	2	.01	<1	.00	-	.01	-
NICKEL	MG/L	2	.01	<1	.00	-	.01	-
SELENIUM	MG/L	2	<1	<1	<1			
ZINC	MG/L	2	10	3.3	6.7	-	5.8	-
CHE MET PEST WELL 6								
PH	PH	2	6.3	6.1				
SPEC COND	UMH/CM	2	350	290	320	-	320	-
TOT D SOLIDS	MG/L	2	230	210	220	-	220	-
COLOR	P-CO U	2	4.0	2.0	3.0	-	2.8	-
CHLORIDE	MG/L	2	2.3	2.0	2.2	-	2.2	-
NITRATE	MG/L	2	.48	.06	.27	-	.17	-
SULFATE	MG/L	2	25	15	20	-	19	-
COPPER	MG/L	2	.02	.01	.02	-	.01	-
MANGANESE	MG/L	2	2.4	.96	1.7	-	1.5	-
MERCURY	UG/L	2	.20	<0.01	.10	-	.20	-
IRON	MG/L	2	30	2.2	16	-	8.1	-
LEAD	MG/L	2	.74	.14	.44	-	.32	-
SILVER	MG/L	2	<1	<1	<1			
ARSENIC	MG/L	2	.03	<0.1	.02	-	.03	-
BARIUM	MG/L	2	.66	.24	.45	-	.40	-
BERYLLIUM	MG/L	2	.00	<1	.00	-	.00	-
CADMIUM	MG/L	2	.19	.01	.10	-	.04	-
CHROMIUM	MG/L	2	.06	.01	.04	-	.03	-
NICKEL	MG/L	2	.09	.01	.05	-	.03	-
SELENIUM	MG/L	2	<1	<1	<1			
ZINC	MG/L	2	44	8.5	26	-	19	-

- INSUFFICIENT DATA

TABLE 58
WATER QUALITY IN GROUNDWATER, CONTD

PLANT WATER QUALITY FOR 1981

CHE MET PEST WELL 7

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARTHIMETIC MEAN	ARTHIMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
PH	PH	2	8.8	7.1				
SPEC COND	UMH/CM	2	100	80	92	-	91	-
TOT D SOLIDS	MG/L	2	75	53	64	-	63	-
COLOR	P-CO U	2	3.5	2.0	2.8	-	2.7	-
CHLORIDE	MG/L	2	2.4	1.7	2.0	-	2.0	-
NITRATE	MG/L	2	.18	.14	.16	-	.16	-
SULFATE	MG/L	2	2.0	1.0	1.5	-	1.4	-
COPPER	MG/L	2	.02	.02	.02	-	.02	-
MANGANESE	MG/L	2	.20	.03	.12	-	.08	-
MERCURY	UG/L	2	<0.01	<0.01	<0.01			
IRON	MG/L	2	1.5	.60	1.0	-	.93	-
LEAD	MG/L	2	.29	.26	.27	-	.27	-
SILVER	MG/L	2	<1	<1	<1			
ARSENIC	MG/L	2	.00	<0.1	.00	-	.00	-
BARIUM	MG/L	2	.07	.05	.06	-	.06	-
BERYLLIUM	MG/L	2	<1	<1	<1			
CADMIUM	MG/L	2	.17	.02	.10	-	.06	-
CHROMIUM	MG/L	2	.01	.01	.01	-	.01	-
NICKEL	MG/L	2	.01	.01	.01	-	.01	-
SELENIUM	MG/L	2	<1	<1	<1			
ZINC	MG/L	2	22	17	19	-	19	-

709-G WELL 1

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARTHIMETIC MEAN	ARTHIMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
PH	PH	1	8.2	8.2				
SPEC COND	UMH/CM	1	420	420	420	-	420	-
TOT D SOLIDS	MG/L	1	270	270	270	-	270	-
COLOR	P-CO U	1	10	10	10	-	10	-
CHLORIDE	MG/L	1	1.9	1.9	1.9	-	1.9	-
NITRATE	MG/L	1	.08	.08	.08	-	.08	-
SULFATE	MG/L	1	44	44	44	-	44	-
COPPER	MG/L	1	.01	.01	.01	-	.01	-
MANGANESE	MG/L	1	.04	.04	.04	-	.04	-
MERCURY	UG/L	1	<0.01	<0.01	<0.01			
IRON	MG/L	1	.50	.50	.50	-	.50	-
LEAD	MG/L	1	.02	.02	.02	-	.02	-
SILVER	MG/L	1	<1	<1	<1			
ARSENIC	MG/L	1	.01	.01	.01	-	.01	-
BARIUM	MG/L	1	.06	.06	.06	-	.06	-
BERYLLIUM	MG/L	1	<1	<1	<1			
CADMIUM	MG/L	1	.01	.01	.01	-	.01	-
CHROMIUM	MG/L	1	.01	.01	.01	-	.01	-
NICKEL	MG/L	1	.01	.01	.01	-	.01	-
SELENIUM	MG/L	1	<1	<1	<1			
ZINC	MG/L	1	.60	.60	.60	-	.60	-

904-76G WELL 1

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARTHIMETIC MEAN	ARTHIMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
PH	PH	2	5.7	5.2				
SPEC COND	UMH/CM	2	280	240	260	-	260	-
TOT D SOLIDS	MG/L	2	250	250	250	-	250	-
COLOR	P-CO U	2	5.0	<1	2.5	-	5.0	-
CHLORIDE	MG/L	2	1.1	.80	.95	-	.94	-
NITRATE	MG/L	2	32	30	31	-	31	-
SULFATE	MG/L	2	<2	<2	<2			
COPPER	MG/L	2	.01	.01	.01	-	.01	-
MANGANESE	MG/L	2	.48	.38	.43	-	.43	-
MERCURY	UG/L	2	.90	.20	.55	-	.42	-
IRON	MG/L	2	17	5.5	11	-	9.5	-
LEAD	MG/L	2	.06	.04	.05	-	.05	-
SILVER	MG/L	2	<1	<1	<1			
ARSENIC	MG/L	2	.01	<0.1	.00	-	.01	-
BARIUM	MG/L	2	1.0	.37	.70	-	.62	-
BERYLLIUM	MG/L	2	.00	<1	<1	-	.00	-
CADMIUM	MG/L	2	.02	.01	.02	-	.02	-
CHROMIUM	MG/L	2	.01	.01	.01	-	.01	-
NICKEL	MG/L	2	.01	.01	.01	-	.01	-
SELENIUM	MG/L	2	<1	<1	<1			
ZINC	MG/L	2	11	6.9	9.0	-	8.7	-

904-76G WELL 2

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARTHIMETIC MEAN	ARTHIMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
PH	PH	2	3.8	3.8				
SPEC COND	UMH/CM	2	20000	1000	10000	-	4500	-
TOT D SOLIDS	MG/L	1	740	740	740	-	740	-
COLOR	P-CO U	1	<1	<1	<1			
CHLORIDE	MG/L	2	5.0	4.3	4.6	-	4.6	-
NITRATE	MG/L	2	75	28	52	-	46	-
SULFATE	MG/L	2	7.0	<2	3.5	-	7.0	-
COPPER	MG/L	2	.03	.02	.02	-	.02	-
MANGANESE	MG/L	2	1.7	1.1	1.4	-	1.4	-
MERCURY	UG/L	2	32	<0.01	16	-	32	-
IRON	MG/L	2	84	6.6	45	-	24	-
LEAD	MG/L	2	.04	.03	.03	-	.03	-
SILVER	MG/L	2	<1	<1	<1			
ARSENIC	MG/L	2	.02	.01	.02	-	.02	-
BARIUM	MG/L	2	2.3	1.7	2.0	-	2.0	-
BERYLLIUM	MG/L	2	.01	.00	.01	-	.01	-
CADMIUM	MG/L	2	.01	<1	.01	-	.01	-
CHROMIUM	MG/L	2	.37	.03	.20	-	.11	-
NICKEL	MG/L	2	.10	.02	.06	-	.04	-
SELENIUM	MG/L	2	<1	<1	<1			
ZINC	MG/L	2	2.7	.50	1.6	-	1.2	-

: - INSUFFICIENT DATA

TABLE 58

WATER QUALITY IN GROUNDWATER, CONTD

904-76G WELL 4

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARTHIMETIC MEAN	ARTHIMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
PH	PH	2	5.5	5.0				
SPEC COND	UMH/CM	2	19000	560	9500	-	3200	-
TOT D SOLIDS	MG/L	1	500	500	500	-	500	-
COLOR	P-CO U	1	2.5	2.5	2.5	-	2.5	-
CHLORIDE	MG/L	2	5.0	3.9	4.5	-	4.4	-
NITRATE	MG/L	2	80	10	45	-	28	-
SULFATE	MG/L	2	17	4.5	11	-	8.8	-
COPPER	MG/L	2	.41	.10	.26	-	.20	-
MANGANESE	MG/L	2	1.6	.90	1.3	-	1.2	-
MERCURY	UG/L	2	3.9	<0.01	2.0	-	3.9	-
IRON	MG/L	2	120	53	86	-	79	-
LEAD	MG/L	2	.08	.03	.06	-	.05	-
SILVER	MG/L	2	<1	<1	<1			
ARSENIC	MG/L	2	.09	.04	.06	-	.06	-
BARIUM	MG/L	2	1.5	1.0	1.3	-	1.2	-
BERYLLIUM	MG/L	2	.14	.08	.11	-	.10	-
CADMIUM	MG/L	2	.05	<1	.03	-	.05	-
CHROMIUM	MG/L	2	1.2	.08	.64	-	.32	-
NICKEL	MG/L	2	.09	.03	.06	-	.05	-
SELENIUM	MG/L	2	<1	<1	<1			
ZINC	MG/L	2	4.6	1.0	2.8	-	2.2	-

904-102G WELL 1

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARTHIMETIC MEAN	ARTHIMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
PH	PH	2	5.3	4.8				
SPEC COND	UMH/CM	2	900	330	620	-	550	-
SUSP SOLIDS	MG/L	0						
TOT D SOLIDS	MG/L	2	680	290	490	-	450	-
COLOR	P-CO U	2	7.5	5.0	6.3	-	6.1	-
CHLORIDE	MG/L	2	7.4	4.3	5.9	-	5.6	-
NITRATE	MG/L	2	110	29	69	-	56	-
SULFATE	MG/L	2	53	37	45	-	44	-
COPPER	MG/L	2	.46	.02	.24	-	.10	-
MANGANESE	MG/L	2	150	1.9	74	-	17	-
MERCURY	UG/L	2	.40	<0.01	.20	-	.40	-
IRON	MG/L	2	27	5.3	16	-	12	-
LEAD	MG/L	2	.05	.05	.05	-	.05	-
SILVER	MG/L	2	<1	<1	<1			
ARSENIC	MG/L	2	.71	<0.1	.35	-	.71	-
BARIUM	MG/L	2	10	.38	5.2	-	1.9	-
BERYLLIUM	MG/L	2	.03	<1	.01	-	.03	-
CADMIUM	MG/L	2	.10	.02	.06	-	.04	-
CHROMIUM	MG/L	2	.03	<1	.02	-	.03	-
NICKEL	MG/L	2	.05	.01	.03	-	.02	-
SELENIUM	MG/L	2	<1	<1	<1			
ZINC	MG/L	2	110	2.2	58	-	16	-

904-102G WELL 2

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARTHIMETIC MEAN	ARTHIMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
PH	PH	1	5.4	5.4				
SPEC COND	UMH/CM	1	47	47	47	-	47	-
CHLORIDE	MG/L	2	3.3	2.7	3.0	-	3.0	-
NITRATE	MG/L	2	.82	.31	.57	-	.50	-
SULFATE	MG/L	1	11	11	11	-	11	-
MERCURY	UG/L	1	<0.01	<0.01	<0.01			

- INSUFFICIENT DATA

TABLE 58
WATER QUALITY IN GROUNDWATER, CONTD

904-102G WELL 3

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARTHIMETIC MEAN	ARTHIMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
PH	PH	2	5.0	4.8				
SPEC COND	UMH/CM	2	790	580	680	-	670	-
TOT D SOLIDS	MG/L	2	670	420	550	-	530	-
COLOR	P-CO U	2	2.5	2.0	2.3	-	2.2	-
CHLORIDE	MG/L	2	15	14	15	-	14	-
NITRATE	MG/L	2	78	58	68	-	67	-
SULFATE	MG/L	2	110	85	98	-	97	-
COPPER	MG/L	2	.02	.01	.02	-	.01	-
MANGANESE	MG/L	2	.52	.34	.43	-	.42	-
MERCURY	UG/L	2	.40	.10	.25	-	.20	-
IRON	MG/L	2	7.8	7.8	7.8	-	7.8	-
LEAD	MG/L	2	.06	.01	.04	-	.02	-
SILVER	MG/L	2	<1	<1	<1			
ARSENIC	MG/L	2	.01	<0.1	.01	-	.01	-
BARIUM	MG/L	2	.14	.12	.13	-	.13	-
BERYLLIUM	MG/L	2	<1	<1	<1			
CADMIUM	MG/L	2	.02	.02	.02	-	.02	-
CHROMIUM	MG/L	2	.01	<1	.01	-	.01	-
NICKEL	MG/L	2	.01	<1	.01	-	.01	-
SELENIUM	MG/L	2	<1	<1	<1			
ZINC	MG/L	2	.55	.32	.44	-	.42	-

904-102G WELL 4

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARTHIMETIC MEAN	ARTHIMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
PH	PH	2	5.2	5.1				
SPEC COND	UMH/CM	2	700	310	510	-	470	-
TOT D SOLIDS	MG/L	2	490	230	360	-	340	-
COLOR	P-CO U	2	7.0	2.0	4.5	-	3.7	-
CHLORIDE	MG/L	2	3.7	6.1	7.4	-	7.3	-
NITRATE	MG/L	2	60	25	43	-	39	-
SULFATE	MG/L	2	140	59	100	-	91	-
COPPER	MG/L	2	.03	.01	.02	-	.02	-
MANGANESE	MG/L	2	.14	.10	.12	-	.12	-
MERCURY	UG/L	2	.30	<0.01	.15	-	.30	-
IRON	MG/L	2	10	5.6	7.8	-	7.5	-
LEAD	MG/L	2	.02	.02	.02	-	.02	-
SILVER	MG/L	2	<1	<1	<1			
ARSENIC	MG/L	2	<0.1	<0.1	<0.1			
BARIUM	MG/L	2	.15	.06	.11	-	.10	-
BERYLLIUM	MG/L	2	<1	<1	<1			
CADMIUM	MG/L	2	.05	.02	.03	-	.03	-
CHROMIUM	MG/L	2	.01	<1	.01	-	.01	-
NICKEL	MG/L	2	.03	.02	.03	-	.02	-
SELENIUM	MG/L	2	<1	<1	<1			
ZINC	MG/L	2	.20	.18	.19	-	.19	-

489-D WELL 1

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARTHIMETIC MEAN	ARTHIMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
PH	PH	2	2.6	2.6				
SPEC COND	UMH/CM	2	4700	250	2500	-	1100	-
TOT D SOLIDS	MG/L	2	9400	3500	6400	-	5700	-
COLOR	P-CO U	2	260	5.0	130	-	36	-
CHLORIDE	MG/L	2	3.7	3.1	3.4	-	3.4	-
NITRATE	MG/L	2	4.2	2.2	3.2	-	3.0	-
SULFATE	MG/L	2	5500	2900	4200	-	4000	-
COPPER	MG/L	2	1.9	.18	1.0	-	.59	-
MANGANESE	MG/L	2	19	8.5	14	-	13	-
MERCURY	UG/L	2	.75	.20	.48	-	.39	-
IRON	MG/L	2	89	6.1	48	-	23	-
LEAD	MG/L	2	.03	.02	.02	-	.02	-
SILVER	MG/L	2	<1	<1	<1			
ARSENIC	MG/L	2	3.8	.09	2.0	-	.59	-
BARIUM	MG/L	2	.08	.06	.07	-	.07	-
BERYLLIUM	MG/L	2	.73	.04	.39	-	.17	-
CADMIUM	MG/L	2	.17	.10	.14	-	.13	-
CHROMIUM	MG/L	2	.33	.06	.19	-	.14	-
NICKEL	MG/L	2	4.1	1.6	2.9	-	2.6	-
SELENIUM	MG/L	2	<1	<1	<1			
ZINC	MG/L	2	10	5.0	7.6	-	7.1	-

- INSUFFICIENT DATA

TABLE 58
WATER QUALITY IN GROUNDWATER, CONTD

PLANT WATER QUALITY FOR 1981

489-D WELL 2

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARTHIMETIC MEAN	ARTHIMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
PH	PH	2	4.9	4.9				
SPEC COND	UMH/CM	2	93	45	69	-	65	-
TOT D SOLIDS	MG/L	2	54	50	52	-	52	-
COLOR	P-CO U	2	7.5	5.0	6.3	-	6.1	-
CHLORIDE	MG/L	2	6.1	4.3	5.2	-	5.1	-
NITRATE	MG/L	2	2.5	1.8	2.2	-	2.1	-
SULFATE	MG/L	2	3.0	1.0	2.0	-	1.7	-
COPPER	MG/L	2	.03	.01	.02	-	.02	-
MANGANESE	MG/L	2	.10	.06	.08	-	.08	-
MERCURY	UG/L	2	.20	<0.01	.10	-	.20	-
IRON	MG/L	2	14	3.1	8.4	-	6.5	-
LEAD	MG/L	2	.28	.11	.19	-	.17	-
SILVER	MG/L	2	<1	<1	<1			
ARSENIC	MG/L	2	.02	<0.1	.01	-	.02	-
BARIUM	MG/L	2	.39	.06	.22	-	.15	-
BERYLLIUM	MG/L	2	.00	<1	.00	-	.00	-
CADMIUM	MG/L	2	.01	.01	.01	-	.01	-
CHROMIUM	MG/L	2	.01	<1	.00	-	.01	-
NICKEL	MG/L	2	.01	<1	.00	-	.01	-
SELENIUM	MG/L	2	<1	<1	<1			
ZINC	MG/L	2	5.0	3.5	4.3	-	4.2	-

489-D WELL 3

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARTHIMETIC MEAN	ARTHIMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
PH	PH	2	5.4	5.1				
SPEC COND	UMH/CM	2	70	65	68	-	67	-
TOT D SOLIDS	MG/L	2	59	53	56	-	56	-
COLOR	P-CO U	2	20	5.5	13	-	10	-
CHLORIDE	MG/L	2	4.3	3.9	4.1	-	4.1	-
NITRATE	MG/L	2	.68	.62	.65	-	.65	-
SULFATE	MG/L	2	13	8.0	10	-	10	-
COPPER	MG/L	2	.02	.01	.01	-	.01	-
MANGANESE	MG/L	2	.64	.46	.55	-	.54	-
MERCURY	UG/L	2	1.6	.80	1.2	-	1.1	-
IRON	MG/L	2	12	6.2	8.9	-	8.4	-
LEAD	MG/L	2	.04	.03	.03	-	.03	-
SILVER	MG/L	2	<1	<1	<1			
ARSENIC	MG/L	2	.01	<0.1	.01	-	.01	-
BARIUM	MG/L	2	.07	.06	.07	-	.07	-
BERYLLIUM	MG/L	2	.00	<1	.00	-	.00	-
CADMIUM	MG/L	2	.03	.02	.02	-	.02	-
CHROMIUM	MG/L	2	.01	.01	.01	-	.01	-
NICKEL	MG/L	2	.06	.01	.03	-	.02	-
SELENIUM	MG/L	2	<1	<1	<1			
ZINC	MG/L	2	.36	.35	.36	-	.36	-

489-D WELL 4

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARTHIMETIC MEAN	ARTHIMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
PH	PH	2	5.6	5.0				
SPEC COND	UMH/CM	2	64	31	48	-	45	-
TOT D SOLIDS	MG/L	2	56	34	45	-	44	-
COLOR	P-CO U	2	3.0	3.0	3.0	-	3.0	-
CHLORIDE	MG/L	2	1.9	1.3	1.6	-	1.6	-
NITRATE	MG/L	2	3.2	1.4	2.3	-	2.1	-
SULFATE	MG/L	2	12	3.5	7.8	-	6.5	-
COPPER	MG/L	2	.01	.00	.01	-	.00	-
MANGANESE	MG/L	2	2.0	.73	1.4	-	1.2	-
MERCURY	UG/L	2	.30	.10	.20	-	.17	-
IRON	MG/L	2	6.4	4.4	5.4	-	5.3	-
LEAD	MG/L	2	.03	.02	.02	-	.02	-
SILVER	MG/L	2	<1	<1	<1			
ARSENIC	MG/L	2	.00	<0.1	.00	-	.00	-
BARIUM	MG/L	2	.27	.14	.21	-	.20	-
OIL & GREASE	MG/L	2	<1	<1	<1			
CADMIUM	MG/L	2	.02	.01	.02	-	.02	-
CHROMIUM	MG/L	2	.01	<1	.01	-	.01	-
NICKEL	MG/L	2	.01	<1	.01	-	.01	-
SELENIUM	MG/L	2	<1	<1	<1			
ZINC	MG/L	2	.38	.30	.34	-	.34	-

\- INSUFFICIENT DATA

TABLE 30

WATER QUALITY IN GROUNDWATER, CONTD

489-D WELL 5

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARITHMETIC MEAN	ARITHMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
PH	PH	2	5.5	4.3				
SPEC COND	UMH/CM	2	56	54	55	-	55	-
TOT D SOLIDS	MG/L	2	60	47	54	-	53	-
COLOR	P-CO U	2	5.0	2.0	3.5	-	3.2	-
CHLORIDE	MG/L	2	1.7	1.6	1.6	-	1.6	-
NITRATE	MG/L	2	1.4	1.1	1.3	-	1.2	-
SULFATE	MG/L	2	14	14	14	-	14	-
COPPER	MG/L	2	.01	.01	.01	-	.01	-
MANGANESE	MG/L	2	.09	.05	.07	-	.07	-
MERCURY	UG/L	2	.20	<0.01	.10	-	.20	-
IRON	MG/L	2	10	4.0	7.1	-	6.4	-
LEAD	MG/L	2	.03	.02	.03	-	.03	-
SILVER	MG/L	2	<1	<1	<1			
ARSENIC	MG/L	2	.00	<0.1	.00	-	.00	-
BARIUM	MG/L	2	.06	.05	.05	-	.05	-
BERYLLIUM	MG/L	2	.00	<1	.00	-	.00	-
CADMIUM	MG/L	2	.02	.01	.02	-	.02	-
CHROMIUM	MG/L	2	.01	.01	.01	-	.01	-
NICKEL	MG/L	2	.01	<1	.01	-	.01	-
SELENIUM	MG/L	2	<1	<1	<1			
ZINC	MG/L	2	.65	.62	.64	-	.64	-

189-P WELL 1

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARITHMETIC MEAN	ARITHMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
PH	PH	2	5.7	5.4				
SPEC COND	UMH/CM	2	110	99	100	-	100	-
TOT D SOLIDS	MG/L	2	79	66	73	-	72	-
COLOR	P-CO U	2	5.0	3.5	4.3	-	4.2	-
CHLORIDE	MG/L	2	6.2	5.6	5.9	-	5.9	-
NITRATE	MG/L	2	.10	.04	.07	-	.06	-
SULFATE	MG/L	2	7.0	6.0	6.5	-	6.5	-
COPPER	MG/L	2	.04	.03	.04	-	.04	-
MANGANESE	MG/L	2	.39	.34	.37	-	.36	-
MERCURY	UG/L	2	2.4	.10	1.3	-	.49	-
IRON	MG/L	2	8.3	3.2	5.7	-	5.1	-
LEAD	MG/L	2	.30	.30	.30	-	.30	-
SILVER	MG/L	2	<1	<1	<1			
ARSENIC	MG/L	2	<0.1	<0.1	<0.1			
BARIUM	MG/L	2	.06	.06	.06	-	.06	-
BERYLLIUM	MG/L	2	<1	<1	<1			
CADMIUM	MG/L	2	.02	.01	.02	-	.02	-
CHROMIUM	MG/L	2	.02	.01	.01	-	.01	-
NICKEL	MG/L	2	<1	<1	<1			
SELENIUM	MG/L	2	<1	<1	<1			
ZINC	MG/L	2	22	20	21	-	21	-

189-P WELL 2

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARITHMETIC MEAN	ARITHMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
PH	PH	2	4.8	4.5				
SPEC COND	UMH/CM	2	25	25	25	-	25	-
TOT D SOLIDS	MG/L	2	36	20	28	-	27	-
COLOR	P-CO U	2	2.0	1.5	1.8	-	1.7	-
CHLORIDE	MG/L	2	4.0	3.6	3.8	-	3.8	-
NITRATE	MG/L	2	.07	.05	.06	-	.06	-
SULFATE	MG/L	2	2.0	2.0	2.0	-	2.0	-
COPPER	MG/L	2	.06	.04	.05	-	.05	-
MANGANESE	MG/L	2	.02	.02	.02	-	.02	-
MERCURY	UG/L	2	.40	<0.01	.20	-	.40	-
IRON	MG/L	2	2.5	.60	1.6	-	1.2	-
LEAD	MG/L	2	.02	.02	.02	-	.02	-
SILVER	MG/L	2	<1	<1	<1			
ARSENIC	MG/L	2	.00	<0.1	.00	-	.00	-
BARIUM	MG/L	2	.03	.02	.02	-	.02	-
BERYLLIUM	MG/L	2	<1	<1	<1			
CADMIUM	MG/L	2	.01	.01	.01	-	.01	-
CHROMIUM	MG/L	2	.00	<1	.00	-	.00	-
NICKEL	MG/L	2	.01	.00	.01	-	.01	-
SELENIUM	MG/L	2	<1	<1	<1			
ZINC	MG/L	2	.91	.60	.76	-	.74	-

\- INSUFFICIENT DATA

TABLE 58

WATER QUALITY IN GROUNDWATER, CONTD

189-P WELL 3

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARTHIMETIC MEAN	ARTHIMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
PH	PH	2	3.6	3.4				
SPEC COND	UMH/CM	2	1900	1800	1900	-	1800	-
TOT D SOLIDS	MG/L	2	2000	1200	1600	-	1500	-
COLOR	P-CO U	2	11	5.0	8.0	-	7.4	-
CHLORIDE	MG/L	2	2.3	2.2	2.2	-	2.2	-
NITRATE	MG/L	2	.88	.08	.48	-	.27	-
SULFATE	MG/L	2	2200	1700	2000	-	1900	-
COPPER	MG/L	2	.03	.01	.02	-	.02	-
MANGANESE	MG/L	2	4.7	4.4	4.6	-	4.6	-
MERCURY	UG/L	2	.20	.10	.15	-	.14	-
IRON	MG/L	2	100	28	64	-	53	-
LEAD	MG/L	2	.05	.04	.05	-	.05	-
SILVER	MG/L	2	<1	<1	<1			
ARSENIC	MG/L	2	.13	<0.1	.07	-	.13	-
BARIUM	MG/L	2	.10	.09	.09	-	.09	-
BERYLLIUM	MG/L	2	.02	.01	.01	-	.01	-
CADMIUM	MG/L	2	.03	.01	.02	-	.02	-
CHROMIUM	MG/L	2	.01	.01	.01	-	.01	-
NICKEL	MG/L	2	.72	.62	.67	-	.67	-
SELENIUM	MG/L	2	<1	<1	<1			
ZINC	MG/L	2	3.3	2.8	3.1	-	3.0	-

189-P WELL 4

PARAMETER	UNITS	NO. OF ANALYSES	MAXIMUM	MINIMUM	ARTHIMETIC MEAN	ARTHIMETIC 2 STD DEV	GEOMETRIC MEAN	GEOMETRIC STD DEV
PH	PH	2	4.5	4.2				
SPEC COND	UMH/CM	2	25	20	23	-	22	-
TOT D SOLIDS	MG/L	2	37	22	30	-	29	-
COLOR	P-CO U	2	2.0	1.0	1.5	-	1.4	-
CHLORIDE	MG/L	2	4.3	3.9	4.1	-	4.1	-
NITRATE	MG/L	2	.26	.07	.16	-	.13	-
SULFATE	MG/L	2	<2	<2	<2			
COPPER	MG/L	2	.08	.02	.05	-	.04	-
MANGANESE	MG/L	2	.02	<0.005	.01	-	.02	-
MERCURY	UG/L	2	.60	.10	.35	-	.25	-
IRON	MG/L	2	1.7	.40	1.0	-	.81	-
LEAD	MG/L	2	.02	.02	.02	-	.02	-
SILVER	MG/L	2	<1	<1	<1			
ARSENIC	MG/L	2	<0.1	<0.1	<0.1			
BARIUM	MG/L	2	.02	.01	.02	-	.02	-
BERYLLIUM	MG/L	2	<1	<1	<1			
CADMIUM	MG/L	2	.01	<1	.00	-	.01	-
CHROMIUM	MG/L	2	<1	<1	<1			
NICKEL	MG/L	2	.01	<1	.01	-	.01	-
SELENIUM	MG/L	2	<1	<1	<1			
ZINC	MG/L	2	.35	.24	.30	-	.29	-

- INSUFFICIENT DATA

TABLE 59
RADIOACTIVITY IN GROUNDWATER AT WASTE FACILITIES

	No. of Analyses	Alpha, pCi/l Max	Min	Avg	Nonvolatile Beta, pCi/l Max	Min	Avg
300-M Seepage Basin							
M Seep Basin Well 1	4	< 1.5	<0.3	<0.8	< 24	< 7	< 17
M Seep Basin Well 2	4	2.4	<0.5	<1.6	< 24	< 7	< 17
M Seep Basin Well 3	4	2.1	<0.7	<1.2	< 24	< 7	< 17
M Seep Basin Well 4	4	7.4	<0.4	<2.8	30	< 7	< 19
M Seep Basin Well 5	3	8.0	<1.5	<4.3	38	18	< 27
M Seep Basin Well 6	3	7.8	<1.6	<4.3	68	< 24	< 39
M Seep Basin Well 7	3	2.5	<0.4	<1.5	< 24	< 7	< 16
M Seep Basin Well 8	1	-	-	4.3	-	-	16
200-H Seepage Basin							
H Seep Basin Well 1	2	< 1.8	0.7	< 1.2	< 32	< 8	< 20
H Seep Basin Well 2	2	< 1.1	0.6	< 0.8	< 31	< 8	< 19
H Seep Basin Well 3	2	3.2	1.3	2.2	91	90	90
H Seep Basin Well 4	2	6.8	3.6	5.2	680	390	535
H Seep Basin Well 5	2	2.6	0.8	1.7	81	110	96
H Seep Basin Well 6	2	5.6	3.2	4.4	< 31	14	< 22
H Seep Basin Well 7	2	3.6	1.7	2.6	35	19	27
200-F Seepage Basin							
F Seep Basin Well 1	1	-	-	< 0.3	-	-	< 8
F Seep Basin Well 2	1	-	-	2.4	-	-	12
F Seep Basin Well 3	1	-	-	0.5	-	-	8
F Seep Basin Well 4	1	-	-	2.1	-	-	22
Central Shops							
709-G Well	2	1.0	< 0.6	< 1.3	12	8	< 10
Chemical-Metal-Pesticide Wells							
CMP Well 1	3	< 1.5	< 0.4	< 0.8	< 25	< 7	< 14
CMP Well 2	3	< 1.5	< 0.4	< 0.9	< 24	< 7	< 16
CMP Well 3	3	2.7	0.7	1.4	< 24	6	< 15
CMP Well 4	3	0.9	< 0.4	< 0.6	< 24	< 7	< 13
CMP Well 5	3	8.0	< 1.5	4.9	38	< 25	< 33
CMP Well 6	3	8.6	< 1.6	< 5.8	69	< 24	< 51
CMP Well 7	3	2.5	0.7	< 1.5	< 24	< 7	< 13
Old TNX Seepage Basin (904-76G)							
904-76G Well 1	3	15.6	< 1.5	< 6.9	35	16	<2.5
904-76G Well 2	3	104.0	9.4	50.7	480	93	240
904-76G Well 3	1	-	-	34.0	-	-	110
904-76G Well 4	3	84.2	1.0	44.9	250	16	160
New TNX Seepge Basin (904-102G)							
904-102G Well 1	1	-	-	5.2	-	-	35
904-102G Well 2	1	-	-	4.4	-	-	34
904-102G Well 3	2	1.3	0.6	1.0	< 8	< 7	< 8
904-102G Well 4	1	-	-	< 0.4	-	-	< 7
Coal Storage Runoff Containment Basins							
788-3A CSRCB 1	0	-	-	-	-	-	-
788-3A CRSCB 2	3	3.9	0.9	2.3	91	11	41
788-3A CSRCB 3	3	12.0	2.0	5.7	110	13	48
788-3A CSRCB 4	3	17.1	< 1.6	7.8	260	< 24	120
189-P CSRCB 1	4	< 0.3	2.9	< 1.0	8	< 7	8
189-P CSRCB 2	4	19.3	< 0.5	< 6.0	88	9	31
189-P CSRCB 3	3	2.5	< 0.5	1.2	24	< 7	< 13
189-P CSRCB 4	4	4.3	0.7	2.7	26	< 7	< 12
189-K CSRCB 1	1	-	-	1.8	-	-	< 8
189-K CSRCB 2	1	-	-	1.8	-	-	11
189-K CSRCB 3	1	-	-	1.5	-	-	< 8
189-K CSRCB 4	1	-	-	1.0	-	-	8
189-C CSRCB 1	1	-	-	< 0.4	-	-	< 8
189-C CSRCB 2	1	-	-	2.3	-	-	< 8
189-C CSRCB 3	1	-	-	< 0.4	-	-	< 8
289-H CSRCB 1	1	-	-	3.3	-	-	910
289-H-CSRCB 2	1	-	-	0.6	-	-	310
289-H-CSRCB 3	1	-	-	16.2	-	-	10
289-H-CSRCB 4	1	-	-	1.0	-	-	< 8
489-D CSRCB 1	3	3.1	-	< 1.5	< 38	< 8	< 24
489-D CSRCB 2	3	12.0	-	4.4	11	< 7	< 9
489-D CSRCB 3	3	7.0	-	4.1	27	18	21
489-D CSRCB 4	3	11.0	-	4.8	43	12	24
489-D CSRCB 5	3	2.0	-	1.2	< 13	< 8	< 10

\- No analysis.

TABLE 60
SANITARY WASTEWATER-NPDES PERMIT SC 0023710

607-7A
STP-001

	Avg. Flow	Fecal Coliform (conc/100 ml)		pH		Suspended Solids Quantity (lb/day)		Suspended Solids Conc. (mg/l)		BOD Quantity (lb/day)		BOD Concentration (mg/l)	
	(gpm)	Max.	Avg.	Min.	Max.	Max.	Avg.	Max.	Avg.	Max.	Avg.	Max.	Avg.
NPDES Permit Limits*	-	400	200	6.0	9.0	48.8	32.5	45	30	48.8	32.5	45	30
January	43	0	0	6.6	6.9	4.1	2.6	8.0	5.0	4.1	2.6	8.0	5.0
February	45	1	1	6.6	6.7	6.5	4.3	12	8	4.9	2.7	9	5
March	58	0	0	6.7	6.8	14.0	9.0	20	13	7.0	6.3	10	9
April	49	0	0	6.6	7.0	10.6	5.3	18.0	9.0	4.1	2.4	7.0	4.0
May	49	1	0.5	6.7	7.0	9.5	4.7	16	8	3.5	1.8	5.0	3.0
June	53	1	1	6.9	7.3	5.7	4.0	9.0	6.3	1.9	1.0	3.0	1.6
July	39	5	1.4	6.8	6.9	2.8	1.8	6.0	3.8	1.9	1.2	4.0	2.6
August	57	800	19.5	6.5	7.2	10.9	5.3	16	7.8	5.5	3.1	8.0	4.5
September	45	1,000	118	7.0	7.5	5.4	4.0	10.0	7.3	4.3	2.1	8.0	3.8
October	47	37.0	2.9	7.1	7.4	3.4	1.9	6.0	3.4	1.1	1.0	2.0	1.8
November	54	20	9.5	7.0	7.3	26.7	9.8	41	15	1.9	1.5	3.0	2.3
December	56	9.0	1.6	6.9	7.4	6.8	3.4	10	5	2.7	1.7	4.0	2.5

- Underlined numbers were in violation of NPDES Permit (SC0023710).
* Not applicable when effluent is discharged to the sprayfield.

607-7F
STP-003

	Avg. Flow	Fecal Coliform (conc/100 ml)		pH		Suspended Solids Quantity (lb/day)		Suspended Solids Conc. (mg/l)		BOD Quantity (lb/day)		BOD Concentration (mg/l)	
	(gpm)	Max.	Avg.	Min.	Max.	Max.	Avg.	Max.	Avg.	Max.	Avg.	Max.	Avg.
NPDES Permit Limits*	-	400	200	6.0	9.0	22.5	15.0	45	30	22.5	15.0	45	30
January	19	7.0	1.6	6.5	6.8	4.1	2.5	18	11	1.1	0.8	5.0	3.5
February	21	0	0	6.5	7.0	2.7	2.2	10.6	8.9	5.3	1.8	21.0	7.0
March	20	2.0	1.2	6.8	6.9	15.8*	5.3	66	22	3.0	2.0	15.0	9.0
April	20	1.0	1.0	6.8	6.9	1.7	1.0	7.0	4.0	1.4	0.7	6.0	3.0
May	20	1.0	0.33	6.6	7.0	1.5	0.9	6.0	3.8	1.0	0.7	4.0	3.0
June	21	0	0	6.7	7.0	3.3	2.3	13.0	9.3	2.5	1.3	10.0	5.3
July	28	0	0	6.6	6.9	5.0	3.3	15.0	9.8	3.0	2.2	9.0	6.6
August	31	300	12.6	6.4	7.2	3.8	3.0	10.0	8.0	2.2	1.7	6.0	4.5
September	33	80	5.9	6.8	7.8	14.8	6.8	37	17	2.8	1.9	7.0	4.8
October	26	190	6.0	6.5	7.8	5.6	2.8	18	9.2	2.5	1.1	8.0	3.4
November	30	270	12	6.3	7.3	19.7	13.3	55	37	2.2	1.2	6.0	3.3
December	31	2.0	1.2	6.7	7.4	5.6	2.7	15.0	7.3	2.2	1.1	6.0	3.0

- Underlined numbers were in violation of NPDES Permit (SC0023710).
* Permit limits for suspended solids and BOD quantities were increased in July 1981. Excursions prior to this date were based on lower limits.

607-7H
STP-004

	Avg. Flow	Fecal Coliform (conc/100 ml)		pH		Suspended Solids Quantity (lb/day)		Suspended Solids Conc. (mg/l)		BOD Quantity (lb/day)		BOD Concentration (mg/l)	
	(gpm)	Max.	Avg.	Min.	Max.	Max.	Avg.	Max.	Avg.	Max.	Avg.	Max.	Avg.
NPDES Permit Limits*	-	400	200	6.0	9.0	22.5	15.0	45	30	22.5	15.0	45	30
January	28	2.0	1.2	6.5	6.8	6.7	2.8	20	8.5	1.3	0.3	4.0	1.0
February	38	0	0	6.5	6.8	10.1	7.5	22.0	16.5	3.2	2.7	7.0	6.0
March	35	88	4.3	6.5	6.9	7.6	3.8	18.0	9.0	2.9	2.1	7.0	5.0
April	29	2.0	1.2	6.7	7.1	4.9	2.8	14.0	8.0	7.0	3.5	20.0	10.0
May	28	1.0	0.3	6.4	7.2	3.3	1.8	10.0	5.5	2.0	1.3	6.0	4.0
June	34	8.0	1.7	6.4	6.8	4.9	2.5	12.0	6.0	1.6	1.0	4.0	2.5
July	27	8.0	1.5	6.6	7.2	2.9	1.8	9.0	5.4	3.9	1.8	12.0	5.6
August	27	5.0	1.5	6.6	7.6	14.6	7.6	45	23.5	7.5	4.9	23.0	15.0
September	25	160	5.6	6.9	7.7	3.9	3.5	13.0	11.5	2.7	1.3	9.0	4.3
October	25	15	2.8	6.1	7.6	24	11.2	80	37.4	5.4	2.2	18.0	7.2
November	25	200	8.7	6.6	7.4	9.6	6.9	32	23	1.8	0.9	6.0	3.0
December	17	1.0	1.0	6.9	7.0	1.3	1.0	6.0	4.8	1.6	0.7	8.0	3.5

- Underlined numbers were in violation of NPDES Permit (SC0023710).

607-7P
STP-005

	Avg. Flow	Fecal Coliform (conc/100 ml)		pH		Suspended Solids Quantity (lb/day)		Suspended Solids Conc. (mg/l)		BOD Quantity (lb/day)		BOD Concentration (mg/l)	
	(gpm)	Max.	Avg.	Min.	Max.	Max.	Avg.	Max.	Avg.	Max.	Avg.	Max.	Avg.
NPDES Permit Limits*	-	400	200	6.0	9.0	9.01	6.0	45	30	9.01	6.0	45	30
January	12	12.0	3.5	6.8	6.9	5.1*	2.0	36.0	14.0	0.6	0.3	4.0	1.8
February	9	2.0	1.3	6.4	6.9	0.5	0.4	5.0	3.6	0.5	0.5	7.0	4.3
March	7	44.0	6.2	6.5	6.8	0.6	0.3	7.0	3.3	1.8	0.8	21.0	10.0
April	10	1.0	1.0	6.4	7.2	0.7	0.2	6.0	2.0	0.5	0.4	4.0	3.0
May	11	1.0	0.3	6.6	7.0	1.3	0.9	10.0	6.8	0.5	0.4	4.0	2.8
June	8	0	0	6.8	7.1	0.5	0.28	5.0	2.8	0.38	0.24	4.0	2.5
July	5	3.0	1.9	6.8	7.0	0.76	0.37	13.0	6.4	0.24	0.16	4.0	2.6
August	2	22.0	5.9	6.5	7.0	0.35	0.27	13.0	8.0	0.14	0.08	6.0	3.5
September	2	10.0	1.8	7.2	7.3	0.53	0.25	21	9.8	0.07	0.05	3.0	2.0
October	3	6.0	1.6	7.0	7.9	1.37	0.49	41	14.8	0.22	0.12	6.0	3.2
November	3	800	12	7.5	8.0	1.1	0.4	32	11	0.10	0.07	3.0	2.0
December	3	1.0	1.0	6.9	8.1	0.7	0.3	20.0	8.5	0.1	0.1	4.0	2.5

- Underlined numbers were in violation of NPDES Permit (SC0023710).
* Permit limits for suspended solids and BOD quantities were increased in July 1981. Excursions prior to this date were based on lower limits.

TABLE 60
SANITARY WASTEWATER-NPDES PERMIT SC 0023710, CONTD

607-7D
STP-002

	Avg. Flow (gpm)	Fecal Coliform (conc/100 ml)		pH		Suspended Solids Quantity (lb/day)		Suspended Solids Conc. (mg/l)		BOD Quantity (lb/day)		BOD Concentration (mg/l)	
		Max.	Avg.	Min.	Max.	Max.	Avg.	Max.	Avg.	Max.	Avg.	Max.	Avg.
NPDES Permit Limits*	-	400	200	6.0	9.0	15.0	10.0	45	30	15.0	10.0	45	30
January	9	13.0	3.3	6.8	7.0	0.9	0.4	8.0	4.0	0.4	0.3	8.0	3.0
February	13	0	0	6.7	6.9	2.1	1.0	13.0	6.0	2.2	1.4	14.0	8.7
March	12	20	2.1	6.5	6.9	0.7	0.4	5.0	3.0	1.0	0.6	7.0	4.0
April	9	6.0	1.4	6.4	7.2	0.4	0.2	4.0	2.0	0.4	0.3	4.0	3.0
May	8	0	0	6.7	7.2	0.5	0.3	5.0	2.8	0.5	0.4	5.0	3.8
June	12	0	0	6.5	7.0	1.1	0.71	8.0	5.0	2.9	1.4	20.0	10.0
July	10	2.0	1.2	6.4	7.2	1.75	0.54	15.0	4.6	0.96	0.43	8.0	3.6
August	10	17.0	7.9	6.8	7.6	0.93	0.68	8.0	5.8	1.2	0.66	10.0	5.5
September	7	800	48.6	7.0	7.3	2.0	0.94	24	11.3	1.0	0.40	12.0	4.8
October	8	50	2.7	7.1	7.8	2.0	1.0	20	10.2	0.96	0.48	10.0	5.0
November	9	47	20	7.0	7.5	1.5	1.2	14	11	0.4	0.3	4.0	2.7
December	8	4.0	1.3	6.1	7.4	0.8	0.4	8.0	4.3	0.6	0.3	6.0	3.3

- Underlined numbers were in violation of NPDES Permit (SC0023710).

607-18G
STP-006

	Avg. Flow (gpm)	Fecal Coliform (conc/100 ml)		pH		Suspended Solids Quantity (lb/day)		Suspended Solids Conc. (mg/l)		BOD Quantity (lb/day)		BOD Concentration (mg/l)	
		Max.	Avg.	Min.	Max.	Max.	Avg.	Max.	Avg.	Max.	Avg.	Max.	Avg.
NPDES Permit Limits*	-	400	200	6.0	9.0	15.0	10.0	45	30	15.0	10.0	45	30
January	24	1.0	1.0	6.5	6.8	4.1	2.0	14.0	7.0	1.2	0.6	4.0	2.0
February	19	1.0	1.0	6.4	7.0	3.2	2.0	14.0	8.8	1.8	0.8	8.0	3.3
March	17	2.0	1.2	6.4	7.0	2.1	1.0	10.4	5.0	2.2	1.5	11.0	7.5
April	13	50	2.9	6.8	7.0	4.2	1.7	27	11	0.3	0.3	2.0	2.0
May	14	0	0	6.4	6.9	1.7	0.9	10.0	5.5	1.0	0.5	6.0	3.0
June	18	100	3.2	6.6	6.9	2.8	1.2	13.0	5.5	0.65	0.50	3.0	2.3
July	13	0	0	6.8	7.2	8.0	4.6	18.0	11.4	1.3	0.72	2.9	1.8
August	11	80	8.4	6.6	7.6	3.1	2.0	23	15.3	1.1	0.83	8.0	6.3
September	13	50	2.7	6.9	7.3	4.1	3.3	26	20.7	0.78	0.67	5.0	4.3
October	14	7.0	2.3	6.8	7.4	5.3	2.9	32.0	17.4	0.67	0.40	4.0	2.4
November	14	55	3	6.5	7.2	3.7	2.3	23	14	1.0	0.70	6.0	4.0
December	12	7.0	1.7	6.3	7.2	1.6	0.9	11.0	6.3	0.6	0.4	4.0	2.5

This discharge was in compliance for all parameters throughout 1981.

Flow Rates*

Plant	Designed Flow (gpm)	Avg. Flow (gpm)	% Design	Max. Flow (gpm)	Month	% Design (Max. Flow gpm)
607-7A	90	49.6	55	58	March	64
607-7F	28	25.0	89	33	September	118
607-7H	21	28.2	134	38	February	181
607-7P	7	6.2	89	12	January	171
607-7D	8	9.6	120	13	February	163
607-7G	8	15.2	190	19	February	238

*Note - These flows are only an average over 24 hours. Maximum flows during day shift can be 2 to 3 times the average flow.

TABLE 61

ASH BASINS EFFLUENT - NPDES PERMIT 0010175

Parameter		Sample Frequency	Sample Type	Permit Limit	ABD-011	ABF-012	ABH-013	ABK-014	ABP-015
Flow (10^6 gal/day)	max	1/week	weir	-	4.47	0.91	0.58	0.02	0.1
	min				0.11	<0.06	<0.06	0.01	<0.06
	avg				2.04(12)[a]	<0.18(12)	<0.17(12)	<0.01(4)	<0.07(9)
Oil and grease (mg/l)	avg	2/month	grab	15	<5(12)	<5(12)	<5(12)	<5(5)	<5(8)
Suspended solids (mg/l)	max	2/month	grab	100	15	20	27	49	104
	min			-	0.3	<1	<1	1	3
	avg			30	3.4(12)	<8.7(12)	6.5(12)	9.8(5)	24(8)
pH (Standard units)	max	1/week	grab	9.0	8.5	6.8	7.2	7.8	9.5
	min			6.0	6.0(12)	3.9(12)	4.2(12)	3(5)	5.7(9)
Arsenic (μg/l)	max	1/month	grab	-	50	10	<10	15	15
	min				<10	<10	<10	<10	<10
	avg				<18(10)[b]	<10(10)	<10(10)	<11(5)	<12(6)
Cadmium (μg/l)	max	1/month	grab	-	<10	<10	<10	<10	<1,000
	min				<10	<10	<10	<10	<10
	avg				<10(12)	<10(12)	<10(12)	<10(5)	<134(8)
Chromium (μg/l)	max	1/month	grab	-	<10	<10	<10	<10	<10
	min				<10	<10	<10	<10	<10
	avg				<10(12)	<10(12)	<10(12)	<10(5)	<10(8)
Copper (μg/l)	max	1/month	grab	-	20	45	210	<10	<10
	min				<10	<10	<10	<10	<10
	avg				<11(12)	<25(12)	<38(12)	<10(5)	<10(8)
Iron (μg/l)	max	1/month	grab	-	1,500	2,500	1,670	560	92,000
	min				40	90	120	15	415
	avg				212(12)	441(12)	421(12)	158(5)	24,436(8)
Lead (μg/l)	max	1/month	grab	-	27	33	30	13	37
	min				<10	<10	<10	<10	<10
	avg				<12(12)	<10(12)	<12(12)	<11(5)	<15(8)
Mercury (μg/l)	max	1/month	grab	-	<2	<2	<2	<0.2	<2
	min				<0.2	<0.2	<0.2	<0.2	<0.2
	avg				<0.8(12)	<0.8(12)	<0.8(12)	<0.2(5)	<1.3(7)
Nickel (μg/l)	max	1/month	grab	-	15	49	26	28	<10
	min				<10	<10	<10	<10	<10
	avg				<11(12)	<26(12)	<18(12)	<14(5)	<10(8)
Selenium (μg/l)	max	1/month	grab	-	<10	<10	<10	<10	<10
	min				<10	<10	<10	<10	<10
	avg				<10(10)	<10(10)	<10(10)	<10(5)	<10(6)
Vanadium (μg/l)	max	1/month	grab	-	32				
	min				<10	b	b	b	b
	avg				<18(11)				
Zinc (μg/l)	max	1/month	grab	-	15	110	146	18	30
	min				<10	18	<10	<10	<10
	avg				<20(12)	66(12)	44(12)	<12(5)	<12(8)

a ( ) number of months sampled.

b Positive numbers and numbers less than the limit of detection for a given analytical procedure were included in the average. Averages reported as less than a number (<) include the numbers which are at or below the limit of detection.

c No data.

\- No permit limit.

TABLE 62

PH DATA FOR ASH BASIN RECEIVING STREAMS

Parameter	Sample Frequency	Sample Type		Permit Limit	ABD-011-1 (Beaver Dam Creek)	ABF-012-1 (Upper Three Runs Creek)	ABH-013-1 (Four Mile Creek)	ABK-014-1 (Pen Branch)	ABP-015-1 (Myers Branch)
pH	1/week	grab	max	9.0	12.2	7.5	7.6	8.2	7.6
			min	6.0	1.9(12)[a]	5.4(12)	4.6(12)	6.1(12)	4.3

a ( ) number of months sampled.

TABLE 63
LOWER LIMITS OF DETECTION AND STANDARD DEVIATIONS

Analysis	Sample Type	Length of Counts, Minutes	Aliquot	Lower Limit of Detection & Precision (95% Confidence Level)	Units
			Zinc Sulfide Alpha Counters		
Gross alpha	Water	20	1 l	0.25 ± 0.13	pCi/l
	Vegetation	20	2 g	0.12 ± 0.06	pCi/g
	Rain (collection pan)	20	0.37 m^2	0.07 ± 0.04	nCi/m^2 E-02 (0.0007 ± 0.0004 nCi/m^2)
	Air	20	800 m^3	0.03 ± 0.02	pCi/m^3 E-02 (0.0003 ± 0.0002 pCi/m^3)
Uranium or plutonium (alpha)	Food	20	100 g	0.002 ± 0.001	pCi/g
			Gas Flow Proportional Beta Counters		
Gross beta	Water	10	1 l	7.1 ± 0.39	pCi/l
	Vegetation	10	2 g	3.5 ± 0.20	pCi/g
	Air	10	800 m^3	0.88 ± 0.05	pCi/m^3 E-02 (0.0008 ± 0.0005 pCi/m^3)
Sr-89,90	Bone	10	2 g	4.5 ± 0.25	pCi/g
	Rain	10	0.37 m^3	0.02 ± 0.001	nCi/m^2
	Air composites				
	Plant perimeter	10	~19,500 m^3	0.10 ± 0.001	pCi/m^3 E-02 (0.0010 ± 0.00001 pCi/m^3)
	25-mile radius	10	~18,500 m^3	0.11 ± 0.001	pCi/m^3 E-02 (0.0011 ± 0.00001 pCi/m^3)
	100-mile radius	10	~6,500 m^3	0.33 ± 0.02	pCi/m^3 E-02 (0.0033 ± 0.0002 pCi/m^3)
Sr-90	River water	50	20 l	0.02 ± 0.002	pCi/l
	Milk	50	0.5 l	1.10 ± 0.12	pCi/l
	Food	50	20 g	0.02 ± 0.002	pCi/g
	Rain	50	0.37 m^2	0.004 ± 0.0004	nCi/m^2
			Liquid Scintillation Counters		
Tritium	Drinking water	300	4 ml	300 ± 10	pCi/l (0.30 ± 0.01 pCi/ml)
	River water	300	4 ml	300 ± 10	pCi/l (0.30 ± 0.01 pCi/ml)
	Rainwater	300	4 ml	300 ± 10	pCi/l (0.30 ± 0.01 pCi/ml)
	Milk	300	4 ml	300 ± 10	pCi/l (0.30 ± 0.01 pCi/ml)
	Air (atmospheric moisture)	300	4 ml (water)	300 ± 10	pCi/l (0.30 ± 0.01 pCi/ml) (x avg abs humidity = ~4 pCi/m^3 of air)
	Food	20	3 ml	1 ± 0.05	pCi/ml (free water)
	Vegetation	20	3 ml	1 ± 0.05	pCi/ml (free water)
			Alpha Spectrometer Surface Barrier Detectors		
Pu-238	Air composites				
	Plant perimeter	72[a]	~19,500 m^3	0.36	aCi/m^3
	25-mile radius	72[a]	~18,500 m^3	0.39	aCi/m^3
	100-mile radius	72[a]	~6,500 m^3	1.18	aCi/m^3
	Rain composites				
	Plant perimeter	72[a]	4.8 m^2	0.0020	pCi/m^2
	25-mile radius	72[a]	4.4 m^2	0.0022	pCi/m^2
	Soil	24[a]	10 g	0.001	pCi/g
Pu-239	Air composites				
	Plant perimeter	72[a]	~19,500 m^3	0.35	aCi/m^3
	25-mile radius	72[a]	~18,500 m^3	0.38	aCi/m^3
	100-mile radius	72[a]	~6,500 m^3	1.12	aCi/m^3
	Rain composites				
	Plant perimeter	72[a]	4.8 m^2	0.0019	pCi/m^2
	25-mile radius	72[a]	4.4 m^2	0.0021	pCi/m^2
	Soil	24[a]	10 g	0.001	pCi/g
			Na(I) Detector (9 x 9 in.)		
I-131	Milk	200	3.8 l	1.0 ± 0.5	pCi/l
	Vegetable	10	50 g	0.2 ± 0.01	pCi/g
Cs-137	Milk	200	1.8 l	3 ± 2	pCi/l

[a]Hours.

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