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CHARACTERIZATION INVESTIGATION STUDY VOLUME 2: CHEMICAL AND RADIOLOGICAL ANALYSIS OF WASTE PITS NOVEMBER 1987

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Characterization Investigation Study

Volume 2: Chemical and Radiological Analyses of the Waste Storage Pits

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November 1987

Prepared for the

FEED MATERIALS PRODUCTION CENTER

WESTINGHOUSE MATERIALS COMPANY OF OHIO

P.O. BOX 398704
CINCINNATI, OHIO 45239

UNDER CONTRACT DE-AC05-86OR21600

U.S. DEPARTMENT of ENERGY

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CHARACTERIZATION INVESTIGATION STUDY VOLUME 2: CHEMICAL AND RADIOLOGICAL ANALYSIS OF WASTE PITS

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EXECUTIVE SUMMARY

The Feed Materials Production Center (FMPC) located near the unincorporated village of Fernald, approximately 20 miles northwest of Cincinnati in southwestern Ohio, was constructed in 1951 to produce high purity uranium metal for use at various Department of Energy facilities. The production facilities consist of eight separate operations plants that have used a wide variety of chemical and metallurgical processes on ore concentrates, recycled uranium from spent reactor fuel, or various uranium compounds. The waste products from these operations include: general uncontaminated scrap and refuse, contaminated and uncontaminated metal scrap, waste oils, low-level radioactive waste, co-contaminated wastes, mixed waste, toxic waste, sludges from water treatment, and fly ash from the steam plant. This material has been stored in designated areas and is estimated to total more than 350,000 cubic meters. Most of the process waste is contained in pit nos. 1 through 6, which were excavated in the area west of the production facility. Other wastes stored in this area include: laboratory chemicals and other combustible materials in the burn pit; fine waste stream sediments in the clear well; fly ash and waste oils in the two fly ash areas; lime-alum sludges and boiler plant blowdown in the lime sludge ponds; and nonradioactive sanitary waste, construction rubble, and asbestos in the sanitary landfill.

As part of the comprehensive waste management and environmental program at the FMPC, specific alternatives are being developed and evaluated for the final disposition of the waste inventory currently stored at the site. Selective investigations have been conducted to characterize the material contained within the approximate 100-acre Waste Storage Area. This report presents the methodology used to sample and analyze the waste materials described previously and the results obtained in that study.

The initial step in the investigation was to provide detailed sampling and analytical plans and procedures to be used in the field and laboratory, health and safety procedures to ensure worker and public protection, and methods to ensure and control the proper collection of data; as well as its review, storage, analysis, and reporting. A grid was constructed throughout the study area by having a licensed surveyor provide perpendicular lines from an established monument in order to accurately locate exact sampling locations. Three to 12 vertical borings were taken from pit nos. 1 through 6, burn pit, clear well, lime sludge ponds (2), sanitary landfill, and fly ash areas (2) for a total of 61 borings. In the waste pits that contained standing water, water samples were taken as well as the underlying sediments, which were sampled at 20-inch increments to

near the bottom of the pit. The dry pits were sampled at 24-inch increments from the surface to close to the bottom. All sampling gear was subjected to extensive decontamination procedures between sampling events.

A total of 790 samples was obtained for the various types of analyses. A portion of each sample was immediately sealed for volatile organic analysis for later compositing in the laboratory, a portion for gamma ray spectral analysis, and a composite made of samples from each borehole for nonvolatile chemical and radiochemical analysis. Chain-of-custody forms were completed for each sample.

A number of additional samples was provided for quality assurance purposes: 23 trip blanks to screen for sample cross-contamination during transport, 13 field blanks to evaluate the decontamination procedure, and 8 blind duplicates to check the representatives of the compositing procedure.

Approximately 100 samples were transported under chain of custody to the laboratory for chemical analyses, including RCRA characteristics, EPA Hazardous Substances List (HSL) inorganics, HSL organics with a library search for non-HSL constituents, indicators, and ions, for a total of approximately 165 chemical compounds or characteristics per sample. Five samples from pit no. 4 received more extensive analyses as described in 40 CFR 264 Appendix IX. All analyses were performed in accordance with EPA Contract Laboratory Program (CLP) protocols.

Nearly 900 samples and composite samples were counted in the on-site gamma spectroscopy laboratory to estimate the activity concentrations of U-238, Ra-226, and Th-232. These data were used to assess the vertical distribution of radioactivity in the pits and to provide data needed to ship the samples off-site. Seventy composite samples were transported under chain of custody to the laboratory for radiochemical analysis of U-234, U-235, U-238, Th-228, Th-230, Th-232, Pu-238, Pu-239/240, Tc-99, Sr-90, Ru-106, Np-237, and Cs-137. The fly ash area samples were analyzed for an abbreviated list but included Pb-210.

Most of the chemicals listed on the HSL of compounds were not detected in the more than 17,000 analyses performed. All of these results, as well as the extensive quality assurance documentation required by EPA's CLP program, are on file at Westinghouse Materials Company of Ohio. The data contained in this document report only those chemicals that were found in the samples.

All of the pits were tested for the four RCRA characteristics of hazardous waste: corrosivity, ignitability, reactivity, and EP-toxicity for metals, except for the fly ash areas. All were

found to be within the established limits or below the maximum allowable concentrations.

Each of the storage areas showed predominantly high concentrations of aluminum, calcium, iron, and magnesium ranging from thousands of mg/kg to hundreds of thousands of mg/kg. Arsenic and vanadium were found in all of the boreholes in pit nos. 3 and 5, the maximum concentration being 3,049 and 9,695 mg/kg, respectively. Barium concentrations were seen in all the composites from pit nos. 3 and 4, the maximum value at 14,354 mg/kg. Lead was also contained in all the pit no. 3 samples, the maximum concentration shown was 613 mg/kg. Pit no. 6 and the burn pit had silver concentrations of 158 and 506 mg/kg, respectively. High concentrations of fluoride came from pit no. 4, the maximum being 124,576 mg/kg. Traces of mercury were seen in all of the samples from pit no. 5 and the clear well. The upper and lower fly ash areas showed traces of arsenic, cadmium, lead, and mercury.

PCB's were pervasive throughout the areas tested, with the exception of the south lime sludge pond. Concentrations ranged from trace amounts to 10,000 ug/kg in pit no. 1. TCE was found in high concentrations (30,000 ug/kg) in pit nos. 4 and 6. Pesticides, including DDT, malathion, and organophosphates, were seen in the results from pit nos. 1, 2, and 4 and the north lime sludge pond. Large concentrations of semivolatile organic compounds such as fluorathenes (460,000 ug/kg), pyrenes (310,000 ug/kg), and phenanthrenes (370,000 ug/kg) were observed in pit no. 2. Semivolatiles were also characteristic in pit no. 4, the burn pit, the clear well, and the sanitary landfill. No semivolatile or volatile organics were found in pit no. 3, pit no. 5, the south lime sludge pond, or the fly ash areas. No pesticides or PCB's were seen in any of the water samples taken from pit nos. 4, 5, 6, or the clear well. Nor were semivolatile organics noted in waters from pit nos. 4 and 5. Traces of TCE, however, were found in all five water samples from pit no. 6.

Radioactivity concentrations in waste materials were principally associated with the isotopes of uranium, especially U-238. The lowest maximum values for U-238 were seen in the burn pit (454 pCi/g) and the clear well (670 pCi/g); moderate values in pit no. 1 (6,980 pCi/g), pit no. 3 (1,380 pCi/g), pit no. 4 (1,539 pCi/g), pit no. 5 (1,230 pCi/g); and high values in pit no. 2 (17,900 pCi/g) and pit no. 6 (18,700 pCi/g). Uranium isotopes were also found in the water samples from pit nos. 4, 5, 6 and the clear well; the highest activity concentration was in pit no. 4 where U-238 was 11,400 pCi/L. Th-230 likewise showed a wide range of activity concentration in most of the numbered pits except for the pit no. 6 and burn pit samples. The highest levels were contained in pit no. 3 (21,900 pCi/g) and pit no. 5 (20,200 pCi/g). Other Th-230 values were found in pit no. 1 (1,980 pCi/g), pit no. 2 (2,980 pCi/g), pit no. 4 (566 pCi/g), and the clear well (5,600 pCi/g). Elevated Ra-226 activity

concentration was noted in the same pits, once again with the exception of pit no. 6 and the burn pit. The values ranged from a low maximum in pit no. 4 of 18 pCi/g to a high maximum in pit no. 5 of 999 pCi/g. Pit nos. 3 and 5 also had the highest Tc-99 activity concentrations of 1,110 pCi/g and 2,990 pCi/g, respectively. All of the water samples showed Tc-99 and Ru-106 concentrations. Other radioisotopes, such Cs-137, Np-237, Sr-90, were found in pit nos. 5, 6, the clear well, and in some of the water samples. Isotopic plutonium was noted in pit nos. 3, 5, and 6. The upper and lower fly ash areas showed very low activity concentrations. Little or no radioactivity was found in the lime sludge ponds. The sanitary landfill likewise indicated very low activity concentrations.

In reviewing the geological boring logs and the vertical profile radiological results, the following observations were made. For pit nos. 1, 3, 5, 6, the burn pit, lime sludge ponds, and the fly ash areas, the geological log shows that the soils and residues were somewhat homogeneous with depth and from borehole to borehole. Several of the pits (burn pit and upper fly ash area) can be separated into distinct stratigraphical layers. The results for the vertical radiological study show that the U-238, Th-232, and Ra-226 concentrations in these pits are relatively uniform both with depth and between borings. In all of these pits, there are boreholes that have a distinct layer(s) that has elevated radionuclide concentrations; but on the average, the activity is relatively uniform. It should be noted that a wooden pallet disposal area was identified at the northern tip of pit no. 3.

For pit nos. 2 and 4 and the sanitary landfill, several of the borings gave poor sample recovery at various depths. This was due to the sampler coming into contact with concrete and/or various construction rubble or trash. The vertical profile radiological data show that the U-238, Ra-226, and Th-232 activity in these storage areas is generally more heterogeneous by depth and between borings than for the other storage areas.

Section 1

SECTION 1

INTRODUCTION

The purpose of this volume is to present the results produced by that portion of the Characterization Investigation Study associated with the chemical and radiological analysis of waste materials stored on the western portion of the Feed Materials Production Center. The storage facilities include: the six designated waste pits, burn pit, and clear well of the Waste Storage Area; the sanitary landfill; two lime sludge ponds; and two fly ash piles. Other portions of the study are reported in documents described in Subsection 1.2.

1.1 HISTORICAL BACKGROUND

1.1.1 Location

The Feed Materials Production Center (FMPC) is located near the unincorporated village of Fernald in the valley of the Great Miami River approximately 20 miles northwest of Cincinnati in southwestern Ohio. The unicorporated villages of New Baltimore, Venice (i.e., Ross), and Shandon are within a few miles. Hamilton, Ohio, is approximately 10 miles to the northeast. Specifically, the FMPC occupies parts of Sections 30 and 31, Township 3 North, Range 2 East; and parts of Sections 5, 6, 7, and 8, Township 2 North, Range 2 East.

The FMPC comprises 1,050 acres, of which approximately 850 acres are in northern Hamilton County and approximately 200 acres are in southern Butler County. The production area encompasses approximately 136 acres in the center of the FMPC.

The FMPC is bounded roughly by State Highway 126 to the north, a transmission line to the east, Willey Road to the south, and Paddy's Run Road and the Ohio and Chesapeake Railroad to the west (Figure 1-1).

1.1.2 Production Activities

The FMPC was constructed in 1951 to produce high purity uranium metal in several physical forms for use at various DOE facilities.

A wide variety of chemical and metallurgical processes is utilized at the FMPC. Figure 1-2 is a schematic of these processes (ORAU, 1985).

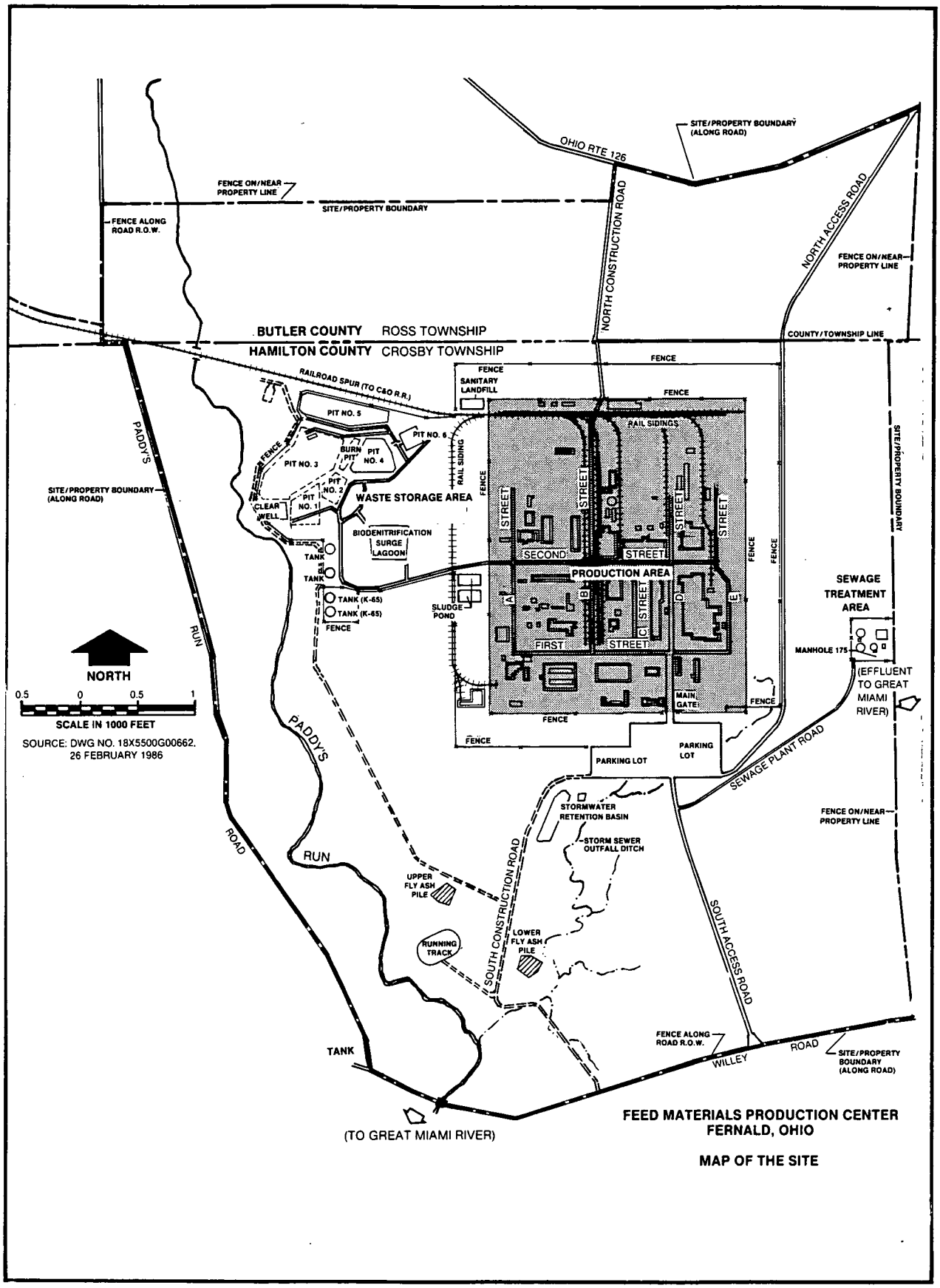
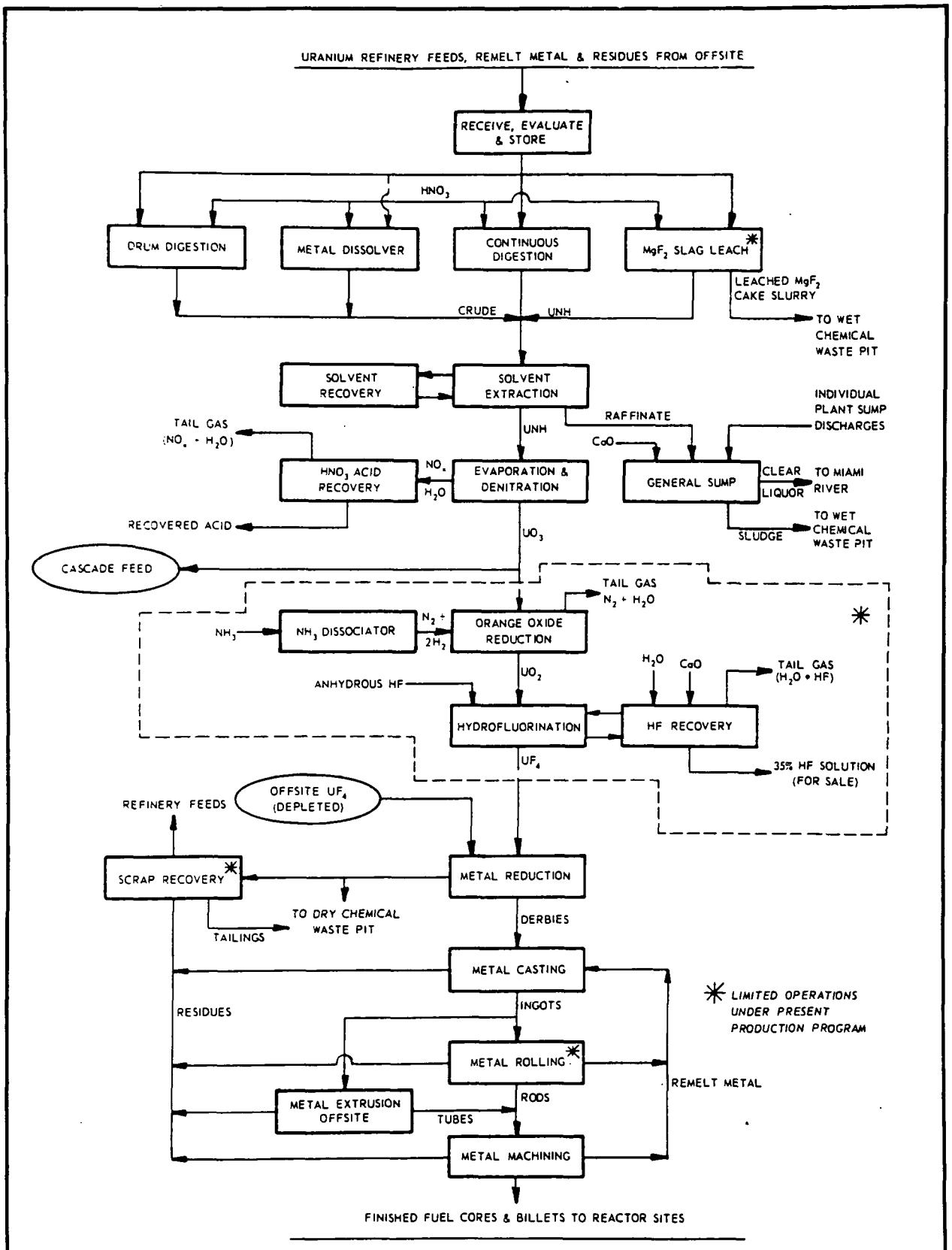


FIGURE 1-1 MAP OF THE SITE FEED MATERIALS PRODUCTION CENTER, FERNALD, OHIO



Reference ORAU, 1985.

FIGURE 1-2 SCHEMATIC DIAGRAM OF THE FMPC PROCESS

Several radionuclides are known to be present in feed materials processed, stored, or disposed of at the FMPC. U-235 enrichments in raw materials range up to approximately 20 percent. However, the maximum product enrichment is 1.25 percent, and the average product is slightly depleted. A small amount of thorium processing has also been performed in the past, but presently thorium is only stored on-site. Small quantities of fission products (e.g., Sr-90, Cs-137, Ru-106, and Tc-99) and transuranics may also be contained in some plant effluents and wastes as a consequence of processing some recycled fuel (ORAU, 1985). In addition, other nonuranic radionuclides (e.g., neptunium and plutonium) have been found in plant effluents. Raw feed materials containing very low concentrations of plutonium were used as late as May 1986 (Employee Bulletin, 1986).

In general, production facilities at the FMPC consist of eight separate operations plants. Uranium production begins at the sampling plant with ore concentrates, recycled uranium from spent reactor fuel, or with various uranium compounds. At the Refinery, these materials are dissolved in nitric acid and the uranium is extracted into an organic liquid and then back-extracted into dilute nitric acid to yield a solution of uranyl nitrate (NLO, 1985a). The uranyl nitrate is evaporated and heated to convert the solution to uranium trioxide (UO_3) powder. In the Green Salt Plant, the UO_3 is reduced to uranium dioxide (UO_2) with hydrogen and then converted to uranium tetrafluoride (UF_4) by reaction with anhydrous hydrogen fluoride. In the Metals Production Plant, UF_4 and magnesium are combined in a refractor-lined reduction vessel to produce uranium metal through a thermite reaction. This primary uranium metal is then re-melted with available scrap uranium metal to yield purified uranium ingots, which are extruded to form rods or tubes in the Metals Fabrication Plant. Sections are then cut and machined to final dimensions. Primary metal and metal castings of other shapes are also final products (NLO, 1985a).

1.1.3 Historic Disposal Practices

1.1.3.1 General Description of FMPC Wastes

Wastes stored at the FMPC include: general uncontaminated scrap and refuse, contaminated and uncontaminated metal scrap, waste oils, low-level radioactive waste, co-contaminated wastes, mixed wastes, toxic waste, and fly ash from the steam plant.

Wastes currently stored at the Waste Storage Area and elsewhere at the FMPC are estimated as totaling more than 3.5×10^5 cu m (ORAU, 1985).

The radionuclides encountered at the FMPC are generally uranium, thorium, and the radioactive daughters of each. The processing of recycled compounds has introduced transuranic radionuclides, such as plutonium and neptunium, as well as fission fragments such as ruthenium and technetium (present in the FMPC effluent). Other radionuclides are present in trace quantities (NLO, 1985b). In addition, the FMPC has been designated as the DOE thorium storage center, and about 1,050 metric tons of thorium feed material and products are stored on-site (ORAU, 1985).

Other wastes stored include: uncontaminated and contaminated metal scrap, 1,1,1-trichloroethane, spent barium chloride salt, methylene chloride/perchloroethylene degreaser, various caustic bases and acids (e.g., anhydrous ammonia and hydrofluoric acid), contaminated waste oil, PCB wastes, and construction rubble and debris (NLO, 1985b; ORAU, 1985; Dames & Moore, n.d.).

The historic waste storage facilities at the FMPC consist of six waste pits (numbers 1 through 6), two concrete silos (K-65 silos 1 and 2), two additional concrete silos (metal oxide silos 3 and 4), a burn pit, the clear well, fly ash disposal areas 1 and 2, sanitary landfill, and two lime sludge ponds. The six waste pits, four concrete silos, burn pit, and clear well are located west of the production facility within the fenced controlled area (Figure 1-3). The fly ash areas are located southwest of the production area.

Waste Pits

The waste pits consist of waste pit nos. 1 through 6, the burn pit, and the clear well. They are numbered chronologically in their order of construction. The pits also are typically referred to as "wet" if they received waste in slurry form (3 and 5), or "dry" if they received solid waste from trucks (1, 2, 4, and 6). Table 1-1 describes the characteristics of the Waste Storage Area and an approximate inventory of stored wastes based on a very limited amount of historical information. No characterization studies of the pits have been performed to date.

Transport of solid wastes to the pits was dependent upon the types of wastes generated and the types of storage containers. In general, drummed wastes were transported on semiflatbed trailers, metal dumpsters were carried by dumpster vehicles, bulk wastes were transported by dump trucks and dump trailers, and drummed pyrophoric metal was conveyed on four-wheeled flatbed trailers pulled by tow tractors (NLO, 1977).

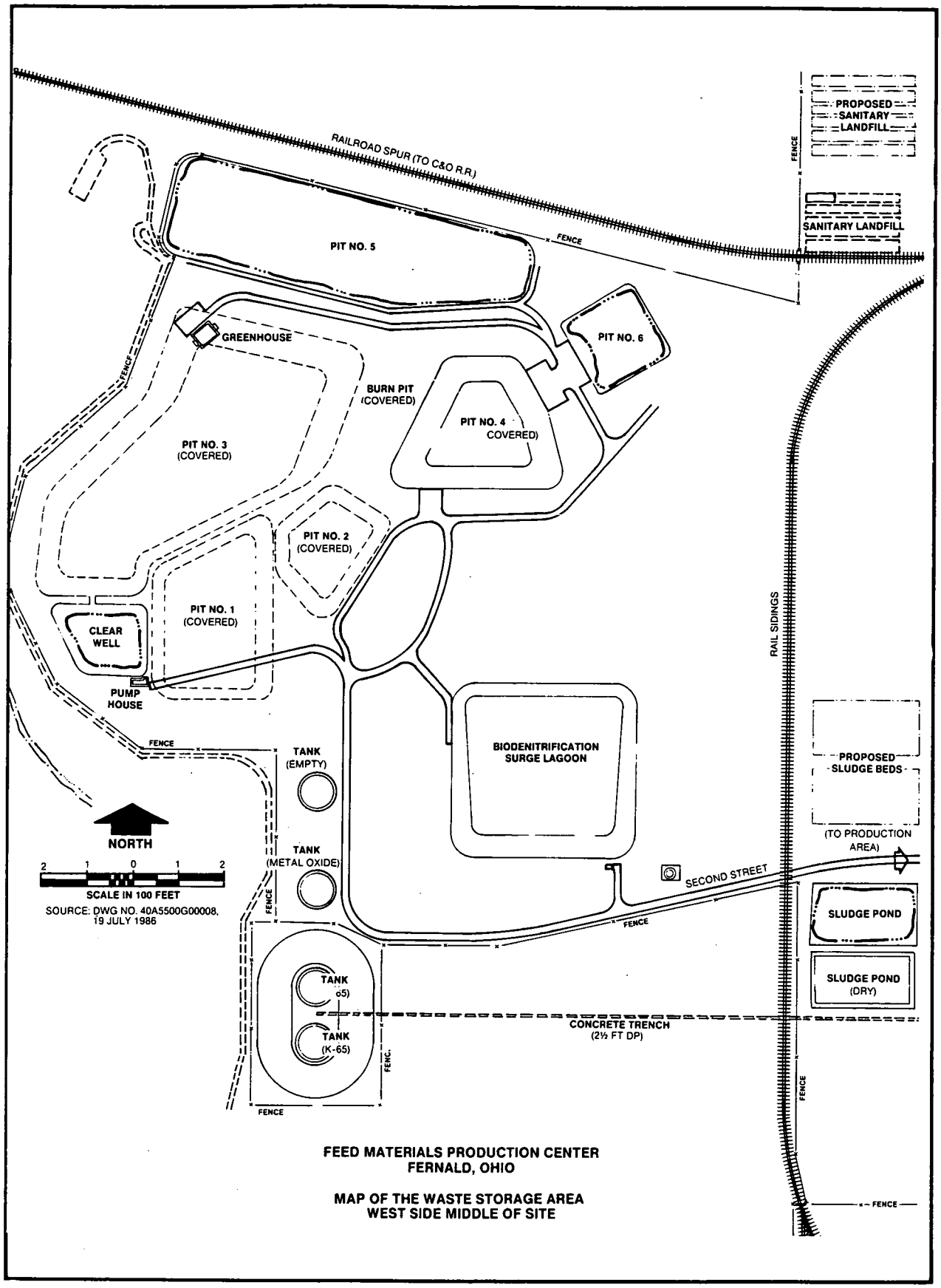


FIGURE 1-3 MAP OF THE STORAGE AREA WEST SIDE MIDDLE OF SITE

Table 1-1

Approximate Waste Storage Contents at the FMPC

Facility/Feature	Contents	Estimated Maximum Depth, Feet	Backfilled
Pit no. 1	Neutralized waste filter cakes, graphite, brick, scrap, sump liquor and cakes, depleted slag	17	Covered with clean fill dirt
Pit no. 2	Neutralized waste filter cakes, graphite, brick, scrap, sump liquor and cakes, depleted slag	13	Covered with clean fill
Pit no. 3	Lime neutralized raffinate concentrate, slag leach residues, filter cakes, fly ash, lime sludge	27	Covered with clean fill
Pit no. 4	Process residues, trailer cakes, slurries, raffinates, depleted graphite, nonburnable trash, asbestos	24	Covered
Pit no. 5	Solids from neutralized raffinate, slag leach slurry, sump slurry, lime sludge	30	No
Pit no. 6	Depleted slag, scrap, green salt, process residue, filter cake	24	No
Burn pit	Pyrophoric and reactive chemicals, oils, combustable wastes, scrap iron, wood, tin cans, ashes and gravel	Unknown	Backfilled
Clear well	Clear process effluents and surface runoff		Active
Sanitary landfill	Uncontaminated burnable materials including cafeteria scrap, asbestos, and miscellaneous construction rubble	Unknown	Backfilled

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Table 1-1
(continued)

Facility/Feature	Contents	Estimated Maximum Depth, Feet	Backfilled
Lime sludge ponds	Residue from water treatment facility	Unknown	North pond active South pond covered
K-65 silos	Austrailian radium cake and pitch blend processing residues	NA	NA
Metal oxide silo (lower)	Metal oxides	NA	NA
Metal oxide silo (upper)	Empty	NA	NA
Slurry line	Enclosed pipelines that transported waste material to K-65 silos, metal oxide silo, and pit nos. 2, 3, 4, and 5	NA	NA
Upper fly ash pile	Fly ash and contaminated oils	Unknown	NA
Lower fly ash pile	Fly ash	Unknown	Active
Southfield area	Construction rubble containing low levels of radioactivity	Unknown	Covered

At the Waste Storage Area, dump trucks, dump trailers, dumpster units, and drummed wastes were emptied directly onto the pits' edges. The materials were then pushed into the pits by either a bulldozer or a dragline scraper (NLO, 1977). Loose contamination was washed from bulldozers, dragline scraper, vehicles, dumpster, and fork trucks with water at the pits. Empty drums were washed in the drum washing facility.

Liquid wastes were transported between the general sump and the Waste Storage Area via two 6-inch diameter pipes (Dames and Moore, n.d.). These pipes exited the production area on the west side enclosed in a concrete trench that was covered with slabs of concrete. The trench extended to the fence of the K-65 tanks at which point the pipes turned north and were buried underground. The two pipes then branched with one running north between pit nos. 2, 3, and 4 to pit no. 5, while the other ran west to the clear well.

On the southern dike of pit no. 5, the pipe from the general sump connected to three berm valves. With these valves, the liquid wastes could be directed from the general sump to pit nos. 4 or 5, from either of the two pits to the other, and from either pit back to the general sump (Dames and Moore, n.d.).

An additional pipe originated in the tower at the west end of pit no. 5 and extended, buried in the dike of pit no. 3, to the clear well. This pipe transported pit no. 5 supernatant to the clear well. The other 6-inch pipe, which connected the clear well and the general sump, was used to transport clear well effluent back to the general sump (Dames and Moore, n.d.).

Waste pit no. 1, constructed in 1952, was excavated into an existing clay lens and lined with clay excavated from the burn pit (H&R, 1986). The capacity of the waste pit was expanded by the addition of a berm on the west end in 1957 to provide a total capacity of 40,000 cubic yards (cu yd). The waste material that was placed in the waste pit consisted primarily of neutralized waste filter cakes, production plant sump cakes, depleted slag, scrap graphite, contaminated brick, and sump liquor. Although the majority of the wastes were dry solids, decant pipes were constructed through the west berm. These pipes were used rarely (NLO, 1985c). The quantity of uranium placed in the pit is estimated at 52,000 kg. Waste pit no. 1 was closed in 1959, backfilled, and covered with clean fill dirt (NLO, 1985c). Surface water runoff is diverted to the clear well prior to its discharge to the Great Miami River.

Waste pit no. 2 was constructed in 1957 and operated from 1957 to 1964 (H&R, 1986). This pit was constructed near a small pond east of waste pit no. 1 and lined with a compacted on-site native clay layer (Dames and Moore, n.d.). Waste pit no. 2 received primarily dry, low-level radioactive wastes consisting

of neutralized waste filter cakes, sump cakes, depleted slag, contaminated brick, sump liquor, and concentrated raffinate residues. As with pit no. 1, decant pipes were located through the west berm. The pit holds approximately 13,000 cu yd of wastes that contain approximately 1,206,000 kg of uranium and approximately 400 kg of thorium. The waste pit has been covered with clean uncontaminated fill and graded to provide surface drainage to the clear well for subsequent discharge to the Great Miami River.

Waste pit no. 3 was constructed in 1959 by excavating into the underlying clay lens and placing a layer of clay along the pit walls (Dames and Moore, n.d.). Waste pit no. 3 was operated as a settling basin from 1959 to 1968, receiving wet waste streams consisting of lime-neutralized radioactive raffinate concentrate from the Recovery Plant and the general sump (H&R, 1986; NLO, 1985c). From 1975 to 1977, the waste pit was used to dispose of slag leach residue, filter cakes, fly ash, and lime sludges. The pit contains an estimated 227,000 cu yd of wastes, including 129,000 kg of uranium and 400 kg of thorium. The pit was retired in 1977, and clean fill was placed over the waste. Surface water runoff is diverted to the clear well prior to discharge to the Great Miami River.

Waste pit no. 4 was constructed in 1960 and used until May 1986. This pit was constructed similarly to pit no. 3 with a liner consisting of 2 feet of compacted clay on the sides and bottom. Waste pit no. 4 received process residues, trailer cakes, slurries, raffinates, graphite, noncombustible trash, and asbestos (H&R, 1986; NLO, 1985c). The pit contains an estimated 53,000 cu yd of waste, including more than 3 million kg of uranium and 61,800 kg of thorium.

Waste pit no. 5 was constructed in 1968 and operated from 1968 to 1983 (H&R, 1986; NLO, 1985c). The pit was lined with a 60-ml thick Royal-Seal EPDM elastomeric membrane. Occasional joint failures and tears occurred at the surface and were noticed during routine inspection at various times and ascribed to weathering effects (NLO, 1985c). The corrective action has been to re-glue the seam and patch the tears. As with pit no. 3, this waste pit received liquid waste slurries from the Refinery and the Recovery Plant, including neutralized raffinate settled solids, slag leach slurry, sump slurries, and lime sludge. The waste volume consists of approximately 102,500 cu yd, containing 50,309 kg of uranium and 17,000 kg of thorium (H&R, 1986).

Waste pit no. 6 was constructed in 1979 and operated until 1985 (H&R, 1986). Pit no. 6 was constructed in the same manner as waste pit no. 5 and lined with a similar synthetic liner. Minor tears above the water line have been observed and repaired.

Noncoarse solid wastes, including green salt, filter cakes, and process residues, containing elevated levels of uranium have been stored in the pit. Rainfall that had collected in the pit was pumped to waste pit no. 5 for settling prior to discharge via the clear well until March 1987. Collected rainfall is transferred currently to nearby wastewater treatment facilities prior to discharge. The current waste volume is approximately 9,000 cu yd, which consists of 843,142 kg uranium (H&R, 1986). The capacity of waste pit no. 6 has not been reached; however, the pit is currently retired.

The burn pit was constructed in 1957 as a site to excavate clay to line waste pit nos. 1 and 2. The burn pit was subsequently used to dispose of laboratory chemicals and to burn combustible materials, including pyrophoric and reactive chemicals, oils, and other low-level contaminated combustible materials (H&R, 1986). The actual inventory of materials or chemicals that were disposed of in the burn pit is unknown. The boundaries of the burn pit are no longer discernible from covered pit no. 4 (Lechel, 1986).

The clear well receives surface runoff from the waste pit area. The clear well was used until March 1987 as a final settling basin prior to discharge to the Great Miami River via the FMPC NPDES discharge point.

Waste Storage Silos

The waste storage silos are located south of the waste pit areas as shown in Figure 1-1.

The four 80-foot diameter silos were constructed with floors of 4-inch concrete over an 8-inch layer of gravel containing an underdrain system of 2-inch slotted pipe draining to a collection tank (NLO, 1985c). Below the gravel is a 2-inch layer of asphaltic concrete underlain by 18 inches of compacted clay. The walls are 8-inch thick pre- and post-stressed concrete with a 0.75-inch gunite coating on the exterior. The silos' domed roofs taper from 8 inches thick at the silo walls to 4 inches thick at the apex.

Waste raffinate slurries were pumped into the K-65 silos where the solids would settle. The clarified liquid was then decanted through valves placed along the 26-foot height of the silo wall and sent to the refinery sump. As the depth of solids reached the level of the valve, it was sealed and the next higher valve was used to decant liquids. Settling and decanting were continued in this way until the silos were filled to approximately 4 feet below the top of the vertical wall (NLO, 1985c).

From 1952 through 1959, more than 7,200 cu yd of residues resulting from the processing of pitchblende ores were disposed of in the K-65 silos (H&R, 1986). This residue contains 11,200 kg of uranium as well as radium and trace amounts of precious and heavy metals.

In 1964, the walls of the silos were covered with an earthen embankment to provide protection and structural support and to minimize direct radiation. In 1979, all obviously visible tank openings were sealed. The earthen embankment was further enlarged in 1983 to alleviate observed soil erosion on the slopes. Following identification of cracks in the center portion of the domes of the silos, protective covers consisting of prefabricated wood, neoprene, hypalon, and metal structures were placed over the domes of silos 1 and 2 (H&R, 1986).

Metal oxide tank 3 contains waste raffinate slurries that had been dewatered in an evaporator and spray calciner to produce a dry, powder-like waste. This calcined waste was pneumatically conveyed to the tank. Excess conveying air was filtered through a baghouse dust collector (NLO, 1985c). Metal oxide tank 4 remains empty.

Metal oxide tank 3 was designed in a fashion similar to silos 1 and 2. From 1952 through 1959, more than 5,100 cu yd of calcined residues were stocked in the silo. These residues contain approximately 18,000 kg uranium, some metal oxides, heavy metals, and radium.

Fly Ash Disposal Areas

The fly ash disposal areas are located southwest of the production area (Figure 1-1). Fly ash resulting from the coal-fired boiler plant is loaded into dump trucks and transported to the disposal area (H&R, 1986). The inactive, retired upper pile contains approximately 50,000 cu yd of fly ash and is sparsely covered with soil and vegetation. Approximately 1,000 kg of uranium are present from the spreading of waste oils over the fly ash to control dust. The active lower pile located southeast of the inactive site currently contains approximately 33,000 cu yd of fly ash.

The area known as the southfield is encompassed by the areas including the fly ash piles. The southfield area is directly north of the inactive fly ash pile (H&R, 1986). This area was reported to be the repository for belowground disposal of construction rubble containing low levels of radioactivity. Radiological surveys indicate that the soil in this area contains elevated levels of radionuclides (H&R, 1986).

Lime Sludge Ponds

Spent lime from FMPC Water Treatment Plant operations (lime-alum sludges and boiler plant blowdown) are conveyed to two unlined ponds for storage (Figure 1-3). Each pond is approximately 100 feet by 200 feet by 6 to 8 feet deep with a total volume of 5,000 cu yd per pond. One pond is completely filled and retired. The other is approximately 90 percent full. No hazardous materials are recorded as being received at the lime sludge ponds.

Sanitary Landfill

The FMPC sanitary landfill is located on a 3-acre tract in the northeast corner of the Waste Storage Area (Figure 1-3). The facility is organized into 17 individual cells, 5 of which are full and out of service. The 12 remaining cells are awaiting issuance of an OEPA Permit to Install. Each cell is estimated to provide approximately 2,080 cu yd of gross disposal volume. Materials that have been accepted at the facility include: nonburnable, nonradioactive sanitary wastes generated on-site (20 cu yd/wk); and nonradioactive construction-related rubble (variable quantity). Small quantities of nonradioactive asbestos are also deposited in the facility.

1.2 DEVELOPMENT OF THE CHARACTERIZATION INVESTIGATION STUDY (CIS)

1.2.1 General Background

As part of the comprehensive waste management and environmental program for the FMPC, specific alternatives are being developed and evaluated for the final disposition of the low-level waste inventory currently stored at the site. These objectives are being implemented through the sitewide RI/FS and the Environmental Impact Statement currently being developed by the Department of Energy. Selected investigations of approximately 100 acres within the Waste Storage Area were initiated to provide data and information for the RI/FS and EIS. These site characterizations are collectively referred to as the Characterization Investigation Study (CIS). The study consists of the assessment of existing data and reports, development of a detailed work plan, performance of field investigations, data interpretation and analysis, and final reporting. The following subsections provide a brief description of each of the investigations.

1.2.2 Evaluation of Current Situation

The Evaluation of Current Situation (Roy F. Weston, Inc., 1986a) consists of seven sections that in their entirety

describe the present situation as it is known from obtainable records, previous studies and monitoring data, and conversations with plant personnel. Section 2, Site Background, presents a general description of the regional and site environments organized into traditional categories such as geology, soils, groundwater, water quality, flora and fauna, land use, population, etc., and indicates the limitations of present knowledge. Section 3, Nature and Extent of Problem, describes the production process, waste management operations and facilities, waste composition and distribution, and an evaluation of environmental and public health risks associated with the existing situation. Section 4, History of Response Actions, includes descriptions of past remedial measures performed in the Waste Storage Areas. Section 5, Definition of Boundary Conditions, sets the outer geographic limits of the characterizations based on present knowledge. Section 6, Site Topographic Mapping, describes the types of maps that will be available for the project as well as the grid system to be used for position location. Section 7, Preinvestigation Evaluation, identifies potential disposal categories that are likely to be considered and is used to ensure that the data collected in the characterization are sufficient for engineering evaluations.

1.2.3 Support Documentation

Support Documentation (Roy F. Weston, Inc., 1986b) contains nine sections that in their entirety form the planning basis for site characterization activities at the Waste Storage Area. Their intent is to fully document the why, what, where, and how of the investigations to be performed. Sections 2 through 5 comprise the environmental sampling plans that present the rationale and procedures to be used in the field. The chemical and radiological characteristics of the wastes will be defined, as well as any contamination that may have migrated into selected environmental pathways. Section 6 presents the Health and Safety Plan, the implementation of which will ensure that the studies will be conducted in a manner that ensures worker and public protection. The QA/QC Plan, contained in Section 7, is intended to ensure and to control the proper collection of data. Section 8 presents the series of activities and methods that will be used to keep the public informed as these studies progress. The Data Management Plan, in Section 9, describes how the data are to be reviewed, collected, stored, analyzed, and reported.

1.2.4 Characterization Reports

The principal objective of the Geophysical Survey (Roy F. Weston, Inc., 1987a) was to provide information to optimize placement of soil borings and groundwater monitoring wells for the CIS and the RI/FS. An additional objective of the survey was to identify the location of buried steel tanks and drums.

The presence of drums possibly containing hazardous or radioactive waste material presents a potential safety hazard to drilling operations. Three separate techniques were used:

- Magnetics, to identify areas containing relatively large concentrations of buried ferrous metal.
- Electromagnetic Terrain Conductivity (EM), to locate areas of anomalous electrical conductivity produced by buried metal debris or groundwater plumes.
- Ground Penetrating Radar, to locate pit boundaries and to verify indications of buried metal objects and buried pipelines.

Chemical and Radiological Analysis of Waste Pits (Roy F. Weston, Inc., 1987b). Three to 12 vertical samples were taken from pit nos. 1 through 6, burn pit, clear well, lime sludge ponds (2), sanitary landfill, and fly ash piles (2). In the wet pits containing standing water, water samples were taken as well as the underlying sediments, which were sampled at 20-inch increments to the bottom of the pit. The dry pits were sampled at 24-inch increments from the surface to the bottom. Each vertical sample was composited and sent to laboratories for chemical and radiological analysis. Chemical analyses included RCRA characteristics and constituents designated on EPA's Hazardous Substance List. Pit no. 4 samples received a more extensive series of analyses -- those found in Appendix IX. All analyses followed protocols established by EPA's Contract Laboratory Program (CLP). Radiochemical analyses included: U-234, U-235, U-238, Th-228, Th-230, Th-232, Pu-238, Pu-239/Pu-240, Tc-99, Sr-90, Ru-106, Np-237, Cs-137, and Ra-226. Ra-228 and Pb-210 were included for samples from the fly ash piles. In addition, each increment of each sample was processed through the on-site gamma spectroscopy laboratory to evaluate the vertical distribution of selected radionuclides in the pits.

Selected samples were processed on-site for standard engineering properties, but are not included in this report.

Radiological Characterization of Surface Soils in Waste Storage Area (Roy F. Weston, Inc., 1987c). A systematic survey of the surface soils throughout the Waste Storage Area, associated on-site drainages, and the fly ash piles was conducted over a 10-month period. A 50-foot grid was established using standard surveying techniques. Measurements were taken at each grid intersection using a Field Instrument for Detecting Low-Energy Radiation (FIDLER). A scan of the area within the grid was also performed, and when elevated readings were encountered, measurements were made along a finer grid (6.5 ft x 6.5 ft).

Approximately 24,400 locations were surveyed to locate areas where the concentrations of uranium exceeded 35 pCi/g. Soil samples down to 18 inches deep were taken at those locations and sent to the on-site gamma spectroscopy laboratory where estimations of radionuclide concentrations were made for U-238, Ra-226, Th-232, Cs-137, and Ru-106. In addition, measurements were made of the beta-gamma dose rate at 50-foot intervals in the study area, and the exposure rate due to penetrating gamma radiation was determined in all work areas. The data from this surface radiological characterization may be compared to that obtained at 15 background stations located in the vicinity of FMPC, but at distances large enough to be free of influence from site activity.

Section 2

SECTION 2

DESCRIPTION OF METHODS

Sampling and analytical methods are presented in this section in a descriptive format to provide a general understanding of how these activities were performed and assist the reader in understanding the data presented in Section 3. Detailed written procedures for all activities can be found in Site Characterization of the Waste Storage Areas, Part 2, Vols. 1 and 2, Support Documentation, (Roy F. Weston, Inc., 1986).

2.1 SAMPLING

2.1.1 Survey Grid and Coordinate System

A sampling grid was constructed throughout the study area by having a licensed surveyor locate perpendicular lines at 100-foot intervals from an established monument. Fifty-foot and smaller subgrids were filled in by field personnel by cross taping with measuring tapes. All grid nodes were marked with pin flags. The areal extent of the grid can be seen in Figure 2-1.

The field data were collected in reference to the FMPC local coordinate system for ease of recording. These coordinates were later converted into global state plane coordinate values by using the following equations:

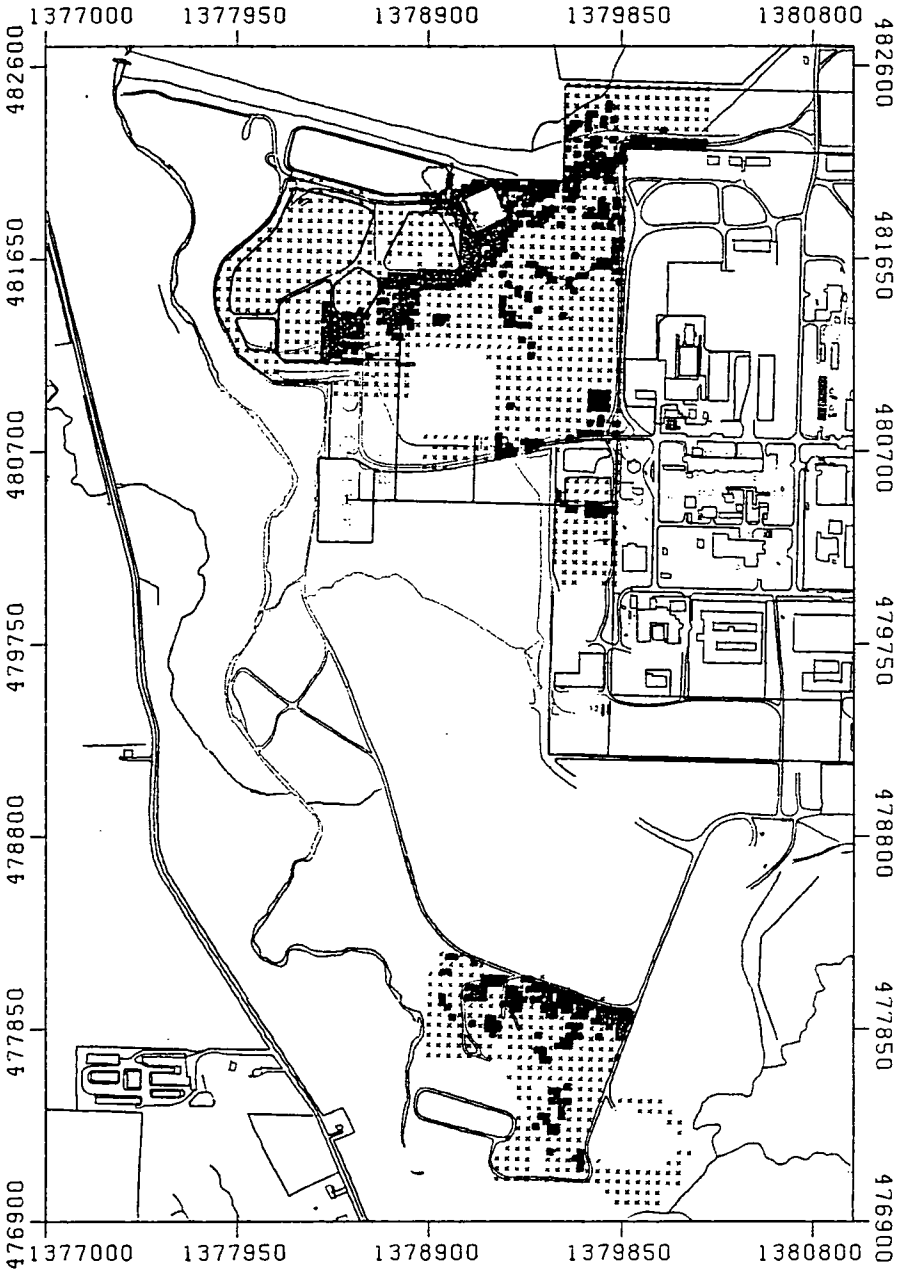
East Coordinate = 1,376,578.563 + EF (Cos A) - SF (Sin A)
North Coordinate = 482,784.678 - EF (Sin A) - SF (Cos A)

where: EF is the local east coordinate.
SF is the local south coordinate.
A is the angle of rotation, 1° 34' 04".

All sampling locations are presented in this latter coordinate system.

2.1.2 Number, Location, and Depth of Samples

The number of borings made in each pit varied from 3 to 12. Statistical representativeness could not be established at this phase because no assumptions regarding homogeneity of the material could be made. In general, the smaller pits, or those of less concern, had fewer borings than the larger pits. The upper fly ash pile had the largest number of borings because of its large area.



STATE PLANE CØØRDINATE SYSTEM

ØHIØ SØUTH ZØNE

1 INCH = 950 FEET

PREPARED BY

RØY F. WESTØN, INC. 9/1/87

FIGURE 2-1 GRID LOCATION

The locations of borings can be seen in Figures 2-2A, 2-2B, 2-2C, and 2-2D. In some cases the borings appear to be placed outside the designated pit boundary; for example, Borings 4 and 6 in the sanitary landfill. However, all borings were placed in actual fill material areas. The exact coordinates are presented in Table 2-1. An attempt was made to locate the sampling locations at well-spaced intervals within pits, but the final determination was made by reviewing the geophysical survey data to avoid areas with high potential for buried metal objects. Sampling extended from the surface to near the bottom of pit nos. 1 through 6, as determined by a visual inspection of the boring material by a geologist. (In other locations, sampling extended to the subgrade.)

Surface water sampling locations are provided in Table 2-2.

2.1.3 Sample Designation

A code system was used to identify various information concerning each sample taken during the course of the field investigation. Sample codes were in the form XXX-YY-OO-OOO, where:

- XXX Project identification - FMP was used to designate the Feed Materials Production Center.
- YY Sample measurement type - A two-letter designation, such as SW for surface water samples or PS for subsurface samples, following the project identification code.
- OO Sample location - A two-digit designation indicating sample location as referenced in Table 2-3.
- OOO Sample number - A three-digit code was used to consecutively number samples taken for each sample type.

For example, FMP-PS-02-001 designates the first subsurface sample taken from pit no. 2 at the Feed Materials Production Center.

2.1.4 Collection Methods

Dry Pits

The pits designated as dry in this report include pit nos. 1 through 4, the burn pit, the sanitary landfill, the south lime sludge pond, and the upper and lower fly ash piles. This designation was made on the basis of the present condition rather than the historical designation based on the physical condition

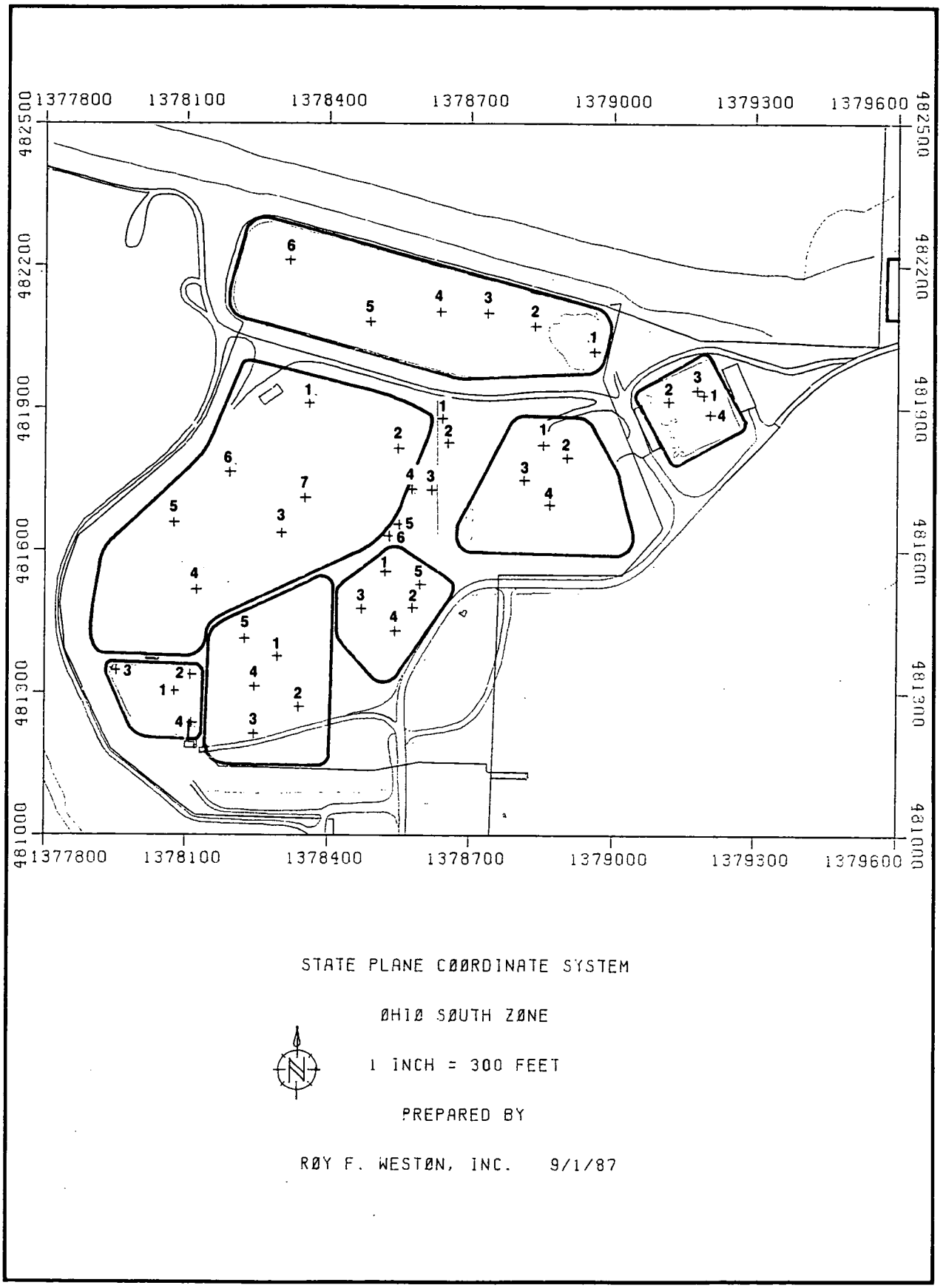


FIGURE 2-2A BOREHOLE SAMPLE LOCATIONS IN THE WASTE STORAGE AREA

STATE PLANE CØØRDINATE SYSTEM

ØHIØ SØUTH ZØNE

1 INCH = 75 FEET

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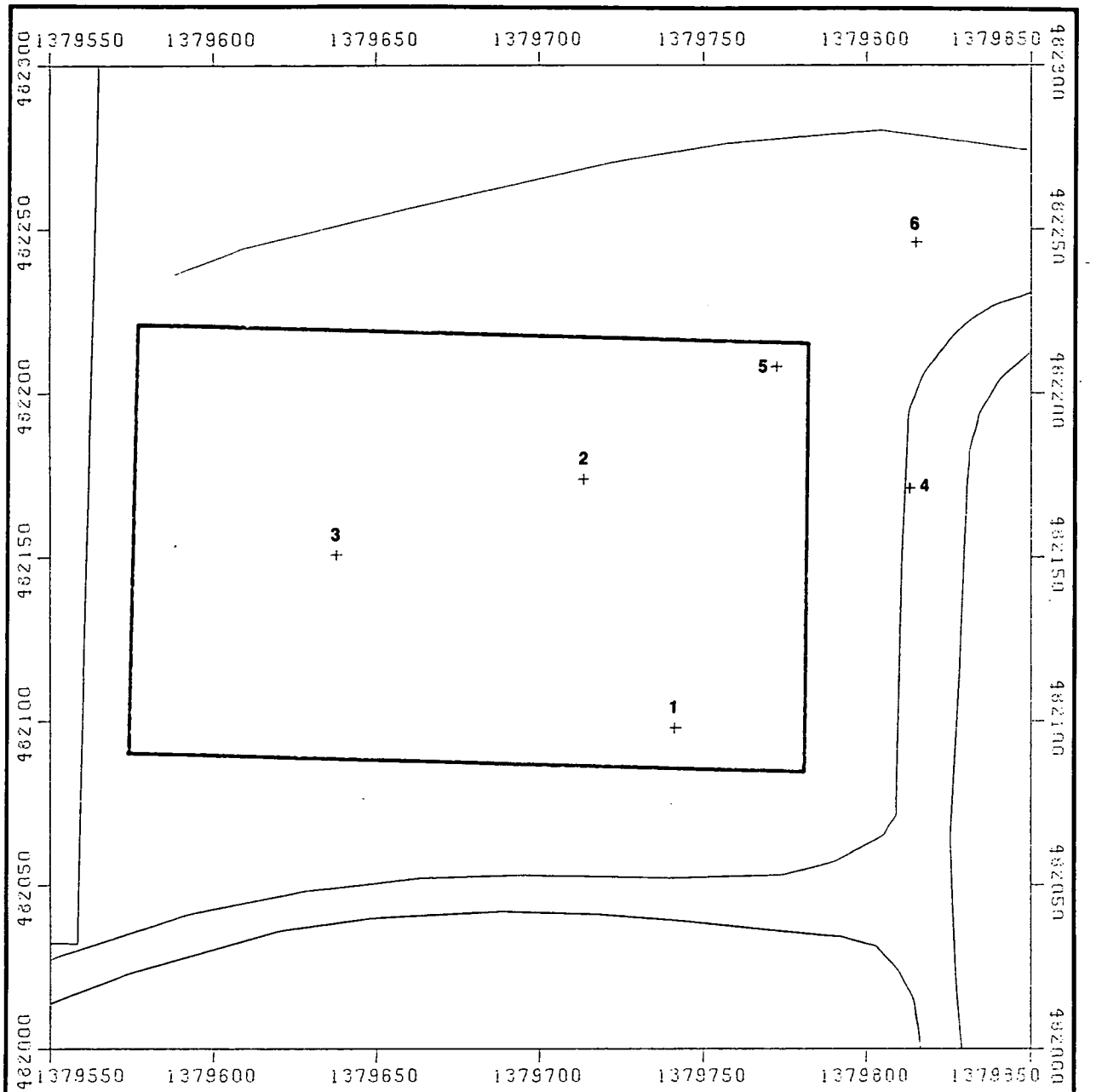
FIGURE 2-2B BOREHOLE SAMPLE LOCATIONS IN THE LIME SLUDGE POND AREA



STATE PLANE CØØRDINATE SYSTEM

ØHIØ SØUTH ZØNE

1 INCH = 50 FEET

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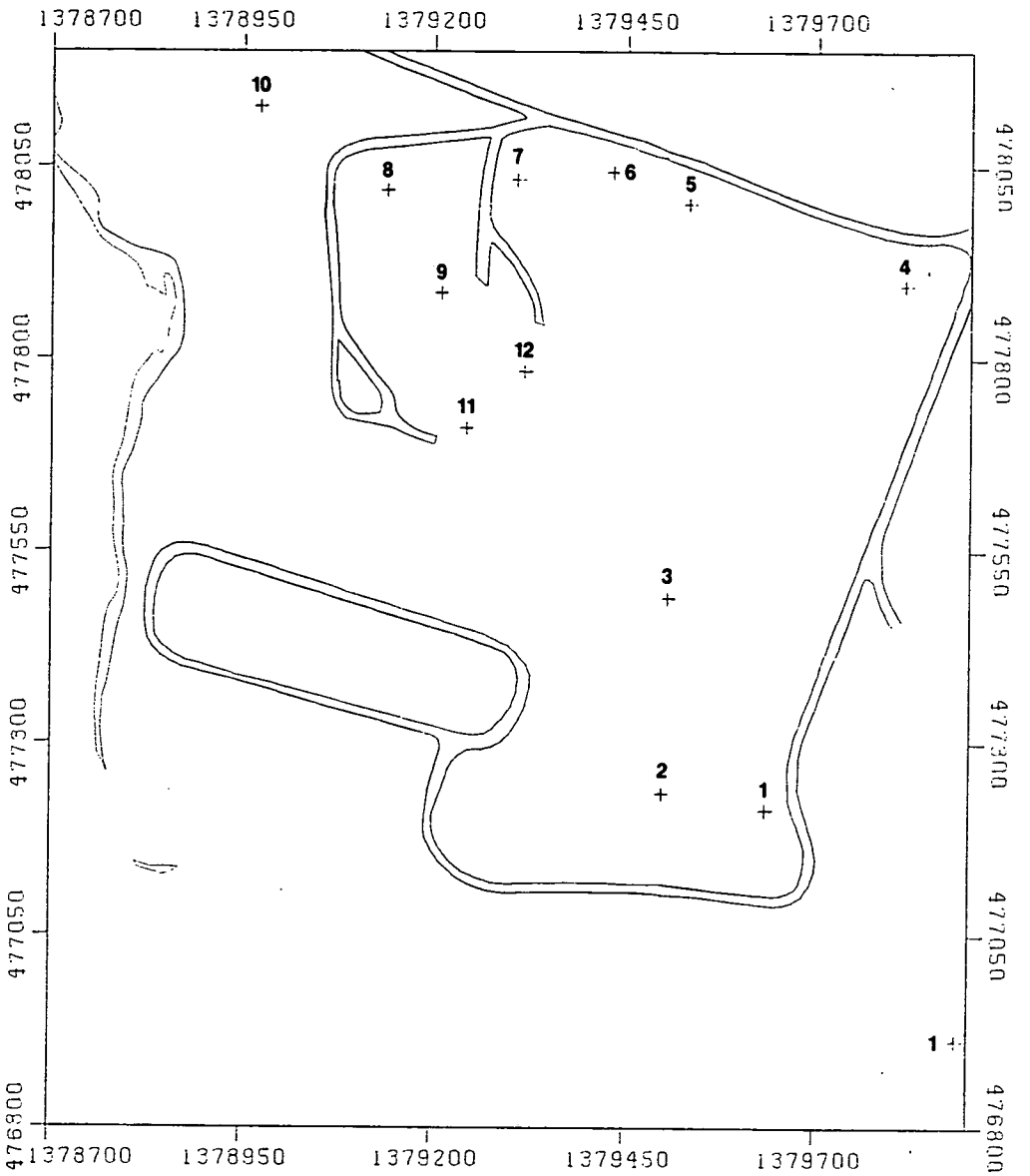
FIGURE 2-2C BOREHOLE SAMPLE LOCATIONS IN THE SANITARY LANDFILL



STATE PLANE COORDINATE SYSTEM

OHIO SOUTH ZONE

1 INCH = 250 FEET

PREPARED BY

ROY F. WESTON, INC. 9/1/87

FIGURE 2-2D BOREHOLE SAMPLE LOCATIONS IN THE FLYASH AREA

TABLE 2-1 COORDINATE LOCATION OF BORINGS

Borehole Locations

Borehole		State Plane Coordinates Northing	Easting
PIT ONE			
	01	481377.31	1378290.75
	02	481270.97	1378337.75
	03	481213.59	1378241.25
	04	481313.56	1378244.00
	05	481414.22	1378221.63
PIT TWO			
	01	481556.09	1378520.63
	02	481479.47	1378578.63
	03	481477.47	1378468.50
	04	481430.44	1378542.25
	05	481529.03	1378595.00
PIT THREE			
	01	481910.75	1378355.38
	02	481815.44	1378547.75
	03	481637.22	1378297.75
	04	481517.06	1378119.50
	05	481658.38	1378073.25
	06	481765.16	1378191.25
	07	481710.81	1378349.88
PIT FOUR			
	01	481822.09	1378853.13
	02	481795.72	1378902.38
	03	481748.16	1378813.00
	04	481696.72	1378864.63
PIT FIVE			
	01	482019.28	1378958.50
	02	482072.69	1378834.88
	03	482100.41	1378735.63
	04	482103.13	1378635.75
	05	482082.25	1378485.00
	06	482212.00	1378313.50
PIT SIX			
	01	481927.88	1379191.13
	02	481914.94	1379115.75
	03	481938.28	1379176.38
	04	481887.47	1379205.00
BURNPIT			
	01	481877.94	1378639.50
	02	481827.56	1378653.13
	03	481728.53	1378616.38
	04	481729.66	1378575.50
	05	481655.38	1378548.38
	06	481630.91	1378527.75

Borehole Locations

Borehole		State Plane Coordinates Northing	Easting
CLEARWELL			
	01	481303.22	1378073.63
	02	481337.25	1378109.50
	03	481346.56	1377951.75
	04	481236.16	1378111.75
UPPER FLYASH			
	01	477214.00	1379634.25
	02	477234.75	1379496.75
	03	477489.63	1379504.75
	04	477895.31	1379815.00
	05	478002.13	1379530.88
	06	478042.88	1379429.88
	07	478033.25	1379306.63
	08	478018.91	1379136.13
	09	477885.91	1379207.50
	10	478127.53	1378969.00
	11	477709.94	1379240.75
	12	477782.88	1379317.75
LOWER FLYASH			
	01	477003.72	1379933.63
	02	476914.03	1379884.13
NORTH LIME SLUDGEPOND			
	01	480677.00	1379572.00
	02	480650.63	1379621.38
	03	480624.28	1379670.63
SOUTH LIME SLUDGEPOND			
	01	480550.66	1379618.63
	02	480522.94	1379717.88
	03	480472.28	1379741.00
SANITARY LANDFILL			
	01	482097.91	1379741.00
	02	482173.69	1379713.00
	03	482150.75	1379637.38
	04	482170.97	1379813.00
	05	482208.09	1379772.00
	06	482245.94	1379815.00

Table 2-2

Locations of Surface Water Samples

Sample No.	Description
FMP-SW-04-001	Pit no. 4 - Sample collected from a 10-ft by 20-ft shallow depression in a pit near the southeast corner. Collected approximately 6 inches below surface using a Wheaton subsurface grab sampler.
FMP-SW-05-001	Pit no. 5 - Sample collected in water 1 to 15 feet deep. A Wheaton sampler was used to obtain the sample at a depth of 6 inches.
FMP-SW-05-002	Pit no. 5 - Sample collected on left side of north end of catwalk, and 1 foot north of catwalk. Sample obtained from a depth of 2 feet using a Kemmerer sampler.
FMP-SW-06-001	Pit no. 6 - Sample collected from a pontoon boat in the east corner, 23 feet south of the north bank and 23 feet west of the east bank. Sample collected at a depth of 1.5 feet using a Kemmerer sampler.
FMP-SW-06-002	Pit no. 6 - Sample collected from a pontoon boat near the north corner, 25 feet southeast of the northwest bank and 17 feet southwest of the northeast bank. Sample collected at a depth of 2 feet using a Kemmerer sampler.
FMP-SW-06-003	Pit no. 6 - Sample collected from a pontoon boat near the west corner, 40 feet northeast of the southwest bank and 20 feet southeast of the northwest bank. Sample collected at a depth of 1.5 feet using a Kemmerer sampler.
FMP-SW-06-004	Pit no. 6 - This sample is a duplicate of FMP-SW-06-003.

Table 2-2
(continued)

Sample No.	Description
FMP-SW-06-005	Pit no. 6 - Sample collected from a pontoon boat near the south corner, 22 feet northwest of the southeast bank and 49 feet northeast of the southwest bank. Sample collected at a depth of 1.5 feet using a Kemmerer sampler.
FMP-SW-08-001	Clear well - Sample collected from a small rowboat near the northwest corner of the clear well. Sample was collected at a depth of 2.5 feet using a Kemmerer sampler.
FMP-SW-08-002	Clear well - Sample was collected from the north end of the catwalk located near the southeast corner of the clear well. Sample is a composite of three portions from depths of 1, 5, and 9 feet. A Kemmerer sampler was used to obtain one-third of the total sample from each depth.

Table 2-3

Two-Digit Designations for Identifying Sample Measurement Locations

Sample/Measurement Location	Origin Location		Two Digit Code
Pit no. 1			01
Pit no. 2			02
Pit no. 3			03
Pit no. 4			04
Pit no. 5			05
Pit no. 6			06
Burn pit			07
Clear well			08
Drainage swale N of pit no. 5, N of R.R. tracks	S412	E3886	21
Wetlands W of waste storage			22
Slurry line to K-65	S2274	E3300	23
Upper fly ash piles			24
Lower fly ash piles			25
Drainage swale N of pit no. 5, S of R. R. tracks			26
Drainage S of and adjacent to pit no. 5	S778	E2441	28
Drainage S of pit no. 5 and W of pit no. 4	S806	E2274	29
Drainage W of production area	S1044	E3281	30
Drainage W of production area, at guard shack	S1908	E3290	31
Drainage W of production area by lime sludge pond	S1938	E3300	32
Drainage S of slurry line	S2432	E3269	33
Drainage at railroad by S gate	S1978	E2966	34
Drainage W of biodenitrification lagoon	S1693	E2176	35
Drainage E of pit no. 4 on E side of road	S959	E2613	36
Drainage S of pit no. 6	S989	E2634	37
Drainage S of pit no. 5, E of greenhouse	S777	E1897	38
Drainage E of pit no. 4 at decontamination pad	S942	E2514	39
Drainage from production area W of new UF-4UF-6 plant			40
Drainage W of UF-4 plant			41
Drainage W of railroad from UF-4 building			42
Drainage W of lime sludge ponds, S of slurry line			43
Drainage S of slurry, E of K-65 silos			44
Special, off-site background measurements			45
General area of waste storage			46
North lime sludge pond			47
South lime sludge pond			48
Sanitary landfill			49
Drainage separating upper fly ash pile from running track			52
Drainage along N & W sides of upper fly ash pile			53
Decontamination pad			54

NOTE: Stations are rounded to nearest foot.

1955B

at disposal as described in Subsection 1.1.3. Each of these storage areas (except the south lime sludge pond) was sampled using the 3-inch outer diameter hollow-stem auger sampling technique. The drill rig used was a Diedrich Drilling's D-50 mounted on an all-terrain log skidder. Samples were obtained using a 24-inch drive split-spoon sampler. The sampling of these pits was performed using ASTM Method D 1586-84, Penetration Tests and Split Barrel Sampling of Soils. Samples were obtained from the south lime sludge pond by erecting a portable aluminum derrick with a motorized cathead (manufactured by Acker Drill Company, Inc.) and driving a 24-inch split-spoon sampler using the ASTM procedure. This technique was used because the sludge pond residue would not support the weight of the drill rig.

All subsurface boring locations were sampled continuously, with samples taken at intervals of 2 feet. Sampling continued until reaching a depth at which a geologist identified the residue or waste/natural clay interface. When the split-spoon sampler was taken to the sample preparation table, technicians uncased and split the core lengthwise. Immediately, a section of the inner-core was placed into a volatile organic analysis (VOA) bottle and sealed. Half of the core was placed into the 477-ml Nalgene jars used for radiological samples. The remainder of the sample was placed into a large stainless steel bowl and covered for compositing with the remaining sample from the boring.

This subsurface sample preparation procedure was performed for each sample interval from the pit boring. Once sampling was completed at each boring location, the material remaining in the stainless steel bowls was composited. Portions of the composited sample were placed into the appropriate container (amber glass jar or wide-mouth plastic bottle) for nonvolatile chemical analysis. A portion of the composite was placed into a 477-ml Nalgene container for radiological analysis. The remaining composited material from the borehole was placed into plastic containers for geotechnical and physical parameter analyses in a soils laboratory established in the FMPC laboratory building.

Technicians labeled each sample and recorded the date, sample number, technician name, grid location, depth of sample, chain-of-custody number, laboratory location, and analytical parameters in the Subsurface Field Logbook. The radiological composite samples were transferred to the field laboratory for immediate gamma ray spectral analysis. This was done to provide each off-site laboratory with an estimate of the sample's radionuclide concentration and for proper shipping documentation. Radiological composite samples were later sent to the TMA/

Eberline laboratory in Albuquerque for radiochemical analysis. The chemical composite samples and VOA bottles were sent for analysis of their chemical constituents to Weston Analytics. Each VOA bottle from discrete sample intervals (from a single boring) was composited and analyzed for volatile organic chemicals. The radiological samples from discrete depths were archived for on-site gamma spectral measurements.

Wet Pits

The wet pits discussed in this report include pit nos. 5 and 6, the north lime sludge pond, and the clear well. The clear well sediment was sampled using a stainless steel ponar dredge. The residues from pit nos. 5 and 6 and the north lime sludge pond were sampled from a floating sampling platform using a 3-inch diameter stainless steel piston-type sampler designed by WESTON. As shown in Figure 2-3, this sampler consisted of a stainless steel rod spaced with stainless steel piston rings at three 20-inch intervals. The rod/piston assembly was inserted into a stainless steel tube sleeve and lowered to the desired depth. As the sleeve was raised, pit residue flowed around the rod and piston. The sleeve was then lowered around the rod/piston assembly, sealing the three samples. This device was used to obtain 20-inch incremental samples for the entire depth of the pit residue (or until the sampler met resistance where, at that time, a decision was made either to abandon the boring or to stop at that depth and use the sample as is).

When the piston sampler was brought to the sample preparation table located on the pit berm, the outer sleeve was retracted very slowly to allow the residue in each sample interval to flow into separate stainless steel bowls. Immediately, a portion of the residue was placed into a VOA bottle and sealed. The VOA bottles from each sample interval (in a single boring) were sent to Weston Analytics laboratory for compositing and for analysis of volatile organic chemicals. A portion of the sample interval was placed into a 477-ml Nalgene radiological jar for analysis in the on-site gamma spectroscopy laboratory. The remainder of the sample interval was covered in the bowl and set aside for compositing.

This same procedure was followed for each sample interval from the pit boring, and the remaining residue was composited. Portions of the composited sample were placed into the appropriate containers for nonvolatile chemical analysis (amber glass jars and wide-mouth plastic bottles). A portion of the composite boring was placed into a 477-ml Nalgene container for radiological analysis, both in the on-site laboratory and for shipment to TMA/Eberline for radiochemical analyses. The remainder of the composite was placed into plastic containers for geotechnical and physical parameter analyses in the on-site soils laboratory.

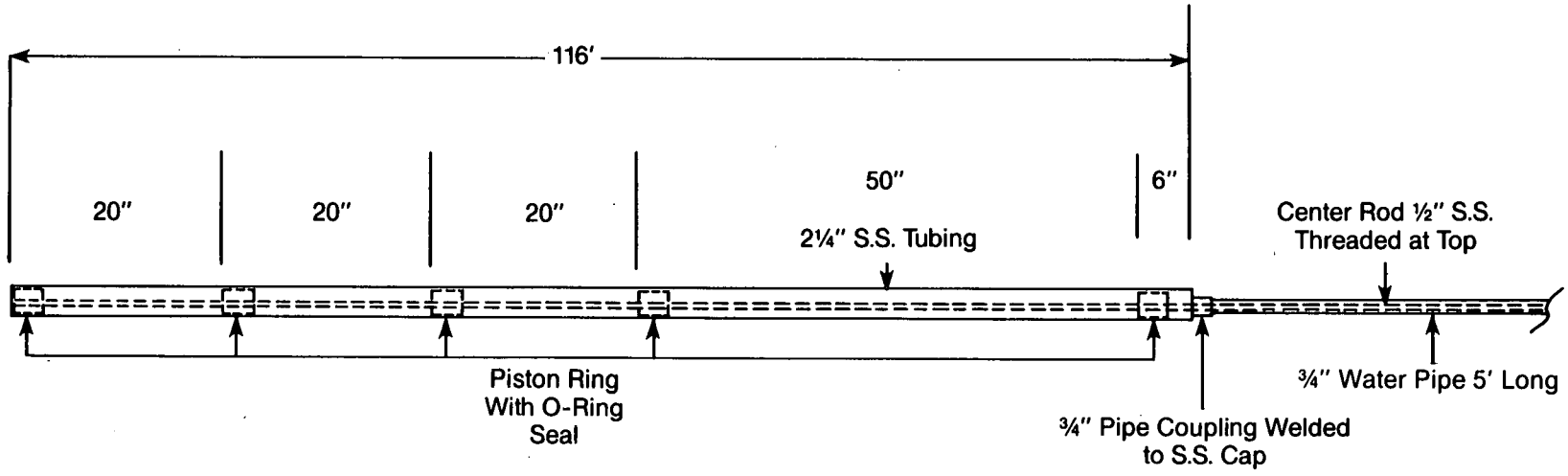


FIGURE 2-3 STAINLESS STEEL PISTON-TYPE SAMPLER

For each sample location, technicians labeled each sample container and recorded the date, sample number, technician's name, grid location, depth of sample interval, chain-of-custody number, laboratory location, and the analytical parameters in the Subsurface Field Logbook. Radiological composite samples were then sent to the TMA/Eberline laboratory in Albuquerque for radiochemical analysis, and the chemical composite samples were sent to Weston Analytics.

Water Samples

Water was sampled from pit nos. 4, 5, and 6 and the clear well using either a portable grab sampler (manufactured by Wheaton, Inc.) or a Kemmerer sampler (manufactured by Wildco, Inc.). These devices were designed to sample water from beneath the surface at specific depths. A description of the sampling locations was presented in Table 2-2.

Upon taking the water samples, several field measurements were performed. These included pH, temperature, specific conductivity, and dissolved oxygen. From the total number of samples taken from pit nos. 4, 5, and 6 and the clear well, one sample from each of these pits was filtered so that an assessment could be made of soluble chemical species and suspended matter. Technicians labeled the sample bottles and recorded the sample number, date, time, depth of sampling, total depth of the water, temperature, pH, specific conductivity, and the dissolved oxygen in the Surface Water Sample Logbook. All samples were shipped off-site. Samples requiring chemical constituent analyses were sent to Weston Analytics laboratory, and those requiring radiochemical analyses were sent to the TMA/Eberline laboratory.

2.1.5 Sampling Equipment Decontamination

Because of the potential for cross-contamination during sampling, extensive decontamination of the field equipment was performed after use at each sample location. The decontamination staging area was built on a concrete pad between pit nos. 4 and 6. The water source used was the hydrant located next to pit no. 4. The equipment routinely brought in for decontamination included the split-spoon samplers, the piston sampler, stainless steel bowls, the hollow-stem auger, and the drill rig. The split-spoons, bowls, and piston sampler were decontaminated after each use. The auger stem was decontaminated after each boring, and the drill rig was decontaminated after each pit.

Decontamination of the equipment coming into direct contact with the sample was performed by removing gross contamination with a wire brush and rinsing with Alconox soap and tap water from the hydrant. The equipment was then cleaned with a steam

cleaner powered by a portable gasoline-powered generator. After steam cleaning, the equipment was rinsed with methanol and distilled water and wrapped in foil for future use. The auger stem and drill rig were steam-cleaned, scrubbed with wire brushes, and rinsed with Alconox soap and tap water.

If equipment was going to be released from the controlled area, then surface swipes were taken and analyzed for gross alpha contamination. Equipment was controlled for Th-230 and was released if fixed gross alpha contamination did not exceed 100 dpm/100 sq cm or removable gross alpha contamination did not exceed 20 dpm/100 sq cm.

2.1.6 Quality Control

The quality of the data taken during the CIS was evaluated using a variety of methods. These included the use of trip and field blanks, an analysis of duplicate samples, the recounting of samples, and the auditing of field procedures and the laboratories. Each of these is discussed as follows:

- Trip Blanks - Trip blanks were sent with every batch of samples analyzed for volatile organic chemical constituents. These samples were used to screen for sample cross-contamination from the time the sample was taken to the time the sample reached the WESTON laboratory.

- Field Blanks - Field blanks were used to evaluate the decontamination procedure and the cross-contamination of samples from poorly cleaned sampling equipment. These samples were taken by rinsing distilled water over the decontaminated equipment and collecting the water as a discrete sample. To evaluate the purity of the distilled water, a "clean" sample of distilled water was sent from the batch used for making field blanks and analyzed for the same chemical constituents.

- Blind Duplicates - One blind duplicate composite sample from each pit was sent to the on-site laboratory and the Weston Analytics laboratory for analysis. These samples served to evaluate the precision of the compositing.

- Duplicate Counting - Every tenth sample in the on-site laboratory was immediately recounted. These duplicate counts served to evaluate the reproducibility of the on-site counting system.

- Auditing and Surveillances - During the CIS, WESTON conducted an audit of the on-site gamma spectral laboratory. This audit served to ensure that the gamma spectroscopy system was operating properly for the samples being analyzed and that the procedure used had sufficient checks to ensure adequate accuracy and precision for the CIS. The analytical precision due to the spectrometer is within 25 percent at the 95 percent confidence interval for the concentrations of interest. The on-site spectrometer readings fell between these confidence levels at U-238 activity concentrations close to 35 pCi/g. Additional QA surveillances of the TMA/Eberline laboratory in Albuquerque and of each stage of the field work were performed by Westinghouse Materials Company of Ohio (WMCO).

2.1.7 Health and Safety

Field activities during the CIS were carried out in strict accordance with the Environmental Safety and Health Program Plan. This plan is presented in its entirety in Section 6 of the Support Documentation (Roy F. Weston, Inc., 1986b). The scope of this plan included: organization and responsibilities; health and safety standards; environmental standards; program requirements, occupational monitoring, and personnel protection methods; hazard control and monitoring methods; and a contingency plan for emergencies for the FMPC during CIS work.

Aspects of the health and safety plan were developed on the basis of information provided by WMCO and with consideration of all of the known or suspected chemical and radiological constituents in the Waste Storage Area. From these considerations it was clear that physical intrusion into the waste storage pits would require medical surveillance for selected personnel, training in procedures to minimize periods of contact with hazardous materials, training in the use of a wide variety of personal protection equipment (up to and including Level B protection), and a selection of specialized equipment for monitoring the work environment.

Personnel protection procedures were based on recommended exposure guidelines and safety standards contained in existing Federal regulations. These procedures were implemented so that exposures to hazardous chemicals and radioactive environments were reasonably low. Because of physical stress to workers in protective clothing, mandatory rest periods were enforced and body fluids were replenished.

A Work Location Personnel Protection and Safety Evaluation Form was completed and approved prior to the initiation of waste pit sampling. Workers received training based on requirements of

this evaluation, and an approved copy of the document was distributed to each field operating group and posted in a conspicuous location.

An access control point was established at the west gate between pit no. 5 and pit no. 3. Each project staff member entering the CIS work area was required to enter and exit through this point. An access register was maintained at the control point and served as a daily record of the entry and exit of each person. Upon entry, a check was made to ensure that each person was dressed in accordance with task requirements. Labeled containers were placed at the step-off pad, and soiled protective clothing was deposited as required (gloves, shoe covers, disposable coveralls, waste paper, etc.). This was done to prevent the spread of contamination to points outside the Waste Storage Area. Each person that left the access control point was monitored with portable radiation survey instruments to verify that no contamination was present on skin or clothing surfaces. All personnel and equipment released from the access control point were monitored in accordance with the conservative release limits associated with Th-230.

All equipment and instrumentation used for personnel safety monitoring was maintained and calibrated in accordance with requirements in project procedures. Internal audits were performed by WESTON, and surveillances were conducted by WMCO. Results of tests, calibrations, inspections, audits, access control monitoring, and work area air quality monitoring were documented, and records have been archived with the project files.

2.2 ANALYSIS

2.2.1 Chemical Analysis

All samples taken from the FMPC site for chemical analysis were shipped to the Weston Analytics laboratory in Lionville, Pennsylvania, except for three samples from pit no. 6. These were sent to Thermo Analytical, Inc. because the radioactivity concentrations exceeded WESTON's NRC license criteria of 10 nCi/g. Upon receipt, samples were logged in and assigned a laboratory number that is listed on all data reports and laboratory chain-of-custody forms. All of the sample analyses requested were listed on the chain-of-custody forms.

Samples were received by the laboratory from 13 March 1987 through 21 May 1987 from the following locations: pit nos. 1 through 6, the burn pit, the clear well, the upper and lower fly ash piles, the north and south lime sludge ponds, and the sanitary landfill. The chemical analyses requested included: RCRA characteristics, HSL inorganics, HSL organics with a library search for non-HSL constituents, Appendix IX constit-

uents, indicators, and anions. All analyses were performed in accordance with EPA Contract Laboratory Program (CLP) protocols.

Resource Conservation and Recovery Act (RCRA) Characteristics

A waste is considered to be hazardous if it exhibits any one of the four RCRA characteristics. These include: corrosivity, ignitability, reactivity, and EP-toxicity. A total of 54 soil samples from the FMPC site was tested for RCRA characteristics. These samples were collected from pit nos. 1 through 6, the burn pit, the clear well, the north and south lime sludge ponds, and the sanitary landfill. All test methods used for RCRA characteristics are listed in SW-846, September 1986.

Corrosivity is measured using a standard pH meter. A sample is considered to be corrosive if it has a pH of <2 or >12.5.

Ignitability is used to identify wastes that present fire hazards during storage, disposal, and/or transportation. A sample is ignitable if it has a flash point of <60°C (140°F).

Reactivity is tested by measuring reactive sulfide or cyanide. It is used to characterize waste that might pose a threat to human health or the environment by generating toxic fumes. The action limit is 500 mg H_2S/kg of waste for reactive sulfide and 250 mg CN/kg of waste for releasable cyanide.

EP-Toxicity is measured by using an extraction procedure designed to simulate the leaching a waste will undergo if it is disposed of in a sanitary landfill. After extraction, the extract from each sample is analyzed for the EP-toxicity metals. The EP-toxicity metals and their maximum allowable concentration are listed as follows:

EP-Toxicity Metals

Analyte	Maximum Concentration (mg/L)
As	5.0
Ba	100.0
Cd	1.0
Cr	5.0
Pb	5.0
Hg	0.2
Se	1.0
Ag	5.0

EP-Toxicity herbicides and pesticides were not analyzed because full herbicide and pesticide HSL constituent analyses were run on all samples.

Hazardous Substance List (HSL)

The majority of samples from the FMPC were analyzed for all inorganic and organic HSL compounds. The matrices of these samples included: solid residues, fly ash, and water.

All methods used for HSL inorganic analysis are listed in the U.S. EPA Statement of Work "Inorganic Analysis Multimedia, Multiconcentration," SOW 785, July 1985. The inorganic HSL list includes cyanide and 23 metals and is presented in Table 2-4 with contract-required detection limits (CRDL).

In addition to the HSL list, water samples were also analyzed for anions, including carbonate, bicarbonate (EPA 310.1), nitrate, phosphate, sulfate, chloride, and fluoride (SM429). Indicators including total dissolved solids (EPA 160.1) and total suspended solids (EPA 160.2) were also measured. Water samples were analyzed for total metals, and filtered samples were analyzed for soluble materials.

The organic HSL list consists of volatiles (Table 2-5), semi-volatiles (Table 2-6), and pesticides/PCBs (Table 2-7). All extraction and analysis procedures for HSL organics are listed in the U.S. EPA Statement of Work "Organic Analysis Multimedia, Multiconcentration," SOW 785, July 1985.

Additional analysis was performed on the following list of targeted non-HSL constituents:

- Dichlorodifluoromethane
- Tributylphosphate
- Acrolein
- Acrylonitrile
- Bis (chloromethyl) ether
- Methylbromide
- Methylchloride
- Trichlorofluoromethane
- Cis 1,2-dichloroethylene
- 1,2-dichloropropylene

Appendix IX Constituents

Five samples from the FMPC were analyzed for 40 CFR 264 and 270 Appendix IX constituents. These included four soil samples and one water sample collected from pit no. 4. Appendix IX constit-

TABLE 2-4 HSL INORGANICS

Analyte	Contract Required Detection Limit (ug/L)
Aluminum	200
Antimony	60
Arsenic	10
Barium	200
Beryllium	5
Cadmium	5
Calcium	5000
Chromium	10
Cobalt	50
Copper	25
Iron	100
Lead	5
Magnesium	5000
Manganese	15
Mercury	0.2
Nickel	40
Potassium	5000
Selenium	5
Silver	10
Sodium	5000
Thallium	10
Vanadium	50
Zinc	20
Cyanide	10

TABLE 2-5 HSL VOLATILES

Volatiles	CAS Number	Detection Limits* Low Water[a] ug/L	Detection Limits* Low Soil/Sediment[b] ug/Kg
1. Chloromethane	74-87-3	10	10
2. Bromomethane	74-83-9	10	10
3. Vinyl Chloride	75-01-4	10	10
4. Chloroethane	75-00-3	10	10
5. Methylene Chloride	75-09-2	5	5
6. Acetone	67-64-1	10	10
7. Carbon Disulfide	75-15-0	5	5
8. 1,1-Dichloroethene	75-35-4	5	5
9. 1,1-Dichloroethane	75-35-3	5	5
10. trans-1,2-Dichloroethene	156-60-5	5	5
11. Chloroform	67-66-3	5	5
12. 1,2-Dichloroethane	107-06-2	5	5
13. 2-Butanone	78-93-3	10	10
14. 1,1,1-Trichloroethane	71-55-6	5	5
15. Carbon Tetrachloride	56-23-5	5	5
16. Vinyl Acetate	108-05-4	10	10
17. Bromodichloromethane	75-27-4	5	5
18. 1,1,2,2-Tetrachloroethane	79-34-5	5	5
19. 1,2-Dichloropropane	78-87-5	5	5
20. trans-1,3-Dichloropropene	10061-02-6	5	5
21. Trichloroethene	79-01-6	5	5
22. Dibromochloromethane	124-48-1	5	5
23. 1,1,2-Trichloroethane	79-00-5	5	5
24. Benzene	71-43-2	5	5
25. cis-1,3-Dichloropropene	10061-01-5	5	5
26. 2-Chloroethyl Vinyl Ether	110-75-8	10	10
27. Bromoform	75-25-2	5	5
28. 2-Hexanone	591-78-6	10	10
29. 4-Methyl-2-pentanone	108-10-1	10	10
30. Tetrachloroethene	127-18-4	5	5
31. Toluene	108-88-3	5	5
32. Chlorobenzene	108-90-7	5	5
33. Ethyl Benzene	100-41-4	5	5
34. Styrene	100-42-5	5	5
35. Total Xylenes		5	5

[a]Medium Water Contract Required Detection Limits (CRDL) for Volatile HSL Compounds are 100 times the individual Low Water CRDL.

[b]Medium Soil/Sediment Contract Required Detection Limits (CRDL) for Volatile HSL Compounds are 100 times the individual Low Soil/Sediment CRDL.

TABLE 2-6* HSL SEMI-VOLATILES

Semi-Volatiles	CAS Number	Detection Limits* Low Water[c] ug/L	Low Soil/Sediment[d] ug/Kg
36. Phenol	108-95-2	10	330
37. bis(2-Chloroethyl) ether	111-44-4	10	330
38. 2-Chlorophenol	95-57-8	10	330
39. 1,3-Dichlorobenzene	541-73-1	10	330
40. 1,4-Dichlorobenzene	106-46-7	10	330
41. Benzyl Alcohol	100-51-6	10	330
42. 1,2-Dichlorobenzene	95-50-1	10	330
43. 2-Methylphenol	95-48-7	10	330
44. bis(2-Chloroisopropyl) ether	39638-32-9	10	330
45. 4-Methylphenol	106-44-5	10	330
46. N-Nitroso-Dipropylamine	621-64-7	10	330
47. Hexachloroethane	67-72-1	10	330
48. Nitrobenzene	98-95-3	10	330
49. Isophorone	78-59-1	10	330
50. 2-Nitrophenol	88-75-5	10	330
51. 2,4-Dimethylphenol	105-67-9	10	330
52. Benzoic Acid	65-85-0	50	1600
53. bis(2-Chloroethoxy) methane	111-91-1	10	330
54 2,4-Dichlorophenol	120-83-2	10	330
55. 1,2,4-Trichlorobenzene	120-82-1	10	330
56. Naphthalene	91-20-3	10	330
57. 4-Chloroaniline	106-47-8	10	330
58. Hexachlorobutadiene	87-68-3	10	330
59. 4-Chloro-3-methylphenol (para-chloro-meta-cresol)	59-50-7	10	330
60. 2-Methylnaphthalene	91-57-6	10	330
61. Hexachlorocyclopentadiene	77-47-4	10	330
62. 2,4,6-Trichlorophenol	88-06-2	10	330
63. 2,4,5-Trichlorophenol	95-95-4	50	1600
64. 2-Chloronaphthalene	91-58-7	10	330
65. 2-Nitroaniline	88-74-4	50	1600
66. Dimethyl Phthalate	131-11-3	10	330
67. Acenaphthylene	208-96-8	10	330
68. 3-Nitroaniline	99-09-2	50	1600
69. Acenaphthene	83-32-9	10	330
70. 2,4-Dinitrophenol	51-28-5	50	1600
71. 4-Nitrophenol	100-02-7	50	1600
72. Dibenzofuran	132-64-9	10	330
73. 2,4-Dinitrotoluene	121-14-2	10	330
74. 2,6-Dinitrotoluene	606-20-2	10	330
75. Diethylphthalate	84-66-2	10	330
76. 4-Chlorophenyl Phenyl ether	7005-72-3	10	330
77. Fluorene	86-73-7	10	330
78. 4-Nitroaniline	100-01-6	50	1600
79. 4,6-Dinitro-2-methylphenol	534-52-1	50	1600
80. N-nitrosodiphenylamine	86-30-6	10	330
81. 4-Bromophenyl Phenyl ether	101-55-3	10	330
82. Hexachlorobenzene	118-74-1	10	330
83. Pentachlorophenol	87-86-5	50	1600
84. Phenanthrene	85-01-8	10	330
85. Anthracene	120-12-7	10	330
86. Di-n-butylphthalate	84-74-2	10	330
87. Fluoranthene	206-44-0	10	330
88. Pyrene	129-00-0	10	330
89. Butyl Benzyl Phthalate	85-68-7	10	330
90. 3,3'-Dichlorobenzidine	91-94-1	20	660
91. Benzo(a)anthracene	56-55-3	10	330
92. bis(2-ethylhexyl)phthalate	117-81-7	10	330
93. Chrysene	218-01-9	10	330
94. Di-n-octyl Phthalate	117-84-0	10	330
95. Benzo(b)fluoranthene	205-99-2	10	330
96. Benzo(k)fluoranthene	207-08-9	10	330
97. Benzo(a)pyrene	50-32-8	10	330
98. Indeno(1,2,3-cd)pyrene	193-39-5	10	330
99. Dibenz(a,h)anthracene	53-70-3	10	330
100. Benzo(g,h,i)perylene	191-24-2	10	330

[c]Medium Water Contract Required Detection Limits (CRDL) for Semi-Volatile HSL Compounds are 100 times the individual Low Water CRDL.

[d]Medium Soil/Sediment Contract Required Detection Limits (CRDL) for Semi-Volatile HSL Compounds are 60 times the individual Low Soil/Sediment CRDL.

TABLE 2-7 HSL PESTICIDES

Pesticides	CAS Number	Detection Limits* Low Water[e] ug/L	Detection Limits* Low Soil/Sediment[f] ug/Kg
101. alpha-BHC	319-84-6	0.05	8.0
102. beta-BHC	319-85-7	0.05	8.0
103. delta-BHC	319-86-8	0.05	8.0
104. gamma-BHC (Lindane)	58-89-9	0.05	8.0
105. Heptachlor	76-44-8	0.05	8.0
106. Aldrin	309-00-2	0.05	8.0
107. Heptachlor Epoxide	1024-57-3	0.05	8.0
108. Endosulfan I	959-98-8	0.05	8.0
109. Dieldrin	60-57-1	0.10	16.0
110. 4,4'-DDE	72-55-9	0.10	16.0
111. Endrin	72-20-8	0.10	16.0
112. Endosulfan II	33213-65-9	0.10	16.0
113. 4,4'-DDD	72-54-8	0.10	16.0
114. Endosulfan Sulfate	1031-07-8	0.10	16.0
115. 4,4'-DDT	50-29-3	0.10	16.0
116. Endrin Ketone	53494-70-5	0.10	16.0
117. Methoxychlor	72-43-5	0.5	80.0
118. Chlordane	57-74-9	0.5	80.0
119. Toxaphene	8001-35-2	1.0	160.0
120. AROCLOR-1016	12674-11-2	0.5	80.0
121. AROCLOR-1221	11104-28-2	0.5	80.0
122. AROCLOR-1232	11141-16-5	0.5	80.0
123. AROCLOR-1242	53469-21-9	0.5	80.0
124. AROCLOR-1248	12672-29-6	0.5	80.0
125. AROCLOR-1254	11097-69-1	1.0	160.0
126. AROCLOR-1260	11096-82-5	1.0	160.0

[e]Medium Water Contract Required Detection Limits (CRDL) for Pesticide HSL Compounds are 100 times the individual Low Water CRDL.

[f]Medium Soil/Sediment Contract Required Detection Limits (CRDL) for Pesticide HSL compounds are 15 times the individual Low Soil/Sediment CRDL.

*Detection limits listed for soil/sediment are based on wet weight. The detection limits calculated by the laboratory for soil/sediment, calculated on dry weight basis, as required by the contract, will be higher.

uents include HSL compounds and additional organic and inorganic analyses. Appendix IX constituents are listed in Table 2-8 and are analyzed as follows:

- Volatiles - GC/MS, extended run, EPA CLP method.
- Semivolatiles - GC/MS, extended run, EPA CLP method.
- Organochlorine Pesticides/PCBs - extended run, EPA CLP method.
- Chlorophenoxy Herbicides - EPA method 8140.
- Organophosphorous Pesticides - EPA method 8150.
- Metals - EPA CLP method; Osmium by ICP.
- Inorganics (fluoride, sulfide, cyanide) - EPA methods.

Contract Laboratory Program (CLP)

The U.S. EPA Contract Laboratory Program was initiated to provide analytical services in support of CERCLA (Superfund) activities. The program specifies standardized analytical protocols and quality assurance/quality control criteria, and defines comprehensive data reporting requirements to help ensure that litigation-quality information is available for all analyses.

Analytical protocols are designed to provide qualitative and quantitative information for organic and inorganic HSL compounds and dioxins. These analyses are used frequently throughout the CLP and are referred to as routine analytical services (RAS). Laboratories that want to participate under contract in this program must demonstrate technical competence through acceptable performance on performance evaluation samples and during periodic on-site inspections by EPA.

Overall quality assurance/quality control requirements are designed to enable documentation of acceptable instrument performance and acceptable method performance. Instrument performance is regulated through calibration requirements. Initial setup and continuing calibration criteria are specified. Method performance is monitored by the performance of quality control samples and/or compounds that go through the entire analysis. For organic analysis method blanks, surrogates and matrix spikes/matrix spike duplicates are used to judge method performance. For inorganic analysis method blanks, laboratory control samples, matrix spikes, and duplicates are used to judge method performance.

TABLE 2-8 APPENDIX IX

Common Name	Appendix VIII (IX)
ORGANICS	
acenaphthene	X
acenaphthylene	X
acetone	A
acetonitrile	X
acetophenone	X
2-acetylaminofluorene	X
acrolein	X
acrylonitrile	X
aldrin	X
allyl alcohol	X
4-aminobiphenyl	X
aniline	X
anthracene	X
aramite	X
Aroclor 1016	X
Aroclor 1221	X
Aroclor 1232	X
Aroclor 1242	X
Aroclor 1248	X
Aroclor 1254	X
Aroclor 1260	X
benzene	X
benzenethiol	X
benzidine	X
benz(a)anthracene	X
benzo(b)fluoranthene	X
benzo(k)fluoranthene	X
benzoic acid	A
benzo(ghi)perylene	X
benzo(a)pyrene	X
p-benzoquinone	X
benzyl alcohol	A
alpha-BHC	X
beta-BHC	X
delta-BHC	X
gamma-BHC	X
bis(2-chloroethoxy)methane	X
bis(2-chloroethyl)ether	X
bis(2-chloroisopropyl)ether	X
bis(2-ethylhexyl)phthalate	X
bromodichloromethane	X
bromomethane	X
4-bromophenyl phenyl ether	X
butyl benzyl phthalate	X
2-sec-butyl-4,6-dinitrophenol	X
carbon disulfide	X
carbon tetrachloride	X
chlordane	X
p-chloroaniline	X
chlorobenzene	X
chlorobenzilate	X
2-chloro-1,3-butadiene	X
p-chloro-m-cresol	X
chlorodibromomethane	X
chloroethane	X
2-chloroethyl vinyl ether	X
chloroform	X
chloromethane	X
2-chloronaphthalene	X
2-chlorophenol	X
4-chlorophenyl phenyl ether	A
3-chloropropene	X

Common Name	Appendix VIII (IX)
3-chloropropionitrile	X
chrysene	X
ortho-cresol	X
para-cresol	X
4,4'DDD	X
4,4'DDE	X
4,4'DDT	X
dibenzo(a,h)anthracene	X
dibenzofuran	A
dibenzo(a,e)pyrene	X
dibenzo(a,h)pyrene	X
dibenzo(a,i)pyrene	X
1,2-dibromo-3-chloropropane	X
1,2-dibromoethane	X
dibromomethane	X
di-n-butyl phthalate	X
m-dichlorobenzene	X
o-dichlorobenzene	X
p-dichlorobenzene	X
3,3'-dichlorobenzidine	X
trans-1,4-dichloro-2-butene	X
dichlorodifluoromethane	X
1,1-dichloroethane	X
1,2-dichloroethane	X
1,1-dichloroethylene	X
trans-1,2-dichloroethylene	X
dichloromethane	X
2,4-dichlorophenol	X
2,6-dichlorophenol	X
2,4-dichlorophenoxyacetic acid	X
1,2-dichloropropane	X
cis-1,3-dichloropropene	X
trans-1,3-dichloropropene	X
dieldrin	X
diethyl phthalate	X
0,0-diethyl-0-2-pyrazinyl phosphorothioate	X
3,3'-dimethoxybenzidine	X
p-dimethylaminoazobenzene	X
7,12-dimethylbenz(a)anthracene	X
3,3'-dimethylbenzidine	X
alpha, alpha-dimethyl-phenethylamine	X
2,4-dimethylphenol	X
dimethyl phthalate	X
m-dinitrobenzene	X
4,6-dinitro-o-cresol	X
2,4-dinitrophenol	X
2,4-dinitrotoluene	X
2,6-dinitrotoluene	X
di-n-octyl phthalate	X
1,4-dioxane	X
diphenylamine	X
1,2-diphenylhydrazine	X
di-n-propylnitrosamine	X
disulfoton	X
endosulfan sulfate	
endosulfan I (alpha)	X
endosulfan II (beta)	X
endrin	X
endrin aldehyde	X
endrin ketone	

TABLE 2-8 APPENDIX IX (CONTINUED)

Common Name	Appendix VIII (IX)
ethyl benzene	A
ethyl cyanide	X
ethylene oxide	X
ethyl methacrylate	X
famphur	X
fluoranthene	X
fluorene	X
heptachlor	X
heptachlor epoxide	X
hexachlorobenzene	X
hexachlorobutadiene	X
hexachlorocyclopentadiene	X
hexachlorodibenzo-p-dioxins	X
hexachlorodibenzofurans	X
hexachloroethane	X
hexachlorophene	X
hexachloropropene	X
2-hexanone	A
indeno(1,2,3-cd)pyrene	X
iodomethane	X
isobutyl alcohol	X
isodrin	X
isophorone	A
isosafrole	X
kepone	X
malononitrile	X
methacrylonitrile	X
methapyrilene	X
methoxychlor	X
3-methylcholanthrene	X
4,4'-methylene-bis(2-chloroaniline)	X
methyl ethyl ketone	X
methyl methacrylate	X
methyl methanesulfonate	X
2-methylnaphthalene	A
methyl parathion	X
4-methyl-2-pentanone	A
2-methylphenol	
4-methylphenol	
naphthalene	X
1,4-naphthoquinone	X
1-naphthylamine	X
2-naphthylamine	X
m-nitroaniline	A
o-nitroaniline	A
p-nitroaniline	X
nitrobenzene	X
2-nitrophenol	A
4-nitrophenol	X
N-nitrosodi-n-butylamine	X
N-nitrosodiethylamine	X
N-nitrosodimethylamine	X
N-nitrosodiphenylamine	X
N-nitrosomethylethylamine	X
N-nitrosomorpholine	X
N-nitrosopiperidine	X
N-nitrosopyrrolidine	X
5-nitro-o-toluidine	X
parathion	X
pentachlorobenzene	X
pentachlorodibenzo-p-dioxins	X
pentachlorodibenzofurans	X
pentachloroethane	X
pentachloronitrobenzene	X

Common Name	Appendix VIII (IX)
pentachlorophenol	X
phenacetin	X
phenanthrene	X
phenol	X
phorate	X
2-picoline	X
pronamide	X
2-propyn-1-ol	X
pyrene	X
pyridine	X
resorcinol	X
safrole	X
silvex	X
styrene	A
2,4,5-T	X
1,2,4,5-tetrachlorobenzene	X
2,3,7,8-tetrachlorodibenzo-p-dioxin	X
tetrachlorodibenzo-p-dioxins	X
tetrachlorodibenzofurans	X
1,1,1,2-tetrachloroethane	X
1,1,2,2-tetrachloroethane	X
tetrachloroethylene	X
2,3,4,6-tetrachlorophenol	X
tetraethyldithiopyrophosphate	X
toluene	X
toxaphene	X
tribromomethane	X
1,2,4-trichlorobenzene	X
1,1,1-trichloroethane	X
1,1,2-trichloroethane	X
trichloroethylene	X
trichloromethanethiol	X
trichloromonofluoromethane	X
2,4,5-trichlorophenol	X
2,4,6-trichlorophenol	X
1,2,3-trichloropropane	X
tris(2,3-dibromopropyl) phosphate	X
vinyl acetate	A
vinyl chloride	X
total xylenes	A
METALS	
aluminum	A
antimony	X
arsenic	X
barium	X
beryllium	X
cadmium	X
calcium	A
chromium	X
cobalt	A
copper	X
iron	A
lead	X
magnesium	A
manganese	A
mercury	X
nickel	X
osmium	X
potassium	A
selenium	X
silver	X

sodium	A
thallium	X
tin	A
vanadium	X
zinc	X
MISCELLANEOUS	
cyanide	X
fluoride	X
phenols	
sulfide	X

A = Added from Superfund List

Reporting requirements entail a complete accounting of all results reported. Properly labeled raw data and QC summary forms provide all the documentation needed to independently verify reported data.

2.2.2 Radiochemical Analysis

Certain samples of waste pit residues were analyzed by radiochemical techniques. Radiochemical parameters included the isotopes of thorium, plutonium, and uranium as well as the specific radionuclides Sr-90, Tc-99, and Np-237. The radionuclides analyzed are those listed in Appendix D except for Ra-226, which was analyzed by gamma spectroscopy in the on-site laboratory. Cs-137 and Ru-106 were analyzed by gamma spectroscopy in the Albuquerque Laboratory. In the analytical process, individual elements are separated from the residue matrix, purified, and carried through sequential steps prior to evaluation in the counting laboratory. Radiochemical procedures used during this program are TMA/Eberline corporate procedures that were refined through internal research and development. They are adaptations of procedures developed by the Environmental Measurements Laboratory (EML), the Environmental Protection Agency (EPA), and several national laboratories. Accuracy is confirmed by the use of NBS or NBS-traceable calibration standards for all analyses, and by participation in the EPA's cross-check program and other laboratory intercomparisons.

Prior to analysis, samples were dried, pulverized, and blended. Typically, a 10-gram aliquot of the blended soil sample to be analyzed is digested in strong acids, and a portion of the solution equivalent to 1 gram of soil is used to perform the analysis. The remainder of the solution is retained for reruns or duplicate analyses. For radionuclides such as neptunium, plutonium, thorium, and uranium, tracer radionuclides are added to the 1-gram aliquot and the solution is passed through a column of anion exchange resin. In this step, the radionuclide is absorbed to the column. Each radionuclide is eluted from the column by using solvents unique to the radionuclide. Additional steps are taken to separate and purify the sample prior to electroplating it on a metal substrate. Alpha spectrometry is used to identify and quantify the radionuclide. In calculating concentrations, corrections are made for weight, percent recovery of the tracer, detector background, and detector efficiency. Analyses for Sr-90 and Tc-99 also start with a 1-gram equivalent aliquot. Following the addition of tracers, the radionuclides are precipitated using compounds unique to the procedure. Steps are taken to remove other fission products and to further purify the sample in carrier solutions prior to drying the sample for beta counting. Factors used to calculate concentrations include: weight of the aliquot, radioactive decay, tracer recovery, detector efficiency, and detector background.

2.2.3 Gamma Ray Spectrometry

For the radiological characterization of the waste pits, lime sludge ponds, fly ash piles, and burn pit, the on-site laboratory was used to analyze all sample intervals and composites. The on-site laboratory data were used to assess vertical trends of radioactivity and to provide data needed to ship the samples off-site. All composites were then sent to TMA/Eberline for radiochemical analyses.

The detector for the on-site gamma spectrometry system consisted of a high purity germanium crystal (Type N). This detector, manufactured by Princeton Gamma Tech, had an efficiency of approximately 22.5 percent relative to the 1.33 meV Co-60 photon at a 25-cm source-to-detector distance (compared to the efficiency of a 3-inch by 3-inch NaI crystal). The detector used on-site was equipped with a 0.020-inch beryllium window. The combination of this thin window and the Type N germanium made the detection system well suited for photons having energy as low as 20 keV. The detector was installed in a shield fabricated on-site using lead brick. The lead was stacked carefully on a welded steel platform and positioned high enough above the floor so that the detector's source of liquid nitrogen could be placed beneath the shield. The side walls of the lead shield were 4 inches thick, and the top and bottom were both 2 inches thick. This resulted in a 1-cu ft counting cave. Access to the detector was provided by a 2-inch thick graded sliding door on top of the shield. All internal surfaces were covered with a layer of cadmium and copper, each with a thickness of 0.060 inches. The grading of this shield with these materials provided for the attenuation of low-energy, back-scattered X-rays from the lead.

Signals from the germanium crystal were routed through a circuit of standard electronic components, with eventual storage of pulse signals in a multichannel scaler (MSC). The data in the MSC were analyzed using data reduction software, developed by Quantum Technology, with which isotopic identification was accomplished through a comparison of computer-fitted photopeaks with a customized radionuclide library. This library was designed based on the radionuclides identified during the review of historical FMPC documents for the development of the CIS work plan.

Linearity of the gamma-ray spectrometry system as a function of energy was determined by using isotopic sources of Co-57 and Co-60, with respective gamma ray energies of 122 and 1,332 keV. Only the 1,332 keV line from Co-60 was used to check system linearity at higher energy levels. System gain was adjusted so that the energy per channel was approximately 0.64 keV. With this setup, the 2.61 meV gamma ray from Tl-208, the most energetic gamma ray in existing primordial radionuclides, could be

found near channel 4,050. Further verification of the energy scale was accomplished by monitoring the calculated energy of known gamma rays in uranium ore standards. The spectrometer was calibrated by counting a uranium standard certified by the New Brunswick Laboratory and by assigning values to observed photopeaks based on known concentrations in the standard. This standard contained 0.01 weight percent uranium with Ra-226 adjusted to be in secular equilibrium with the uranium. The reported U-238 activity of the sample was 33.6 pCi/g. This standard was counted each day prior to counting soil samples, and the observed concentration of Ra-226 was posted on a system control chart. The mean activity and its standard deviation were determined after 20 successive counts of this standard for 10 minutes. These were determined every 20 days. The control chart contained a mean activity line and ± 2 sigma and 3 sigma control lines. During approximately five months of field operations, the system never exceeded the 3 sigma control line and exceeded the 2 sigma control line only twice.

Each soil sample was recorded on a chain-of-custody record at the time it was collected. Custody of the samples was then transferred to TMA/Eberline's Laboratory Manager at the laboratory trailer. There they were entered in the laboratory sample logbook and stored in locked file cabinets until they were counted. There was one exception to this procedure. After delivery to the field laboratory, chemical composite samples were counted upon receipt. This was done to provide information on radionuclide concentrations for shipping documents and to permit planning by the WESTON laboratory. All composite samples were later shipped to the TMA/Eberline laboratory for radiochemical analyses.

No sample preparation of the pit samples was performed in the field laboratory. Each sample was counted as received and in the original sample container. Each sample was counted for 10 minutes. In some cases, samples with elevated activity levels were counted for only 5 minutes. Once a count was completed, the gamma-ray spectrum was stored on a magnetic disk and another sample count was performed. During this count, the previous spectrum was analyzed by the computer's data reduction program. It should be mentioned that for U-238, Ra-226, and Th-232, estimates of the concentrations of these radionuclides were made through an analysis of photons emitted from radioactive daughters that should have been in secular equilibrium with their respective parent radionuclides. When several daughter photons were present, the data reduction program calculated a mean concentration by weighting the abundance of each photon. For example, in determining the concentration of Ra-226, values based on the 609 keV photon from Bi-214 with an abundance of 0.47 photons per disintegration received greater weight than values based on the 295 keV gamma ray from Pb-214 with an abundance of 0.19 photons per disintegration.

Upon completion of the data reduction, a complete report of the analysis was printed. This report served as a record of the analytical results of that sample. Included in this report was the sample identification number, counting date and time, length of count (live time in seconds), energy conversion factor from channel number to photon energy in keV, a photopeak resolution conversion equation, a table display of all observed photopeaks, the library file name, the efficiency file name, a table display of all identified photopeaks complete with estimates of radionuclide concentrations (in micro Ci/g), and a table display of all photopeaks not contained in the radionuclide library.

Each printed report of analysis included at least two pages of data. Therefore, more than 1,400 pages of sample analysis data are on file for the CIS. An example of this analysis report is presented in Figure 2-4. For the purpose of data review, the analysis of each sample was summarized by posting the concentrations of U-238, Th-232, and Ra-226 on a Preliminary Data Report Form (PDR).

For purposes of quality control, every tenth sample was recounted immediately after the first count. The results of this analysis were also recorded in a printed report and summarized on the PDR.

At the end of the project, 69 profile samples that were sent off-site for radiochemical analysis were removed for storage and documented on a new chain-of-custody record prior to shipment. This action was noted on the original chain-of-custody record that was used to transfer the sample from its collection point. Following completion of the field work, all samples remaining at the FMPC were packed in wooden crates and relinquished to a WMCO official along with the original chain-of-custody record. These actions were carried out to ensure accurate documentation of sample storage.

2.2.4 Geotechnical Analysis

The list of geotechnical tests performed is presented in Subsection 3.3.

Quantum Technology
GDR_C Version Ge2.0

****

Sample ID : FMPSS23016 4+00N Sample Size : 8.04E+02 GRAMS

Sampling Start : 11-06-86 10:15 Sampling Stop : 11-06-86 10:15

Counting Start : 2-04-87 13:00 Current Date : 2-05-87 9:01

Live Time : 600 Sec

Detector # 45

Energy(keV)= -0.83 + 0.649*Ch + 1.13E-07*Ch^2 + 0.00E+00*Ch^3 2-04-87 16:30

FWHM(keV) = 1.38 + 0.050*En + 0.00E+00*En^2 + 0.00E+00*En^3 2-04-87 16:30
Where En = Sqrt(Energy in keV)

Sensitivity : 1.00 Search Start / End : 0 / 4095

PK. #	ENERGY (keV)	ADDRESS CHANNEL	NET COUNTS	UN-CERTAINTY	C.L. COUNTS	BKG COUNTS	CH IN PEAK	FLAG
1	76.70	119.47	37	28	57	152	8	
2	93.06	144.67	67	26	52	112	9	
3	185.88	287.70	55	14	23	53	11	
4	239.49	370.30	58	21	43	52	13	
5	295.83	457.10	40	11	17	27	11	
6	351.92	543.52	63	9	9	8	13	
7	511.17	788.85	16	9	18	11	11	
8	583.27	899.93	28	5	0	0	14	
9	609.92	940.97	30	8	14	6	12	
10	1120.73	1727.73	15	4	0	0	14	
11	1461.53	2252.52	21	5	0	0	13	
12	2615.72	4029.10	10	3	0	0	18	

****

Quantum Technology
GDR_C Nuclide Activity Summary

****

Library File: FMPLIB.DAT

Efficiency file: JAREFF.DAT

ID.: JAREFF.DAT

Eff.=1/[6.46E-01*En^-1.54E+00 + 4.67E+02*En^ 8.90E-01] 2-04-87 16:30
(Where En = Energy in MeV)

Buildup time: 0.00E+00 hrs. Decay time: 2.16E+03 hrs

Nuclide	Energy (keV)	Concentration (uCi/GRAMS)	Halflife (hrs)	Peaks Found
U-238	Average:	5.63E-06 +- 2.18E-06	3.90E+13	1 of 4
	92.40	5.63E-06 +- 2.18E-06		
	63.30	< 1.15E-05 MDA		
Th-232	Average:	1.39E-06 +- 2.38E-07	1.23E+14	2 of 5
	238.60	1.05E-06 +- 3.83E-07		
	583.10	1.61E-06 +- 3.04E-07		
	911.10	< 2.16E-06 MDA		
Ra-226	Average:	1.63E-06 +- 1.82E-07	1.40E+07	4 of 5
	295.20	1.91E-06 +- 5.14E-07		
	351.90	1.78E-06 +- 2.64E-07		
	609.30	1.10E-06 +- 3.10E-07		
	1120.30	2.88E-06 +- 7.44E-07		
K-40	1460.80	7.20E-06 +- 1.57E-06	1.12E+13	1 of 1
Am-241	59.50	< 1.20E-06 MDA	3.80E+06	
Th-230	67.70	< 1.70E-04 MDA	6.75E+08	
U-235	143.70	< 3.46E-06 MDA	6.17E+12	0 of 3
Ru-106	621.80	< 2.04E-06 MDA	8.80E+03	0 of 2
Cs-137	661.60	< 2.82E-07 MDA	2.60E+05	

UNKNOWN PEAKS

Energy (keV)	Centroid Channel	Net Counts	Un-Certainty	C.L. Counts	Bkg. Counts	Ch in Peak
76.70	119.47	37	28	57	152	8
185.88	287.70	55	14	23	53	11
511.17	788.85	16	9	18	11	11
2615.72	4029.10	10	3	0	0	18

FIGURE 2-4 GAMMA SPECTRAL ANALYSIS REPORT

Section 3

SECTION 3

RESULTS

3.1 CHEMICAL RESULTS

All samples were analyzed in accordance with the description provided in Subsection 2.2.1. Only those samples in which measured amounts of analytes were found are reported in the following subsections. Appendix A presents the minimum and maximum values of analytes found in individual pits. Sample results of each borehole are presented in Appendix B for each area, including pit nos. 1 through 6, the burn pit, the north and south lime sludge ponds, the clear well, the fly ash piles, and the sanitary landfill. Location coordinates of individual boreholes are found in Table 2-1. The data tables include borehole numbers, sample ID's, laboratory ID's, analyses, and concentrations. Inorganics and organics are listed in separate tables. The inorganics show that the EP-TOX metals results follow total metals, soluble metals, indicators, and anions where applicable. Positive results for organic analysis are listed with two qualifiers. "J" indicates an estimated value. This symbol is used when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero. "*" indicates a common laboratory contaminant recognized by EPA. These contaminants include: methylene chloride, acetone, toluene, 2-butanone, and common phthalate esters.

3.1.1 Chemical Results - Soils

Pit No. 1

Five composite samples were analyzed from pit no. 1 for RCRA characteristics, HSL inorganics, and HSL organics. These samples included a composite sample from each of the five boreholes. A summary of the analytical data for inorganic and organic constituents is found in Appendix Tables B-1 and B-2, respectively.

A review of the RCRA parameters measured showed that all the borehole samples from pit no. 1 were within the established limits for corrosivity, measured by pH; reactivity; and ignitability. The EP-TOX metals from all five boreholes were below the maximum allowable concentration. (Refer to Subsection 2.2.1 for a description of limits.)

Results from the HSL inorganics show that aluminum, calcium, iron, and magnesium were present in measurable concentrations at each boring location. Boreholes 3 and 5 contained the largest amounts of aluminum and iron. Aluminum concentrations ranged from 1,702 mg/kg in borehole 4 to 20,223 mg/kg in borehole 3. Calcium ranged from 4,755 mg/kg to 192,498 mg/kg, the largest concentration being found in borehole 2.

PCB's were detected in all the boreholes from pit no. 1, including aroclor 1248, 1254, and 1260. Measured amounts ranged from 720 ug/kg in borehole 4 to 10,000 ug/kg in borehole 2. The semivolatiles chrysene and phenanthrene were detected in borehole 1 in amounts of 510 ug/kg and 2,300 ug/kg, respectively. A trace amount of chloroform (210 ug/kg) was found in borehole 4. 1,600 ug/kg of 4,4-DDT was also found in borehole 4.

Pit No. 2

Four samples were analyzed from pit no. 2 for RCRA characteristics, HSL inorganics, and HSL organics. (Of the five boreholes, borehole 2 was used to collect radiochemistry data only.) These samples included a composite sample from each of the boreholes. A summary of the inorganic and organic constituents is found in Tables B-3 and B-4.

A review of the RCRA parameters measured showed that all the borehole samples from pit no. 2 were within the established limits for corrosivity, measured by pH; ignitability; and reactivity. The EP-TOX metals from all four boreholes were below the maximum allowable concentration.

Results from the HSL inorganics show that aluminum, calcium, iron, and magnesium were present in measurable amounts in all of the boreholes. Aluminum concentrations ranged from 7,242 mg/kg to 22,421 mg/kg, the largest amount being found in borehole 5. The iron concentration in the boreholes ranged from 13,265 mg/kg to 24,037 mg/kg. Borehole 1 had the lowest concentrations of both iron and aluminum.

HSL organic analysis shows that PCB's were detected in samples from boreholes 1, 3, and 4, ranging from 321 to 1,800 ug/kg, the highest concentration being found in borehole 1. 4,4-DDT was found in boreholes 1 and 3 in amounts of 1,400 and 580 ug/kg, respectively. 670 ug/kg of vinyl chloride, a volatile, was detected in borehole 3. Large amounts of numerous semi-volatile compounds, including fluoranthenes and pyrenes up to 460,000 ug/kg, were found in boreholes 3 and 5.

Pit No. 3

Six samples were analyzed from pit no. 3 for RCRA characteristics, HSL inorganics, and HSL organics. (Borehole 1 was analyzed for radiological constituents only.) These samples included a composite sample from each of the boreholes. A summary of the inorganic and organic constituents is found in Tables B-5 and B-6.

A review of the RCRA parameters measured showed that all of the borehole samples from pit no. 3 were within the established limits for corrosivity, measured by pH; ignitability; and reactivity. The EP-TOX metals from each of the six boreholes were below the maximum allowable concentration.

Results from the HSL inorganics show that aluminum, calcium, iron, and magnesium were present in measurable amounts in all of the boreholes. Arsenic was detected in all the boreholes and ranged in concentration from 15 mg/kg in borehole 2 to 3,049 mg/kg in borehole 4. Vanadium and lead were also found in all the boreholes. Vanadium concentrations ranged from 50 to 9,695 mg/kg, the highest amount being found in borehole 4. Lead was also detected in all the boreholes; the highest concentration, 613 mg/kg, was measured in borehole 3.

PCB's were found in all the borehole samples, although not in measurable quantities. No measurable amounts of volatile or semivolatile organic compounds were found in the borehole samples.

Pit No. 4

Four samples were analyzed from pit no. 4 for RCRA characteristics. A composite sample from borehole 4 was analyzed for HSL inorganics and HSL organics. The remaining borehole samples were analyzed for Appendix IX constituents. A summary of the inorganic and organic constituents is found in Tables B-7 and B-8.

A review of the RCRA parameters measured showed that all of the borehole samples from pit no. 4 were within the established limits for corrosivity, measured by pH; ignitability; and reactivity. The EP-TOX metals from each of the four boreholes were below the maximum allowable concentration.

Results from Appendix IX constituents and HSL inorganics show that aluminum, calcium, iron, and magnesium were found in measurable amounts in all of the boreholes. Fluoride was found in large concentrations in boreholes 1, 2, and 3, ranging from 47,812 to 124,567 mg/kg. No fluoride analysis was performed on the composite sample from borehole 4 as it was analyzed for HSL constituents, not Appendix IX constituents. Barium was detected

in all the borehole samples and ranged from 444 mg/kg in borehole 3 to 6,668 mg/kg in borehole 4.

PCB's were detected in boreholes 1, 2, 3, and 4 ranging from 99 to 1,034 ug/kg. Organophosphorous pesticides, including ethyl parathion and methyl parathion, were detected in boreholes 1, 2, and 3 and ranged in concentration from 82 to 2,100 ug/kg. 670 ug/kg of malathion was detected in borehole 2. A large concentration, 30,000 ug/kg, of tetrachloroethene was found in borehole 4. Semivolatile compounds, including phenanthrene (1,000 to 2,000 ug/kg), fluoranthrene (1,000-2,000 ug/kg), and pyrene (670 to 1,400 ug/kg), were found in boreholes 1 and 2. No measurable amounts of semivolatile organic compounds were detected in boreholes 3 and 4.

Pit No. 5

Six samples were analyzed from pit no. 5 for RCRA characteristics, HSL inorganics, and HSL organics. These samples included a composite sample from each of the six boreholes. A summary of the inorganic and organic constituents is found in Tables B-9 and B-10.

A review of the RCRA parameters measured showed that all of the borehole samples from pit no. 5 were within the established limits for corrosivity, measured by pH; ignitability; and reactivity. The EP-TOX metals from each of the six boreholes were below the maximum allowable concentration.

Results from the HSL inorganics show that aluminum, calcium, iron, and magnesium were present in measurable amounts in all of the boreholes. Arsenic was detected in all the boreholes and ranged in concentration from 139 mg/kg in borehole 4 to 2,800 mg/kg in borehole 5. Traces of mercury were also found in all the boreholes and ranged from 0.3 mg/kg in borehole 1 to 1.8 mg/kg in borehole 4. Vanadium concentrations of 5,000 mg/kg or more were found in boreholes 5 and 6.

750 ug/kg of aroclor 1254 was found in borehole 1. In addition, qualitative amounts of aroclor 1248 and 1254 were found in boreholes 3, 5, and 6. No measurable amounts of volatiles or semivolatiles were detected in any of the boreholes.

Pit No. 6

Four samples were analyzed from pit no. 6 for RCRA characteristics and HSL organics. The composite sample from borehole 4 was analyzed for HSL inorganics. The samples from boreholes 1, 2, and 3 were analyzed for priority pollutant metals. Samples from boreholes 1, 2, and 3 were sent to Thermo Analytical, Inc. for chemical analysis because the on-site laboratory determined the activity concentration of U-238 was greater than 10 nCi/g. This

activity level exceeds WESTON's NRC license criteria. A summary of the inorganic and organic constituents is found in Tables B-11 and B-12.

A review of the RCRA parameters measured showed that all the borehole samples from pit no. 6 were within the established limits for corrosivity, measured by pH; ignitability; and reactivity. The EP-TOX metals from each of the four boreholes were below the maximum allowable concentration.

Results for HSL inorganics from the samples from borehole 4 showed measurable amounts of aluminum, calcium, and magnesium. 60 mg/kg of lead and 158 mg/kg of silver were also detected in this sample. The samples from boreholes 1, 2, and 3 showed traces of mercury and lead.

29,000 ug/kg of 1,1,2,2-tetrachloroethane was detected in borehole 4. A qualitative amount of aroclor 1254 was also found in borehole 4. No measurable amounts of semivolatile organic compounds were found in pit no. 6.

Burn Pit

Six samples were analyzed from the burn pit for RCRA characteristics, HSL inorganics, and HSL organics. These samples included composite samples from each of the boreholes. A summary of the inorganic and organic constituents is found in Tables B-13 and B-14.

A review of the RCRA parameters measured showed that all of the borehole samples from the burn pit were within the established limits for corrosivity, measured by pH; ignitability; and reactivity. The EP-TOX metals from each of the six boreholes were below the maximum allowable concentration.

Results from the HSL inorganics show that aluminum, calcium, iron, and magnesium were present in measurable amounts in all the boreholes. Iron concentrations ranged from 3,746 mg/kg in borehole 5 to 17,455 mg/kg in borehole 3. Traces of lead were found in all the boreholes, ranging in concentration from 6.68 to 52.58 mg/kg. 506 mg/kg of silver was found in borehole 4.

PCB's were detected in boreholes 1, 2, 3, and 5 and ranged from 200 to 2,700 ug/kg. Qualitative amounts of PCB's were detected in boreholes 4 and 6. Semivolatile organic compounds were found in all the boreholes. Tetrachloroethene, a volatile compound, was detected in borehole 4 at 260 ug/kg.

Clear Well

Three sediment samples were analyzed from the clear well for RCRA characteristics, HSL inorganics, and HSL organics. (The

borehole 1 sample was analyzed for radiological isotopes only.) A summary of the inorganic and organic constituents is listed in Tables B-15 and B-16.

A review of the RCRA parameters measured showed that all the sediment samples from the clear well were within the established limits for corrosivity, measured by pH; ignitability; and reactivity. The EP-TOX metals from all of the sediment samples were below the maximum allowable concentration.

Results from the HSL inorganics show that aluminum, calcium, iron, and magnesium were present in measurable amounts in all the sediment samples. Aluminum concentrations ranged from 12,939 to 23,770 mg/kg, the highest concentration being found in sample 3. Mercury was measured in all the samples and ranged from 0.42 to 4.3 mg/kg. Traces of arsenic were also found in all the sediment samples but were below 20 mg/kg.

737 ug/kg of aroclor 1254 and 308 ug/kg of aroclor 1248 were detected in sample 2. Qualitative amounts of aroclor 1254 were also found in all the other sediment samples. No measurable amounts of volatile organic compounds were found in any of the clear well sediment samples.

Upper Fly Ash Area

Twelve samples were analyzed for HSL inorganics and HSL pesticides/PCB's. These included a composite sample from each of the 12 boreholes. A summary of the inorganic and organic constituents is found in Tables B-17 and B-18.

Results from the HSL inorganics show that measurable amounts of aluminum, calcium, iron, and magnesium were found in all the borehole samples from the upper fly ash area. Traces of arsenic were found in all the boreholes and ranged from 3.7 to 31.17 mg/kg. Cadmium and lead were also detected in small concentrations in all of the boreholes. Mercury was detected in all the boreholes except borehole 8.

PCB's were measured in boreholes 4, 6, 7, 8, 9, and 10 and ranged from 250 to 880 ug/kg. Qualitative amounts of PCB's were detected in all the other boreholes.

Lower Fly Ash Area

Two samples from the lower fly ash area were analyzed for HSL inorganics and pesticides/PCB's. These included a composite sample from each of the two boreholes. A summary of the inorganic and organic constituents found is listed in Tables B-19 and B-20.

A review of the HSL inorganic data showed measurable amounts of aluminum, calcium, iron, and magnesium in each borehole. Traces of arsenic, cadmium, lead, and mercury were also found in both boreholes.

Qualitative amounts of aroclor 1260 were found in both boreholes.

North Lime Sludge Pond

Three samples were analyzed for RCRA characteristics, HSL inorganics, and HSL organics. These samples included a composite sample from each of the three boreholes. A summary of the inorganic and organic constituents is listed in Tables B-21 and B-22.

A review of the RCRA parameters measured showed that all of the borehole samples were within the established limits for ignitability, corrosivity, and reactivity. The EP-TOX metals from each of the three boreholes were below the maximum allowable concentration.

Results from the HSL inorganic analysis show that aluminum, calcium, iron, and magnesium are present in measurable amounts in all the borehole samples. Traces of mercury were detected in boreholes 1 and 2.

In the organics analysis, butyl benzyl phthalate was found in concentrations of 2,800 ug/kg and 370 ug/kg in boreholes 1 and 3. 1,200 ug/kg of chlordane and 1,200 ug/kg of aroclor 1248 were found in borehole 3. No measurable amounts of volatile organic compounds were found in any of the boreholes.

South Lime Sludge Pond

Three samples were analyzed for RCRA characteristics, HSL inorganics, and HSL organics. These samples included a composite sample from each of the three boreholes. A summary of the inorganic and organic constituents is listed in Tables B-23 and B-24.

A review of the RCRA parameters measured showed that all of the borehole samples from the south lime sludge pond were within the established limits for corrosivity, measured by pH; ignitability; and reactivity. The EP-TOX metals from each of the three boreholes were below the maximum allowable concentration.

Results from the HSL inorganics show that aluminum, calcium, iron, and magnesium were present in measurable amounts in all three boreholes. Iron was found in all borehole samples and ranged from 5,041 to 6,936 mg/kg.

No measurable amounts of volatile or semivolatile organic compounds were found in any of the boreholes.

Sanitary Landfill

Six samples were analyzed for RCRA characteristics, HSL inorganics, and HSL organics. These samples included a composite sample from each of the six boreholes. A summary of the inorganic and organic consitutents is listed in Tables B-25 and B-26.

A review of the RCRA parameters measured showed that all of the borehole samples were within the established limits for ignitability, corrosivity, and reactivity. The EP-TOX metals from each of the six boreholes were below the maximum allowable concentration.

Results from the HSL inorganics show that aluminum, calcium, iron, and magnesium were present in measurable concentrations in all the boreholes in the sanitary landfill. Iron concentrations ranged from 13,467 mg/kg in borehole 4 to 21,845 mg/kg in borehole 6. Traces of lead and cadmium were found in all of the borehole samples.

PCB's were found in boreholes 2, 4, 5, and 6 and ranged in concentration from 120 to 565 ug/kg. Qualitative measurements of PCB's were found in boreholes 1 and 3. Semivolatile organic compounds were detected in all the samples.

3.1.2 Chemical Results - Water

Pit No. 4

One surface water sample, FMP-SW-04-001, was analyzed from pit no. 4 for Appendix IX constituents. The sample was field filtered, and both total and soluble metals were analyzed. A summary of the inorganic and organic data is listed in Tables B-27 and B-28. The unfiltered samples are reported as "total" and the filtered as "soluble." Results from the HSL inorganics show that calcium, magnesium, sodium, and potassium were abundant in both the total and soluble metals fractions. 502 mg/L of chloride and 19 mg/L of fluoride were detected. 6 ug/L of 1,1-dichlorethene was also found. No measurable amounts of semivolatiles, pesticides, or PCB's were found in these surface water samples.

Pit No. 5

Two surface water samples, FMP-SW-05-001 and FMP-SW-05-002, were analyzed for HSL inorganics and HSL organics. The samples were field filtered and both samples were analyzed for total and soluble metals. A summary of the inorganics and organic data

is listed in Tables B-29 and B-30. Calcium, magnesium, sodium, and potassium were found in large amounts in both the total and soluble metals analyses for both samples. Traces of zinc were detected only in FMP-SW-05-001. Cyanide was detected in both surface water samples in amounts of 87 ug/L in FMP-SW-05-001 and 67 ug/L in FMP-SW-05-002. Nitrate concentrations in both samples were greater than 1,000 mg/L. 11 ug/L of benzene was found in sample FMP-SW-05-001. No measurable amounts of semivolatile organic compounds, pesticides, or PCB's were detected in surface water samples from pit no. 5.

Pit No. 6

Five surface water samples were collected from pit no. 6. These samples were analyzed for HSL organics and HSL inorganics. A summary of the inorganics and organic data is listed in Tables B-31 and B-32. Calcium, potassium, and sodium were present in all the surface water samples from pit no. 6 in both the total and soluble fractions. Nitrate, chloride, and phosphate were also detected in all the samples. Aluminum was found in all the samples except FMP-SW-06-005. Traces of tetrachloroethene, a volatile organic, were detected in all the water samples from pit no. 6. 6 ug/L of chlorobenzene was found in sample FMP-SW-06-002. No measurable amounts of pesticides or PCB's were found in the surface water samples.

Clear Well

Two surface water samples, FMP-SW-08-001 and FMP-SW-08-002, were analyzed for HSL inorganics and HSL organics. The samples were field filtered and both samples were analyzed for total and soluble metals. A summary of the inorganic and organic data is listed in Tables B-33 and B-34. Chloride, fluoride, nitrate, phosphate, and sulfate were detected in both samples. Traces of iron and mercury were found in FMP-SW-08-002. 87 ug/L of cyanide was found in FMP-SW-08-001. 7 ug/L of chloroform and a qualitative amount of 2-nitrophenol were detected in FMP-SW-08-002. No pesticides or PCB's were detected in the surface water samples from the clear well.

3.1.3 Quality Control Sample Analysis

Trip Blanks

One trip blank was included for each sampling event and analyzed for volatiles only. The analysis of these samples provided an overall indication of interferences introduced in the field (sample collection and transport) and the laboratory. Results for volatile analysis of the trip blanks are listed in Appendix C. The only volatile compound found in a measurable quantity in any of the trip blanks was 2-butanone, which is a common laboratory contaminant.

Field Blanks

The results for inorganic analyses show that metals, including calcium, copper, iron, lead, and zinc, were found in many of the field blanks. These metals could have been present in the water source used for field blanks.

Thirteen field blanks were collected and analyzed for the Hazardous Substance List (HSL) constituents, including volatiles, semivolatiles, pesticides/PCB's, metals, and cyanide. Results for organic analyses of the field blanks are listed in Appendix C. Trihalomethanes, including chloroform and bromodichloromethane, were detected in more than 50 percent of the field blanks. The presence of these compounds could indicate that the water used for the field blanks was from a chlorinated source. Trace amounts of N-nitrosodiphenyl amine were found in two of the field blanks; however, traces were also found in the laboratory blanks.

A trace amount of an aroclor compound was found in one of the field blanks. The group of samples analyzed with this field blank did have detectable PCB's and a trace amount was found in the laboratory blank. 1,1,1-trichloroethane was detected in two of the field blanks.

Blind Duplicates

The results of the inorganic and organic analyses of the duplicate samples of composited borehole material are also presented in Appendix C. Each set of sample results shows the concentrations found in the original sample followed by the concentrations in the duplicate sample.

3.2 RADIOLOGICAL RESULTS

The results of the radiological characterization of pit nos. 1 through 6, the burn pit, clear well, sanitary landfill, north and south lime sludge ponds, and the upper and lower fly ash piles are presented as follows. No comparison has been made in this report to guideline values for radionuclides in soil. Radiochemical analyses results of composite samples from individual boreholes are presented in Subsection 3.2.1. Included are summary tables for each pit that list each radionuclide and its activity concentration for each borehole. Appendix A presents the minimum and maximum values found in individual pits. A complete tabulation of all data from these analyses is presented in Appendix D.

Results from the radiochemical analysis of surface water samples are presented in Subsection 3.2.2. Included is a discus-

sion of the distribution of radionuclides in water from pit nos. 4 through 6 and the clear well.

Results from the on-site gamma ray spectral analysis of incremental depth profile samples are provided in Subsection 3.2.3 and Appendix E. The detection method used to produce these data was high resolution gamma ray spectrometry analyses for radionuclides which emit, or whose radioactive daughters emit, gamma rays with energy greater than approximately 50 keV. The detection system was built around a computer that was programmed to identify U-238, Th-232, and Ra-226. The discussion presented in this subsection centers on assessment of the vertical distribution of these radionuclides in each pit.

3.2.1 Results from Radiochemical Analysis of Pit Residue

This subsection presents the results of radiochemical analysis of radionuclides in each borehole composite sample. Results for each pit are summarized and a table of data is presented. The borehole numbers in each table correspond to the grid intersections discussed in Subsection 2.1.2. The text describes the distribution of the various radionuclides analyzed. A review of the data from the majority of the pit residues shows that uranium is the predominant radionuclide. The discussion centers around the isotopic distribution of the three isotopes of uranium (U-238, U-235, and U-234). By evaluating the isotopic abundance of these three isotopes, an assessment of the possible origin of the residue can be made. For example, the uranium isotopic concentrations may appear to be near natural abundance. This means that the U-238/U-234 ratio is close to 1 and the U-238/U-235 ratio is close to 20. For natural uranium, the key characteristics are shown as follows:

Isotope	Half Life (years)	Atomic Weight (grams)	Abundance (percent)	Specific Activity
U-238	$4.468E^{9}$	238.05	99.284	0.3337
U-235	$7.038E^{8}$	235.04	0.711	0.0154
U-234	$2.446E^{5}$	235.04	0.0053	0.331

The specific activity of the three isotopes shown in the last column is the activity of each isotope per microgram of natural uranium (which includes all three isotopes). Note that the U-238/U-234 and U-238/U-235 ratios are approximately 1 and 20, respectively. If the isotopic ratios of uranium are near natural

abundance, then it is likely that the residue originated from uranium refinery feeds such as uranium ore concentrates.

In several of the samples taken, the isotopic concentrations are not representative of uranium in natural abundance. In these samples, the U-238/U-234 and U-238/U-235 ratios are statistically different than 1 and 20, respectively. If the uranium is depleted, the U-234 and U-235 activity concentrations will be lower than for natural uranium, thus giving higher U-238/U-234 and U-238/U-235 ratios. In those cases where uranium isotopes are found in ratios other than those found in natural abundance, then it is likely that the waste material originated from operations having a variety of uranium feed materials.

Pit No. 1

A summary of radionuclide concentrations in each borehole for pit no. 1 is presented in Table 3-1. A review of these data shows that the predominant radionuclides are uranium and Th-230. By looking at the three isotopes of uranium (U-234, U-235, and U-238), the data show that the uranium activity in boreholes 1, 4, and 5 appears to be near natural abundance. Note that the U-238/234 ratios are 1.1, 1.2, and 1.5, while the U-238/U-235 ratios are 15, 10.9, and 22.5, respectively. From the previous discussion, these ratios correspond to uranium near its natural isotopic abundance.

The isotopic uranium concentrations in boreholes 2 and 3 are not representative of uranium in natural abundance. In these boreholes, the U-238/U-234 ratios are 2.8 and 5.9 while the U-238/U-235 ratios are 45.6 and 56, respectively. Clearly the U-234 and U-235 activity concentrations are lower than what would be expected for uranium in natural abundance.

Thorium 230 was elevated in all composite samples taken from pit no. 1. The activity ranged from 122 pCi/g to 1,980 pCi/g. The remaining radionuclides analyzed were very low in activity except for Ra-226, which ranged from 12 to 60 pCi/g across the pit.

Pit No. 2

A summary of the radionuclide concentrations in each borehole for pit no. 2 is presented in Table 3-2. A review of these data shows that the predominant radionuclide detected in the pit is uranium. The results show that the uranium activity in boreholes 2 and 4 appears to be near natural abundance. Borehole 2 has the highest U-234 activity of 18,200 pCi/g. The isotopic uranium concentrations in boreholes 1, 3, and 5 do not appear to be representative of uranium in natural abundance. In these

TABLE 3-1 RADIONUCLIDE CONCENTRATIONS IN COMPOSITE SAMPLES FROM PIT 1

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
01-01	CS-137	<	.50	
	NP-237	<	.10	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	60.20	3.10
	RU-106	<	4.00	
	SR-90	<	.40	
	TC-99	<	1.00	
	TH-228	=	16.00	2.00
	TH-230	=	1980.00	20.00
	TH-232	=	17.00	2.00
	U-234	=	429.00	5.00
	U-235	=	32.00	1.00
	U-238	=	485.00	5.00
01-02	CS-137	<	.20	
	NP-237	<	.10	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	12.00	2.80
	RU-106	<	2.00	
	SR-90	<	.30	
	TC-99	<	2.00	
	TH-228	=	8.60	1.60
	TH-230	=	1240.00	20.00
	TH-232	=	7.70	1.50
	U-234	=	488.00	13.00
	U-235	=	30.00	3.00
	U-238	=	1370.00	20.00
01-03	CS-137	<	1.00	
	NP-237	<	.30	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	21.10	2.30
	RU-106	<	2.00	
	SR-90	<	.60	
01-03	TC-99	=	15.00	1.00
	TH-228	=	18.00	4.00
	TH-230	=	326.00	17.00
	TH-232	=	17.00	4.00
	U-234	=	1180.00	30.00
	U-235	=	151.00	9.00
	U-238	=	6980.00	60.00
01-04	CS-137	=	1.10	.80
	NP-237	<	.10	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	36.20	2.50
	RU-106	<	2.00	
	SR-90	<	.60	
	TC-99	<	2.00	
	TH-228	=	6.10	2.00
	TH-230	=	376.00	13.00
	TH-232	=	11.40	1.60
	U-234	=	451.00	5.00
	U-235	=	51.00	2.00
	U-238	=	558.00	5.00
01-05	CS-137	<	.40	
	NP-237	<	.10	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	23.10	1.60
	RU-106	<	3.00	
	SR-90	<	.50	
	TC-99	<	1.00	
	TH-228	=	1.80	.20
	TH-230	=	122.00	1.00
	TH-232	=	1.80	.20
	U-234	=	244.00	3.00
	U-235	=	16.00	1.00
	U-238	=	360.00	4.00

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

TABLE 3-2 RADIONUCLIDE CONCENTRATIONS IN COMPOSITE SAMPLES FROM PIT 2

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
02-01	CS-137	=	3.60	1.20
	NP-237	<	.20	
	PU-238	=	.10	.10
	PU-239/240	=	.05	.02
	RA-226	=	84.30	4.20
	RU-106	=	35.00	12.00
	SR-90	<	.30	
	TC-99	=	11.00	1.00
	TH-228	=	3.30	.20
	TH-230	=	3.60	.30
	TH-232	=	.60	.10
	U-234	=	564.00	19.00
	U-235	=	131.00	9.00
	U-238	=	4280.00	50.00
02-02	CS-137	<	2.00	
	NP-237	<	.40	
	PU-238	=	.10	.10
	PU-239/240	=	.60	.10
	RA-226	=	412.00	12.50
	RU-106	<	16.00	
	SR-90	<	1.00	
	TC-99	=	618.00	38.00
	TH-228	=	73.00	10.00
	TH-230	=	3980.00	70.00
	TH-232	=	88.00	10.00
	U-234	=	18200.00	200.00
	U-235	=	8780.00	150.00
	U-238	=	17900.00	200.00
02-03	CS-137	<	.20	
	NP-237	<	.30	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	12.20	3.70
	RU-106	<	2.00	
	SR-90	<	.50	
02-03	TC-99	=	14.00	1.00
	TH-228	=	11.00	2.00
	TH-230	=	41.00	3.00
	TH-232	=	11.00	2.00
	U-234	=	226.00	7.00
	U-235	=	21.00	2.00
	U-238	=	1070.00	20.00
02-04	CS-137	<	.70	
	NP-237	<	.10	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	51.50	2.40
	RU-106	<	5.00	
	SR-90	<	.90	
	TC-99	<	1.00	
	TH-228	=	37.00	5.00
	TH-230	=	2040.00	40.00
	TH-232	=	38.00	6.00
	U-234	=	303.00	3.00
	U-235	=	31.00	1.00
	U-238	=	317.00	4.00
02-05	CS-137	=	.70	.50
	NP-237	<	.10	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	28.70	1.90
	RU-106	<	2.00	
	SR-90	<	.60	
	TC-99	<	2.00	
	TH-228	=	.30	.10
	TH-230	=	1.20	.20
	TH-232	=	.10	.10
	U-234	=	39.00	3.00
	U-235	=	1.00	.70
	U-238	=	53.00	4.00

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

samples, the U-234 and U-235 activity concentrations are lower than what would be expected for uranium in its natural abundance.

Th-230 was detected in each borehole. The activity concentrations ranged from 1.2 to 3,980 pCi/g across the pit. The remaining radionuclides analyzed in the samples were low in activity except for Tc-99 concentrations of 618 pCi/g in borehole 2, and Ra-226, which has activity ranging from 12.2 to 412 pCi/g.

Pit No. 3

A summary of the radionuclide concentrations in each borehole for pit no. 3 is presented in Table 3-3. A review of these data shows that U-238 and Th-230 are the predominant radionuclides measured in the composite samples from each borehole. The results show that the uranium activity in boreholes 2, 3, 4, and 5 appears to be near natural abundance. The isotopic uranium concentrations in boreholes 1 and 6 are not representative of uranium in natural abundance. As discussed previously, the U-234 and U-235 activity concentrations in these samples are lower than for natural uranium.

Elevated Th-230 activity was detected in pit no. 3. Activity concentrations ranged from 15 to 21,900 pCi/g. Slightly elevated concentrations of Pu-238/240 were detected in borehole 4. Tc-99 was detected in most samples and ranged from 1 to 1,110 pCi/g. The remaining radionuclides analyzed were low in activity concentration except Ra-226, which ranged from 3.1 to 369 pCi/g.

Pit No. 4

A summary of the radionuclide concentrations in each borehole for pit no. 4 is presented in Table 3-4. A review of these data shows that uranium is the predominant radionuclide measured in each borehole. The results show that the isotopic ratios are not representative of uranium near natural abundance. Borehole 4 has the highest U-238 activity of 15,800 pCi/g.

Elevated Th-230 was detected in all borings from pit no. 4. Activity concentrations ranged from 2.2 to 566 pCi/g. Tc-99 was detected in each borehole and ranged in activity concentration from 6.8 to 225 pCi/g. Ra-226 was detected in boreholes 1, 2, and 3. These activity concentrations ranged from 5 to 20 pCi/g. The remaining radionuclides analyzed were low in activity throughout the pit.

Pit No. 5

A summary of the radionuclide concentrations in each borehole for pit no. 5 is presented in Table 3-5. A review of these data

TABLE 3-3 RADIONUCLIDE CONCENTRATIONS IN COMPOSITE SAMPLES FROM PIT 3

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
03-01	CS-137	<	.70	
	NP-237	<	.10	
	PU-238	<	.08	
	PU-239/240	<	.05	
	RA-226	=	3.10	.80
	RU-106	<	5.00	
	SR-90	<	.50	
	TC-99	<	1.00	
	TH-228	=	1.00	.30
	TH-230	=	15.00	1.00
	TH-232	=	1.00	.30
	U-234	=	27.00	1.00
	U-235	=	2.50	.40
	U-238	=	134.00	3.00
03-02	CS-137	<	.20	
	NP-237	<	.20	
	PU-238	=	.10	.10
	PU-239/240	=	.30	.10
	RA-226	=	4.30	1.40
	RU-106	<	2.00	
	SR-90	<	.90	
	TC-99	=	52.00	2.00
	TH-228	=	14.00	5.00
	TH-230	=	72.00	5.00
	TH-232	=	9.50	3.80
	U-234	=	163.00	2.00
	U-235	=	15.00	1.00
	U-238	=	285.00	3.00
03-03	CS-137	<	6.00	
	NP-237	=	.80	.40
	PU-238	=	.14	.07
	PU-239/240	=	.30	.10
	RA-226	=	369.00	10.00
	RU-106	<	35.00	
	SR-90	=	26.00	3.00
03-03	TC-99	=	132.00	5.00
	TH-228	=	35.00	4.00
	TH-230	=	17000.00	100.00
	TH-232	=	72.00	6.00
	U-234	=	475.00	9.00
	U-235	=	21.00	2.00
	U-238	=	521.00	9.00
03-04	CS-137	<	5.00	
	NP-237	=	2.10	.60
	PU-238	=	1.00	.10
	PU-239/240	=	14.00	1.00
	RA-226	=	198.00	9.00
	RU-106	<	35.00	
	SR-90	=	2.40	.40
	TC-99	=	1110.00	80.00
	TH-228	=	82.00	8.00
	TH-230	=	21900.00	100.00
	TH-232	=	121.00	10.00
	U-234	=	387.00	8.00
	U-235	=	16.40	1.70
	U-238	=	403.00	8.00
03-05	CS-137	<	1.00	
	NP-237	<	.40	
	PU-238	<	.05	
	PU-239/240	=	.30	.10
	RA-226	=	3.40	1.30
	RU-106	<	6.00	
	SR-90	<	.50	
	TC-99	=		
	TH-228	=	58.00	1.20
	TH-230	=	341.00	8.00
	TH-232	=	5.80	1.20
	U-234	=	156.00	5.00
	U-235	=	7.20	1.20
	U-238	=	156.00	5.00

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

TABLE 3-3 (CONTINUED)

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
03-06	CS-137	<	.60	
	NP-237	=	.30	.20
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	136.60	4.30
	RU-106	<	4.00	
	SR-90	<	.90	
	TC-99	=	47.00	2.00
	TH-228	=	7.20	1.70
	TH-230	=	4040.00	40.00
	TH-232	=	6.90	1.90
	U-234	=	79.00	2.00
	U-235	=	5.80	.40
	U-238	=	215.00	3.00
03-07	CS-137	<	.80	
	NP-237	<	.20	
	PU-238	=	.10	.10
	PU-239/240	<	.10	
	RA-226	=	155.00	4.50
	RU-106	<	6.00	
	SR-90	<	.60	
	TC-99	=	93.00	3.00
	TH-228	=	5.90	1.60
	TH-230	=	5900.00	50.00
	TH-232	=	9.40	2.00
	U-234	=	167.00	9.00
	U-235	=	14.00	2.00
	U-238	=	1380.00	20.00

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

TABLE 3-4 RADIONUCLIDE CONCENTRATIONS IN COMPOSITE SAMPLES FROM PIT 4

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
04-01	CS-137	<	.20	
	NP-237	<	.10	
	PU-238	=	.10	.10
	PU-239/240	=	.10	.10
	RA-226	=	16.10	1.50
	RU-106	<	2.00	
	SR-90	<	.40	
	TC-99	=	6.80	1.00
	TH-228	=	22.00	4.00
	TH-230	=	566.00	20.00
	TH-232	=	17.00	3.00
	U-234	=	366.00	5.00
	U-235	=	84.00	2.00
	U-238	=	737.00	7.00
04-02	CS-137	<	.30	
	NP-237	<	.40	
	PU-238	=	.10	.10
	PU-239/240	=	.20	.10
	RA-226	=	5.00	1.10
	RU-106	<	3.00	
	SR-90	<	.40	
	TC-99	=	59.00	2.00
	TH-228	=	18.00	4.00
	TH-230	=	553.00	19.00
	TH-232	=	18.00	3.00
	U-234	=	298.00	5.00
	U-235	=	35.00	2.00
	U-238	=	509.00	6.00
04-03	CS-137	<	.50	
	NP-237	<	.20	
	PU-238	=	.50	.10
	PU-239/240	=	.40	.10
	RA-226	=	18.00	1.80
	RU-106	<	4.00	
	SR-90	<	.60	
04-03	TC-99	=	31.00	2.00
	TH-228	=	24.00	5.00
	TH-230	=	369.00	19.00
	TH-232	=	21.00	5.00
	U-234	=	149.00	7.00
	U-235	=	64.00	5.00
	U-238	=	1530.00	20.00
04-04	CS-137	<	.20	
	NP-237	=	.40	.20
	PU-238	=	.40	.10
	PU-239/240	=	.10	.10
	RA-226	<	20.00	
	RU-106	<	2.00	
	SR-90	<	1.00	
	TC-99	=	225.00	10.00
	TH-228	=	.30	.10
	TH-230	=	2.20	.30
	TH-232	=	.30	.10
	U-234	=	2320.00	90.00
	U-235	=	426.00	38.00
	U-238	=	15800.00	200.00

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

TABLE 3-5 RADIONUCLIDE CONCENTRATIONS IN COMPOSITE SAMPLES FROM PIT 5

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
05-01	CS-137	<	2.00	
	NP-237	=	2.60	.50
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	495.00	96.00
	RU-106	<	13.00	
	SR-90	=	4.10	1.10
	TC-99	=	423.00	20.00
	TH-228	=	41.00	3.00
	TH-230	=	3080.00	30.00
	TH-232	=	21.00	2.00
	U-234	=	430.00	5.00
	U-235	=	26.00	1.00
	U-238	=	387.00	4.00
05-02	CS-137	<	7.00	
	NP-237	=	9.30	1.20
	PU-238	=	2.40	.20
	PU-239/240	=	13.00	1.00
	RA-226	=	443.00	17.00
	RU-106	<	35.00	
	SR-90	=	.80	.30
	TC-99	=	1830.00	200.00
	TH-228	=	78.00	16.00
	TH-230	=	11600.00	200.00
	TH-232	=	90.00	16.00
	U-234	=	1250.00	20.00
	U-235	=	79.00	5.00
	U-238	=	1230.00	20.00
05-03	CS-137	<	4.00	
	NP-237	=	21.00	1.00
	PU-238	=	4.30	.30
	PU-239/240	=	4.80	.30
	RA-226	=	235.00	15.00
	RU-106	<	35.00	
	SR-90	=	1.70	.40
05-03	TC-99	=	887.00	67.00
	TH-228	=	68.00	6.00
	TH-230	=	5350.00	50.00
	TH-232	=	85.00	6.00
	U-234	=	790.00	10.00
	U-235	=	35.00	3.00
	U-238	=	730.00	10.00
05-04	CS-137	<	6.00	
	NP-237	=	23.00	1.00
	PU-238	=	4.40	.30
	PU-239/240	=	11.00	1.00
	RA-226	=	391.00	16.00
	RU-106	<	35.00	
	SR-90	=	3.30	.40
	TC-99	=	821.00	61.00
	TH-228	=	191.00	8.00
	TH-230	=	6740.00	50.00
	TH-232	=	69.00	5.00
	U-234	=	680.00	10.00
	U-235	=	36.00	3.00
	U-238	=	630.00	10.00
05-05	CS-137	=	61.00	9.00
	NP-237	=	.30	.10
	PU-238	=	.40	.10
	PU-239/240	=	.40	.10
	RA-226	=	999.00	25.00
	RU-106	<	35.00	
	SR-90	<	15.00	1.00
	TC-99	=	696.00	48.00
	TH-228	=	51.00	4.00
	TH-230	=	12300.00	100.00
	TH-232	=	62.00	6.00
	U-234	=	310.00	10.00
	U-235	=	14.00	2.00
	U-238	=	460.00	10.00

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

TABLE 3-5 (CONTINUED)

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
05-06	CS-137	=	76.00	8.00
	NP-237	=	5.10	.50
	PU-238	=	.40	.10
	PU-239/240	=	.90	.10
	RA-226	=	752.00	23.00
	RU-106	<	35.00	
	SR-90	=	23.00	1.00
	TC-99	=	2990.00	350.00
	TH-228	=	97.00	9.00
	TH-230	=	20200.00	200.00
	TH-232	=	82.00	9.00
	U-234	=	370.00	10.00
	U-235	=	16.00	2.00
	U-238	=	410.00	10.00

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

shows that uranium and thorium are the predominant radionuclides measured in each borehole. The results show that the isotopic ratios are representative of uranium near natural abundance. Borehole 2 has the highest U-238 activity of 1,230 pCi/g.

Th-230 is elevated in all borings in pit no. 5. Activity concentrations ranged from 3,080 to 20,200 pCi/g and averaged approximately 9,880 pCi/g. Tc-99 was detected in each borehole and ranged in activity concentration from 423 to 2,990 pCi/g. Ra-226 was detected in each borehole and ranged in activity from 235 to 999 pCi/g. In addition, Cs-137, Np-237, Sr-90, and Pu-238/239/240 were elevated at various locations in the pit.

Pit No. 6

A summary of the radionuclide concentrations in each borehole for pit no. 6 is presented in Table 3-6. A review of these data shows that uranium is the predominant radionuclide measured in each borehole. The results show that the isotopic ratios are not representative of uranium near natural isotopic abundance. The U-238 activity concentrations ranged from 12,500 to 18,700 pCi/g and averaged 16,975 pCi/g.

Elevated Tc-99 activity was detected in each borehole from pit no. 6. The activity concentrations ranged from 84 to 164 pCi/g. In addition, slightly elevated concentrations of isotopic plutonium, Sr-90, Np-237, and Cs-137 were detected in the pit no. 6 residues.

Burn Pit

A summary of the radionuclide concentrations in each borehole of the burn pit is presented in Table 3-7. A review of these data shows that uranium is the predominant radionuclide measured in each borehole. The results show that the uranium activity in boreholes 1, 2, 4, and 6 appears to be near natual abundance. The isotopic uranium concentrations in boreholes 3 and 5 do not appear to be representative of uranium in natural abundance. In these samples, the U-234 and U-235 activity concentrations are lower than what would be expected for uranium in its natural abundance.

The only other radionuclides detected from pit no. 6 residues were slightly elevated concentrations of isotopic thorium and Tc-99.

Clear Well

A summary of the radionuclide concentrations in each of the four clear well samples is presented in Table 3-8. A review of

TABLE 3-6 RADIONUCLIDE CONCENTRATIONS IN COMPOSITE SAMPLES FROM PIT 6

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
06-01	CS-137	=	15.00	4.00
	NP-237	=	2.60	.60
	PU-238	=	1.40	.20
	PU-239/240	=	15.00	1.00
	RA-226	<	30.00	
	RU-106	<	35.00	
	SR-90	=	4.00	.40
	TC-99	=	84.00	2.00
	TH-228	=	1.20	.20
	TH-230	=	41.00	1.00
	TH-232	=	1.20	.20
	U-234	=	3380.00	80.00
	U-235	=	1490.00	50.00
	U-238	=	18700.00	200.00
06-02	CS-137	=	31.00	4.00
	NP-237	=	4.50	.80
	PU-238	=	.60	.20
	PU-239/240	=	9.50	.50
	RA-226	<	20.00	
	RU-106	<	35.00	
	SR-90	=	1.80	.40
	TC-99	=	120.00	5.00
	TH-228	=	2.00	.20
	TH-230	=	26.00	1.00
	TH-232	=	.30	.10
	U-234	=	5330.00	100.00
	U-235	=	1750.00	60.00
	U-238	=	18700.00	200.00
06-03	CS-137	=	20.00	4.00
	NP-237	=	.90	.40
	PU-238	=	.40	.10
	PU-239/240	=	4.00	.30
	RA-226	<	16.00	
	RU-106	<	35.00	
	SR-90	<	.50	
06-03	TC-99	=	164.00	7.00
	TH-228	=	.20	.10
	TH-230	=	25.00	1.00
	TH-232	=	.20	.10
	U-234	=	2960.00	120.00
	U-235	=	350.00	40.00
	U-238	=	18000.00	300.00
06-04	CS-137	<	4.00	
	NP-237	=	1.90	.40
	PU-238	=	.70	.20
	PU-239/240	=	6.30	.50
	RA-226	<	23.00	
	RU-106	<	35.00	
	SR-90	=	1.30	.40
	TC-99	=	140.00	9.00
	TH-228	=	.40	.10
	TH-230	=	14.00	1.00
	TH-232	=	.40	.10
	U-234	=	2000.00	70.00
	U-235	=	580.00	40.00
	U-238	=	12500.00	200.00

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

TABLE 3-7 RADIONUCLIDE CONCENTRATIONS IN COMPOSITE SAMPLES IN BURN PIT

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
07-01	CS-137	<	.60	
	NP-237	<	.10	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	3.00	.70
	RU-106	<	2.00	
	SR-90	<	.50	
	TC-99	<	.40	
	TH-228	<	.10	
	TH-230	=	.10	.10
	TH-232	<	.10	
	U-234	=	108.00	2.00
	U-235	=	6.30	.40
	U-238	=	139.00	2.00
07-02	CS-137	<	.20	
	NP-237	<	.20	
	PU-238	=	.50	.10
	PU-239/240	=	.10	.10
	RA-226	=	2.50	.80
	RU-106	<	2.00	
	SR-90	<	.80	
	TC-99	=	60.00	3.00
	TH-228	=	9.60	1.40
	TH-230	=	26.00	2.00
	TH-232	=	7.70	1.30
	U-234	=	415.00	6.00
	U-235	=	27.00	6.00
	U-238	=	454.00	6.00
07-03	CS-137	<	.30	
	NP-237	=	.70	.30
	PU-238	=	.10	.10
	PU-239/240	=	.10	.10
	RA-226	=	3.90	1.10
	RU-106	<	2.00	
	SR-90	<	.90	
07-03	TC-99	=	32.00	1.00
	TH-228	=	.20	.10
	TH-230	=	1.60	.20
	TH-232	=	.10	.10
	U-234	=	78.00	2.00
	U-235	=	6.00	.50
	U-238	=	209.00	3.00
07-04	CS-137	<	.20	
	NP-237	<	.30	
	PU-238	=	.10	.10
	PU-239/240	=	.10	.10
	RA-226	=	2.30	.80
	RU-106	<	2.00	
	SR-90	<	.80	
	TC-99	=	18.00	1.00
	TH-228	=	.30	.10
	TH-230	=	.50	.10
	TH-232	=	.10	.10
	U-234	=	75.00	1.00
	U-235	=	3.70	.30
	U-238	=	90.00	2.00
07-05	CS-137	<	.20	
	NP-237	<	.20	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	<	2.00	
	RU-106	<	2.00	
	SR-90	<	.50	
	TC-99	<	.40	
	TH-228	<	.20	
	TH-230	=	3.20	.60
	TH-232	<	.20	
	U-234	=	9.90	.40
	U-235	=	.50	.10
	U-238	=	22.00	1.00

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

TABLE 3-7 (CONTINUED)

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
07-06	CS-137	<	.30	
	NP-237	=	.70	.30
	PU-238	=	.10	.10
	PU-239/240	=	.40	.10
	RA-226	=	2.60	1.00
	RU-106	<	2.00	
	SR-90	<	.90	
	TC-99	=	64.00	3.00
	TH-228	=	.20	.10
	TH-230	=	2.90	.20
	TH-232	=	.30	.10
	U-234	=	125.00	2.00
	U-235	=	6.70	.50
	U-238	=	138.00	2.00

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

TABLE 3-8 RADIONUCLIDE CONCENTRATIONS IN CLEAR WELL GRAB SAMPLES

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
08-01	CS-137	=	140.00	10.00
	NP-237	=	1.40	.50
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	21.90	4.20
	RU-106	<	12.00	
	SR-90	=	2.80	.50
	TC-99	=	278.00	13.00
	TH-228	<	.20	
	TH-230	=	.30	.10
	TH-232	<	.10	
	U-234	=	242.00	5.00
	U-235	=	28.00	2.00
	U-238	=	634.00	8.00
08-02	CS-137	=	18.00	1.00
	NP-237	<	.40	
	PU-238	=	.10	.10
	PU-239/240	<	.10	
	RA-226	=	21.60	2.60
	RU-106	<	3.00	
	SR-90	=	1.30	.80
	TC-99	=	117.00	5.00
	TH-228	=	20.00	2.00
	TH-230	=	430.00	11.00
	TH-232	=	15.00	2.00
	U-234	=	242.00	4.00
	U-235	=	24.00	1.00
	U-238	=	634.00	7.00
08-03	CS-137	=	450.00	20.00
	NP-237	=	.80	.40
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	458.00	17.00
	RU-106	<	24.00	
	SR-90	=	26.00	3.00
08-03	TC-99	<	.40	
	TH-228	=	30.00	13.00
	TH-230	=	5600.00	120.00
	TH-232	=	39.00	11.00
	U-234	=	376.00	5.00
	U-235	=	39.00	2.00
	U-238	=	548.00	6.00
08-04	CS-137	=	150.00	10.00
	NP-237	=	2.70	.70
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	32.00	5.60
	RU-106	<	13.00	
	SR-90	=	3.80	1.10
	TC-99	<	.40	
	TH-228	<	41.00	2.00
	TH-230	=	105.00	4.00
	TH-232	<	2.80	.70
	U-234	=	299.00	5.00
	U-235	=	49.00	2.00
	U-238	=	670.00	7.00

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

these data shows that uranium, thorium, Tc-99, and Cs-137 are the predominant radionuclides measured in each sample. The results show that the uranium concentrations do not appear to be representative of uranium in natural abundance.

Th-230 was elevated in samples 2, 3, and 4. The activity concentrations ranged from 0.3 to 5,600 pCi/g. Tc-99 was detected in samples 1 and 2. The activity concentrations range from less than 0.4 to 278 pCi/g. Cs-137 was detected in all clear well samples. The activity concentrations ranged from 18 to 450 pCi/g. In addition, Ra-226, Np-237, and Sr-90 were slightly elevated in several clear well samples.

Upper Fly Ash Area

A summary of the radionuclides analyzed and their activity concentrations in each of the 12 upper fly ash area boreholes is presented in Table 3-9. The radioisotopes analyzed for are fewer than in the pits as there is no historical basis for suspecting the presence of activation or fission products. A review of these data reveals that radionuclide concentrations are low. The U-238 concentrations range from 3.1 to 50 pCi/g. The highest uranium concentration was found in borehole 10 in an area overgrown with native grasses. Upon close inspection, this area was discovered to be part of an early fly ash storage area. The depth of the fly ash, as reported in geological descriptions (Appendix F), ranges to approximately 24 feet. In addition, various scrap such as glass was brought out of this borehole. The remaining radionuclides are very low in activity and do not warrant further discussion. As seen by these data, the average radioactivity throughout the upper fly ash pile is low. It should be pointed out, however, that radioactivity was observed in a number of areas during the surface characterization. These data are reported elsewhere (Roy F. Weston, Inc., 1987c). Isolated deposits of uranium and thorium were also identified during the gamma ray spectral analysis of incremental profile soil samples (see Subsection 3.2.3). This suggests that radioactivity associated with the fly ash results from actions that occurred at irregular intervals as the fly ash pile was developed.

Lower Fly Ash Area

A summary of the radionuclide concentrations in each of the two lower fly ash area boreholes is presented in Table 3-10. Borehole 1 is located just south of the lower fly ash pile, and borehole 2 was advanced in a low lying sump in the stormwater outfall ditch. A review of these data shows that all of the radionuclides analyzed are very low in activity concentration. The isotopic uranium concentrations are slightly elevated and reflect uranium near natural abundance.

TABLE 3-9 RADIONUCLIDE CONCENTRATIONS IN COMPOSITE SAMPLES IN UPPER FLY ASH AREA

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
24-01	PB-210	=	28.00	2.00
	RA-226	=	9.00	1.00
	RA-228	=	1.60	.80
	TH-228	=	.10	.10
	TH-230	=	9.60	.50
	TH-232	<	.10	
	U-234	=	9.10	.40
	U-235	=	.40	.10
	U-238	=	19.00	1.00
24-02	PB-210	=	3.00	1.00
	RA-226	=	1.20	.40
	RA-228	=	.90	.60
	TH-228	=	.20	.10
	TH-230	=	.30	.10
	TH-232	=	.20	.10
	U-234	=	2.00	.20
	U-235	=	.09	.07
	U-238	=	4.90	.40
24-03	PB-210	=	2.00	1.00
	RA-226	=	.80	.30
	RA-228	=	.60	.40
	TH-228	<	.10	
	TH-230	=	.10	.10
	TH-232	<	.10	
	U-234	=	8.20	.40
	U-235	=	.50	.10
	U-238	=	24.00	1.00
24-04	PB-210	=	4.00	1.00
	RA-226	=	2.10	.50
	RA-228	=	2.20	.70
	TH-228	=	.30	.20
	TH-230	=	.50	.20
	TH-232	<	.10	
24-04	U-234	=	5.80	.30
	U-235	=	.30	.10
	U-238	=	9.20	.40
24-05	PB-210	=	26.00	2.00
	RA-226	=	17.00	1.00
	RA-228	<	1.00	
	TH-228	=	.80	.30
	TH-230	=	10.00	1.00
	TH-232	=	.50	.20
	U-234	=	3.80	.30
	U-235	=	.20	.05
	U-238	=	5.10	.30
24-06	PB-210	=	4.00	1.00
	RA-226	=	5.00	1.00
	RA-228	=	1.00	.60
	TH-228	<	.10	
	TH-230	=	.50	.10
	TH-232	<	.10	
	U-234	=	2.60	.20
	U-235	=	.10	.04
	U-238	=	3.10	.20
24-07	PB-210	=	2.00	1.00
	RA-226	=	.70	.50
	RA-228	=	3.00	1.00
	TH-228	=	.70	.20
	TH-230	=	1.10	.30
	TH-232	=	.60	.20
	U-234	=	15.00	1.00
	U-235	=	.60	.10
	U-238	=	16.00	1.00
24-08	PB-210	=	3.00	1.00

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

TABLE 3-9 (CONTINUED)

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
24-08	RA-226	=	.70	.50
	RA-228	=	9.00	1.00
	TH-228	=	1.30	.20
	TH-230	=	.70	.20
	TH-232	=	1.40	.20
	U-234	=	14.00	1.00
	U-235	=	.80	.10
	U-238	=	17.00	1.00
24-09	PB-210	=	2.00	1.00
	RA-226	=	.90	.40
	RA-228	=	10.00	1.00
	TH-228	=	1.90	.20
	TH-230	=	.50	.10
	TH-232	=	2.10	.20
	U-234	=	15.00	1.00
	U-235	=	.80	.10
	U-238	=	42.00	1.00
24-10	PB-210	=	5.00	1.00
	RA-226	=	4.10	.70
	RA-228	=	2.00	.70
	TH-228	=	2.30	.80
	TH-230	=	11.00	2.00
	TH-232	=	2.60	.80
	U-234	=	48.00	1.00
	U-235	=	2.20	.20
	U-238	=	50.00	1.00
24-11	PB-210	=	3.00	1.00
	RA-226	=	1.50	.50
	RA-228	=	1.70	.70
	TH-228	=	.20	.10
	TH-230	=	.20	.10
	TH-232	=	.10	.10
	U-234	=	3.70	.30
24-11	U-235	=	.20	.10
	U-238	=	6.60	.40
24-12	PB-210	=	2.00	1.00
	RA-226	=	.60	.30
	RA-228	=	2.00	.60
	TH-228	<	.20	
	TH-230	<	.10	
	TH-232	<	.10	
	U-234	=	6.70	.40
	U-235	=	.20	.10
	U-238	=	9.00	.40

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

TABLE 3-10 RADIONUCLIDE CONCENTRATIONS IN COMPOSITE SAMPLES IN LOWER FLY ASH AREA

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
25-01	PB-210	=	4.00	1.00
	RA-226	=	2.40	.50
	RA-228	=	1.70	.40
	TH-228	<	.10	
	TH-230	=	5.30	.40
	TH-232	<	.10	
	U-234	=	4.50	.30
	U-235	=	.10	.06
	U-238	=	5.10	.30
25-02	PB-210	<	1.00	
	RA-226	=	.40	.10
	RA-228	=	.90	.40
	TH-228	<	.10	
	TH-230	=	.70	.10
	TH-232	=	.10	.10
	U-234	=	5.70	.30
	U-235	=	.20	.06
	U-238	=	6.80	.20

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Sanitary Landfill

A summary of the radionuclide concentrations in each of the six sanitary landfill boreholes is presented in Table 3-11. The U-238 activity concentrations range from 12 to 35 pCi/g across the pit. The remaining radionuclides analyzed in the sanitary landfill are very low or below detection limits and warrant no further discussion.

South and North Lime Sludge Ponds

A summary of the radionuclide concentrations in each of the borings in the south and north lime sludge ponds is presented in Tables 3-12 and 3-13. A review of these data suggests that there is no significant radioactivity in these ponds.

3.2.2 Results from Radiochemical Analysis of Surface Water

Ten water samples were collected from waste storage areas described in Table 2-2. In addition, one field blank was included for radiochemical analysis. This was prepared in the decontamination area by pouring deionized water over a decontaminated split-spoon sampler. All water samples were analyzed for the total concentration of radionuclides. Radiochemical techniques were used for all radionuclides except for Cs-137 and Ru-106. The concentration of these radionuclides was estimated using gamma ray spectral measurements.

The results of the analyses are presented in Table 3-14. A review of these data reveals that uranium and technetium are the principal radionuclides present. Isotopic ratios suggest that water in pit no. 4, pit no. 6, and the clear well contains depleted uranium. Water in pit no. 5 contains natural uranium. The only isotope of thorium in surface water was Th-230; however, the concentration was near detection limits and is considered insignificant. Cesium-137 and Sr-90 were found only in pit no. 5; however, Tc-99 was present in all samples and the highest concentration was in the clear well. The concentration of Ra-226 was insignificant in those samples for which it was analyzed, and low concentrations of Ra-228 were observed. No significant concentrations of Pu-238, Pu-239/240, Np-237, and Ru-106 were found. In several of the samples, poor recovery of the Np tracer led to sample depletion, thus preventing a final analysis. Four additional samples were taken from pit no. 6 and two from the clear well. The activity concentrations of Np-237 in these samples ranged from <0.1 to <0.7 pCi/L.

TABLE 3-11 RADIONUCLIDE CONCENTRATIONS IN COMPOSITE SAMPLES IN SANITARY LANDFILL

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
49-01	CS-137	<	.30	
	NP-237	<	.30	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	1.00	.40
	RU-106	<	2.00	
	SR-90	<	.70	
	TC-99	=		
	TH-228	<	.10	
	TH-230	=	.10	.10
	TH-232	<	.10	
	U-234	=	9.30	.50
	U-235	=	.50	.10
	U-238	=	16.00	1.00
49-02	CS-137	<	.20	
	NP-237	<	.20	
	PU-238	=	.10	.10
	PU-239/240	<	.10	
	RA-226	=	1.00	.50
	RU-106	<	1.00	
	SR-90	<	.30	
	TC-99	=		
	TH-228	<	.10	
	TH-230	=	.10	.10
	TH-232	<	.10	
	U-234	=	8.50	.40
	U-235	=	.40	.10
	U-238	=	13.00	1.00
49-03	CS-137	<	.20	
	NP-237	<	.10	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	1.00	.50
	RU-106	<	1.00	
	SR-90	<	.40	
49-03	TC-99	<	.60	
	TH-228	<	.10	
	TH-230	=	.10	.10
	TH-232	<	.10	
	U-234	=	28.00	1.00
	U-235	=	1.40	.20
	U-238	=	35.00	1.00
49-04	CS-137	<	.20	
	NP-237	<	.10	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	.80	.30
	RU-106	<	1.00	
	SR-90	<	.50	
	TC-99	<	.40	
	TH-228	<	.10	
	TH-230	<	.10	
	TH-232	<	.10	
	U-234	=	4.90	.40
	U-235	=	.40	.10
	U-238	=	12.00	1.00
49-05	CS-137	<	.30	
	NP-237	<	.10	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	.50	.40
	RU-106	<	2.00	
	SR-90	<	.30	
	TC-99	<	.60	
	TH-228	<	.10	
	TH-230	=	.10	.10
	TH-232	<	.10	
	U-234	=	6.40	.40
	U-235	=	.40	.10
	U-238	=	13.00	1.00

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

TABLE 3-11 (CONTINUED)

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
49-06	CS-137	<	.20	
	NP-237	<	.20	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	.80	.20
	RU-106	<	1.00	
	SR-90	<	.40	
	TC-99	<	4.00	
	TH-228	<	.10	
	TH-230	=	.20	.10
	TH-232	<	.10	
	U-234	=	8.40	.50
	U-235	=	.60	.10
	U-238	=	30.00	1.00

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

TABLE 3-12 RADIONUCLIDE CONCENTRATIONS IN COMPOSITE SAMPLES IN SOUTH LIME SLUDGE AREA

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
48-01	CS-137	<	.60	
	NP-237	<	.07	
	PU-238	<	.05	
	PU-239/240	<	.05	
	RA-226	<	2.30	
	RU-106	<	5.00	
	SR-90	<	.50	
	TC-99	<	.40	
	TH-228	=	.30	.30
	TH-230	=	7.00	1.00
	TH-232	=	.30	.20
	U-234	=	3.10	.80
	U-235	=	.30	.30
	U-238	=	2.20	.70
48-02	CS-137	<	.60	
	NP-237	<	.03	
	PU-238	<	.05	
	PU-239/240	<	.05	
	RA-226	<	2.50	
	RU-106	<	5.00	
	SR-90	<	.50	
	TC-99	<	.40	
	TH-228	=	.10	.10
	TH-230	=	1.10	.20
	TH-232	=	.10	.10
	U-234	=	1.80	.30
	U-235	=	.10	.10
	U-238	=	2.80	.30
48-03	CS-137	<	.50	
	NP-237	<	.03	
	PU-238	<	.05	
	PU-239/240	<	.05	
	RA-226	<	1.10	
	RU-106	<	5.00	
	SR-90	<	.50	
	TC-99	<	.30	
	TH-228	=	.20	.20
	TH-230	=	.90	.20
	TH-232	=	.20	.10
	U-234	=	2.00	.30
	U-235	=	.10	.10
	U-238	=	2.70	.30

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

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	CS-137		1.00	
	NP-237	<	.03	
	PU-238	<	.06	
	PU-239/240	<	.05	
	RA-226	<	6.20	
	RU-106	<	6.00	
	SR-90	=	2.20	.90
	TC-99	<	.30	
	TH-228	=	.20	.20
	TH-230	=	20.00	1.00
	TH-232	=	.20	.20
	U-234	=	2.50	.20
	U-235	=	.10	.10
	U-238	=	7.60	.40
47-02	CS-137	<	2.00	
	NP-237	<	.04	
	PU-238	<	.09	
	PU-239/240	<	.05	
	RA-226	<	2.00	
	RU-106	<	6.00	
	SR-90	<	.50	
	TC-99	<	.40	
	TH-228	=	.20	.10
	TH-230	=	5.00	.40
	TH-232	=	.20	.10
	U-234	=	2.50	.20
	U-235	=	.20	.10
	U-238	=	2.40	.20
47-03	CS-137	<	.80	
	NP-237	<	.03	
	PU-238	<	.05	
	PU-239/240	<	.05	
	RA-226	<	3.90	
	RU-106	<	5.00	
	SR-90	<	.50	
47-03	TC-99	<	.30	
	TH-228	=	.20	.10
	TH-230	=	.50	.10
	TH-232	=	.20	.10
	U-234	=	2.10	.20
	U-235	=	.10	.10
	U-238	=	2.70	.20

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Table 3-13

Table 3-14

Radionuclide Concentrations in Surface Water
Collected from Waste Storage Pits

Waste Pit No.	4	5	5
Sample No.	FMP-SW-04-001	FMP-SW-05-001	FMP-SW-05-002
Radionuclide[a]			
U-234	3,400 ± 100	420 ± 10	410 ± 10
U-235	220 ± 20	18 ± 2	19 ± 2
U-238	11,400 ± 100	400 ± 10	370 ± 10
Th-228	<0.1	<0.1	<0.1
Th-230	0.2 ± 0.1	0.1 ± 0.1	0.1 ± 0.1
Th-232	<0.1	<0.1	<0.1
Pu-238	<0.2	<0.1	<0.1
Pu-239	<0.1	<0.1	<0.1
Cs-137	<25	51 ± 15	90 ± 15
Sr-90	<2	41 ± 3	47 ± 4
Ru-106	<86	<76	<85
Np-237	<0.2	<0.7	<0.4
Tc-99	190 ± 10	240 ± 10	320 ± 10

Waste Pit No.	6	6	6
Sample No.	FMP-SW-06-001	FMP-SW-06-002	FMP-SW-06-003
Radionuclide[a]			
U-234	61 ± 2	77 ± 2	77 ± 20
U-235	5 ± 1	8 ± 1	9 ± 1
U-238	320 ± 10	440 ± 10	460 ± 10
Th-228	<0.1	<0.1	<0.1
Th-230	0.3 ± 0.1	0.1 ± 0.1	0.1 ± 0.1
Th-232	<0.1	<0.1	<0.1
Pu-238	<0.2	(b)	<0.1
Pu-239	<0.1	(b)	<0.1
Cs-137	<12	<11	<13
Sr-90	<1	<1	<1
Ru-106	<57	<63	<94
Np-237	(b)	(b)	(b)
Tc-99	420 ± 10	530 ± 10	600 ± 10
Ra-226	<0.1	<0.1	<0.1
Ra-228	4 ± 1	6 ± 1	7 ± 1

(a) Concentrations presented in pCi/L.
(b) Insufficient sample volume.
Note: Ra-226 and Ra-228 analyses inadvertently omitted on these samples.

Table 3-14
(continued)

Waste Pit No.	6	6	Clear Well
Sample No.	FMP-SW-06-004	FMP-SW-06-005	FMP-SW-08-001
Radionuclide[a]			
U-234	76 ± 2	22 ± 1	1,900 ± 100
U-235	9 ± 1	1.5 ± 0.3	110 ± 20
U-238	460 ± 10	120 ± 10	6,200 ± 100
Th-228	<0.1	<0.1	<0.2
Th-230	0.3 ± 0.2	0.2 ± 0.2	<0.2
Th-232	<0.1	<0.1	<0.2
Pu-238	<0.1	<0.1	<0.1
Pu-239	<0.1	<0.1	<0.1
Cs-137	<10	<15	<10
Sr-90	<1	<2	<2
Ru-106	<83	<114	<90
Np-237	(b)	(b)	(b)
Tc-99	400 ± 10	590 ± 10	2,000 ± 100
Ra-226	<0.1	<0.1	1.1 ± 0.1
Ra-228	7 ± 1	13 ± 2	11 ± 2

Waste Pit No.	Clear Well
Sample No.	FMP-SW-06-004
Radionuclide[a]	
U-234	1800 ± 100
U-235	120 ± 20
U-238	5,400 ± 100
Th-228	<0.1
Th-230	0.4 ± 0.2
Th-232	<0.1
Pu-238	<0.2
Pu-239	<0.2
Cs-137	<12
Sr-90	<3
Ru-106	<66
Np-237	(b)
Tc-99	4,000 ± 100
Ra-226	1.1 ± 0.1
Ra-228	12 ± 2

(a) Concentrations presented in pCi/L.
(b) Insufficient sample volume.

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3.2.3 Vertical Distribution of Radionuclides in Waste Pit Residue

Samples of residue were obtained through the use of one of three vertical intrusion techniques. These consisted of a stainless steel split-spoon sampler advanced through a hollow-stem auger, a stainless steel ponar dredge, and a stainless steel piston-type sludge sampler developed by WESTON.

In this section, the results of gamma ray spectral analyses for samples collected at specific depths will be discussed. The distribution of U-238, Ra-226, and Th-232 by depth for each CIS borehole is presented in Tables 3-15 through 3-26 and Appendix E.

It should be remembered that these samples were analyzed on-site with no sample preparation. Therefore, results are presented in units of pCi/g for a wet (as collected) matrix. These results may be compared only in a general way to results from radionuclide analyses where the samples were dried, pulverized, and homogenized prior to initiating the analysis and reporting the results. Moisture in the soil can lead to a 40 percent (maximum) difference in the activity concentration of a given sample. In addition, at the radiochemistry laboratory, a 10-gram aliquot of the prepared sample is taken and if a "hot particle" were present in the sample, even with the standard sample preparation, it may not be incorporated into the aliquot being analyzed. This can lead to variability in activity concentration from the different detection methods since only a fraction of the sample is analyzed.

In several of the tables of results, it should be noted that some sample intervals showed no sample recovery. This means that for a given interval, something prevented the sample material from entering either the split-spoon or piston-type sampler. This could be anything from hitting a wooden pallet or drilling into concrete aggregate that was placed into the pit. When the cause of the poor recovery is known, it will be discussed in the text. In several cases, it could not be determined why the sample was not recovered.

Pit No. 1 (Table 3-15)

Five boreholes were drilled in pit no. 1, each to a depth of 12 feet. In most cases, residue was recovered at 1- to 2-foot intervals. The principal radionuclide detected in pit no. 1 was uranium. Radium and thorium have much lower activity concentrations and are present in similar concentrations. The residue in the pit has been covered with soil; however, there is no uniform layer of surface material that does not display above background concentrations of radionuclides. In boring 2, there is very little Ra-226 and Th-232 between 4 and 12 feet. In bor-

TABLE 3-15

ACTIVITY CONCENTRATIONS OF PIT 1 PROFILE SAMPLES

DEPTH FEET	BH - 01 U-238	BH - 01 RA-226	BH - 01 TH-232	BH - 02 U-238	BH - 02 RA-226	BH - 02 TH-232	BH - 03 U-238	BH - 03 RA-226	BH - 03 TH-232	BH - 04 U-238	BH - 04 RA-226	BH - 04 TH-232	BH - 05 U-238	BH - 05 RA-226	BH - 05 TH-232
	pCi/g			pCi/g			pCi/g			pCi/g			pCi/g		
0-1	197.0	9.9	8.2	195.0	2.5	2.9	591.0	7.9	27.0	1350.0	14.7	12.3	9.1	1.6	<3.3
1-2	325.0	46.6	24.9	1420.0	25.7	16.3	1770.0	9.6	19.3	722.0	38.2	34.7	22.2	1.4	1.3
2-3	390.0	50.8	22.8	488.0	46.2	17.8	30.4	1.1	<2.2	576.0	31.4	21.3	29.8	2.6	4.0
3-4	373.0	60.0	34.7	586.0	31.2	7.5	19.0	1.4	1.0	542.0	57.5	31.0	123.0	8.3	13.6
4-5	545.0	69.6	24.4	108.0	11.1	3.9	65.3	1.5	1.3	439.0	30.4	31.1	358.0	39.7	57.0
5-6	679.0	72.3	31.6	387.0	7.0	<2.6	"	"	"	399.0	36.4	22.4	25.4	1.5	1.6
6-7	492.0	69.5	32.7	415.0	3.7	5.7	180.0	5.9	1.1	413.0	40.7	27.4	31.5	6.2	4.1
7-8	292.0	54.2	20.6	663.0	<4.3	<6.5	"	"	"	430.0	53.6	32.1	126.0	18.6	13.8
8-9	540.0	85.8	25.4	201.0	3.0	<0.3	"	"	"	628.0	108.0	26.8	593.0	46.2	40.9
9-10	"	"	"	153.0	2.2	<4.2	NO SAMPLE RECOVERY			449.0	93.4	35.2	748.0	50.7	43.9
10-11	197.0	111.0	32.4	219.0	1.5	<5.5	2390.0	120.0	34.2	434.0	45.1	34.3	613.0	42.1	41.9
11-12	227.0	69.0	18.1	592.0	<4.8	<4.5	7090.0	15.6	<28.7	488.0	61.5	36.4	304.0	55.4	47.2

ing 3, there are two separate deposits of uranium-bearing material. One of these is the 0- to 2-foot interval. The second is between 10 and 12 feet with the highest U-238 concentration in pit no. 1 (7,090 pCi/g) between 11 and 12 feet. The geologic logging at depths of approximately 11 feet described the residue as a bright yellow semisolid material.

Pit No. 2 (Table 3-16)

Five boreholes were drilled in pit no. 2, four to a depth of 10 feet and one to a depth of 8 feet. In most cases, residue was recovered at 1- to 2-foot intervals except in boring 2 where the split-spoon came into contact with concrete and small rocks that hindered recovery. The principal radionuclide in pit no. 2 is uranium. Radium and thorium have much lower activity concentrations in most depth intervals. The highest U-238 and Ra-226 concentrations in pit no. 2 were found in boring 2 and were measured as 5,170 pCi/g in the 1- to 2-foot sample interval and 613 pCi/g in the 9- to 10-foot sample, respectively. The geologic log of the samples indicates that the sample residue in the 1- to 2-foot interval was predominantly clay with traces of lime green and bright yellow clayey material. The highest Th-232 activity concentration of 563 pCi/g was measured in the 7- to 8-foot sample interval in boring 1. The geological log from this depth describes the residue as a yellowish brown and white soft clay-like material. The residue in pit no. 2 has been covered with soil; however, there is no uniform layer of surface material that is not contaminated.

Pit no. 3 (Table 3-17)

Seven boreholes were drilled into pit no. 3, four to a depth of 20 feet, one to a depth of 7 feet, one to a depth of 12 feet, and one to a depth of 14 feet. In most cases, residue was recovered at 1- or 2-foot intervals. Boring 1 was completed near the greenhouse on the north side of the pit. This boring was terminated after about 8 feet because of poor sample recovery. Fragments of wood were discovered in the sampler and anecdotal evidence indicated that pallets had been buried in this area. In borings 2 and 6, recovery of sample residue was poor from 4 to 6 feet due to coarse gravel. In boring 5, sample recovery was poor from 6 to 8 feet. In boring 3, sample recovery was poor from 2 to 4 feet. The principal radionuclides detected from the on-site laboratory were U-238, Ra-226, and Th-232. Th-230 was also detected and has been reported in Subsection 3.2.1 for the composite samples analyzed for isotopic thorium. Gamma spectral counting a sample for 10 minutes does not give a statistically reliable measure of Th-230 activity concentration. However, the on-site gamma spectroscopy provided an adequate screening technique for the detection of high concentrations of Th-230, but the data will not be reported as a function of depth in this report.

TABLE 3-16

ACTIVITY CONCENTRATIONS IN PIT 2 PROFILE SAMPLES

DEPTH FEET	BH - 01 U-238 (pCi/g)	BH - 01 RA-226 (pCi/g)	BH - 01 TH-232 (pCi/g)	BH - 02 U-238 (pCi/g)	BH - 02 RA-226 (pCi/g)	BH - 02 TH-232 (pCi/g)	BH - 03 U-238 (pCi/g)	BH - 03 RA-226 (pCi/g)	BH - 03 TH-232 (pCi/g)	BH - 04 U-238 (pCi/g)	BH - 04 RA-226 (pCi/g)	BH - 04 TH-232 (pCi/g)	BH - 05 U-238 (pCi/g)	BH - 05 RA-226 (pCi/g)	BH - 05 TH-232 (pCi/g)
0-1	40.3	13.5	<6.1	63.7	1.1	<4.0	3490.0	<8.7	5.6	45.1	1.1	1.9	33.5	1.8	2.1
1-2	208.0	3.8	5.2	5170.0	<34.3	<41.6	2270.0	12.0	34.2	32.1	1.2	0.9	30.5	13.3	<2.7
2-3	439.0	3.4	<11.7	NO SAMPLE RECOVERY			393.0	2.9	5.0	20.5	<1.6	2.0	9.6	1.5	1.0
3-4	"	"	"	NO SAMPLE RECOVERY			463.0	62.2	<10.1	9.3	<1.0	0.8	NO SAMPLE RECOVERY		
4-5	4370.0	9.7	24.3	NO SAMPLE RECOVERY			NO SAMPLE RECOVERY			70.7	1.9	<3.5	14.2	1.0	0.8
5-6	4420.0	<6.0	<16.7	NO SAMPLE RECOVERY			NO SAMPLE RECOVERY			"	"	"	11.6	<1.0	3.9
6-7	1570.0	19.6	24.2	NO SAMPLE RECOVERY			32.4	11.0	<2.4	36.9	<1.7	2.7	39.9	<1.7	0.8
7-8	1440.0	361.0	563.0	NO SAMPLE RECOVERY			"	"	"	"	"	"	"	"	"
8-9				398.0	176.0	80.0	845.0	53.7	<10.5	300.0	257.0	36.4	354.0	384.0	70.8
9-10				365.0	613.0	57.0	"	"	"	432.0	135.0	120.0	485.0	197.0	113.0

TABLE 3-17

ACTIVITY CONCENTRATIONS IN PIT 3 PROFILE SAMPLES

DEPTH FEET	BH - 01 U-238	BH - 01 RA-226	BH - 01 TH-232	BH - 02 U-238	BH - 02 RA-226	BH - 02 TH-232	BH - 03 U-238	BH - 03 RA-226	BH - 03 TH-232	BH - 04 U-238	BH - 04 RA-226	BH - 04 TH-232	BH - 05 U-238	BH - 05 RA-226	BH - 05 TH-232	BH - 06 U-238	BH - 06 RA-226	BH - 06 TH-232	BH - 07 U-238	BH - 07 RA-226	BH - 07 TH-232
	pCi/g			pCi/g			pCi/g			pCi/g			pCi/g			pCi/g			pCi/g		
0-1	12.2	0.9	1.5	11.5	<0.6	<1.1	22.0	1.6	1.3	<15.5	4.6	1.6	15.8	<0.7	1.3	3.3	<0.9	0.9	34.7	11.1	<2.2
1-2	21.9	<0.7	1.5	56.5	1.5	<1.9	45.4	3.4	4.6	222.0	4.1	<4.3	<9.2	0.7	<0.3	49.3	4.5	2.2	<49.2	52.2	<13.5
2-3	15.6	0.8	1.0	54.1	1.9	1.5	NO SAMPLE RECOVERY			194.0	82.9	53.7	8.7	0.7	0.7	48.2	2.1	<5.4	230.0	230.0	<11.5
3-4	144.0	2.0	2.7	151.0	2.2	3.8	NO SAMPLE RECOVERY			245.0	146.0	64.1	<5.0	0.6	<0.3	39.5	3.1	2.0	208.0	5.3	1.5
4-5	"	"	"	NO SAMPLE RECOVERY			181.0	113.0	9.8	75.9	165.0	33.2	3.4	0.8	1.1	NO SAMPLE RECOVERY			157.0	261.0	<23.7
5-6	17.5	0.9	1.8	NO SAMPLE RECOVERY			59.4	149.0	10.0	157.0	130.0	38.0	14.9	<1.7	<0.4	NO SAMPLE RECOVERY			206.0	55.2	<9.8
6-7	"	"	"	79.0	0.8	2.0	128.0	220.0	12.4	334.0	150.0	99.5	NO SAMPLE RECOVERY			110.0	65.6	10.9	135.0	161.0	<17.7
7-8				88.7	<0.7	1.5	97.8	142.0	11.8	197.0	153.0	97.3	NO SAMPLE RECOVERY			128.0	574.0	24.7	394.0	7.1	<7.1
8-9				108.0	<0.8	3.4	117.0	196.0	13.2	115.0	81.1	34.8	220.0	4.6	9.1	58.3	37.7	3.9	302.0	26.3	2.6
9-10				70.9	1.2	<1.8	149.0	168.0	11.7	239.0	109.0	55.6	163.0	1.1	2.7	57.8	11.3	2.7	140.0	3.5	<8.8
10-11				75.1	1.3	1.8	136.0	206.0	14.9	158.0	80.0	33.4	50.1	5.0	8.0	95.6	93.0	5.8	590.0	2.7	2.2
11-12				64.3	2.1	1.3	145.0	172.0	9.9	219.0	97.5	36.4	191.0	<4.1	2.1	126.0	56.5	7.3	41.0	0.8	<5.9
12-23				90.0	1.0	2.0	121.0	161.0	9.9	177.0	83.8	48.2	150.0	2.3	3.9	9.3	10.3	0.3			
13-14				131.0	15.4	17.4	106.0	372.0	15.6	209.0	82.5	44.6	261.0	<2.5	<7.1	7.5	<0.8	<1.5			
14-15				156.0	4.7	10.6	176.0	164.0	16.7	198.0	82.3	41.8	228.0	1.5	0.9						
15-16				"	"	"	142.0	185.0	14.3	102.0	139.0	37.9	115.0	1.3	<5.6						
16-17				160.0	4.3	20.4	249.0	75.6	11.7	130.0	139.0	34.1	386.0	2.1	<4.5						
17-18				143.0	5.4	15.4	"	"	"	87.1	186.0	39.9	238.0	2.0	1.8						
18-19				113.0	6.6	12.7	<115.0	394.0	21.9	74.5	205.0	38.2	324.0	3.0	<3.3						
19-20				151.0	3.8	12.4	178.0	117.0	<5.0	189.0	80.7	31.1	477.0	3.8	<2.3						

The highest U-238 activity concentration measured was 590 pCi/g at the 10- to 11-foot interval in boring 7. The highest Ra-226 activity was measured at 574 pCi/g at the 7- to 8-foot interval in boring 6, and the highest Th-232 activity was 99.5 pCi/g at the 6- to 7-foot interval in boring 4.

Pit No. 4 (Table 3-18)

The sample recovery in pit no. 4 was very good, considering the nature of the material drilled. In most cases, residue was recovered at 1- or 2-foot intervals. Sample recovery was poor from 4 to 6 feet (boring 1); 12 to 13 feet (boring 2); and from 3 to 6 feet, 10 to 12 feet, and 16 to 18 feet (boring 4).

The principal radionuclide detected in pit no. 4 was U-238. The highest U-238 activity concentration measured was 16,100 pCi/g in the 18- to 20-foot sampling interval of boring 4. Ra-226 and Th-232 were also detected over most sampling intervals. The highest Ra-226 activity concentration measured was 76.2 pCi/g in the 12- to 13-foot sampling interval of boring 4. The highest Th-232 activity measured was 118 pCi/g in the 6- to 7-foot interval of boring 1.

Pit No. 5 (Table 3-19)

Six locations in pit no. 5 were sampled using the WESTON piston-type sampler. In all cases, residue samples were collected in 20-inch intervals below the surface of the water. Boring 1, at the east end of the pit, was sampled to 20 inches (1.7 feet); borings 2 and 5 were sampled to approximately 15 feet; borings 3 and 4 were sampled to approximately 30 feet; and boring 6 was sampled to approximately 13 feet. Sample recovery was good at each sample interval.

The principal radionuclides detected in the on-site laboratory from pit no. 5 were U-238, Ra-226, and Th-232. Th-230 was also detected and is reported in Subsection 3.2.1 for the composite samples analyzed for isotopic thorium. As discussed for pit no. 3, the on-site gamma spectral measurements will not provide a statistically reliable measure of Th-230 activity concentrations. However, this detection system provided an adequate screening technique for the detection of high Th-230 concentrations.

The highest U-238 activity concentration detected in pit no. 5 is 508 pCi/g at the 20- to 40-inch (1.7- to 3-foot) sample interval in boring 2. The highest Ra-226 activity is 300 pCi/g at the 60- to 80-inch (5- to 6.7-foot) sample interval in boring 2. The highest Th-232 activity was measured at 580 pCi/g in the 20- to 40-inch (1.7- to 3-foot) sample interval in boring 5. The activity concentrations of these radionuclides is rather uniform throughout the profile of each boring in this pit.

TABLE 3-18

ACTIVITY CONCENTRATIONS IN PIT 4 PROFILE SAMPLES

DEPTH FEET	BH - 01 U-238	BH - 01 RA-226	BH - 01 TH-232	BH - 02 U-238	BH - 02 RA-226	BH - 02 TH-232	BH - 03 U-238	BH - 03 RA-226	BH - 03 TH-232	BH - 04 U-238	BH - 04 RA-226	BH - 04 TH-232
	pCi/g			pCi/g			pCi/g			pCi/g		
0-1	6.9	<0.7	<2.4	11.1	1.2	<0.5	16.7	1.0	1.0	111.0	0.8	<3.1
1-2	3.3	0.7	0.6	"	"	"	37.3	2.0	1.5	1830.0	<5.3	9.7
2-3	68.6	<1.8	1.6	234.0	1.1	<0.6	39.0	<1.8	0.7	"	"	"
3-4	"	"	"	33.2	<0.1	0.9	"	"	"	NO SAMPLE RECOVERY		
4-5	NO SAMPLE RECOVERY			121.0	1.7	<3.5	273.0	4.8	6.8	NO SAMPLE RECOVERY		
5-6	NO SAMPLE RECOVERY			"	"	"	4590.0	41.6	58.0	NO SAMPLE RECOVERY		
6-7	5960.0	12.0	118.0	826.0	6.0	7.4	2460.0	39.9	50.6	2150.0	<4.9	58.2
7-8	1150.0	31.0	38.6	564.0	2.4	3.5	578.0	18.9	39.7	2140.0	<4.8	<7.8
8-9	242.0	14.9	5.3	472.0	4.8	6.6	1640.0	8.2	19.0	13400.0	<46.1	<70.8
9-10	182.0	11.2	<4.8	"	"	"	409.0	30.0	14.4	13100.0	27.0	467.0
10-11	391.0	13.6	9.2	261.0	1.3	6.1	606.0	26.5	17.4	NO SAMPLE RECOVERY		
11-12	367.0	38.0	8.5	255.0	4.0	5.2	1390.0	39.0	6.8	NO SAMPLE RECOVERY		
12-13	274.0	31.0	7.0	NO SAMPLE RECOVERY			632.0	18.3	10.2	12300.0	76.2	321.0
13-14	184.0	11.6	1.2	NO SAMPLE RECOVERY			329.0	11.9	3.3	9840.0	37.9	95.2
14-15	405.0	3.0	11.1	304.0	12.2	19.0	555.0	18.2	9.8	10000.0	42.4	90.5
15-16	175.0	2.8	11.7	"	"	"	226.0	2.4	<5.3	"	"	"
16-17	380.0	9.2	15.2	421.0	16.1	19.9	794.0	19.1	11.5	NO SAMPLE RECOVERY		
17-18	212.0	10.2	16.3	"	"	"	371.0	9.1	9.2	NO SAMPLE RECOVERY		
18-19	369.0	13.2	21.9	552.0	26.6	24.9	493.0	7.2	6.8	16100.0	56.2	98.9
19-20	288.0	16.4	26.2	"	"	"	516.0	7.4	13.3	"	"	"

TABLE 3-19

ACTIVITY CONCENTRATIONS IN PIT 5 PROFILE SAMPLES

DEPTH INCHES	BH - 01 U-238	BH - 01 RA-226	BH - 01 TH-232	BH - 02 U-238	BH - 02 RA-226	BH - 02 TH-232	BH - 03 U-238	BH - 03 RA-226	BH - 03 TH-232	BH - 04 U-238	BH - 04 RA-226	BH - 04 TH-232	BH - 05 U-238	BH - 05 RA-226	BH - 05 TH-232	BH - 06 U-238	BH - 06 Ra-226	BH - 06 Th-232
	pCi/g			pCi/g			pCi/g			pCi/g			pCi/g			pCi/g		
0-20	181.0	158.0	26.9	409.0	6.3	21.3	214.0	2.0	7.4	177.0	9.4	391.0	243.0	20.2	22.1	59.3	117.0	40.5
20-40	NO RECOVERY FOR			508.0	42.1	49.0	233.0	37.7	164.0	151.0	83.5	51.8	<214.0	131.0	580.0	<66.0	166.0	11.2
40-60	REMAINDER OF			321.0	104.0	16.1	<92.5	127.0	10.2	230.0	32.9	125.0	<203.0	196.0	15.8	<39.1	182.0	8.4
60-80	BOREHOLE 1			<200.0	300.0	55.7	<99.9	140.0	11.9	<111.0	85.1	17.5	<180.0	157.0	8.4	<57.4	155.0	8.9
80-100				72.8	247.0	23.5	49.8	94.9	12.8	60.1	141.0	34.0	103.0	119.0	12.4	<32.8	147.0	14.4
100-120				84.0	102.0	7.5	<105.0	167.0	45.4	67.5	128.0	8.2	<142.0	268.0	20.2	<61.5	160.0	20.7
120-140				135.0	171.0	<24.1	58.0	114.0	16.5	88.2	110.0	17.0	80.3	119.0	14.1	<27.1	101.0	6.8
140-160				212.0	84.2	13.0	136.0	138.0	12.1	63.4	115.0	18.2	<96.8	156.0	10.9	97.7	72.6	7.2
160-180				243.0	64.2	14.7	166.0	161.0	9.7	<114.0	140.0	32.7	<104.0	194.0	9.7			
180-200							101.0	26.0	21.0	449.0	8.7	51.2						
200-220							246.0	21.4	18.3	138.0	60.4	14.6						
220-240							256.0	6.4	50.6	158.0	54.7	16.9						
240-260							291.0	5.6	36.5	646.0	6.9	32.4						
260-280							88.5	9.9	24.9	157.0	10.2	26.9						
280-300							176.0	2.3	17.7	152.0	6.5	19.0						
300-320							267.0	5.7	37.1	95.2	189.0	57.6						
320-340							204.0	56.0	33.8	170.0	7.0	18.1						
340-360										136.0	14.9	21.1						

Pit No. 6 (Table 3-20)

Four locations were sampled in pit no. 6 using the WESTON piston-type sampler. In all cases, residue samples were collected in 20-inch intervals below the surface of the water. Borings 1 and 2 were sampled to depths of approximately 40 inches below the water-residue interface. Boring 3 was sampled to 180 inches below the water-residue interface, and boring 4 was sampled to approximately 120 inches below the interface. Sample recovery was good at each sample interval collected. At locations 1 and 2, the sampler met with resistance at depths below 40 inches of residue. Attempts to sample additional locations at depths below 40 inches of residue also met with resistance.

The only radionuclide detected from on-site gamma spectral measurements in pit no. 6 was U-238. The highest activity concentration detected was 10,900 pCi/g in the boring 1 sample interval of approximately 40 to 60 inches (3.3 to 5 ft) below the water. The U-238 activity concentrations were fairly uniform with depth and spatial location throughout the pit.

Burn Pit (Table 3-21)

Six boreholes were drilled into the burn pit. Boring 1 was advanced and sampled to a depth of 10 feet. Borings 2 and 6 were advanced and sampled to a depth of 12 feet. Boring 3 was advanced and sampled to a depth of 14 feet, and borings 4 and 5 were advanced and sampled to a depth of 16 feet. In most cases, sample material was recovered at 1- or 2-foot intervals. In boring 2, the sample interval between 6 and 8 feet did not provide sufficient sample material to obtain a profile radiological sample. The material recovered from this interval was used for the radiological and chemical composite samples. In boring 3, sample recovery was poor from 5 to 10 feet. Apparently, the split-spoon hit wooden pallets at this interval as there were wood chips in the casing. In boring 4, sample recovery was poor from 12 to 14 feet. In boring 5, between 8 and 12 feet, insufficient material was recovered in order to obtain a profile radiological sample. The material recovered from this interval was used for the radiological and chemical composite sample.

The principal radionuclide detected in the burn pit was U-238. The distribution of the uranium was heterogeneous throughout the profile of each boring. The highest U-238 activity concentration measured in the on-site laboratory was 392 pCi/g in the 10- to 12-foot interval of boring 3. The Ra-226 and Th-232 activity concentrations were relatively low in the burn pit. The highest Ra-226 activity was 24.8 pCi/g measured in the 6- to 7-foot sample interval of boring 5; and the highest Th-230 activity was 69.4 pCi/g measured in the 10- to 11-foot sample interval of boring 4.

TABLE 3-20

ACTIVITY CONCENTRATIONS IN PIT 6 PROFILE SAMPLES

DEPTH INCHES	BH - 01 U-238	BH - 01 RA-226	BH - 01 TH-232	BH - 02 U-238	BH - 02 RA-226	BH - 02 TH-232	BH - 03 U-238	BH - 03 RA-226	BH - 03 TH-232	BH - 04 U-238	BH - 04 RA-226	BH - 04 TH-232
	pCi/g			pCi/g			pCi/g			pCi/g		
0 - 20	8370	<9.1	<13.6	9740	<14.4	<20.5	3750	<8.1	<9.1	7450	<8.8	<23.3
20 - 40	10900	<22.2	<31.7	7220	<5.8	<132.0	4100	<13.3	<21.4	5750	<15.5	<21.8
40 - 60							2810	<10.1	<17.4	6040	<12.4	<17.5
60 - 80							3990	<9.6	<14.9	4200	<9.0	<14.1
80 - 100							3140	<6.5	<8.7	3520	<9.9	<22.1
100 - 120							5560	<17.2	<14.9	3430	<8.0	<24.2
120 - 140							4430	<10.7	<19.4			
140 - 160							4460	<6.9	<19.5			
160 - 180							4720	<12.6	<10.5			

TABLE 3-21

ACTIVITY CONCENTRATIONS IN BURN PIT PROFILE SAMPLES

	BH - 01			BH - 02			BH - 03			BH - 04			BH - 05			BH - 06		
DEPTH FEET	U-238	RA-226	TH-232	U-238	RA-226	TH-232	U-238	RA-226	TH-232	U-238	RA-226	TH-232	U-238	RA-226	TH-232	U-238	RA-226	TH-232
	pCi/g			pCi/g			pCi/g			pCi/g			pCi/g			pCi/g		
0-1	7.0	2.1	1.6	10.6	1.1	<3.1	191	1.2	4.5	223	1.5	2.7	10.3	<0.8	1.4	72.9	2.2	1.8
1-2	28.3	2.5	1.7	42.1	2.2	2.0	130	1.7	3.7	22.0	<2.5	1.1	16.4	0.9	0.8	88.7	1.7	2.0
2-3	<5.5	<1.6	<3.2	153	0.8	1.7	72.2	2.0	8.7	72.2	0.7	1.2	29.7	2.7	4.6	12.4	1.8	2.2
3-4	<7.8	0.6	<0.3	"	"	"	"	"	"	29.4	1.7	1.1	14.9	1.9	1.2	9.2	1.5	<1.4
4-5	<5.3	0.6	0.7	8.2	1.2	<2.4	NO SAMPLE RECOVERY			165	2.0	2.9	14.4	2.4	1.1	6.4	1.8	1.3
5-6	"	"	"	<11.4	0.5	0.8	NO SAMPLE RECOVERY			9.4	2.3	2.0	11.7	1.9	1.4	9.0	1.3	2.3
6-7	15.4	<1.1	1.2	NO SAMPLE RECOVERY			NO SAMPLE RECOVERY			337	2.5	2.9	219	24.8	60.0	290	3.5	9.8
7-8	8.2	<0.3	1.5	NO SAMPLE RECOVERY			NO SAMPLE RECOVERY			"	"	"	310	0.8	9.6	"	"	"
8-9	2.7	0.4	<3.0	24.4	2.0	1.4	NO SAMPLE RECOVERY			218	3.7	<2.4	NO SAMPLE RECOVERY			268	1.6	5.4
9-10	<12.9	0.7	1.1	<5.9	0.4	<0.3	NO SAMPLE RECOVERY			95.2	2.2	7.8	NO SAMPLE RECOVERY			"	"	"
10-11				<6.9	0.9	<3.1	392	2.6	15.1	334	23	69.4	NO SAMPLE RECOVERY			14.8	<2.4	<5.0
11-12				<9.0	1.0	1.2	"	"	"	60.3	2.8	5.0	NO SAMPLE RECOVERY			"	"	"
12-13							46.3	1.3	1.9	NO SAMPLE RECOVERY			111	2.3	6.5			
13-14							"	"	"	NO SAMPLE RECOVERY			"	"	"			
14-15										4.8	1.0	1.3	30.1	1.0	2.1			
										"	"	"	"	"	"			

Upper Fly Ash Area (Table 3-22)

Twelve boreholes were drilled throughout the large area known as the upper fly ash pile. Boreholes were advanced and sampled to the following depths: 8 ft (borehole 1), 20 ft (borehole 2), 10 ft (borehole 3), 4 ft (borehole 4), 8 ft (borehole 5), 8 ft (borehole 6), 8 ft (borehole 7), 8 ft (borehole 8), 14 ft (borehole 9), 26 ft (borehole 10), 34 ft (borehole 11), and 18 ft (borehole 12). In most cases, sample material was recovered at 1- or 2-foot intervals. Sample recovery was poor at the following depth intervals: 8 to 10 ft (borehole 2), 2 to 4 ft (borehole 8), and 14 to 16 ft (borehole 12).

The activity concentrations in the profile samples showed relatively low concentrations of U-238, Ra-226, and Th-232. Borehole 10 had several samples above 100 pCi/g for U-238. This borehole had a layer from approximately 16 feet to 24 feet where uranium was elevated. The boring logs at this depth indicate the presence of fly ash and trash (glass, nails, etc.).

Lower Fly Ash Area (Table 3-23)

Two boreholes were advanced in an area southeast of the lower fly ash area: boring 1 at a location of an apparent surface soil radiation anomaly and boring 2 in the streambed of the storm sewer outfall ditch. Borehole 1 was advanced and sampled to a depth of 8 feet. Borehole 2 was advanced to a depth of 16 feet. In all cases, sample material was recovered at 1- or 2-foot intervals.

The activity concentrations in the profile samples were very low. The highest U-238 activity concentration measured was 18.2 pCi/g in the first 1-foot increment of sediment in boring 2. Uranium was not detected in boring 1. The highest Ra-226 activity concentration measured was 4.3 pCi/g in the first 2-foot sample increment taken from boring 1. Th-232 activity concentrations were at or slightly above detection limits.

North Lime Sludge Pond (Table 3-24)

Three locations were sampled in the north lime sludge pond using the WESTON piston-type sampler. Boring 1 was sampled to a depth of approximately 5 feet below the water-residue interface. Boring 2 was sampled to a depth of approximately 6 feet and boring 3 was sampled to a depth of about 8 feet below the water-residue interface.

The activity concentrations in the profile samples were very low. The highest U-238 activity measured in the on-site laboratory was 6.9 pCi/g in the 6.7- to 8.3-foot sample interval of boring 3. The Ra-226 and Th-232 activity concentrations were all at or slightly above the detection limits.

TABLE 3-22

ACTIVITY CONCENTRATIONS IN UPPER FLY ASH AREA PROFILE SAMPLES
(BOREHOLES 1 THROUGH 6)

	BH-01			BH-02			BH-03			BH-04			BH-05			BH-06		
DEPTH FEET	U-238	Ra-226	Th-232	U-238	Ra-226	Th-232	U-238	Ra-226	Th-232	U-238	Ra-226	Th-232	U-238	Ra-226	Th-232	U-238	Ra-226	Th-232
	pCi/g			pCi/g			pCi/g			pCi/g			pCi/g			pCi/g		
0-1	<57.2	32.5	<1.9	<27.5	<3.7	7.6	17.8	0.7	1.0	<29.0	4.8	<5.9	<32.8	46.0	<7.3	<32.9	5.6	<4.6
1-2	"	"	"	"	"	"	"	"	"	11.1	0.9	1.4	<46.2	34.0	<7.3	<18.3	1.7	2.1
2-3	9.9	2.7	<.05	<7.6	0.6	1.4	14.3	<1.0	1.0	9.8	1.1	0.9	9.3	1.2	1.1	<15.4	0.6	<0.8
3-4	<14.6	0.7	1.0	"	"	"	7.8	0.8	<5.0	<8.7	1.1	1.0	<16.0	<1.2	<0.4	<13.1	1.1	1.0
4-5	16.2	1.9	1.9	<16.2	1.0	1.9	6.2	0.6	<3.1				<9.3	1.7	<0.6	<5.0	0.6	0.5
5-6	"	"	"	"	"	"	5.0	<1.1	0.6				<7.0	0.8	<0.4	<12.7	<0.3	<4.7
6-7	<9.1	1.4	<2.2	<11.3	0.6	1.3	<13.5	0.8	1.2				<14.7	1.2	<0.5	<8.1	0.6	0.8
7-8	<7.3	1.0	0.9	"	"	"	15.2	<1.1	<0.8				<14.2	1.0	<3.8	"	"	"
8-9				NO SAMPLE RECOVERY			<13.0	<0.7	0.7									
9-10				NO SAMPLE RECOVERY			<10.6	0.8	0.8									
10-11				<9.8	0.5	0.6												
11-12				<12.1	0.8	<0.3												
12-13				3.7	0.8	0.8												
13-14				<8.7	1.0	1.0												
14-15				<11.2	1.0	1.7												
15-16				"	"	"												
16-17				2.7	<1.2	0.5												
17-18				<7.9	0.5	<0.3												
18-19				<9.4	0.5	0.5												
19-20				<11.1	<1.2	0.9												

TABLE 3-22 (CONTINUED)

ACTIVITY CONCENTRATIONS IN UPPER FLY ASH AREA PROFILE SAMPLES
(BOREHOLES 7 THROUGH 12)

DEPTH FEET	BH-07 U-238	BH-07 Ra-226	BH-07 Th-232	BH-08 U-238	BH-08 Ra-226	BH-08 Th-232	BH-09 U-238	BH-09 Ra-226	BH-09 Th-232	BH-10 U-238	BH-10 Ra-226	BH-10 Th-232	BH-11 U-238	BH-11 Ra-226	BH-11 Th-232	BH-12 U-238	BH-12 Ra-226	BH-12 Th-232
	pCi/g			pCi/g			pCi/g			pCi/g			pCi/g			pCi/g		
0-1	38.6	4.5	25.2	30.0	<2.1	36.5	<39.3	<5.5	78.1	19.8	<1.8	1.8	<15.0	1.7	2.2	<9.0	<0.1	<2.3
1-2	12.3	1.3	1.9	"	"	"	<41.4	<5.1	101.3	11.8	1.2	<0.4	17.0	1.1	1.3	<7.6	1.1	0.7
2-3	15.2	0.8	1.5	NO SAMPLE RECOVERY			12.3	2.6	4.2	20.2	2.5	1.6	13.7	1.0	1.5	<9.3	0.6	0.6
3-4	5.5	<1.3	1.0	NO SAMPLE RECOVERY			"	"	"	23.5	2.7	2.9	9.1	<0.8	1.5	"	"	"
4-5	<6.8	1.0	1.0	<11.5	<0.1	1.2	<27.4	1.9	3.9	<7.7	3.7	2.7	<10.9	<0.9	1.3	5.3	0.9	1.1
5-6	<10.0	<1.9	<1.5	<5.3	0.6	0.8	"	"	"	<16.5	2.4	3.5	7.6	1.7	1.0	"	"	"
6-7	<12.3	<0.8	<0.3	<8.0	0.5	1.1	22.1	1.7	6.7	18.0	2.0	2.5	11.9	1.7	2.2	13.2	0.7	0.9
7-8	"	"	"	"	"	"	"	"	"	<14.7	3.0	<4.3	<10.3	2.9	3.1	22.0	1.4	2.0
8-9							10.7	1.2	2.6	<8.3	2.8	2.4	<10.7	1.8	2.3	5.9	1.2	1.0
9-10							6.3	0.9	0.8	<11.0	3.0	1.5	<10.2	2.6	2.0	"	"	"
10-11							<7.1	<1.8	0.9	<7.7	2.9	2.6	<9.3	2.1	2.9	12.8	1.0	4.3
11-12							<10.5	0.9	<1.6	<6.9	2.1	1.6	<9.2	2.0	2.2	"	"	"
12-13							<8.3	0.7	<2.5	<15.6	2.1	3.0	<16.4	1.9	1.8	6.3	0.6	1.5
13-14							<9.0	0.8	0.8	<11.5	1.5	1.0	<9.6	2.1	1.9	"	"	"
14-15										<5.2	<0.7	0.8	<15.0	2.0	2.2	NO SAMPLE RECOVERY		
15-16										135.0	2.5	1.5	<6.2	2.6	2.2	<5.4	<1.7	<0.3
16-17										40.5	2.9	1.5	<9.8	1.8	2.9	<4.2	0.8	0.7
17-18										81.6	4.0	<2.1	<10.1	1.5	3.3			
18-19										74.4	2.6	<1.4	<9.5	<2.5	3.6			
19-20										8.9	1.2	<0.8	<8.5	2.0	2.2			
20-21										139.0	7.0	<3.0	<10.8	<2.3	3.5			
21-22										160.0	7.9	<3.7	<17.6	2.3	2.9			
22-23										104.0	5.1	2.2	<11.3	2.1	<4.7			
23-24										"	"	"	<13.0	1.8	2.8			
24-25										10.0	1.4	<0.4	14.1	1.9	1.1			
25-26										"	"	"	<18.7	1.9	2.4			
26-27													6.3	1.3	1.7			
27-28													5.3	1.6	2.4			
28-29													<12.0	1.2	<3.7			
29-30													15.9	1.8	1.6			
30-31													2.6	1.4	1.9			
31-32													<3.5	1.0	1.0			
32-33													<4.4	0.8	0.8			
33-34													<4.3	1.0	0.6			

TABLE 3-23

ACTIVITY CONCENTRATIONS IN LOWER FLY ASH AREA PROFILE SAMPLES

	BH - 1			BH - 2		
DEPTH FEET	U-238	Ra-226	Th-232	U-238	Ra-226	Th-232
	pCi/g			pCi/g		
0-1	<8.1	4.3	<1.8	18.2	<1.8	0.6
1-2	"	"	"	5.3	1.1	1.1
2-3	<6.6	3.0	<1.1	8.6	1.7	<5.8
3-4	<3.8	0.5	<1.8	<7.9	<0.8	1.1
4-5	<2.5	<0.8	0.4	<4.4	<0.5	<1.7
5-6	<5.1	<0.4	0.5	<9.9	<0.9	<0.4
6-7	<5.7	<0.5	<1.2	<3.6	<0.6	<2.0
7-8	<7.0	<0.8	0.8	"	"	"
8-9				<4.0	<1.6	<0.3
9-10				4.1	0.8	<2.6
10-11				<5.5	<0.9	0.4
11-12				2.3	0.3	<0.8
12-13				<7.3	0.7	<0.3
13-14				<3.5	0.7	<0.4
14-15				<4.0	<1.0	<1.8
15-16				"	"	"

TABLE 3-24

ACTIVITY CONCENTRATIONS IN N. LIME SLUDGE POND PROFILE SAMPLES

DEPTH INCHES	BH - 01 U-238	BH - 01 RA-226	BH - 01 TH-232	BH - 02 U-238	BH - 02 RA-226	BH - 02 TH-232	BH - 03 U-238	BH - 03 RA-226	BH - 03 TH-232
	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g
0 - 20	5.8	0.7	0.9						
20 - 40	2.3	<0.6	<2.4	1.7	<0.6	0.5	<6.8	<1.3	0.5
40 - 60	<8.3	<1.3	<8.1	<4.3	<0.5	<0.4	<3.8	<0.1	<1.3
60 - 80				2.8	<0.7	<0.3	6.9	0.9	<1.4

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South Lime Sludge Pond (Table 3-25)

Three boreholes were sampled using the portable derrick and driving split-spoon samplers. Borehole 1 was sampled to a depth of 8 feet. Boreholes 2 and 3 were sampled to a depth of 9 feet. In all cases, sample recovery was good.

The activity concentrations in the profile samples were very low. The highest U-238 activity concentration measured was 6.7 pCi/g in the 2- to 3-foot sample interval of boring 1. The majority of uranium was at detection limits. The highest Ra-226 and Th-232 activity concentrations measured were 1.1 and 0.6 pCi/g, respectively.

Sanitary Landfill (Table 3-26)

Six boreholes were drilled into the sanitary landfill. Borehole 1 was advanced and sampled to a depth of 18 feet; borehole 2 to a depth of 12 feet; borehole 3 to a depth of 16 feet; borehole 4 to a depth of 8 feet; borehole 5 to a depth of 14 feet; and borehole 6 to a depth of 18 feet. In most cases, sample material was recovered at 1- or 2-foot intervals. In borehole 1, sample recovery was poor from 8 to 10 feet. In borehole 6, sample recovery was poor in the 2- to 4-foot sample interval and in the 8- to 10-foot sample interval.

The activity concentrations in the sanitary landfill were generally quite low. In borehole 2, U-238 was detected from approximately 5 to 14 feet. The highest U-238 activity concentration measured in this region was 388 pCi/g at an interval of 6 to 8 feet.

The Ra-226 and Th-232 activity concentrations were all measured at or slightly above detection limits except in the borehole 3 sample intervals of 6 to 8 feet, 8 to 10 feet, and 10 to 12 feet in which the Th-232 activity concentrations measured at 79.7, 17.1, and 12.8 pCi/g, respectively.

3.3 GEOTECHNICAL RESULTS

Classification of Materials

Samples were collected for analyses of geotechnical engineering classification from pit nos. 1 through 6, the burn pit, the two lime sludge ponds, and the sanitary landfill. The sample numbers, sample locations, depth intervals of the samples, and number of the samples are shown in Table 3-27.

TABLE 3-25

ACTIVITY CONCENTRATIONS IN S. LIME SLUDGE POND PROFILE SAMPLES

DEPTH FEET	BH - 01 U-238	BH - 01 RA-226	BH - 01 TH-232	BH - 02 U-238	BH - 02 RA-226	BH - 02 TH-232	BH - 03 U-238	BH - 03 RA-226	BH - 03 TH-232
	pCi/g			pCi/g			pCi/g		
0-1	NO SAMPLE RECOVERY			4.0	<0.2	<0.4	3.2	<0.2	<0.4
1-2	NO SAMPLE RECOVERY			"	"	"	<10.1	<0.1	<0.4
2-3	6.7	<1.7	0.6	<4.8	<1.6	<2.6	<9.8	1.1	<0.7
3-4	<7.4	<1.2	<0.5	2.7	<0.1	<0.3	<13.4	2.0	<0.6
4-5	2.8	<1.3	<0.2	<11.2	<0.1	<0.3	<5.6	<1.0	<0.4
5-6	<4.2	<0.6	<0.2	<5.5	<2.2	<0.4	4.7	<0.7	<0.4
6-7	4.1	<1.4	<0.3	2.0	<1.5	<1.5	<7.2	<0.5	0.3
7-8	<5.6	<1.3	<1.5	<12.0	<1.4	0.4	<6.9	<0.9	<0.2
8-9				<1.8	<0.2	<1.1	4.4	<1.0	<2.3

TABLE 3-26

ACTIVITY CONCENTRATIONS IN SANITARY LANDFILL PROFILE SAMPLES

	BH - 01			BH - 02			BH - 03			BH - 04			BH - 05			BH - 06		
DEPTH FEET	U-238	RA-226	TH-232	U-238	RA-226	TH-232	U-238	RA-226	TH-232	U-238	RA-226	TH-232	U-238	RA-226	TH-232	U-238	RA-226	TH-232
	pCi/g			pCi/g			pCi/g			pCi/g			pCi/g			pCi/g		
0-1	18.2	1.8	1.0	15.4	<0.9	2.0	19.3	<0.2	2.4	<4.6	0.5	<0.3	5.9	0.8	1.6	13.9	<1.6	1.0
1-2	6.7	<0.6	0.7	4.9	<1.1	1.0	"	"	"	"	"	"	"	"	"	8.8	<2.5	1.2
2-3	6.1	0.8	<5.2	7.1	0.7	1.3	6.1	<0.7	1.2	<10.3	1.0	<0.3	9.4	0.7	1.2	NO SAMPLE RECOVERY		
3-4	"	"	"	<9.6	0.7	<4.7	"	"	"	9.3	0.9	1.0	4.2	<0.5	<2.3	NO SAMPLE RECOVERY		
4-5	35.1	4.6	1.9	3.5	0.7	<3.2	4.4	0.7	<3.5	<4.7	<1.5	<0.3	14.8	0.6	1.1	8.2	<1.8	0.8
5-6	"	"	"	<9.2	0.6	<0.3	13.7	1.0	1.3	<8.6	1.1	1.0	<7.7	0.7	0.8	"	"	"
6-7	9.3	<1.5	<2.2	5.3	0.9	1.0	388	<5.2	79.7	<5.3	<0.7	<0.3	<8.1	<0.1	1.2	<7.5	0.7	<4.3
7-8	<7.3	0.6	<0.3	"	"	"	"	"	"	"	"	"	<10.6	<0.9	<1.4	<8.3	0.8	1.2
8-9	NO SAMPLE RECOVERY			<12.7	0.9	1.0	146	<1.9	17.1				<9.8	0.9	<0.3	NO SAMPLE RECOVERY		
9-10	NO SAMPLE RECOVERY			<12.6	0.7	1.1	"	"	"				<3.9	0.4	1.3	NO SAMPLE RECOVERY		
10-11	<6.1	<1.0	1.2	<8.3	1.1	1.0	198	<2.0	12.8				3.2	0.6	0.8	<8.1	<2.8	<4.1
11-12	"	"	"	4.3	1.4	1.6	"	"	"				<10.4	0.6	0.6	<13.2	<0.2	1.1
12-13	8.1	<0.6	1.0				48.9	<1.4	3.1				NO SAMPLE RECOVERY			3.8	<0.9	0.7
13-14	<11.3	0.9	<2.6				9.2	<1.7	<0.4				11.3	<1.4	<1.4	<6.6	0.6	0.8
14-15	<15.5	<1.0	0.8				<7.0	<0.8	0.6							3.3	0.8	<6.0
15-16	"	"	"				6.3	0.8	1.1							<5.7	<1.3	<3.2
16-17	<5.0	0.9	<3.0													<16.1	<0.8	<0.4
17-18	<10.5	0.9	0.7													<12.3	0.8	<0.4

Table 3-27

Fernald - Sample Identification

Sample No.	Depth Interval (ft)	Sample Location	Number of Samples	Consistency
FMP-PS-01-048	0-12	Pit no. 1	5	Clayey
FMP-PS-03-052	0-20	Pit no. 3	10	Sludge
FMP-PS-04-039		Pit no. 4	12	Clayey
FMP-PS-04-062	0-20	Pit no. 4	5	Clayey
FMP-PS-04-002	0-20	Pit no. 4	10	Clayey
FMP-PS-04-037		Pit no. 4	10	Clayey
FMP-PS-49-019	0-12	Landfill	5	Clayey
FMP-PS-49-047		Landfill	5	Clayey
FMP-PS-49-003	0-18	Landfill	5	Clayey
FMP-PS-49-056		Landfill	5	Clayey
FMP-PS-49-033		Landfill	5	Clayey
FMP-PS-49-072		Landfill	5	Clayey
FMP-PS-48-013	2-11.2	Lime sludge	10	Sludge
FMP-PS-48-028		Lime sludge	12	Sludge
FMP-PS-48-042	0-12	Lime sludge	10	Sludge
FMP-PS-07-004		Burn pit	5	Sludge
FMP-PS-07-002	0-10	Burn pit	5	Sludge
FMP-PS-07-052	0-16	Burn pit	6	Sludge
FMP-PS-07-050		Burn pit	4	Sludge
FMP-PS-07-034	0-16	Burn pit	6	Sludge
FMP-PS-47-056		Lime sludge		Sludge
FMP-PS-47-012	0-5.5	Lime sludge	1	Sludge
FMP-PS-06-022	0-15	Pit no. 6	10	Sludge
FMP-PS-02-039		Pit no. 2	4	Clayey
FMP-PS-03-090	0-20	Pit no. 3	5	Sludge
FMP-PS-06-010	0-10	Pit no. 6	8	Sludge
FMP-PS-05-025	10-29	Pit no. 5	20	Clayey

Each geotechnical composite sample was visually classified, and several samples were selected for Phase I laboratory testing. These tests included the following:

- Grain size with hydrometer (ASTM D-422)
- Specific gravity (ASTM D-854)
- Atterberg limits (ASTM D-423, D-424)
- Moisture content (ASTM D-2216)

The results are summarized in Table 3-28.

The results of the Phase I analysis show that most of the test area materials classify as sandy silts of low plasticity with the exception of the landfill, which classifies as a sandy clay of low plasticity; pit no. 1, which classifies as a gravely clay; and the burn pit residue, which classifies as a sandy silt.

Natural moisture contents ranged from 134 percent in the landfill to 189.5 percent in pit no. 5. Most samples were nonplastic, with the exception of the landfill (PI, 14-20), pit no. 3 (PI, 5-20), pit no. 5 (PI-29), and pit no. 1 (PI-11). The burn pit had a mixture of plastic and nonplastic materials.

In order to further characterize the material properties in the various areas, a Phase II testing program has been initiated to further classify some of the samples, as well as to perform Harvard Minerature Compaction Tests and I-D consolidation tests.

The Harvard Minerature Compaction Test is a small standard Proctor test to determine the moisture density relationship of a soil. The test requires less sample than the standard Proctor (which is why this test was chosen) and uses a kneeding compaction as opposed to a tamping composition. Correlations have been developed between the two tests, and for this testing program the correlation was checked.

The moisture-density relationship is determined to ascertain the moisture content at which the soil is most easily compacted, should the material need to be removed from its present location and compacted into a new disposal area.

The consolidation test (ASTM D-2435) is used to determine the rate and amount of consolidation (settlement) that will take place due to loadings. Factors that must be considered when calculating the rate of settlement include the layer thickness and whether drainage will be allowed out the bottom. Whether the waste materials are relocated to a new disposal site or stabilized in place, the rate and amount of settlement due to closure will be important.

TABLE 3-28

FERNALD GEOTECHNICAL LABORATORY TESTING RESULTS

SAMPLE NO.	DEPTH INTERVAL	SAMPLE LOCATION	USCS CLASSIF.	SPECIFIC GRAVITY	LIQUID LIMIT	PLASTICITY INDEX	NATURAL MOISTURE CONTENT(%)	PERCENT -200 SIEVE (SILT&CLAY)	PERCENT -2 MICRON (CLAY)	MAXIMUM DRY DENSITY(pcf)	OPTIMUM MOISTURE CONTENT(%)	COLOR	CONSISTANCY	SAMPLE AMOUNT(lbs.)
1-48	0.0-12.'	PIT 1	GC	2.62	34	11	17.2	43	14	105.1	16.0	BROWN	CLAYEY	5
2-39		PIT 2		2.59	53	21	31.9	61	22	86.1	17.8		CLAYEY	4
3-52	0.0-20.'	PIT 3	MH	2.54	52	20	55.9	67	10			BROWN	SLUDGE	10
REDUE							57.0	66	13					
3-90	0.0-20.'	PIT 3	ML	---	38	5	43.3	68	11			GRAY	SLUDGE	5
REDUE				2.65			41.6	66	15					
4-02	0.0-20.'	PIT 4	ML	2.75	NP	NP	27.0	94	6			GRAY	CLAYEY	10
4-37		PIT 4											CLAYEY	10
4-39		PIT 4											CLAYEY	12
4-62	0.0-20.'	PIT 4	ML	3.33	NP	NP	28.6	55	6	120.5	17.0	GRAY	CLAYEY	5
REDUE				3.63										
5-25	10.-29.'	PIT 5	MH	2.43	81	29	189.5	70	2	57.5	62.3	BROWN	CLAYEY	20
6-10	0.0-10.'	PIT 6	ML	2.87	NP	NP	60.4	79	7			GRAY	SLUDGE	8
6-22	0.0-15.'	PIT 6	ML	---	NP	NP	50.5	68	8	101.5	24.0	GRAY	SLUDGE	10
7-02	0.0-10.'	BURN PIT	SM	2.46	NP	NP	30.1	36	4			GRAY/BROWN	SLUDGE	5
7-04		BURN PIT											SLUDGE	5
7-34	0.0-16.'	BURN PIT	ML	---	36	2	30.2	57	15			BROWN/BLACK	SLUDGE	6
REDUE					33	3								
7-50		BURN PIT											SLUDGE	4
7-52	0.0-16.'	BURN PIT	SM	2.35	NP	NP	29.2	40	6	77.0	8.0	BLACK	SLUDGE	6
47-06		LIME SLUDGE											SLUDGE	-
47-12	0.0-5.5'	LIME SLUDGE	ML	2.33	NP	NP	134.0	98	7			GRAY/WHITE	SLUDGE	1
48-13	2.-11.2'	LIME SLUDGE	ML	---	NP	NP	89.6	99	6			WHITE	SLUDGE	10
48-28		LIME SLUDGE											SLUDGE	12
48-42	0.0-12.'	LIME SLUDGE	ML	2.49	NP	NP	88.8	94	4			WHITE	SLUDGE	10
49-03	0.0-18.'	LANDFILL	CL	2.57	33	14	13.4	60	22			BROWN/GRAY	CLAYEY	5
49-19	0.0-12.'	LANDFILL	CL	---	40	20	15.1	52	19	100.2	17.5	BROWN/GRAY	CLAYEY	5
49-33		LANDFILL											CLAYEY	5
49-47		LANDFILL								115.7	13.5		CLAYEY	5
49-56		LANDFILL											CLAYEY	5
49-72		LANDFILL	-	2.58									CLAYEY	5
AVERAGES				2.01	22	7	54.4	67	10	95.5	22.0			

*NOTES/DEFINITIONS OF TERMS

NP = NON PLASTIC-- THE SOIL EXHIBITS NO CHARACTERISTICS OF PLASTICITY

-200 SIEVE = THE PERCENT OF THE TOTAL SAMPLE BY WEIGHT PASSING A 200 MESH(.074mm) SIEVE THIS SIZE DESIGNATION IS THE BREAK BETWEEN SAND AND (SILT & CLAY)

-2u = THE PECENT OF THE TOTAL SAMPLE BY WEIGHT PASSING A SIEVE WITH A HOLE SIZE OF .0002 mm THIS SIZE IS COMMONLY REFERED TO AS THE BREAK BETWEEN SILT AND CLAY

The Phase II testing program is ongoing. However, because of the time required for each consolidation test (1 to 2 weeks), it will be 3 to 4 months before all results are completed. Once completed, a separate report will be prepared along with predictions of settlement rates and amounts for each disposal area.

Section 4

SECTION 4

SUMMARY

The results for the analysis of RCRA characteristics are presented in Subsection 3.1. RCRA characteristics are those properties that if exhibited by a waste identify the waste as a hazardous waste. It is a process whereby the EPA identifies properties that might be possessed by a waste which would cause the waste, if improperly managed, to cause harm to human health or the environment. Using the current guidelines set forth by the EPA (40 CFR 261), the stored residue samples did not show hazardous levels of the properties tested.

Results for the inorganic chemical analysis show that all pit residues had elevated concentrations of aluminum, calcium, iron, and magnesium. Pit nos. 3, 5, the clear well, and the upper and lower fly ash piles had elevated concentrations of arsenic. These concentrations ranged from detection limits to about 2,800 mg/kg for pit no. 5. Pit nos. 3 and 5 had elevated vanadium concentrations ranging from 50 mg/kg to 9,695 mg/kg. Pit nos. 3, 6, the burn pit, the upper and lower fly ash areas, and the sanitary landfill all had elevated lead concentrations. These ranged from detection limits to 613 mg/kg for pit no. 3. Pit nos. 5, 6, the clear well, and the lower fly ash area had elevated mercury concentrations. These ranged from detection limits to 4.4 mg/kg for the clear well. The upper and lower fly ash areas and the sanitary landfill had slightly elevated cadmium concentrations. Pit no. 6 and the burn pit had silver concentrations measured at 158 mg/kg and 506 mg/kg, respectively. Pit no. 4 had fluoride concentrations ranging from 47,812 mg/kg to 124,576 mg/kg. In addition, barium was also detected in pit no. 4 and ranged from 444 mg/kg to 6,668 mg/kg.

Results from the organic chemical analysis showed elevated PCB's detected in pit nos. 1 through 6, the burn pit, the upper and lower fly ash piles, the sanitary landfill, and the north lime sludge pond. The PCB's most frequently detected were Aroclor 1254, Aroclor 1248, and Aroclor 1260. The concentrations of PCB's in the Waste Storage Area ranged from detection limits to about 10,000 ug/kg in pit no. 1.

Various organic chemicals were detected in individual pits that were found in other storage areas. In pit no. 1, chrysene and phenanthrene were detected and ranged in concentration from 510 to 2,300 ug/kg. In pit no. 2, 4-4 DDT and vinyl chloride were detected with concentrations ranging from 580 ug/kg to 1,400 ug/kg and 670 ug/kg, respectively. In pit no. 4, organophos-

phorous pesticides including ethyl parathion and methyl parathion were detected and ranged in concentration from 82 ug/kg to 2,100 ug/kg. In addition, malathion and tetrachloroethene were detected at concentrations of 670 and 30,000 ug/kg, respectively. In pit no. 6, a concentration of 29,000 ug/kg of 1-1-2-2 tetrachloroethane was detected. In the north lime sludge pond, butyl benzyl phthalate was detected at concentrations ranging from 370 to 2,800 ug/kg. In addition, chlordane was detected in the north lime sludge pond at concentrations of 1,200 ug/kg.

Surface water samples collected from pit nos. 4, 5, 6, and the clear well showed measurable amounts of calcium, magnesium, sodium, and potassium. Samples from pit no. 5 and the clear well had traces of cyanide. Although pit no. 4 borehole samples showed large concentrations of fluoride, only a trace amount was measured in the surface water sample. Only traces of organic compounds were detected in any of the surface water samples.

Results from the radiological analyses show only isolated deposits of radioactivity in waste storage facilities other than pit nos. 1 through 6, the burn pit, and the clear well. Radiochemical techniques were employed to analyze samples that represented a composite, or physical average, of material removed from a given boring. On-site gamma ray spectral analysis was employed to analyze the 723 individual profile samples obtained from the borings. Radiochemical analyses revealed that the principal radioactivity present in waste storage facilities consisted of U-238, Th-230, Tc-99, and Ra-226. Concentrations of Th-228, Th-232, Pu-238, Pu-239/Pu-240, Sr-90, Ru-106, Np-237, Cs-137, Ra-228, and Pb-210 were found in minor amounts except in clear well sediments, where the concentration of Cs-137 was elevated and ranged from 18 to 450 pCi/g. Strontium-90 was observed in pits nos. 3 and 5 and the clear well, but the maximum concentration was only 26 pCi/g.

Information concerning the vertical distribution of radioactivity may be found in Subsection 3.2.2, which presents a discussion of the pertinent observations. The data base for radionuclides in profile samples samples was developed from computer generated reports of gamma spectral analyses and is on file with project records. Principal radionuclides from these analyses were U-238, Ra-226, and Th-232. In general, activity concentrations in pit nos. 1 through 6 are elevated in the deepest profile sample. In the burn pit, fly ash piles piles, and sanitary landfill borings, only one uranium concentration exceeded 35 pCi/g (46 pCi/g wet), and all Ra-226 and Th-232 concentrations were less than 15 pCi/g in the deepest profile sample. Gamma ray spectral data may be used to determine the points at which maximum and mimimum activity concentrations occur in each boring.

In most cases, the principal radionuclides in pit nos. 1 through 6 and the clear well are distributed with reasonable uniformity, as seen in the data presented in Appendix E. While uranium was almost evenly distributed in pit no. 3, concentrations of Th-230 and Tc-99 were observed near the south end of that pit. Considering the other storage facilities, U-238 is the principal radionuclide in all except pit no. 5 where both Th-230 and Tc-99 have concentrations higher than U-238. The nonhomogeneity of radioactivity in borings in the fly ash piles and sanitary landfill may also be seen in Appendix D. There was no significant radioactivity in the two lime sludge ponds.

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Appendix A

APPENDIX A

MINIMUM AND MAXIMUM VALUES QUANTIFIED IN INORGANIC, ORGANIC, AND RADIOCHEMICAL ANALYSES

Pit One

Inorganic

Compound	Minimun Activity Concentration	Maximum Activity Concentration	Unit Of Measure	No. Of Measurements
ALUMINUM, TOTAL	1702.92	20223.31	MG/KG	6
ARSENIC, TOTAL	14.46	15.20	MG/KG	2
BARIUM, EP LEACHATE	1018.00	3743.00	UG/L	4
BARIUM, TOTAL	116.48	395.37	MG/KG	6
BERYLLIUM, TOTAL	2.03	2.20	MG/KG	2
CADMIUM, TOTAL	1.46	4.96	MG/KG	3
CALCIUM, TOTAL	4755.83	192497.97	MG/KG	6
CHROMIUM, TOTAL	6.35	46.33	MG/KG	5
COBALT, TOTAL	27.85	27.85	MG/KG	1
COPPER, TOTAL	19.05	160.79	MG/KG	6
IRON, TOTAL	1832.56	19687.98	MG/KG	6
LEAD, EP LEACHATE	660.00	660.00	UG/L	1
LEAD, TOTAL	4.98	89.92	MG/KG	6
MAGNESIUM, TOTAL	7613.78	36957.20	MG/KG	6
MANGANESE, TOTAL	144.81	2914.70	MG/KG	6
MERCURY, TOTAL	.26	.36	MG/KG	2
NICKEL, TOTAL	9.22	64.53	MG/KG	5
POTASSIUM, TOTAL	165.48	2564.10	MG/KG	6
SILVER, TOTAL	2.25	33.09	MG/KG	3
SODIUM, TOTAL	386.12	3638.58	MG/KG	5
VANADIUM, TOTAL	13.74	66.74	MG/KG	5
ZINC, TOTAL	6.09	57.91	MG/KG	4

Pit One

Organic

Compound	Minimun Concentration	Maximum Concentration	Unit Of Measure	No. Of Measurements
4,4-DDT	1600.00	1600.00	UG/KG	1
AROCLOR-1248	3500.00	3500.00	UG/KG	1
AROCLOR-1254	720.00	10000.00	UG/KG	4
AROCLOR-1260	7000.00	7000.00	UG/KG	1
CHLOROFORM	210.00	210.00	UG/KG	1
CHRYSENE	510.00	510.00	UG/KG	1
PHENANTHRENE	770.00	2300.00	UG/KG	2

Pit One

Radiochemistry

Compound	Minimum Activity Concentration	Maximum Activity Concentration	Unit Of Measure	No. Of Measurements
CS-137	.20	1.10	PCI/G	5
NP-237	.10	.30	PCI/G	5
PU-238	.10	.10	PCI/G	5
PU-239/240	.10	.10	PCI/G	5
RA-226	12.00	60.20	PCI/G	5
RU-106	2.00	4.00	PCI/G	5
SR-90	.30	.60	PCI/G	5
TC-99	1.00	15.00	PCI/G	5
TH-228	1.80	18.00	PCI/G	5
TH-230	122.00	1980.00	PCI/G	5
TH-232	1.80	17.00	PCI/G	5
U-234	244.00	1180.00	PCI/G	5
U-235	16.00	151.00	PCI/G	5
U-238	360.00	6980.00	PCI/G	5

Pit Two

Inorganic

Compound	Minimun Activity Concentration	Maximum Activity Concentration	Unit Of Measure	No. Of Measurements
ALUMINUM, TOTAL	7242.30	22421.77	MG/KG	5
ARSENIC, TOTAL	2.75	10.06	MG/KG	4
BARIUM, EP LEACHATE	4221.00	9458.00	UG/L	3
BARIUM, TOTAL	62.37	208.49	MG/KG	5
BERYLLIUM, TOTAL	1.87	8.92	MG/KG	3
CADMIUM, TOTAL	3.04	9.59	MG/KG	5
CALCIUM, TOTAL	34414.38	80154.23	MG/KG	5
CHROMIUM, TOTAL	16.17	91.26	MG/KG	5
COBALT, TOTAL	13.63	450.56	MG/KG	4
COPPER, TOTAL	26.18	329.06	MG/KG	5
IRON, TOTAL	13265.46	24037.73	MG/KG	5
LEAD, TOTAL	20.70	190.29	MG/KG	5
MAGNESIUM, TOTAL	8884.98	26676.81	MG/KG	5
MANGANESE, TOTAL	495.43	916.57	MG/KG	5
MERCURY, EP LEACHATE	.27	.27	UG/L	1
MERCURY, TOTAL	.22	.70	MG/KG	4
NICKEL, TOTAL	28.75	608.90	MG/KG	5
POTASSIUM, TOTAL	667.42	4318.50	MG/KG	5
SELENIUM, TOTAL	1.59	10.19	MG/KG	3
SILVER, TOTAL	5.90	23.16	MG/KG	3
SODIUM, TOTAL	410.72	2303.20	MG/KG	5
VANADIUM, TOTAL	26.95	105.94	MG/KG	5
ZINC, TOTAL	53.58	3247.15	MG/KG	5

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Pit Two

Organic

Compound	Minimun Concentration	Maximum Concentration	Unit Of Measure	No. Of Measurements
2-METHYLNAPHTHALENE	7000.00	7000.00	UG/KG	1
4,4-DDT	580.00	1400.00	UG/KG	2
4-CHLOROPHENYL-PHENYLETHER	62000.00	62000.00	UG/KG	1
ACENAPHTHENE	43000.00	43000.00	UG/KG	1
ANTHRACENE	120000.00	120000.00	UG/KG	1
AROCLOR-1248	321.00	321.00	UG/KG	1
AROCLOR-1254	323.00	323.00	UG/KG	1
AROCLOR-1260	740.00	1800.00	UG/KG	2
BENZO(A)ANTHRACENE	860.00	180000.00	UG/KG	3
BENZO(A)PYRENE	700.00	140000.00	UG/KG	3
BENZO(B)FLUORANTHENE	760.00	110000.00	UG/KG	2
BENZO(G,H,I)PERYLENE	42000.00	42000.00	UG/KG	1
BENZO(K)FLUORANTHENE	600.00	120000.00	UG/KG	3
CHRYSENE	920.00	180000.00	UG/KG	2
DIBENZOFURAN	36000.00	36000.00	UG/KG	1
FLUORANTHENE	590.00	460000.00	UG/KG	3
FLUORENE	62000.00	62000.00	UG/KG	1
INDENO(1,2,3-CD)PYRENE	46000.00	46000.00	UG/KG	1
NAPHTHALENE	16000.00	16000.00	UG/KG	1
PHENANTHRENE	1700.00	370000.00	UG/KG	2
PYRENE	1600.00	310000.00	UG/KG	2
VINYL CHLORIDE	670.00	670.00	UG/KG	1

Pit Two

Radiochemistry

Compound	Minimum Activity Concentration	Maximum Activity Concentration	Unit Of Measure	No. Of Measurements
CS-137	.20	3.60	PCI/G	5
NP-237	.10	.40	PCI/G	5
PU-238	.10	.10	PCI/G	5
PU-239/240	.05	.60	PCI/G	5
RA-226	12.20	412.00	PCI/G	5
RU-106	2.00	35.00	PCI/G	5
SR-90	.30	1.00	PCI/G	5
TC-99	1.00	618.00	PCI/G	5
TH-228	.30	73.00	PCI/G	5
TH-230	1.20	3980.00	PCI/G	5
TH-232	.10	88.00	PCI/G	5
U-234	39.00	18200.00	PCI/G	5
U-235	1.00	8780.00	PCI/G	5
U-238	53.00	17900.00	PCI/G	5

Pit Three

Inorganic

Compound	Minimun Activity Concentration	Maximum Activity Concentration	Unit Of Measure	No. Of Measurements
ALUMINUM, TOTAL	8219.61	64100.08	MG/KG	7
ARSENIC, EP LEACHATE	514.00	3116.00	UG/L	4
ARSENIC, TOTAL	15.41	3049.06	MG/KG	7
BARIUM, TOTAL	251.19	14354.90	MG/KG	7
BERYLLIUM, TOTAL	2.76	24.01	MG/KG	6
CADMIUM, TOTAL	1.91	12.65	MG/KG	7
CALCIUM, TOTAL	53183.03	178241.20	MG/KG	7
CHROMIUM, TOTAL	16.38	151.84	MG/KG	7
COPPER, TOTAL	79.50	2332.66	MG/KG	7
IRON, TOTAL	10730.37	26919.20	MG/KG	7
LEAD, TOTAL	25.57	613.21	MG/KG	7
MAGNESIUM, TOTAL	21492.80	51570.00	MG/KG	7
MANGANESE, TOTAL	407.29	10570.89	MG/KG	7
MERCURY, EP LEACHATE	.25	7.23	UG/L	2
MERCURY, TOTAL	.45	4.01	MG/KG	4
NICKEL, TOTAL	22.34	503.97	MG/KG	7
POTASSIUM, TOTAL	810.24	2894.00	MG/KG	7
SELENIUM, EP LEACHATE	257.00	257.00	UG/L	1
SELENIUM, TOTAL	1.29	89.80	MG/KG	4
SILVER, TOTAL	3.54	8.11	MG/KG	4
SODIUM, TOTAL	1191.68	7640.00	MG/KG	7
SULFIDE	1.95	1.95	MG/KG	1
THALLIUM, TOTAL	5.89	12.21	MG/KG	2
VANADIUM, TOTAL	50.06	9695.51	MG/KG	7
ZINC, TOTAL	37.87	311.19	MG/KG	7

Pit Three

Radiochemistry

Compound	Minimum Activity Concentration	Maximum Activity Concentration	Unit Of Measure	No. Of Measurements
CS-137	.20	6.00	PCI/G	7
NP-237	.10	2.10	PCI/G	7
PU-238	.05	1.00	PCI/G	7
PU-239/240	.05	14.00	PCI/G	7
RA-226	3.10	369.00	PCI/G	7
RU-106	2.00	35.00	PCI/G	7
SR-90	.50	26.00	PCI/G	7
TC-99	1.00	1110.00	PCI/G	7
TH-228	1.00	82.00	PCI/G	7
TH-230	15.00	21900.00	PCI/G	7
TH-232	1.00	121.00	PCI/G	7
U-234	27.00	475.00	PCI/G	7
U-235	2.50	21.00	PCI/G	7
U-238	134.00	1380.00	PCI/G	7

Pit Four

Inorganic

Compound	Minimun Activity Concentration	Maximum Activity Concentration	Unit Of Measure	No. Of Measurements
ALUMINUM, TOTAL	3645.60	10325.99	MG/KG	5
ARSENIC, EP LEACHATE	582.00	582.00	UG/L	1
ARSENIC, TOTAL	4.63	4.63	MG/KG	1
BARIUM, EP LEACHATE	1023.00	81470.00	UG/L	3
BARIUM, TOTAL	444.03	6668.76	MG/KG	5
BERYLLIUM, TOTAL	13.30	13.30	MG/KG	1
CADMIUM, EP LEACHATE	141.00	141.00	UG/L	1
CADMIUM, TOTAL	1.92	28.72	MG/KG	3
CALCIUM, TOTAL	14252.84	61252.80	MG/KG	5
CHROMIUM, TOTAL	7.92	93.63	MG/KG	5
COBALT, TOTAL	84.06	84.06	MG/KG	1
COPPER, TOTAL	20.35	187.73	MG/KG	5
FLUORIDE	47812.36	124576.13	MG/KG	4
IRON, TOTAL	3045.60	16127.52	MG/KG	5
LEAD, EP LEACHATE	753.00	753.00	UG/L	1
LEAD, TOTAL	13.71	62.51	MG/KG	5
MAGNESIUM, TOTAL	11423.80	24251.31	MG/KG	5
MANGANESE, TOTAL	1383.43	3596.38	MG/KG	5
MERCURY, EP LEACHATE	1.06	1.06	UG/L	1
MERCURY, TOTAL	.18	.63	MG/KG	3
NICKEL, TOTAL	20.67	49.73	MG/KG	3
PHENOL	.43	.83	MG/KG	3
POTASSIUM, TOTAL	303.10	1920.00	MG/KG	4
SILVER, EP LEACHATE	2767.00	2767.00	UG/L	1
SILVER, TOTAL	2.59	443.65	MG/KG	4
SODIUM, TOTAL	254.90	1237.55	MG/KG	5
SULFIDE	.50	.50	MG/KG	1
VANADIUM, TOTAL	13.85	235.36	MG/KG	4
ZINC, TOTAL	13.92	84.06	MG/KG	5

Pit Four

Organic

Compound	Minimun Concentration	Maximum Concentration	Unit Of Measure	No. Of Measurements
ANTHRACENE	510.00	510.00	UG/KG	1
AROCLOR-1242	99.00	1034.00	UG/KG	2
AROCLOR-1248	460.00	854.00	UG/KG	2
AROCLOR-1254	1008.00	1008.00	UG/KG	1
BENZO(A)ANTHRACENE	750.00	750.00	UG/KG	1
BENZO(A)PYRENE	550.00	550.00	UG/KG	1
BENZO(B)FLUORANTHENE	510.00	510.00	UG/KG	1
BENZO(K)FLUORANTHENE	560.00	560.00	UG/KG	1
CHLOROFORM	430.00	1300.00	UG/KG	2
CHRYSENE	760.00	760.00	UG/KG	2
ETHYL PARATHION	82.00	860.00	UG/KG	3
FLUORANTHENE	1000.00	2200.00	UG/KG	3
MALATHION	670.00	670.00	UG/KG	1
METHYL PARATHION	370.00	2100.00	UG/KG	3
PHENANTHRENE	1000.00	2100.00	UG/KG	3
PYRENE	670.00	1400.00	UG/KG	3
TETRACHLOROETHENE	530.00	30000.00	UG/KG	2
TRICHLOROETHENE	300.00	300.00	UG/KG	1

Pit Four

Radiochemistry

Compound	Minimum Activity Concentration	Maximum Activity Concentration	Unit Of Measure	No. Of Measurements
CS-137	.20	.50	PCI/G	4
NP-237	.10	.40	PCI/G	4
PU-238	.10	.50	PCI/G	4
PU-239/240	.10	.40	PCI/G	4
RA-226	5.00	20.00	PCI/G	4
RU-106	2.00	4.00	PCI/G	4
SR-90	.40	1.00	PCI/G	4
TC-99	6.80	225.00	PCI/G	4
TH-228	.30	24.00	PCI/G	4
TH-230	2.20	566.00	PCI/G	4
TH-232	.30	21.00	PCI/G	4
U-234	149.00	2320.00	PCI/G	4
U-235	35.00	426.00	PCI/G	4
U-238	509.00	15800.00	PCI/G	4

Pit Five

Inorganic

Compound	Minimun Activity Concentration	Maximum Activity Concentration	Unit Of Measure	No. Of Measurements
ALUMINUM, TOTAL	6373.77	15400.00	MG/KG	6
ANTIMONY, TOTAL	28.00	28.00	MG/KG	1
ARSENIC, EP LEACHATE	516.00	516.00	UG/L	1
ARSENIC, TOTAL	139.00	2800.00	MG/KG	6
BARIUM, EP LEACHATE	2260.00	3171.00	UG/L	2
BARIUM, TOTAL	15800.00	36938.95	MG/KG	7
BERYLLIUM, TOTAL	2.85	18.00	MG/KG	5
BERYLLIUM,TOTAL	8.80	8.80	MG/KG	1
CADMIUM, TOTAL	17.00	17.00	MG/KG	1
CADMIUM,TOTAL	4.40	4.40	MG/KG	1
CALCIUM, TOTAL	116000.00	206144.40	MG/KG	6
CHROMIUM, TOTAL	25.66	223.29	MG/KG	6
COBALT, TOTAL	16.00	43.99	MG/KG	3
COPPER, TOTAL	672.21	3370.00	MG/KG	6
IRON, TOTAL	10979.43	17900.00	MG/KG	6
LEAD, TOTAL	59.50	236.00	MG/KG	6
MAGNESIUM, TOTAL	25201.76	63200.00	MG/KG	6
MANGANESE, TOTAL	346.29	4740.00	MG/KG	6
MERCURY, EP LEACHATE	1.90	6.20	UG/L	3
MERCURY, TOTAL	.39	1.80	MG/KG	6
NICKEL, TOTAL	52.55	202.00	MG/KG	3
POTASSIUM, TOTAL	611.10	1490.00	MG/KG	6
SELENIUM, TOTAL	2.80	7.47	MG/KG	3
SILVER, TOTAL	8.18	9.40	MG/KG	2
SODIUM, TOTAL	1425.90	9980.00	MG/KG	6
THALIUM, TOTAL	2.80	2.80	MG/KG	1
VANADIUM, TOTAL	791.98	5380.00	MG/KG	6
ZINC, TOTAL	116.92	212.00	MG/KG	6

Pit Five

Organic

Compound	Minimun Concentration	Maximum Concentration	Unit Of Measure	No. Of Measurements
AROCLOR-1254	750.00	750.00	UG/KG	1

Pit Five

Radiochemistry

Compound	Minimum Activity Concentration	Maximum Activity Concentration	Unit Of Measure	No. Of Measurements
CS-137	2.00	76.00	PCI/G	6
NP-237	.30	23.00	PCI/G	6
PU-238	.10	4.40	PCI/G	6
PU-239/240	.10	13.00	PCI/G	6
RA-226	235.00	999.00	PCI/G	6
RU-106	13.00	35.00	PCI/G	6
SR-90	.80	23.00	PCI/G	6
TC-99	423.00	2990.00	PCI/G	6
TH-228	41.00	191.00	PCI/G	6
TH-230	3080.00	20200.00	PCI/G	6
TH-232	21.00	90.00	PCI/G	6
U-234	310.00	1250.00	PCI/G	6
U-235	14.00	79.00	PCI/G	6
U-238	387.00	1230.00	PCI/G	6

Pit Six

Inorganic

Compound	Minimun Activity Concentration	Maximum Activity Concentration	Unit Of Measure	No. Of Measurements
ALUMINUM, TOTAL	4730.37	4730.37	MG/KG	1
ARSENIC, TOTAL	7.61	7.61	MG/KG	1
BARIUM, EP LEACHATE	1092.00	1092.00	UG/L	1
BARIUM, TOTAL	95.22	95.22	MG/KG	1
BERYLLIUM, TOTAL	2.00	5.73	MG/KG	2
CADMIUM, EP LEACHATE	251.00	251.00	UG/L	1
CADMIUM, TOTAL	.60	5.73	MG/KG	2
CALCIUM, TOTAL	22189.54	22189.54	MG/KG	1
CHROMIUM, TOTAL	4.80	29.74	MG/KG	4
COBALT, TOTAL	26.09	26.09	MG/KG	1
COPPER, TOTAL	13.00	222.02	MG/KG	4
IRON, TOTAL	2749.88	2749.88	MG/KG	1
LEAD, EP LEACHATE	1894.00	1894.00	UG/L	1
LEAD, TOTAL	5.00	59.62	MG/KG	4
MAGNESIUM, TOTAL	32101.13	32101.13	MG/KG	1
MANGANESE, TOTAL	34.96	34.96	MG/KG	1
MERCURY, TOTAL	.03	.07	MG/KG	3
NICKEL, TOTAL	7.70	51.39	MG/KG	4
POTASSIUM, TOTAL	913.15	913.15	MG/KG	1
SILVER, EP LEACHATE	2068.00	2068.00	UG/L	1
SILVER, TOTAL	158.10	158.10	MG/KG	1
SODIUM, TOTAL	600.07	600.07	MG/KG	1
VANADIUM, TOTAL	100.18	100.18	MG/KG	1
ZINC, TOTAL	4.80	51.00	MG/KG	4

Pit Six

Organic

Compound	Minimun Concentration	Maximum Concentration	Unit Of Measure	No. Of Measurements
1,1,2,2-TETRACHLOROETHANE	29000.00	29000.00	UG/KG	1

Pit Six

Radiochemistry

Compound	Minimum Activity Concentration	Maximum Activity Concentration	Unit Of Measure	No. Of Measurements
CS-137	4.00	31.00	PCI/G	4
NP-237	.90	4.50	PCI/G	4
PU-238	.40	1.40	PCI/G	4
PU-239/240	4.00	15.00	PCI/G	4
RA-226	16.00	30.00	PCI/G	4
RU-106	35.00	35.00	PCI/G	4
SR-90	.50	4.00	PCI/G	4
TC-99	84.00	164.00	PCI/G	4
TH-228	.20	2.00	PCI/G	4
TH-230	14.00	41.00	PCI/G	4
TH-232	.20	1.20	PCI/G	4
U-234	2000.00	5330.00	PCI/G	4
U-235	350.00	1750.00	PCI/G	4
U-238	12500.00	18700.00	PCI/G	4

Burn Pit

Inorganic

Compound	Minimun Activity Concentration	Maximum Activity Concentration	Unit Of Measure	No. Of Measurements
ALUMINUM, TOTAL	2911.89	11935.61	MG/KG	7
ARSENIC, TOTAL	4.38	20.91	MG/KG	4
BARIUM, EP LEACHATE	1252.00	4291.00	UG/L	7
BARIUM, TOTAL	56.23	7097.22	MG/KG	6
BERYLLIUM, TOTAL	1.45	16.38	MG/KG	2
CADMIUM, TOTAL	1.33	34.84	MG/KG	4
CALCIUM, TOTAL	10114.49	116321.92	MG/KG	7
CHROMIUM, TOTAL	7.87	87.52	MG/KG	7
COBALT, TOTAL	22.22	104.11	MG/KG	2
COPPER, TOTAL	12.25	166.54	MG/KG	7
IRON, TOTAL	3746.90	17444.92	MG/KG	7
LEAD, TOTAL	6.68	52.58	MG/KG	7
MAGNESIUM, TOTAL	3859.06	57078.97	MG/KG	7
MANGANESE, TOTAL	119.19	1717.27	MG/KG	7
MERCURY, EP LEACHATE	.21	.32	UG/L	3
MERCURY, TOTAL	.14	.24	MG/KG	3
NICKEL, TOTAL	8.91	59.73	MG/KG	5
POTASSIUM, TOTAL	485.94	1451.80	MG/KG	7
SELENIUM, TOTAL	1.91	1.91	MG/KG	1
SILVER, TOTAL	6.84	506.05	MG/KG	2
SODIUM, TOTAL	355.52	1265.14	MG/KG	5
VANADIUM, TOTAL	14.09	289.53	MG/KG	7
ZINC, TOTAL	14.53	74.66	MG/KG	7

Burn Pit

Organic

Compound	Minimun Concentration	Maximum Concentration	Unit Of Measure	No. Of Measurements
2-METHYLNAPHTHALENE	50.00	50.00	UG/KG	1
AROCLOR-1016	290.00	290.00	UG/KG	1
AROCLOR-1242	290.00	290.00	UG/KG	1
AROCLOR-1248	200.00	200.00	UG/KG	1
AROCLOR-1254	1957.00	2700.00	UG/KG	2
BENZO(A)ANTHRACENE	61.00	64.00	UG/KG	2
BENZO(B)FLUORANTHENE	69.00	170.00	UG/KG	4
BENZO(G,H,I)PERYLENE	85.00	85.00	UG/KG	1
CHRYSENE	73.00	77.00	UG/KG	2
ETHYLBENZENE	270.00	270.00	UG/KG	1
FLUORANTHENE	74.00	220.00	UG/KG	4
PENTACHLOROPHENOL(2)	1200.00	2600.00	UG/KG	2
PHENANTHRENE	100.00	190.00	UG/KG	3
PHENOL	650.00	650.00	UG/KG	1
PYRENE	79.00	140.00	UG/KG	3
TETRACHLOROETHENE	260.00	260.00	UG/KG	1
TOTAL XYLENES	890.00	890.00	UG/KG	1

Burn Pit

Radiochemistry

Compound	Minimum Activity Concentration	Maximum Activity Concentration	Unit Of Measure	No. Of Measurements
CS-137	.20	.60	PCI/G	6
NP-237	.10	.70	PCI/G	6
PU-238	.10	.50	PCI/G	6
PU-239/240	.10	.40	PCI/G	6
RA-226	2.00	3.90	PCI/G	6
RU-106	2.00	2.00	PCI/G	6
SR-90	.50	.90	PCI/G	6
TC-99	.40	64.00	PCI/G	6
TH-228	.10	9.60	PCI/G	6
TH-230	.10	26.00	PCI/G	6
TH-232	.10	7.70	PCI/G	6
U-234	9.90	415.00	PCI/G	6
U-235	.50	27.00	PCI/G	6
U-238	22.00	454.00	PCI/G	6

Clear Well

Inorganic

Compound	Minimun Activity Concentration	Maximum Activity Concentration	Unit Of Measure	No. Of Measurements
ALUMINUM, TOTAL	12939.30	23770.50	MG/KG	4
ARSENIC, TOTAL	8.41	18.46	MG/KG	4
BARIUM, EP LEACHATE	1222.00	2613.00	UG/L	3
BARIUM, TOTAL	733.35	6913.40	MG/KG	4
BERYLLIUM, TOTAL	9.10	9.10	MG/KG	1
CADMIUM, TOTAL	5.11	7.15	MG/KG	2
CALCIUM, TOTAL	129304.89	183078.02	MG/KG	4
CHROMIUM, TOTAL	41.17	76.05	MG/KG	4
COBALT, TOTAL	18.34	18.34	MG/KG	1
COPPER, TOTAL	194.61	1119.30	MG/KG	4
CYANIDE, TOTAL	9.18	9.18	MG/KG	1
IRON, TOTAL	19618.07	21066.50	MG/KG	4
LEAD, TOTAL	32.26	83.00	MG/KG	4
MAGNESIUM, TOTAL	16784.64	44629.00	MG/KG	4
MANGANESE, TOTAL	761.15	1660.41	MG/KG	4
MERCURY, EP LEACHATE	.32	1.25	UG/L	4
MERCURY, TOTAL	.42	4.38	MG/KG	4
NICKEL, TOTAL	46.62	66.95	MG/KG	2
POTASSIUM, TOTAL	1690.00	3653.28	MG/KG	4
SELENIUM, TOTAL	3.72	3.72	MG/KG	1
SILVER, TOTAL	3.30	3.30	MG/KG	1
SODIUM, TOTAL	1293.44	3501.06	MG/KG	4
VANADIUM, TOTAL	99.70	2596.10	MG/KG	4
ZINC, TOTAL	81.81	194.35	MG/KG	4

Clear Well

Organic

Compound	Minimun Concentration	Maximum Concentration	Unit Of Measure	No. Of Measurements
AROCLOR-1248	308.00	308.00	UG/KG	1
AROCLOR-1254	737.00	737.00	UG/KG	1

Clear Well

Radiochemistry

Compound	Minimum Activity Concentration	Maximum Activity Concentration	Unit Of Measure	No. Of Measurements
CS-137	18.00	450.00	PCI/G	4
NP-237	.40	2.70	PCI/G	4
PU-238	.10	.10	PCI/G	4
PU-239/240	.10	.10	PCI/G	4
RA-226	21.60	458.00	PCI/G	4
RU-106	3.00	24.00	PCI/G	4
SR-90	1.30	26.00	PCI/G	4
TC-99	.40	278.00	PCI/G	4
TH-228	.20	41.00	PCI/G	4
TH-230	.30	5600.00	PCI/G	4
TH-232	.10	39.00	PCI/G	4
U-234	242.00	376.00	PCI/G	4
U-235	24.00	49.00	PCI/G	4
U-238	548.00	670.00	PCI/G	4

Upper Fly Ash Area

Inorganic

Compound	Minimun Activity Concentration	Maximum Activity Concentration	Unit Of Measure	No. Of Measurements
ALUMINUM, TOTAL	6673.40	14636.47	MG/KG	13
ARSENIC, TOTAL	3.70	31.17	MG/KG	13
BARIUM, TOTAL	48.37	271.04	MG/KG	12
BERYLLIUM, TOTAL	1.43	1.73	MG/KG	3
CADMIUM, TOTAL	2.12	5.15	MG/KG	13
CALCIUM, TOTAL	3622.16	187187.03	MG/KG	13
CHROMIUM, TOTAL	9.36	21.69	MG/KG	13
COBALT, TOTAL	9.76	27.73	MG/KG	5
COPPER, TOTAL	9.57	23.45	MG/KG	13
IRON, TOTAL	7281.86	23842.80	MG/KG	13
LEAD, TOTAL	10.35	55.95	MG/KG	13
MAGNESIUM, TOTAL	2804.93	30281.44	MG/KG	13
MANGANESE, TOTAL	238.04	1165.66	MG/KG	13
MERCURY, TOTAL	.12	1.22	MG/KG	11
NICKEL, TOTAL	10.22	48.32	MG/KG	13
POTASSIUM, TOTAL	348.48	1503.60	MG/KG	12
SODIUM, TOTAL	135.72	189.35	MG/KG	5
VANADIUM, TOTAL	15.08	31.91	MG/KG	13
ZINC, TOTAL	34.26	67.01	MG/KG	13

Upper Fly Ash Area

Organic

Compound	Minimun Concentration	Maximum Concentration	Unit Of Measure	No. Of Measurements
AROCLOR-1254	290.00	880.00	UG/KG	4
AROCLOR-1260	250.00	420.00	UG/KG	2

Upper Fly Ash Area

Radiochemistry

Compound	Minimum Activity Concentration	Maximum Activity Concentration	Unit Of Measure	No. Of Measurements
PB-210	2.00	28.00	PCI/G	12
RA-226	.60	17.00	PCI/G	12
RA-228	.60	10.00	PCI/G	12
TH-228	.10	2.30	PCI/G	12
TH-230	.10	11.00	PCI/G	12
TH-232	.10	2.60	PCI/G	12
U-234	2.00	48.00	PCI/G	12
U-235	.09	2.20	PCI/G	12
U-238	3.10	50.00	PCI/G	12

Lower Fly Ash Area

Inorganic

Compound	Minimun Activity Concentration	Maximum Activity Concentration	Unit Of Measure	No. Of Measurements
ALUMINUM, TOTAL	3857.10	7027.36	MG/KG	2
ARSENIC, TOTAL	4.64	5.33	MG/KG	2
CADMIUM, TOTAL	2.36	3.15	MG/KG	2
CALCIUM, TOTAL	88166.01	140330.50	MG/KG	2
CHROMIUM, TOTAL	7.95	12.62	MG/KG	2
COPPER, TOTAL	8.62	9.03	MG/KG	2
IRON, TOTAL	12237.80	14896.32	MG/KG	2
LEAD, TOTAL	9.29	12.55	MG/KG	2
MAGNESIUM, TOTAL	24918.50	32006.04	MG/KG	2
MANGANESE, TOTAL	462.88	645.00	MG/KG	2
MERCURY, TOTAL	.16	1.78	MG/KG	2
NICKEL, TOTAL	13.25	13.25	MG/KG	1
POTASSIUM, TOTAL	631.20	752.50	MG/KG	2
SODIUM, TOTAL	129.00	129.00	MG/KG	1
VANADIUM, TOTAL	13.11	20.19	MG/KG	2
ZINC, TOTAL	30.31	42.08	MG/KG	2

Lower Fly Ash Area

Radiochemistry

Compound	Minimum Activity Concentration	Maximum Activity Concentration	Unit Of Measure	No. Of Measurements
PB-210	1.00	4.00	PCI/G	2
RA-226	.40	2.40	PCI/G	2
RA-228	.90	1.70	PCI/G	2
TH-228	.10	.10	PCI/G	2
TH-230	.70	5.30	PCI/G	2
TH-232	.10	.10	PCI/G	2
U-234	4.50	5.70	PCI/G	2
U-235	.10	.20	PCI/G	2
U-238	5.10	6.80	PCI/G	2

North Lime Sludge Pond

Inorganic

Compound	Minimun Activity Concentration	Maximum Activity Concentration	Unit Of Measure	No. Of Measurements
ALUMINUM, TOTAL	9630.00	18600.00	MG/KG	3
ARSENIC, TOTAL	6.30	16.00	MG/KG	3
CALCIUM, TOTAL	252000.00	262000.00	MG/KG	3
CHROMIUM, TOTAL	9.40	22.00	MG/KG	3
COPPER, TOTAL	15.00	24.00	MG/KG	3
IRON, TOTAL	8990.00	20600.00	MG/KG	3
MAGNESIUM, TOTAL	19100.00	21200.00	MG/KG	3
MANGANESE, TOTAL	546.00	638.00	MG/KG	3
MERCURY, EP LEACHATE	.23	.23	UG/L	1
MERCURY, TOTAL	.30	.30	MG/KG	2
POTASSIUM, TOTAL	695.00	1670.00	MG/KG	3
SELENIUM, EP LEACHATE	187.00	293.00	UG/L	3
SODIUM, TOTAL	304.00	1530.00	MG/KG	3
ZINC, TOTAL	38.00	75.00	MG/KG	3

North Lime Sludge Pond

Organic

Compound	Minimun Concentration	Maximum Concentration	Unit Of Measure	No. Of Measurements
AROCLOR-1248	1200.00	1200.00	UG/KG	1
BUTYL BENZYL PHTHALATE	370.00	2800.00	UG/KG	2
CHLORDANE	1200.00	1200.00	UG/KG	1
PHENOL	610.00	610.00	UG/KG	1

North Lime Sludge Pond

Radiochemistry

Compound	Minimum Activity Concentration	Maximum Activity Concentration	Unit Of Measure	No. Of Measurements
CS-137	.80	2.00	PCI/G	3
NP-237	.03	.04	PCI/G	3
PU-238	.05	.09	PCI/G	3
PU-239/240	.05	.05	PCI/G	3
RA-226	2.00	6.20	PCI/G	3
RU-106	5.00	6.00	PCI/G	3
SR-90	.50	2.20	PCI/G	3
TC-99	.30	.40	PCI/G	3
TH-228	.20	.20	PCI/G	3
TH-230	.50	20.00	PCI/G	3
TH-232	.20	.20	PCI/G	3
U-234	2.10	2.50	PCI/G	3
U-235	.10	.20	PCI/G	3
U-238	2.40	7.60	PCI/G	3

South Lime Sludge Pond

Inorganic

Compound	Minimun Activity Concentration	Maximum Activity Concentration	Unit Of Measure	No. Of Measurements
ALUMINUM, TOTAL	4348.55	6015.60	MG/KG	3
BARIUM, EP LEACHATE	1018.00	2091.00	UG/L	3
BARIUM, TOTAL	73.34	73.34	MG/KG	1
CADMIUM, EP LEACHATE	163.00	163.00	UG/L	1
CALCIUM, TOTAL	298311.72	333762.00	MG/KG	3
CHROMIUM, TOTAL	5.04	6.86	MG/KG	3
COPPER, TOTAL	12.01	12.01	MG/KG	1
IRON, TOTAL	5041.56	6936.07	MG/KG	3
LEAD, EP LEACHATE	647.00	660.00	UG/L	2
LEAD, TOTAL	2.14	2.14	MG/KG	1
MAGNESIUM, TOTAL	15141.27	17981.64	MG/KG	3
MANGANESE, TOTAL	694.80	746.77	MG/KG	3
POTASSIUM, TOTAL	216.00	343.20	MG/KG	2
ZINC, TOTAL	14.40	16.59	MG/KG	3

South Lime Sludge Pond

Radiochemistry

Compound	Minimum Activity Concentration	Maximum Activity Concentration	Unit Of Measure	No. Of Measurements
CS-137	.50	.60	PCI/G	3
NP-237	.03	.07	PCI/G	3
PU-238	.05	.05	PCI/G	3
PU-239/240	.05	.05	PCI/G	3
RA-226	1.10	2.50	PCI/G	3
RU-106	5.00	5.00	PCI/G	3
SR-90	.50	.50	PCI/G	3
TC-99	.30	.40	PCI/G	3
TH-228	.10	.30	PCI/G	3
TH-230	.90	7.00	PCI/G	3
TH-232	.10	.30	PCI/G	3
U-234	1.80	3.10	PCI/G	3
U-235	.10	.30	PCI/G	3
U-238	2.20	2.80	PCI/G	3

Sanitary Landfill

Inorganic

Compound	Minimun Activity Concentration	Maximum Activity Concentration	Unit Of Measure	No. Of Measurements
ALUMINUM, TOTAL	6367.05	17247.25	MG/KG	7
ARSENIC, TOTAL	3.28	6.69	MG/KG	5
BARIUM, EP LEACHATE	1276.00	3307.00	UG/L	6
BARIUM, TOTAL	67.58	124.13	MG/KG	5
CADMIUM, TOTAL	1.87	5.33	MG/KG	7
CALCIUM, TOTAL	15714.06	129975.31	MG/KG	7
CHROMIUM, TOTAL	9.23	25.28	MG/KG	7
COPPER, TOTAL	11.15	29.63	MG/KG	7
IRON, TOTAL	13466.76	21844.98	MG/KG	7
LEAD, TOTAL	9.25	19.04	MG/KG	7
MAGNESIUM, TOTAL	7367.19	30105.25	MG/KG	7
MANGANESE, TOTAL	247.58	716.45	MG/KG	7
MERCURY, EP LEACHATE	.20	.20	UG/L	1
MERCURY, TOTAL	.14	3.42	MG/KG	4
NICKEL, TOTAL	12.73	42.35	MG/KG	7
POTASSIUM, TOTAL	491.92	1971.15	MG/KG	7
SODIUM, TOTAL	162.33	355.87	MG/KG	3
VANADIUM, TOTAL	12.11	26.63	MG/KG	7
ZINC, TOTAL	39.61	166.72	MG/KG	7

Sanitary Landfill

Organic

Compound	Minimun Concentration	Maximum Concentration	Unit Of Measure	No. Of Measurements
2-METHYLNAPHTHALENE	66.00	11000.00	UG/KG	3
ACENAPHTHENE	1300.00	28000.00	UG/KG	3
ANTHRACENE	1900.00	2800.00	UG/KG	3
AROCLOR-1242	110.00	260.00	UG/KG	3
AROCLOR-1248	565.00	565.00	UG/KG	1
BENZO(A)ANTHRACENE	1900.00	5100.00	UG/KG	2
BENZO(A)PYRENE	1900.00	7000.00	UG/KG	3
BENZO(B)FLUORANTHENE	1900.00	6700.00	UG/KG	2
BENZO(G,H,I)PERYLENE	1300.00	6000.00	UG/KG	3
BENZO(K)FLUORANTHENE	1900.00	4900.00	UG/KG	3
CHRYSENE	1900.00	4600.00	UG/KG	2
DIBENZO(A,H)ANTHRACENE	560.00	2100.00	UG/KG	3
DIBENZOFURAN	620.00	1900.00	UG/KG	3
FLUORANTHENE	1900.00	1900.00	UG/KG	1
FLUORENE	1400.00	2500.00	UG/KG	3
INDENO(1,2,3-CD)PYRENE	1400.00	5700.00	UG/KG	3
NAPHTHALENE	2700.00	19000.00	UG/KG	2
PHENANTHRENE	1900.00	1900.00	UG/KG	1
PYRENE	1900.00	6300.00	UG/KG	2
TOTAL XYLENES	320.00	320.00	UG/KG	1

Sanitary Landfill

Radiochemistry

Compound	Minimum Activity Concentration	Maximum Activity Concentration	Unit Of Measure	No. Of Measurements
CS-137	.20	.30	PCI/G	6
NP-237	.10	.30	PCI/G	6
PU-238	.10	.10	PCI/G	6
PU-239/240	.10	.10	PCI/G	6
RA-226	.50	1.00	PCI/G	6
RU-106	1.00	2.00	PCI/G	6
SR-90	.30	.70	PCI/G	6
TC-99	.40		PCI/G	6
TH-228	.10	.10	PCI/G	6
TH-230	.10	.20	PCI/G	6
TH-232	.10	.10	PCI/G	6
U-234	4.90	28.00	PCI/G	6
U-235	.40	1.40	PCI/G	6
U-238	12.00	35.00	PCI/G	6

Appendix B

APPENDIX B

CHEMICAL ANALYSIS OF COMPOSITE SAMPLES OF WASTE PIT BORINGS

Table B-1

Pit One Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
01-01	FMP-PS-01-001	8704-180-0020	ALUMINUM, TOTAL	3462.90	MG/KG
			BARIUM, TOTAL	365.48	MG/KG
			CALCIUM, TOTAL	6243.24	MG/KG
			CHROMIUM, TOTAL	6.35	MG/KG
			COPPER, TOTAL	20.09	MG/KG
			IRON, TOTAL	1832.56	MG/KG
			LEAD, TOTAL	15.60	MG/KG
			MAGNESIUM, TOTAL	26457.90	MG/KG
			MANGANESE, TOTAL	1473.23	MG/KG
			MERCURY, TOTAL	.26	MG/KG
			NICKEL, TOTAL	9.22	MG/KG
			POTASSIUM, TOTAL	2051.00	MG/KG
			SILVER, TOTAL	2.25	MG/KG
			SODIUM, TOTAL	1374.17	MG/KG
			VANADIUM, TOTAL	13.74	MG/KG
01-02	FMP-PS-01-032	8704-180-0080	ALUMINUM, TOTAL	6262.50	MG/KG
			BARIUM, TOTAL	116.48	MG/KG
			CADMIUM, TOTAL	1.46	MG/KG
			CALCIUM, TOTAL	192497.97	MG/KG
			CHROMIUM, TOTAL	11.47	MG/KG
			COPPER, TOTAL	21.24	MG/KG
			IRON, TOTAL	4038.33	MG/KG
			LEAD, TOTAL	4.98	MG/KG
			MAGNESIUM, TOTAL	26862.00	MG/KG
			MANGANESE, TOTAL	144.81	MG/KG
			NICKEL, TOTAL	13.18	MG/KG
			POTASSIUM, TOTAL	2564.10	MG/KG
			SILVER, TOTAL	5.37	MG/KG
			SODIUM, TOTAL	3638.58	MG/KG
			VANADIUM, TOTAL	17.33	MG/KG
		8704-180-0140	BARIUM, EP LEACHATE	2001.00	UG/L
01-03	FMP-PS-01-047	8704-180-0090	ALUMINUM, TOTAL	20223.31	MG/KG
			ARSENIC, TOTAL	15.20	MG/KG
			BARIUM, TOTAL	279.10	MG/KG
			BERYLLIUM, TOTAL	2.20	MG/KG
			CADMIUM, TOTAL	4.96	MG/KG
			CALCIUM, TOTAL	94367.72	MG/KG

Table B-1

Pit One Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
01-03	FMP-PS-01-047	8704-180-0090	CHROMIUM, TOTAL	46.33	MG/KG
			COBALT, TOTAL	27.85	MG/KG
			COPPER, TOTAL	160.79	MG/KG
			IRON, TOTAL	19687.98	MG/KG
			LEAD, TOTAL	89.92	MG/KG
			MAGNESIUM, TOTAL	36957.20	MG/KG
			MANGANESE, TOTAL	1609.29	MG/KG
			MERCURY, TOTAL	.36	MG/KG
			NICKEL, TOTAL	64.53	MG/KG
			POTASSIUM, TOTAL	165.48	MG/KG
			SILVER, TOTAL	33.09	MG/KG
			SODIUM, TOTAL	386.12	MG/KG
			VANADIUM, TOTAL	66.74	MG/KG
			ZINC, TOTAL	57.91	MG/KG
		8704-180-0150	BARIUM, EP LEACHATE	1249.00	UG/L
01-04	FMP-PS-01-058	8704-203-0060	ALUMINUM, TOTAL	1702.92	MG/KG
			BARIUM, TOTAL	355.14	MG/KG
			CALCIUM, TOTAL	4755.83	MG/KG
			COPPER, TOTAL	20.48	MG/KG
			IRON, TOTAL	2047.94	MG/KG
			LEAD, TOTAL	17.19	MG/KG
			MAGNESIUM, TOTAL	7613.78	MG/KG
			MANGANESE, TOTAL	2914.70	MG/KG
			POTASSIUM, TOTAL	345.52	MG/KG
			ZINC, TOTAL	10.11	MG/KG
		8704-203-0110	BARIUM, EP LEACHATE	3743.00	UG/L
01-05	FMP-PS-01-030	8704-180-0040	ALUMINUM, TOTAL	16649.09	MG/KG
			ARSENIC, TOTAL	14.46	MG/KG
			BARIUM, TOTAL	159.32	MG/KG
			CADMIUM, TOTAL	2.85	MG/KG
			CALCIUM, TOTAL	32347.93	MG/KG
			CHROMIUM, TOTAL	25.20	MG/KG
			COPPER, TOTAL	29.96	MG/KG
			IRON, TOTAL	12200.56	MG/KG
			LEAD, TOTAL	32.52	MG/KG
			MAGNESIUM, TOTAL	28773.80	MG/KG

Table B-1

Pit One Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
01-05	FMP-PS-01-030	8704-180-0040	MANGANESE, TOTAL	667.74	MG/KG
			NICKEL, TOTAL	33.76	MG/KG
			POTASSIUM, TOTAL	261.58	MG/KG
			SODIUM, TOTAL	689.62	MG/KG
			VANADIUM, TOTAL	49.70	MG/KG
			ZINC, TOTAL	32.10	MG/KG
		8704-180-0130	BARIUM, EP LEACHATE	1018.00	UG/L
			LEAD, EP LEACHATE	660.00	UG/L

Table B-2

Pit One Organic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
01-01	FMP-PS-01-001	8704-180-0020	TETRACHLOROETHENE	75.00	UG/KG	J
			2-METHYLNAPHTHALENE	220.00	UG/KG	J
			NAPHTHALENE	54.00	UG/KG	J
			TOLUENE	47.00	UG/KG	J*
			BENZO(A)ANTHRACENE	84.00	UG/KG	J
			PYRENE	240.00	UG/KG	J
			METHYLENE CHLORIDE	140.00	UG/KG	J*
			BIS(2-ETHYLHEXYL)PHTHALATE	1700.00	UG/KG	*
			CHRYSENE	510.00	UG/KG	
			PHENANTHRENE	2300.00	UG/KG	
			BENZO(B)FLUORANTHENE	300.00	UG/KG	J
			3,3'-DICHLOROBENZIDINE(3)	130.00	UG/KG	J
			FLUORANTHENE	110.00	UG/KG	J
			2-BUTANONE	1900.00	UG/KG	*
			ACETONE	250.00	UG/KG	J*
			CHLOROFORM	150.00	UG/KG	J
			AROCLOR-1254	9700.00	UG/KG	
01-02	FMP-PS-01-032	8704-180-0080	2-BUTANONE	2200.00	UG/KG	*
			FLUORANTHENE	140.00	UG/KG	J
			AROCLOR-1260	7000.00	UG/KG	
			ACETONE	340.00	UG/KG	J*
			CHRYSENE	64.00	UG/KG	J
			DI-N-BUTYL PHTHALATE	92.00	UG/KG	J*
			METHYLENE CHLORIDE	150.00	UG/KG	J*
			PYRENE	84.00	UG/KG	J
			DI-N-OCTYL PHTHALATE	210.00	UG/KG	J*
			PHENANTHRENE	97.00	UG/KG	J
			BENZO(B)FLUORANTHENE	55.00	UG/KG	J
			AROCLOR-1254	10000.00	UG/KG	
01-03	FMP-PS-01-047	8704-180-0090	DI-N-BUTYL PHTHALATE	88.00	UG/KG	J*
			DI-N-OCTYL PHTHALATE	830.00	UG/KG	*
			ACETONE	320.00	UG/KG	J*
			ETHYLBENZENE	40.00	UG/KG	J
			BENZO(A)ANTHRACENE	180.00	UG/KG	J
			2-BUTANONE	3800.00	UG/KG	*
			AROCLOR-1254	820.00	UG/KG	J
			ANTHRACENE	74.00	UG/KG	J

J = Concentration is below quantification level; * = Common laboratory contaminant

Table B-2

Pit One Organic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
01-03	FMP-PS-01-047	8704-180-0090	TOLUENE	40.00	UG/KG	J*
			METHYLENE CHLORIDE	180.00	UG/KG	J*
			BENZO(K)FLUORANTHENE	140.00	UG/KG	J
			CHRYSENE	250.00	UG/KG	J
			FLUORANTHENE	430.00	UG/KG	J
			PHENANTHRENE	290.00	UG/KG	J
			BENZO(B)FLUORANTHENE	270.00	UG/KG	J
			PYRENE	360.00	UG/KG	J
			BENZO(A)PYRENE	140.00	UG/KG	J
01-04	FMP-PS-01-058	8704-203-0060	TOLUENE	96.00	UG/KG	J*
			4,4-DDT	1600.00	UG/KG	
			ACETONE	58.00	UG/KG	J*
			DI-N-BUTYL PHTHALATE	68.00	UG/KG	J*
			CHLOROFORM	210.00	UG/KG	
			DI-N-OCTYL PHTHALATE	150.00	UG/KG	J*
			AROCLOR-1254	720.00	UG/KG	
			CHRYSENE	170.00	UG/KG	J
			AROCLOR-1248	3500.00	UG/KG	
			BIS(2-ETHYLHEXYL)PHTHALATE	330.00	UG/KG	J*
			BENZO(B)FLUORANTHENE	94.00	UG/KG	J
			PHENANTHRENE	770.00	UG/KG	
			PYRENE	76.00	UG/KG	J
			2-BUTANONE	2400.00	UG/KG	*
			FLUORANTHENE	380.00	UG/KG	J
01-05	FMP-PS-01-030	8704-180-0040	CHLOROFORM	67.00	UG/KG	J
			DI-N-BUTYL PHTHALATE	85.00	UG/KG	J*
			ACETONE	210.00	UG/KG	J*
			AROCLOR-1254	1700.00	UG/KG	
			2-BUTANONE	2100.00	UG/KG	*
			FLUORANTHENE	140.00	UG/KG	J
			1,1,1-TRICHLOROETHANE	120.00	UG/KG	J
			DI-N-OCTYL PHTHALATE	250.00	UG/KG	J*
			METHYLENE CHLORIDE	140.00	UG/KG	J*
			PYRENE	72.00	UG/KG	J
			ETHYLBENZENE	55.00	UG/KG	J
			PHENANTHRENE	120.00	UG/KG	J

J = Concentration is below quantification level; * = Common laboratory contaminant

Table B-2

Pit One Organic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier

J = Concentration is below quantification level; * = Common laboratory contaminant

Table B-3

Pit Two Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
02-01	FMP-PS-02-007	8704-203-0070	ALUMINUM, TOTAL	7242.30	MG/KG
			ARSENIC, TOTAL	10.06	MG/KG
			BARIUM, TOTAL	208.49	MG/KG
			BERYLLIUM, TOTAL	1.87	MG/KG
			CADMIUM, TOTAL	3.04	MG/KG
			CALCIUM, TOTAL	34414.38	MG/KG
			CHROMIUM, TOTAL	17.08	MG/KG
			COBALT, TOTAL	38.37	MG/KG
			COPPER, TOTAL	52.41	MG/KG
			IRON, TOTAL	13265.46	MG/KG
			LEAD, TOTAL	25.47	MG/KG
			MAGNESIUM, TOTAL	8884.98	MG/KG
			MANGANESE, TOTAL	528.84	MG/KG
			MERCURY, TOTAL	.22	MG/KG
			NICKEL, TOTAL	64.35	MG/KG
			POTASSIUM, TOTAL	795.60	MG/KG
			SELENIUM, TOTAL	1.59	MG/KG
			SILVER, TOTAL	23.16	MG/KG
			SODIUM, TOTAL	819.00	MG/KG
			VANADIUM, TOTAL	49.14	MG/KG
			ZINC, TOTAL	53.58	MG/KG
		8704-203-0120	BARIUM, EP LEACHATE	4221.00	UG/L
02-03	FMP-PS-02-017	8704-203-0080	ALUMINUM, TOTAL	14195.55	MG/KG
			ARSENIC, TOTAL	3.98	MG/KG
			BARIUM, TOTAL	96.70	MG/KG
			CADMIUM, TOTAL	9.59	MG/KG
			CALCIUM, TOTAL	65445.47	MG/KG
			CHROMIUM, TOTAL	25.25	MG/KG
			COBALT, TOTAL	13.63	MG/KG
			COPPER, TOTAL	38.38	MG/KG
			IRON, TOTAL	21366.55	MG/KG
			LEAD, TOTAL	29.00	MG/KG
			MAGNESIUM, TOTAL	26343.32	MG/KG
			MANGANESE, TOTAL	916.57	MG/KG
			NICKEL, TOTAL	35.60	MG/KG
			POTASSIUM, TOTAL	1515.00	MG/KG
			SILVER, TOTAL	11.11	MG/KG
			SODIUM, TOTAL	479.75	MG/KG
			VANADIUM, TOTAL	38.12	MG/KG

Table B-3

Pit Two Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
02-03	FMP-PS-02-017	8704-203-0080	ZINC, TOTAL	3247.15	MG/KG
		8704-203-0130	BARIUM, EP LEACHATE	9458.00	UG/L
02-04	FMP-PS-02-026	8704-236-0010	ALUMINUM, TOTAL	21920.70	MG/KG
			ARSENIC, TOTAL	3.74	MG/KG
			BARIUM, TOTAL	115.16	MG/KG
			BERYLLIUM, TOTAL	8.92	MG/KG
			CADMIUM, TOTAL	5.75	MG/KG
			CALCIUM, TOTAL	80154.23	MG/KG
			CHROMIUM, TOTAL	91.26	MG/KG
			COBALT, TOTAL	450.56	MG/KG
			COPPER, TOTAL	329.06	MG/KG
			IRON, TOTAL	22326.64	MG/KG
			LEAD, TOTAL	190.29	MG/KG
			MAGNESIUM, TOTAL	26676.81	MG/KG
			MANGANESE, TOTAL	794.60	MG/KG
			MERCURY, TOTAL	.70	MG/KG
			NICKEL, TOTAL	608.90	MG/KG
			POTASSIUM, TOTAL	4318.50	MG/KG
			SELENIUM, TOTAL	10.19	MG/KG
			SODIUM, TOTAL	2303.20	MG/KG
			VANADIUM, TOTAL	105.94	MG/KG
			ZINC, TOTAL	138.47	MG/KG
02-05	FMP-PS-02-038	8704-236-0020	ALUMINUM, TOTAL	22421.77	MG/KG
			ARSENIC, TOTAL	2.75	MG/KG
			BARIUM, TOTAL	130.58	MG/KG
			BERYLLIUM, TOTAL	3.52	MG/KG
			CADMIUM, TOTAL	5.29	MG/KG
			CALCIUM, TOTAL	35478.03	MG/KG
			CHROMIUM, TOTAL	39.32	MG/KG
			COBALT, TOTAL	57.47	MG/KG
			COPPER, TOTAL	53.94	MG/KG
			IRON, TOTAL	24037.73	MG/KG
			LEAD, TOTAL	89.66	MG/KG
			MAGNESIUM, TOTAL	14127.68	MG/KG

Table B-3

Pit Two Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
02-05	FMP-PS-02-038	8704-236-0020	MANGANESE, TOTAL	645.37	MG/KG
			MERCURY, TOTAL	.49	MG/KG
			NICKEL, TOTAL	94.28	MG/KG
			POTASSIUM, TOTAL	2899.15	MG/KG
			SELENIUM, TOTAL	1.67	MG/KG
			SODIUM, TOTAL	1058.82	MG/KG
			VANADIUM, TOTAL	46.38	MG/KG
			ZINC, TOTAL	92.01	MG/KG
		8704-236-0070	MERCURY, EP LEACHATE	.27	UG/L

Table B-4

Pit Two Organic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
02-01	FMP-PS-02-007	8704-203-0070	BENZO(A)PYRENE	110.00	UG/KG	J
			BENZO(K)FLUORANTHENE	180.00	UG/KG	J
			2-BUTANONE	2600.00	UG/KG	*
			ANTHRACENE	58.00	UG/KG	J
			PYRENE	420.00	UG/KG	J
			AROCLOR-1260	1800.00	UG/KG	
			BENZO(B)FLUORANTHENE	180.00	UG/KG	J
			BIS(2-ETHYLHEXYL)PHTHALATE	360.00	UG/KG	J*
			DI-N-BUTYL PHTHALATE	130.00	UG/KG	J*
			CHRYSENE	230.00	UG/KG	J
			DI-N-OCTYL PHTHALATE	96.00	UG/KG	J*
			1,1,1-TRICHLOROETHANE	150.00	UG/KG	J
			BENZO(A)ANTHRACENE	210.00	UG/KG	J
			PHENANTHRENE	400.00	UG/KG	J
			FLUORANTHENE	590.00	UG/KG	
			4,4-DDT	1400.00	UG/KG	
02-03	FMP-PS-02-017	8704-203-0080	DI-N-BUTYL PHTHALATE	380.00	UG/KG	J*
			ANTHRACENE	310.00	UG/KG	J
			AROCLOR-1260	740.00	UG/KG	
			2-BUTANONE	2700.00	UG/KG	*
			BENZO(A)ANTHRACENE	860.00	UG/KG	
			4,4-DDT	580.00	UG/KG	
			FLUORENE	150.00	UG/KG	J
			INDENO(1,2,3-CD)PYRENE	340.00	UG/KG	J
			BENZO(K)FLUORANTHENE	600.00	UG/KG	
			PYRENE	1600.00	UG/KG	
			ETHYLBENZENE	48.00	UG/KG	J
			PHENANTHRENE	1700.00	UG/KG	
			CHRYSENE	920.00	UG/KG	
			VINYL CHLORIDE	670.00	UG/KG	
			BENZO(A)PYRENE	700.00	UG/KG	
			NAPHTHALENE	190.00	UG/KG	J
			BENZO(G,H,I)PERYLENE	290.00	UG/KG	J
			ACENAPHTHENE	80.00	UG/KG	J
			FLUORANTHENE	2300.00	UG/KG	
			DIBENZOFURAN	78.00	UG/KG	J
			BENZO(B)FLUORANTHENE	760.00	UG/KG	
			DI-N-OCTYL PHTHALATE	240.00	UG/KG	J*

J = Concentration is below quantification level; * = Common laboratory contaminant

Table B-4

Pit Two Organic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
02-04	FMP-PS-02-026	8704-236-0010	ACETONE	230.00	UG/KG	J*
			METHYLENE CHLORIDE	200.00	UG/KG	J*
			PYRENE	88.00	UG/KG	J
			PHENANTHRENE	98.00	UG/KG	J
			FLUORANTHENE	160.00	UG/KG	J
			BENZO(B)FLUORANTHENE	110.00	UG/KG	J
			DI-N-BUTYL PHTHALATE	96.00	UG/KG	J*
			AROCLOR-1248	321.00	UG/KG	
			AROCLOR-1254	323.00	UG/KG	
			DI-N-OCTYL PHTHALATE	220.00	UG/KG	J*
			CHRYSENE	74.00	UG/KG	J
			BENZO(A)ANTHRACENE	55.00	UG/KG	J
02-05	FMP-PS-02-038	8704-236-0020	4-METHYLPHENOL	350.00	UG/KG	J
			PHENOL	330.00	UG/KG	J
			TOTAL XYLENES	260.00	UG/KG	J
			2,4-DIMETHYLPHENOL	150.00	UG/KG	J
			ACETONE	540.00	UG/KG	J*
			2-METHYLNAPHTHALENE	7000.00	UG/KG	
			METHYLENE CHLORIDE	170.00	UG/KG	J*
			DI-N-OCTYL PHTHALATE	570.00	UG/KG	J*
			NAPHTHALENE	16000.00	UG/KG	
		8704-236-0020DIL	ANTHRACENE	120000.00	UG/KG	
			INDENO(1,2,3-CD)PYRENE	46000.00	UG/KG	
			BENZO(K)FLUORANTHENE	75000.00	UG/KG	
			BENZO(G,H,I)PERYLENE	42000.00	UG/KG	
			DIBENZO(A,H)ANTHRACENE	16000.00	UG/KG	J
			DIBENZOFURAN	36000.00	UG/KG	
			BENZO(A)PYRENE	140000.00	UG/KG	
			CHRYSENE	180000.00	UG/KG	
			ACENAPHTHENE	50000.00	UG/KG	J
			BENZO(A)PYRENE	120000.00	UG/KG	
			2-METHYLNAPHTHALENE	8000.00	UG/KG	J
			BENZO(G,H,I)PERYLENE	52000.00	UG/KG	J
			PHENANTHRENE	370000.00	UG/KG	
			BENZO(A)ANTHRACENE	180000.00	UG/KG	
			INDENO(1,2,3-CD)PYRENE	52000.00	UG/KG	J

J = Concentration is below quantification level; * = Common laboratory contaminant

Table B-4

Pit Two Organic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
02-05	FMP-PS-02-038	8704-236-0020DIL	FLUORENE	62000.00	UG/KG	
			ACENAPHTHENE	43000.00	UG/KG	
			FLUORANTHENE	460000.00	UG/KG	
			PYRENE	310000.00	UG/KG	
			BENZO(A)ANTHRACENE	130000.00	UG/KG	
			BENZO(B)FLUORANTHENE	110000.00	UG/KG	
			4-CHLOROPHENYL-PHENYLETHER	62000.00	UG/KG	
			BENZO(K)FLUORANTHENE	120000.00	UG/KG	

J = Concentration is below quantification level; * = Common laboratory contaminant

Table B-5

Pit Three Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
03-02	FMP-PS-03-089	8704-145-0060	ALUMINUM, TOTAL	15024.77	MG/KG
			ARSENIC, TOTAL	15.41	MG/KG
			BARIUM, TOTAL	251.19	MG/KG
			CADMIUM, TOTAL	2.89	MG/KG
			CALCIUM, TOTAL	53183.03	MG/KG
			CHROMIUM, TOTAL	38.49	MG/KG
			COPPER, TOTAL	222.54	MG/KG
			IRON, TOTAL	10730.37	MG/KG
			LEAD, TOTAL	55.47	MG/KG
			MAGNESIUM, TOTAL	27782.40	MG/KG
			MANGANESE, TOTAL	539.44	MG/KG
			MERCURY, TOTAL	.45	UG/L
			NICKEL, TOTAL	40.51	MG/KG
			POTASSIUM, TOTAL	2894.00	MG/KG
			SODIUM, TOTAL	2199.44	MG/KG
			VANADIUM, TOTAL	50.06	MG/KG
			ZINC, TOTAL	51.80	MG/KG
03-03	FMP-PS-03-008	8704-121-0010	ALUMINUM, TOTAL	64100.08	MG/KG
			ARSENIC, TOTAL	1566.04	MG/KG
			BARIUM, TOTAL	8654.11	MG/KG
			BERYLLIUM, TOTAL	13.15	MG/KG
			CADMIUM, TOTAL	12.65	MG/KG
			CALCIUM, TOTAL	127425.98	MG/KG
			CHROMIUM, TOTAL	134.09	MG/KG
			COPPER, TOTAL	2332.66	MG/KG
			IRON, TOTAL	26919.20	MG/KG
			LEAD, TOTAL	613.21	MG/KG
			MAGNESIUM, TOTAL	35761.04	MG/KG
			MANGANESE, TOTAL	2863.96	MG/KG
			MERCURY, TOTAL	1.06	MG/KG
			NICKEL, TOTAL	503.97	MG/KG
			POTASSIUM, TOTAL	1315.60	MG/KG
			SELENIUM, TOTAL	59.90	MG/KG
			SILVER, TOTAL	6.57	MG/KG
			SODIUM, TOTAL	3693.80	MG/KG
			THALLIUM, TOTAL	5.89	MG/KG
			VANADIUM, TOTAL	4557.03	MG/KG
			ZINC, TOTAL	311.19	MG/KG
		8704-121-0040	ARSENIC, EP LEACHATE	514.00	UG/L

Table B-5

Pit Three Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
03-03	FMP-PS-03-008	8704-121-0040	MERCURY, EP LEACHATE	.25	UG/L
03-04	FMP-PS-03-028	8704-121-0030	ALUMINUM, TOTAL	20975.81	MG/KG
			ARSENIC, TOTAL	3049.06	MG/KG
			BARIUM, TOTAL	14354.90	MG/KG
			BERYLLIUM, TOTAL	24.01	MG/KG
			CADMIUM, TOTAL	6.93	MG/KG
			CALCIUM, TOTAL	120652.29	MG/KG
			CHROMIUM, TOTAL	87.51	MG/KG
			COPPER, TOTAL	1728.86	MG/KG
			IRON, TOTAL	24310.81	MG/KG
			LEAD, TOTAL	250.60	MG/KG
			MAGNESIUM, TOTAL	25156.03	MG/KG
			MANGANESE, TOTAL	1179.25	MG/KG
			MERCURY, TOTAL	.99	MG/KG
			NICKEL, TOTAL	116.85	MG/KG
			POTASSIUM, TOTAL	1173.92	MG/KG
			SELENIUM, TOTAL	89.80	MG/KG
			SILVER, TOTAL	8.00	MG/KG
			SODIUM, TOTAL	4002.00	MG/KG
			THALLIUM, TOTAL	12.21	MG/KG
			VANADIUM, TOTAL	9695.51	MG/KG
			ZINC, TOTAL	113.65	MG/KG
		8704-121-0050	ARSENIC, EP LEACHATE	3116.00	UG/L
			SELENIUM, EP LEACHATE	257.00	UG/L
03-05	FMP-PS-03-051	8704-145-0010	ALUMINUM, TOTAL	18872.71	MG/KG
			ARSENIC, TOTAL	22.40	MG/KG
			BARIUM, TOTAL	473.68	MG/KG
			BERYLLIUM, TOTAL	6.68	MG/KG
			CADMIUM, TOTAL	8.11	MG/KG
			CALCIUM, TOTAL	178241.20	MG/KG
			CHROMIUM, TOTAL	151.84	MG/KG
			COPPER, TOTAL	1952.97	MG/KG
			IRON, TOTAL	15462.88	MG/KG
			LEAD, TOTAL	340.15	MG/KG
			MAGNESIUM, TOTAL	51570.00	MG/KG
			MANGANESE, TOTAL	10570.89	MG/KG
			MERCURY, TOTAL	4.01	MG/KG

Table B-5

Pit Three Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
03-05	FMP-PS-03-051	8704-145-0010	NICKEL, TOTAL	210.57	MG/KG
			POTASSIUM, TOTAL	2865.00	MG/KG
			SILVER, TOTAL	8.11	MG/KG
			SODIUM, TOTAL	7640.00	MG/KG
			VANADIUM, TOTAL	67.32	MG/KG
			ZINC, TOTAL	209.14	MG/KG
		8704-145-0070	MERCURY, EP LEACHATE	7.23	UG/L
03-06	FMP-PS-03-072	8704-145-0020	ALUMINUM, TOTAL	15029.31	MG/KG
			ARSENIC, TOTAL	434.34	MG/KG
			BARIUM, TOTAL	2186.96	MG/KG
			BERYLLIUM, TOTAL	5.47	MG/KG
			CADMIUM, TOTAL	2.88	MG/KG
			CALCIUM, TOTAL	59267.93	MG/KG
			CHROMIUM, TOTAL	28.23	MG/KG
			COPPER, TOTAL	172.57	MG/KG
			IRON, TOTAL	15210.81	MG/KG
			LEAD, TOTAL	51.68	MG/KG
			MAGNESIUM, TOTAL	25640.90	MG/KG
			MANGANESE, TOTAL	517.71	MG/KG
			NICKEL, TOTAL	31.97	MG/KG
			POTASSIUM, TOTAL	2304.80	MG/KG
			SELENIUM, TOTAL	3.05	MG/KG
			SODIUM, TOTAL	1526.93	MG/KG
			VANADIUM, TOTAL	1404.77	MG/KG
			ZINC, TOTAL	49.26	MG/KG
		8704-145-0080	ARSENIC, EP LEACHATE	611.00	UG/L
03-07	FMP-PS-03-109	8704-180-0010	ALUMINUM, TOTAL	10366.00	MG/KG
			ARSENIC, TOTAL	1225.28	MG/KG
			BARIUM, TOTAL	2072.18	MG/KG
			BERYLLIUM, TOTAL	8.10	MG/KG
			CADMIUM, TOTAL	2.53	MG/KG
			CALCIUM, TOTAL	66920.76	MG/KG
			CHROMIUM, TOTAL	20.00	MG/KG
			COPPER, TOTAL	79.50	MG/KG
			IRON, TOTAL	15490.52	MG/KG
			LEAD, TOTAL	79.04	MG/KG

Table B-5

Pit Three Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
03-07	FMP-PS-03-109	8704-180-0010	MAGNESIUM, TOTAL	25320.00	MG/KG
			MANGANESE, TOTAL	600.59	MG/KG
			NICKEL, TOTAL	28.61	MG/KG
			POTASSIUM, TOTAL	810.24	MG/KG
			SILVER, TOTAL	3.54	MG/KG
			SODIUM, TOTAL	1291.32	MG/KG
			VANADIUM, TOTAL	2077.25	MG/KG
			ZINC, TOTAL	44.56	MG/KG
		8704-180-0100	ARSENIC, EP LEACHATE	2290.00	UG/L

Table B-6

Pit Three Organic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
03-02	FMP-PS-03-089	8704-145-0060	AROCLOR-1254	82.00	UG/KG	J
			BIS(2-ETHYLHEXYL)PHTHALATE	660.00	UG/KG	*
			DI-N-BUTYL PHTHALATE	84.00	UG/KG	J*
			ACETONE	91.00	UG/KG	J*
03-03	FMP-PS-03-008	8704-121-0010	AROCLOR-1254	140.00	UG/KG	J
			PENTACHLOROPHENOL(2)	1300.00	UG/KG	J
			BIS(2-ETHYLHEXYL)PHTHALATE	250.00	UG/KG	J*
			ACETONE	150.00	UG/KG	J*
			N-NITROSODIPHENYLAMINE(1)	130.00	UG/KG	J
03-04	FMP-PS-03-028	8704-121-0030	BIS(2-ETHYLHEXYL)PHTHALATE	480.00	UG/KG	J*
			AROCLOR-1254	550.00	UG/KG	J
			PENTACHLOROPHENOL(2)	630.00	UG/KG	J
			ACETONE	130.00	UG/KG	J*
03-05	FMP-PS-03-051	8704-145-0010	ACETONE	98.00	UG/KG	J*
			DI-N-BUTYL PHTHALATE	84.00	UG/KG	J*
			BIS(2-ETHYLHEXYL)PHTHALATE	280.00	UG/KG	J*
			AROCLOR-1254	100.00	UG/KG	J
03-06	FMP-PS-03-072	8704-145-0020	ACETONE	210.00	UG/KG	J*
			AROCLOR-1254	74.00	UG/KG	J
			DI-N-BUTYL PHTHALATE	84.00	UG/KG	J*
			BIS(2-ETHYLHEXYL)PHTHALATE	110.00	UG/KG	J*
03-07	FMP-PS-03-109	8704-180-0010	ACETONE	390.00	UG/KG	J*
			BENZO(B)FLUORANTHENE	110.00	UG/KG	J
			BENZO(A)ANTHRACENE	60.00	UG/KG	J
			CHRYSENE	75.00	UG/KG	J
			2-BUTANONE	3600.00	UG/KG	*
			METHYLENE CHLORIDE	420.00	UG/KG	*
			PYRENE	190.00	UG/KG	J
			BIS(2-ETHYLHEXYL)PHTHALATE	1100.00	UG/KG	*
			PHENANTHRENE	120.00	UG/KG	J
			FLUORANTHENE	230.00	UG/KG	J

J = Concentration is below quantification level; * = Common laboratory contaminant

Table B-6

Pit Three Organic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
03-07	FMP-PS-03-109	8704-180-0010	AROCLOR-1254	140.00	UG/KG	J

J = Concentration is below quantification level; * = Common laboratory contaminant

Table B-7

Pit Four Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
04-01	FMP-PS-04-001	8704-236-0050	ALUMINUM, TOTAL	10120.84	MG/KG
			BARIUM, TOTAL	2064.55	MG/KG
			CADMIUM, TOTAL	1.92	MG/KG
			CALCIUM, TOTAL	49272.38	MG/KG
			CHROMIUM, TOTAL	17.30	MG/KG
			COPPER, TOTAL	43.51	MG/KG
			FLUORIDE	47812.36	MG/KG
			IRON, TOTAL	10447.78	MG/KG
			LEAD, TOTAL	45.33	MG/KG
			MAGNESIUM, TOTAL	11423.80	MG/KG
			MANGANESE, TOTAL	3596.38	MG/KG
			MERCURY, TOTAL	.37	MG/KG
			NICKEL, TOTAL	20.67	MG/KG
			POTASSIUM, TOTAL	1322.20	MG/KG
			SILVER, TOTAL	6.25	MG/KG
			SODIUM, TOTAL	408.68	MG/KG
			VANADIUM, TOTAL	24.04	MG/KG
			ZINC, TOTAL	35.09	MG/KG
04-02	FMP-PS-04-021	8704-254-0010	ALUMINUM, TOTAL	3645.60	MG/KG
			BARIUM, TOTAL	457.20	MG/KG
			CALCIUM, TOTAL	61252.80	MG/KG
			CHROMIUM, TOTAL	7.92	MG/KG
			COPPER, TOTAL	22.80	MG/KG
			FLUORIDE	124576.13	MG/KG
			IRON, TOTAL	3045.60	MG/KG
			LEAD, TOTAL	39.64	MG/KG
			MAGNESIUM, TOTAL	23656.80	MG/KG
			MANGANESE, TOTAL	1752.00	MG/KG
			PHENOL	.43	MG/KG
			POTASSIUM, TOTAL	1920.00	MG/KG
			SODIUM, TOTAL	456.00	MG/KG
			SULFIDE	.50	MG/KG
			ZINC, TOTAL	13.92	MG/KG
		8704-254-0250	BARIUM, EP LEACHATE	1023.00	UG/L

Table B-7

Pit Four Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
04-03	FMP-PS-04-038	8704-254-0030	ALUMINUM, TOTAL	10325.99	MG/KG
			BARIUM, TOTAL	444.03	MG/KG
			CADMIUM, TOTAL	2.03	MG/KG
			CALCIUM, TOTAL	52221.36	MG/KG
			CHROMIUM, TOTAL	16.05	MG/KG
			COPPER, TOTAL	33.90	MG/KG
			FLUORIDE	118242.78	MG/KG
			IRON, TOTAL	16127.52	MG/KG
			LEAD, TOTAL	23.55	MG/KG
			MAGNESIUM, TOTAL	15890.46	MG/KG
			MANGANESE, TOTAL	3303.50	MG/KG
			MERCURY, TOTAL	.18	MG/KG
			NICKEL, TOTAL	22.43	MG/KG
			PHENOL	.83	MG/KG
			POTASSIUM, TOTAL	892.15	MG/KG
			SILVER, TOTAL	3.82	MG/KG
			SODIUM, TOTAL	254.90	MG/KG
			VANADIUM, TOTAL	25.74	MG/KG
			ZINC, TOTAL	43.07	MG/KG
		8704-254-0270	MERCURY, EP LEACHATE	1.06	UG/L
04-04	FMP-PS-04-061	8705-342-0020	ALUMINUM, TOTAL	4259.04	MG/KG
			ARSENIC, TOTAL	4.63	MG/KG
			BARIUM, TOTAL	6668.76	MG/KG
			BERYLLIUM, TOTAL	13.30	MG/KG
			CADMIUM, TOTAL	28.72	MG/KG
			CALCIUM, TOTAL	14252.84	MG/KG
			CHROMIUM, TOTAL	93.63	MG/KG
			COBALT, TOTAL	84.06	MG/KG
			COPPER, TOTAL	187.73	MG/KG
			IRON, TOTAL	6103.69	MG/KG
			LEAD, TOTAL	62.51	MG/KG
			MAGNESIUM, TOTAL	24251.31	MG/KG
			MANGANESE, TOTAL	1947.39	MG/KG
			MERCURY, TOTAL	.63	MG/KG
			NICKEL, TOTAL	49.73	MG/KG
			SILVER, TOTAL	443.65	MG/KG
			SODIUM, TOTAL	1237.55	MG/KG
			VANADIUM, TOTAL	235.36	MG/KG
			ZINC, TOTAL	84.06	MG/KG

Table B-7

Pit Four Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
04-04	FMP-PS-04-061	8705-342-0090	ARSENIC, EP LEACHATE	582.00	UG/L
			BARIUM, EP LEACHATE	81470.00	UG/L
			CADMIUM, EP LEACHATE	141.00	UG/L
			LEAD, EP LEACHATE	753.00	UG/L
			SILVER, EP LEACHATE	2767.00	UG/L

Table B-8

Pit Four Organic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
04-01	FMP-PS-04-001	8704-236-0050	ETHYL PARATHION	150.00	UG/KG	
			NAPHTHALENE	110.00	UG/KG	J
			NAPHTHALENE	110.00	UG/KG	J
			INDENO(1,2,3-CD)PYRENE	180.00	UG/KG	J
			BENZO(G,H,I)PERYLENE	65.00	UG/KG	J
			BENZO(B)FLUORANTHENE	510.00	UG/KG	
			PYRENE	1400.00	UG/KG	
			FLUORANTHENE	2200.00	UG/KG	
			DIBENZO(A,H)ANTHRACENE	170.00	UG/KG	J
			FLUORENE	310.00	UG/KG	J
			BENZO(K)FLUORANTHENE	560.00	UG/KG	
			CHRYSENE	760.00	UG/KG	
			PHENANTHRENE	2100.00	UG/KG	
			DIBENZOFURAN	160.00	UG/KG	J
			BENZO(A)PYRENE	550.00	UG/KG	
			CHLOROFORM	85.00	UG/KG	J
			INDENO(1,2,3-CD)PYRENE	180.00	UG/KG	J
			ACENAPHTHENE	170.00	UG/KG	J
			AROCLOR-1254	1008.00	UG/KG	
			AROCLOR-1248	854.00	UG/KG	
			METHYLENE CHLORIDE	230.00	UG/KG	J*
			ACETONE	350.00	UG/KG	J*
			DI-N-OCTYL PHTHALATE	170.00	UG/KG	J*
			DIBENZO(A,H)ANTHRACENE	65.00	UG/KG	J
			BIS(2-ETHYLHEXYL)PHTHALATE	270.00	UG/KG	J*
			BENZO(G,H,I)PERYLENE	170.00	UG/KG	J
			METHYL PARATHION	800.00	UG/KG	
			PYRENE	1400.00	UG/KG	
			ANTHRACENE	510.00	UG/KG	
			BENZO(A)ANTHRACENE	750.00	UG/KG	
			CHRYSENE	760.00	UG/KG	
			FLUORANTHENE	2200.00	UG/KG	
			PHENANTHRENE	2100.00	UG/KG	
04-02	FMP-PS-04-021	8704-254-0010	BENZO(A)ANTHRACENE	390.00	UG/KG	J
			BENZO(A)PYRENE	320.00	UG/KG	J
			PHENANTHRENE	1000.00	UG/KG	
			BENZO(B)FLUORANTHENE	250.00	UG/KG	J
			NAPHTHALENE	62.00	UG/KG	J
			ETHYL PARATHION	860.00	UG/KG	

J = Concentration is below quantification level; * = Common laboratory contaminant

Table B-8

Pit Four Organic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
04-02	FMP-PS-04-021	8704-254-0010	BENZO(G,H,I)PERYLENE	130.00	UG/KG	J
			PYRENE	670.00	UG/KG	
			FLUORENE	160.00	UG/KG	J
			TETRACHLOROETHENE	530.00	UG/KG	
			INDENO(1,2,3-CD)PYRENE	150.00	UG/KG	J
			ACENAPHTHENE	87.00	UG/KG	J
			METHYL PARATHION	2100.00	UG/KG	
			ANTHRACENE	260.00	UG/KG	J
			MALATHION	670.00	UG/KG	
			DI-N-BUTYL PHTHALATE	490.00	UG/KG	*
			BENZO(K)FLUORANTHENE	330.00	UG/KG	J
			AROCLOR-1254	296.00	UG/KG	J
			CHLOROFORM	430.00	UG/KG	
			AROCLOR-1248	460.00	UG/KG	
			DIBENZOFURAN	98.00	UG/KG	J
			CHRYSENE	420.00	UG/KG	J
			FLUORANTHENE	1000.00	UG/KG	
04-03	FMP-PS-04-038	8704-254-0030	CHLOROFORM	1300.00	UG/KG	
			PHENANTHRENE	110.00	UG/KG	J
			CHRYSENE	70.00	UG/KG	J
			PYRENE	93.00	UG/KG	J
			AROCLOR-1242	1034.00	UG/KG	
			DI-N-BUTYL PHTHALATE	60.00	UG/KG	J*
			METHYL PARATHION	370.00	UG/KG	
			FLUORANTHENE	170.00	UG/KG	J
			ACETONE	520.00	UG/KG	J*
			TOLUENE	67.00	UG/KG	J*
			BIS(2-ETHYLHEXYL)PHTHALATE	140.00	UG/KG	J*
			ETHYL PARATHION	82.00	UG/KG	
			BENZO(A)ANTHRACENE	52.00	UG/KG	J
			AROCLOR-1254	523.00	UG/KG	J
04-04	FMP-PS-04-061	8705-342-0020	2-BUTANONE	100.00	UG/KG	J*
			AROCLOR-1242	99.00	UG/KG	
			CHLOROFORM	40.00	UG/KG	J
			TRICHLOROETHENE	300.00	UG/KG	
			TRANS-1,2-DICHLOROETHENE	60.00	UG/KG	J
			TOLUENE	60.00	UG/KG	J*

J = Concentration is below quantification level; * = Common laboratory contaminant

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Pit Four Organic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
04-04	FMP-PS-04-061	8705-342-0020	ACETONE	130.00	UG/KG	J*
			METHYLENE CHLORIDE	170.00	UG/KG	J*
			1,1,1-TRICHLOROETHANE	120.00	UG/KG	J
		8705-342-0020DIL	TETRACHLOROETHENE	30000.00	UG/KG	
			2-BUTANONE	7900.00	UG/KG	*

J = Concentration is below quantification level; * = Common laboratory contaminant

Table B-9

Pit Five Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
05-01	FMP-PS-05-077	8704-077-0010	ALUMINUM, TOTAL	6373.77	MG/KG
			ARSENIC, TOTAL	276.10	MG/KG
			BARIUM, TOTAL	36938.95	MG/KG
			BERYLLIUM, TOTAL	2.85	MG/KG
			CALCIUM, TOTAL	206144.40	MG/KG
			CHROMIUM, TOTAL	25.66	MG/KG
			COBALT, TOTAL	43.99	MG/KG
			COPPER, TOTAL	672.21	MG/KG
			IRON, TOTAL	10979.43	MG/KG
			LEAD, TOTAL	59.50	MG/KG
			MAGNESIUM, TOTAL	25201.76	MG/KG
			MANGANESE, TOTAL	346.29	MG/KG
			MERCURY, TOTAL	.39	MG/KG
			NICKEL, TOTAL	52.55	MG/KG
			POTASSIUM, TOTAL	611.10	MG/KG
			SELENIUM, TOTAL	3.60	MG/KG
			SODIUM, TOTAL	1425.90	MG/KG
			VANADIUM, TOTAL	791.98	MG/KG
			ZINC, TOTAL	116.92	MG/KG
05-02	FMP-PS-05-065	8703-057-0010	ALUMINUM, TOTAL	12346.44	MG/KG
			ARSENIC, TOTAL	682.24	MG/KG
			BARIUM, TOTAL	30431.44	MG/KG
			BERYLLIUM, TOTAL	8.18	MG/KG
			CALCIUM, TOTAL	167318.64	MG/KG
			CHROMIUM, TOTAL	223.29	MG/KG
			COBALT, TOTAL	37.95	MG/KG
			COPPER, TOTAL	2850.66	MG/KG
			IRON, TOTAL	14260.78	MG/KG
			LEAD, TOTAL	177.60	MG/KG
			MAGNESIUM, TOTAL	45491.61	MG/KG
			MANGANESE, TOTAL	806.82	MG/KG
			MERCURY, TOTAL	.67	MG/KG
			NICKEL, TOTAL	137.69	MG/KG
			POTASSIUM, TOTAL	1488.60	MG/KG
			SELENIUM, TOTAL	7.47	MG/KG
			SILVER, TOTAL	8.18	MG/KG
			SODIUM, TOTAL	5135.67	MG/KG
			VANADIUM, TOTAL	2271.60	MG/KG
			ZINC, TOTAL	172.67	MG/KG

Table B-9

Pit Five Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
05-02	FMP-PS-05-065	8703-057-0090	BARIUM, EP LEACHATE	3171.00	UG/L
05-03	FMP-PS-05-045	8703-030-0010	ALUMINUM, TOTAL	15400.00	MG/KG
			ARSENIC, TOTAL	179.00	MG/KG
			BARIUM, TOTAL	15800.00	MG/KG
			BERYLLIUM, TOTAL	6.20	MG/KG
			CALCIUM, TOTAL	116000.00	MG/KG
			CHROMIUM, TOTAL	172.00	MG/KG
			COPPER, TOTAL	3370.00	MG/KG
			IRON, TOTAL	14500.00	MG/KG
			LEAD, TOTAL	236.00	MG/KG
			MAGNESIUM, TOTAL	57100.00	MG/KG
			MANGANESE, TOTAL	4740.00	MG/KG
			MERCURY, TOTAL	1.20	MG/KG
			POTASSIUM, TOTAL	1300.00	MG/KG
			SODIUM, TOTAL	3900.00	MG/KG
			VANADIUM, TOTAL	1090.00	MG/KG
			ZINC, TOTAL	211.00	MG/KG
		8703-030-0030	BARIUM, EP LEACHATE	2260.00	UG/L
			MERCURY, EP LEACHATE	3.20	UG/L
05-04	FMP-PS-05-024	8703-997-0010	ALUMINUM, TOTAL	12500.00	MG/KG
			ANTIMONY, TOTAL	28.00	MG/KG
			ARSENIC, TOTAL	139.00	MG/KG
			BARIUM, TOTAL	16400.00	MG/KG
			BERYLLIUM,TOTAL	8.80	MG/KG
			CADMIUM,TOTAL	4.40	MG/KG
			CALCIUM, TOTAL	143000.00	MG/KG
			CHROMIUM, TOTAL	141.00	MG/KG
			COBALT, TOTAL	16.00	MG/KG
			COPPER, TOTAL	2950.00	MG/KG
			IRON, TOTAL	17900.00	MG/KG
			LEAD, TOTAL	156.00	MG/KG
			MAGNESIUM, TOTAL	63200.00	MG/KG
			MANGANESE, TOTAL	3140.00	MG/KG
			MERCURY, TOTAL	1.80	MG/KG
			NICKEL, TOTAL	202.00	MG/KG
			POTASSIUM, TOTAL	1190.00	MG/KG
			SELENIUM, TOTAL	2.80	MG/KG

Table B-9

Pit Five Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
05-04	FMP-PS-05-024	8703-997-0010	SILVER, TOTAL	9.40	MG/KG
			SODIUM, TOTAL	3950.00	MG/KG
			THALIUM, TOTAL	2.80	MG/KG
			VANADIUM,TOTAL	1660.00	MG/KG
			ZINC, TOTAL	212.00	MG/KG
05-05	FMP-PS-05-012	8703-984-0010	ALUMINUM, TOTAL	9170.00	MG/KG
			ARSENIC, TOTAL	2800.00	MG/KG
			BARIUM, TOTAL	18900.00	MG/KG
			BERYLLIUM, TOTAL	18.00	MG/KG
			CALCIUM, TOTAL	200000.00	MG/KG
			CHROMIUM, TOTAL	76.00	MG/KG
			COPPER, TOTAL	1870.00	MG/KG
			IRON, TOTAL	16400.00	MG/KG
			LEAD, TOTAL	168.00	MG/KG
			MAGNESIUM, TOTAL	52000.00	MG/KG
			MANGANESE, TOTAL	1060.00	MG/KG
			MERCURY, TOTAL	1.10	MG/KG
			POTASSIUM, TOTAL	1490.00	MG/KG
			SODIUM, TOTAL	9980.00	MG/KG
			VANADIUM, TOTAL	5380.00	MG/KG
			ZINC, TOTAL	158.00	MG/KG
		8703-984-0030	MERCURY, EP LEACHATE	1.90	UG/L
05-06	FMP-PS-05-001	8703-948-0040	ALUMINUM, TOTAL	7460.00	MG/KG
			ARSENIC, TOTAL	1690.00	MG/KG
			BARIUM, TOTAL	16800.00	MG/KG
			BERYLLIUM, TOTAL	11.00	MG/KG
			CADMIUM, TOTAL	17.00	MG/KG
			CALCIUM, TOTAL	206000.00	MG/KG
			CHROMIUM, TOTAL	81.00	MG/KG
			COPPER, TOTAL	1820.00	MG/KG
			IRON, TOTAL	14700.00	MG/KG
			LEAD, TOTAL	148.00	MG/KG
			MAGNESIUM, TOTAL	46100.00	MG/KG
			MANGANESE, TOTAL	822.00	MG/KG
			MERCURY, TOTAL	1.30	MG/KG
			POTASSIUM, TOTAL	1210.00	MG/KG
			SODIUM, TOTAL	8110.00	MG/KG

Table B-9

Pit Five Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
05-06	FMP-PS-05-001	8703-948-0040	VANADIUM, TOTAL	5000.00	MG/KG
			ZINC, TOTAL	180.00	MG/KG
		8703-948-0090	ARSENIC, EP LEACHATE	516.00	UG/L
			MERCURY, EP LEACHATE	6.20	UG/L

Table B-10

Pit Five Organic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
05-01	FMP-PS-05-077	8704-077-0010	AROCLOR-1254	750.00	UG/KG	
			DI-N-BUTYL PHTHALATE	250.00	UG/KG	J*
			METHYLENE CHLORIDE	350.00	UG/KG	*
			BIS(2-ETHYLHEXYL)PHTHALATE	500.00	UG/KG	J*
05-02	FMP-PS-05-065	8703-057-0010	PHENOL	200.00	UG/KG	J
			BIS(2-ETHYLHEXYL)PHTHALATE	210.00	UG/KG	*
			DI-N-BUTYL PHTHALATE	56.00	UG/KG	*
			METHYLENE CHLORIDE	410.00	UG/KG	J*
05-03	FMP-PS-05-045	8703-030-0010	AROCLOR-1254	330.00	UG/KG	J
			BIS(2-ETHYLHEXYL)PHTHALATE	430.00	UG/KG	J*
			METHYLENE CHLORIDE	200.00	UG/KG	J*
05-04	FMP-PS-05-024	8703-997-0010	BIS(2-ETHYLHEXYL)PHTHALATE	2300.00	UG/KG	*
			METHYLENE CHLORIDE	420.00	UG/KG	J*
05-05	FMP-PS-05-012	8703-984-0010	ACETONE	630.00	UG/KG	*
			UNKNOWN-C10 CYCLIC HYDROCARBON	240.00	UG/KG	J
			METHYLENE CHLORIDE	42.00	UG/KG	J*
			BIS(2-ETHYLHEXYL)PHTHALATE	84.00	UG/KG	*
			DI-N-BUTYL PHTHALATE	200.00	UG/KG	*
			AROCLOR-1248	330.00	UG/KG	J
05-06	FMP-PS-05-001	8703-948-0040	UNKNOWN HYDROCARBON	420.00	UG/KG	J
			METHYLENE CHLORIDE	47.00	UG/KG	J*
			ACETONE	470.00	UG/KG	*
			AROCLOR-1248	550.00	UG/KG	J

J = Concentration is below quantification level; * = Common laboratory contaminant

Table B-11

Pit Six Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
06-01	FMP-PS-06-030	5531-1-3	CHROMIUM, TOTAL	4.80	MG/KG
			COPPER, TOTAL	13.00	MG/KG
			LEAD, TOTAL	5.00	MG/KG
			MERCURY, TOTAL	.03	MG/KG
			NICKEL, TOTAL	8.00	MG/KG
			ZINC, TOTAL	4.80	MG/KG
06-02	FMP-PS-06-029	5531-1-2	CHROMIUM, TOTAL	13.00	MG/KG
			COPPER, TOTAL	74.00	MG/KG
			LEAD, TOTAL	15.00	MG/KG
			MERCURY, TOTAL	.04	MG/KG
			NICKEL, TOTAL	7.70	MG/KG
			ZINC, TOTAL	32.00	MG/KG
06-03	FMP-PS-06-011	5531-1-1	BERYLLIUM, TOTAL	2.00	MG/KG
			CADMIUM, TOTAL	.60	MG/KG
			CHROMIUM, TOTAL	28.00	MG/KG
			COPPER, TOTAL	140.00	MG/KG
			LEAD, TOTAL	40.00	MG/KG
			MERCURY, TOTAL	.07	MG/KG
			NICKEL, TOTAL	20.00	MG/KG
			ZINC, TOTAL	51.00	MG/KG
06-04	FMP-PS-06-001	8704-108-0020	ALUMINUM, TOTAL	4730.37	MG/KG
			ARSENIC, TOTAL	7.61	MG/KG
			BARIUM, TOTAL	95.22	MG/KG
			BERYLLIUM, TOTAL	5.73	MG/KG
			CADMIUM, TOTAL	5.73	MG/KG
			CALCIUM, TOTAL	22189.54	MG/KG
			CHROMIUM, TOTAL	29.74	MG/KG
			COBALT, TOTAL	26.09	MG/KG
			COPPER, TOTAL	222.02	MG/KG
			IRON, TOTAL	2749.88	MG/KG
			LEAD, TOTAL	59.62	MG/KG
			MAGNESIUM, TOTAL	32101.13	MG/KG
			MANGANESE, TOTAL	34.96	MG/KG
			NICKEL, TOTAL	51.39	MG/KG
			POTASSIUM, TOTAL	913.15	MG/KG
			SILVER, TOTAL	158.10	MG/KG

Table B-11

Pit Six Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
06-04	FMP-PS-06-001	8704-108-0020	SODIUM, TOTAL	600.07	MG/KG
			VANADIUM, TOTAL	100.18	MG/KG
			ZINC, TOTAL	47.74	MG/KG
		8704-108-0050	BARIUM, EP LEACHATE	1092.00	UG/L
			CADMIUM, EP LEACHATE	251.00	UG/L
			LEAD, EP LEACHATE	1894.00	UG/L
			SILVER, EP LEACHATE	2068.00	UG/L

Table B-12

Pit Six Organic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
06-01	FMP-PS-06-030	5531-1-16	ACETONE	1800.00	UG/KG	J*
			TOTAL XYLENES	750.00	UG/KG	J
06-02	FMP-PS-06-029	5531-1-13	2-BUTANONE	1200.00	UG/KG	J*
			TOTAL XYLENES	460.00	UG/KG	J
			ACETONE	760.00	UG/KG	J*
06-03	FMP-PS-06-011	5531-1-10	ACETONE	1400.00	UG/KG	J*
			2-BUTANONE	1400.00	UG/KG	J*
			METHYLENE CHLORIDE	700.00	UG/KG	J*
			TOLUENE	440.00	UG/KG	J*
			BIS(2-ETHYLHEXYL)PHTHALATE	910.00	UG/KG	J*
			TOTAL XYLENES	670.00	UG/KG	J
06-04	FMP-PS-06-001	8704-108-0020	AROCLOR-1254	81.00	UG/KG	J
			BIS(2-ETHYLHEXYL)PHTHALATE	410.00	UG/KG	J*
			TRICHLOROETHENE	170.00	UG/KG	J
			METHYLENE CHLORIDE	280.00	UG/KG	*
			2-BUTANONE	530.00	UG/KG	*
			1,1,2,2-TETRACHLOROETHANE	29000.00	UG/KG	
		8704-108-0020DIL	ACETONE	3200.00	UG/KG	J*

J = Concentration is below quantification level; * = Common laboratory contaminant

Table B-13

Burn Pit Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
07-01	FMP-PS-07-001	8704-286-0010	ALUMINUM, TOTAL	8458.71	MG/KG
			CALCIUM, TOTAL	116321.92	MG/KG
			CHROMIUM, TOTAL	9.06	MG/KG
			COPPER, TOTAL	12.25	MG/KG
			IRON, TOTAL	11214.32	MG/KG
			LEAD, TOTAL	6.68	MG/KG
			MAGNESIUM, TOTAL	57078.97	MG/KG
			MANGANESE, TOTAL	288.35	MG/KG
			POTASSIUM, TOTAL	959.40	MG/KG
			VANADIUM, TOTAL	19.98	MG/KG
			ZINC, TOTAL	34.37	MG/KG
		8704-286-0080	BARIUM, EP LEACHATE	4291.00	UG/L
07-02	FMP-PS-07-003	8704-286-0020	ALUMINUM, TOTAL	11935.61	MG/KG
			BARIUM, TOTAL	56.23	MG/KG
			CADMIUM, TOTAL	1.38	MG/KG
			CALCIUM, TOTAL	10114.49	MG/KG
			CHROMIUM, TOTAL	13.65	MG/KG
			COPPER, TOTAL	13.42	MG/KG
			IRON, TOTAL	14601.34	MG/KG
			LEAD, TOTAL	15.87	MG/KG
			MAGNESIUM, TOTAL	5169.47	MG/KG
			MANGANESE, TOTAL	228.39	MG/KG
			POTASSIUM, TOTAL	485.94	MG/KG
			VANADIUM, TOTAL	20.82	MG/KG
			ZINC, TOTAL	49.05	MG/KG
		8704-286-0090	BARIUM, EP LEACHATE	2504.00	UG/L
			MERCURY, EP LEACHATE	.26	UG/L
07-03	FMP-PS-07-026	8704-286-0030	ALUMINUM, TOTAL	7308.15	MG/KG
			BARIUM, TOTAL	105.54	MG/KG
			CADMIUM, TOTAL	1.33	MG/KG
			CALCIUM, TOTAL	62547.07	MG/KG
			CHROMIUM, TOTAL	14.22	MG/KG
			COBALT, TOTAL	22.22	MG/KG
			COPPER, TOTAL	34.44	MG/KG
			IRON, TOTAL	17444.92	MG/KG
			LEAD, TOTAL	33.00	MG/KG

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Table B-13

Burn Pit Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
07-03	FMP-PS-07-026	8704-286-0030	MAGNESIUM, TOTAL	19204.74	MG/KG
			MANGANESE, TOTAL	323.30	MG/KG
			MERCURY, TOTAL	.14	MG/KG
			NICKEL, TOTAL	13.10	MG/KG
			POTASSIUM, TOTAL	888.80	MG/KG
			SODIUM, TOTAL	355.52	MG/KG
			VANADIUM, TOTAL	20.66	MG/KG
			ZINC, TOTAL	65.10	MG/KG
		8704-286-0100	BARIUM, EP LEACHATE	2586.00	UG/L
07-04	FMP-PS-07-033	8705-342-0030	ALUMINUM, TOTAL	2911.89	MG/KG
			ARSENIC, TOTAL	4.38	MG/KG
			BARIUM, TOTAL	7097.22	MG/KG
			BERYLLIUM, TOTAL	16.38	MG/KG
			CADMIUM, TOTAL	34.84	MG/KG
			CALCIUM, TOTAL	12945.90	MG/KG
			CHROMIUM, TOTAL	87.52	MG/KG
			COBALT, TOTAL	104.11	MG/KG
			COPPER, TOTAL	166.54	MG/KG
			IRON, TOTAL	5209.88	MG/KG
			LEAD, TOTAL	52.58	MG/KG
			MAGNESIUM, TOTAL	18039.65	MG/KG
			MANGANESE, TOTAL	1717.27	MG/KG
			MERCURY, TOTAL	.24	MG/KG
			NICKEL, TOTAL	59.73	MG/KG
			POTASSIUM, TOTAL	1451.80	MG/KG
			SILVER, TOTAL	506.05	MG/KG
			SODIUM, TOTAL	1265.14	MG/KG
			VANADIUM, TOTAL	289.53	MG/KG
			ZINC, TOTAL	74.66	MG/KG
		8705-342-0100	BARIUM, EP LEACHATE	1252.00	UG/L
07-05	FMP-PS-07-048	8705-359-0050	ALUMINUM, TOTAL	4378.31	MG/KG
			ARSENIC, TOTAL	7.66	MG/KG
			BARIUM, TOTAL	210.81	MG/KG
			CALCIUM, TOTAL	14599.23	MG/KG
			CHROMIUM, TOTAL	8.30	MG/KG
			COPPER, TOTAL	29.70	MG/KG

Table B-13

Burn Pit Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
07-05	FMP-PS-07-048	8705-359-0050	IRON, TOTAL	3746.90	MG/KG
			LEAD, TOTAL	14.03	MG/KG
			MAGNESIUM, TOTAL	3859.06	MG/KG
			MANGANESE, TOTAL	121.08	MG/KG
			NICKEL, TOTAL	11.83	MG/KG
			POTASSIUM, TOTAL	602.33	MG/KG
			SODIUM, TOTAL	540.02	MG/KG
			VANADIUM, TOTAL	16.61	MG/KG
			ZINC, TOTAL	14.53	MG/KG
		8705-359-0110	BARIUM, EP LEACHATE	2031.00	UG/L
			MERCURY, EP LEACHATE	.21	UG/L
07-06	FMP-PS-07-051	8705-359-0070	ALUMINUM, TOTAL	5823.05	MG/KG
			ARSENIC, TOTAL	20.91	MG/KG
			BARIUM, TOTAL	164.80	MG/KG
			BERYLLIUM, TOTAL	1.45	MG/KG
			CALCIUM, TOTAL	20964.24	MG/KG
			CHROMIUM, TOTAL	7.87	MG/KG
			COPPER, TOTAL	18.24	MG/KG
			IRON, TOTAL	5238.47	MG/KG
			LEAD, TOTAL	7.68	MG/KG
			MAGNESIUM, TOTAL	8294.07	MG/KG
			MANGANESE, TOTAL	119.19	MG/KG
			MERCURY, TOTAL	.17	MG/KG
			NICKEL, TOTAL	8.91	MG/KG
			POTASSIUM, TOTAL	870.66	MG/KG
			SILVER, TOTAL	6.84	MG/KG
			SODIUM, TOTAL	1243.80	MG/KG
			VANADIUM, TOTAL	15.96	MG/KG
			ZINC, TOTAL	15.34	MG/KG
		8705-359-0130	BARIUM, EP LEACHATE	2078.00	UG/L

Table B-14

Burn Pit Organic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
07-01	FMP-PS-07-001	8704-286-0010	PHENANTHRENE	190.00	UG/KG	
			PENTACHLOROPHENOL(2)	1200.00	UG/KG	
			BENZO(B)FLUORANTHENE	69.00	UG/KG	
			FLUORANTHENE	180.00	UG/KG	
			AROCLOR-1242	290.00	UG/KG	
			PYRENE	130.00	UG/KG	
			AROCLOR-1016	290.00	UG/KG	
			DI-N-OCTYL PHTHALATE	72.00	UG/KG	*
			BIS(2-ETHYLHEXYL)PHTHALATE	340.00	UG/KG	*
			CHRYSENE	77.00	UG/KG	
			BENZO(A)ANTHRACENE	64.00	UG/KG	
			ACETONE	380.00	UG/KG	J*
07-02	FMP-PS-07-003	8704-286-0020	PENTACHLOROPHENOL(2)	2600.00	UG/KG	
			DI-N-BUTYL PHTHALATE	210.00	UG/KG	*
			TOLUENE	50.00	UG/KG	J*
			AROCLOR-1254	2700.00	UG/KG	*
			BIS(2-ETHTLHEXYL)PHTHALATE	1000.00	UG/KG	
			BENZO(B)FLUORANTHENE	98.00	UG/KG	
			PHENANTHRENE	190.00	UG/KG	
			CHRYSENE	73.00	UG/KG	
			FLUORANTHENE	210.00	UG/KG	
			BENZO(A)ANTHRACENE	61.00	UG/KG	
			PYRENE	140.00	UG/KG	
			DI-N-OCTYL PHTHALATE	130.00	UG/KG	*
			ACETONE	220.00	UG/KG	J*
07-03	FMP-PS-07-026	8704-286-0030	FLUORANTHENE	74.00	UG/KG	
			TOTAL XYLENES	890.00	UG/KG	
			ACETONE	190.00	UG/KG	J*
			ETHYLBENZENE	270.00	UG/KG	
			PHENANTHRENE	100.00	UG/KG	
			DI-N-OCTYL PHTHALATE	81.00	UG/KG	*
			PYRENE	79.00	UG/KG	
			TETRACHLOROETHENE	170.00	UG/KG	J
			AROCLOR-1248	200.00	UG/KG	*
			BIS(2-ETHYLHEXYL)PHTHALATE	420.00	UG/KG	
			2-METHYLNAPHTHALENE	50.00	UG/KG	

J = Concentration is below quantification level; * = Common laboratory contaminant

Table B-14

Burn Pit Organic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
07-04	FMP-PS-07-033	8705-342-0030	PHENANTHRENE	49.00	UG/KG	J
			METHYLENE CHLORIDE	140.00	UG/KG	J*
			ACETONE	170.00	UG/KG	J*
			DI-N-OCTYL PHTHALATE	67.00	UG/KG	J*
			TETRACHLOROETHENE	260.00	UG/KG	
			AROCLOR-1254	77.00	UG/KG	J
07-05	FMP-PS-07-048	8705-359-0050	FLUORANTHENE	220.00	UG/KG	
			BENZO(B)FLUORANTHENE	83.00	UG/KG	
			BIS(2-ETHYLHEXYL)PHTHALATE	2000.00	UG/KG	*
			DI-N-BUTYL PHTHALATE	54.00	UG/KG	J*
			CHRYSENE	83.00	UG/KG	J
			2-BUTANONE	70.00	UG/KG	J*
			PHENANTHRENE	110.00	UG/KG	J
			BENZO(A)ANTHRACENE	71.00	UG/KG	J
			AROCLOR-1254	1957.00	UG/KG	
			PYRENE	120.00	UG/KG	J
			PHENOL	140.00	UG/KG	J
			METHYLENE CHLORIDE	100.00	UG/KG	J*
			ACETONE	180.00	UG/KG	J*
07-06	FMP-PS-07-051	8705-359-0070	BENZO(B)FLUORANTHENE	170.00	UG/KG	
			FLUORANTHENE	420.00	UG/KG	J
			PHENANTHRENE	290.00	UG/KG	J
			PHENOL	650.00	UG/KG	
			INDENO(1,2,3-CD)PYRENE	78.00	UG/KG	J
			AROCLOR-1242	70.00	UG/KG	J
			PYRENE	250.00	UG/KG	J
			DI-N-BUTYL PHTHALATE	68.00	UG/KG	J*
			BENZO(A)ANTHRACENE	170.00	UG/KG	J
			BENZO(A)PYRENE	160.00	UG/KG	J
			BENZO(G,H,I)PERYLENE	85.00	UG/KG	

J = Concentration is below quantification level; * = Common laboratory contaminant

Table B-15

Clear Well Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
08-02	FMP-PS-08-002	8704-254-0040	ALUMINUM, TOTAL	18827.07	MG/KG
			ARSENIC, TOTAL	12.09	MG/KG
			BARIUM, TOTAL	733.35	MG/KG
			CADMIUM, TOTAL	5.11	MG/KG
			CALCIUM, TOTAL	129304.89	MG/KG
			CHROMIUM, TOTAL	44.21	MG/KG
			COBALT, TOTAL	18.34	MG/KG
			COPPER, TOTAL	194.61	MG/KG
			IRON, TOTAL	19804.67	MG/KG
			LEAD, TOTAL	38.63	MG/KG
			MAGNESIUM, TOTAL	16784.64	MG/KG
			MANGANESE, TOTAL	1660.41	MG/KG
			MERCURY, TOTAL	.42	MG/KG
			NICKEL, TOTAL	46.62	MG/KG
			POTASSIUM, TOTAL	2707.20	MG/KG
			SILVER, TOTAL	3.30	MG/KG
			SODIUM, TOTAL	1293.44	MG/KG
			VANADIUM, TOTAL	148.59	MG/KG
			ZINC, TOTAL	81.81	MG/KG
		8704-254-0280	BARIUM, EP LEACHATE	2613.00	UG/L
			MERCURY, EP LEACHATE	.32	UG/L
08-03	FMP-PS-08-004	8704-254-0050	ALUMINUM, TOTAL	23770.50	MG/KG
			ARSENIC, TOTAL	18.46	MG/KG
			BARIUM, TOTAL	6913.40	MG/KG
			BERYLLIUM, TOTAL	9.10	MG/KG
			CADMIUM, TOTAL	7.15	MG/KG
			CALCIUM, TOTAL	156585.00	MG/KG
			CHROMIUM, TOTAL	76.05	MG/KG
			COPPER, TOTAL	1119.30	MG/KG
			CYANIDE, TOTAL	9.18	MG/KG
			IRON, TOTAL	21066.50	MG/KG
			LEAD, TOTAL	83.00	MG/KG
			MAGNESIUM, TOTAL	44629.00	MG/KG
			MANGANESE, TOTAL	761.15	MG/KG
			MERCURY, TOTAL	4.38	MG/KG
			NICKEL, TOTAL	66.95	MG/KG
			POTASSIUM, TOTAL	1690.00	MG/KG
			SELENIUM, TOTAL	3.72	MG/KG
			SODIUM, TOTAL	2665.00	MG/KG

Table B-15

Clear Well Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
08-03	FMP-PS-08-004	8704-254-0050	VANADIUM, TOTAL	2596.10	MG/KG
			ZINC, TOTAL	194.35	MG/KG
		8704-254-0290	MERCURY, EP LEACHATE	.52	UG/L
08-04	FMP-PS-08-006	8704-254-0060	ALUMINUM, TOTAL	12939.30	MG/KG
			ARSENIC, TOTAL	9.11	MG/KG
			BARIUM, TOTAL	2391.15	MG/KG
			CALCIUM, TOTAL	183078.02	MG/KG
			CHROMIUM, TOTAL	41.17	MG/KG
			COPPER, TOTAL	612.98	MG/KG
			IRON, TOTAL	19618.07	MG/KG
			LEAD, TOTAL	32.26	MG/KG
			MAGNESIUM, TOTAL	34106.16	MG/KG
			MANGANESE, TOTAL	1346.21	MG/KG
			MERCURY, TOTAL	.88	MG/KG
			POTASSIUM, TOTAL	2025.85	MG/KG
			SODIUM, TOTAL	2810.05	MG/KG
			VANADIUM, TOTAL	148.34	MG/KG
			ZINC, TOTAL	88.22	MG/KG
		8704-254-0300	BARIUM, EP LEACHATE	1222.00	UG/L
			MERCURY, EP LEACHATE	1.25	UG/L

Table B-16

Clear Well Organic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
08-02	FMP-PS-08-002	8704-254-0040	CHRYSENE	74.00	UG/KG	J
			AROCLOR-1254	737.00	UG/KG	
			METHYLENE CHLORIDE	380.00	UG/KG	J*
			ACETONE	1800.00	UG/KG	J*
			PHENANTHRENE	68.00	UG/KG	J
			ACETONE	640.00	UG/KG	J*
			AROCLOR-1248	308.00	UG/KG	
08-03	FMP-PS-08-004	8704-254-0050	AROCLOR-1254	150.00	UG/KG	J
			METHYLENE CHLORIDE	640.00	UG/KG	J*
			BIS(2-ETHYLHEXYL)PHTHALATE	200.00	UG/KG	J*
			ACETONE	1800.00	UG/KG	J*
08-04	FMP-PS-08-006	8704-254-0060	BENZO(A)ANTHRACENE	140.00	UG/KG	J
			CHRYSENE	150.00	UG/KG	J
			PYRENE	290.00	UG/KG	J
			AROCLOR-1254	132.00	UG/KG	J
			BIS(2-ETHYLHEXYL)PHTHALATE	270.00	UG/KG	J*
			DI-N-BUTYL PHTHALATE	120.00	UG/KG	J*
			PHENANTHRENE	240.00	UG/KG	J

J = Concentration is below quantification level; * = Common laboratory contaminant

Table B-17

Upper Fly Ash Area Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
24-01	FMP-PS-24-001	8705-359-0080	ALUMINUM, TOTAL	8987.91	MG/KG
			ARSENIC, TOTAL	6.00	MG/KG
			BARIUM, TOTAL	87.88	MG/KG
			CADMIUM, TOTAL	2.85	MG/KG
			CALCIUM, TOTAL	32619.92	MG/KG
			CHROMIUM, TOTAL	13.66	MG/KG
			COBALT, TOTAL	27.73	MG/KG
			COPPER, TOTAL	23.24	MG/KG
			IRON, TOTAL	16055.08	MG/KG
			LEAD, TOTAL	11.04	MG/KG
			MAGNESIUM, TOTAL	15926.62	MG/KG
			MANGANESE, TOTAL	838.02	MG/KG
			MERCURY, TOTAL	1.22	MG/KG
			NICKEL, TOTAL	48.32	MG/KG
			POTASSIUM, TOTAL	632.09	MG/KG
			VANADIUM, TOTAL	15.08	MG/KG
			ZINC, TOTAL	48.52	MG/KG
24-02	FMP-PS-24-011	8705-415-0010	ALUMINUM, TOTAL	13062.21	MG/KG
			ARSENIC, TOTAL	4.10	MG/KG
			BARIUM, TOTAL	118.92	MG/KG
			CADMIUM, TOTAL	4.21	MG/KG
			CALCIUM, TOTAL	79382.49	MG/KG
			CHROMIUM, TOTAL	18.38	MG/KG
			COBALT, TOTAL	9.76	MG/KG
			COPPER, TOTAL	12.83	MG/KG
			IRON, TOTAL	21618.43	MG/KG
			LEAD, TOTAL	16.04	MG/KG
			MAGNESIUM, TOTAL	16823.27	MG/KG
			MANGANESE, TOTAL	392.57	MG/KG
			NICKEL, TOTAL	28.15	MG/KG
			POTASSIUM, TOTAL	1436.25	MG/KG
			VANADIUM, TOTAL	20.10	MG/KG
			ZINC, TOTAL	49.02	MG/KG
24-03	FMP-PS-24-012	8705-415-0030	ALUMINUM, TOTAL	9621.36	MG/KG
			ARSENIC, TOTAL	3.70	MG/KG
			BARIUM, TOTAL	54.74	MG/KG
			CADMIUM, TOTAL	2.89	MG/KG
			CALCIUM, TOTAL	43109.15	MG/KG

Table B-17

Upper Fly Ash Area Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
24-03	FMP-PS-24-012	8705-415-0030	CHROMIUM, TOTAL	13.63	MG/KG
			COPPER, TOTAL	10.74	MG/KG
			IRON, TOTAL	16897.81	MG/KG
			LEAD, TOTAL	15.35	MG/KG
			MAGNESIUM, TOTAL	18728.29	MG/KG
			MANGANESE, TOTAL	328.90	MG/KG
			MERCURY, TOTAL	.43	MG/KG
			NICKEL, TOTAL	21.89	MG/KG
			POTASSIUM, TOTAL	640.46	MG/KG
			VANADIUM, TOTAL	19.21	MG/KG
			ZINC, TOTAL	43.17	MG/KG
24-04	FMP-PS-24-014	8705-415-0040	ALUMINUM, TOTAL	6673.40	MG/KG
			ARSENIC, TOTAL	4.43	MG/KG
			BARIUM, TOTAL	51.07	MG/KG
			CADMIUM, TOTAL	2.12	MG/KG
			CALCIUM, TOTAL	61643.90	MG/KG
			CHROMIUM, TOTAL	9.36	MG/KG
			COPPER, TOTAL	9.57	MG/KG
			IRON, TOTAL	12797.79	MG/KG
			LEAD, TOTAL	15.98	MG/KG
			MAGNESIUM, TOTAL	30281.44	MG/KG
			MANGANESE, TOTAL	461.77	MG/KG
			MERCURY, TOTAL	.37	MG/KG
			NICKEL, TOTAL	13.19	MG/KG
			POTASSIUM, TOTAL	510.72	MG/KG
			VANADIUM, TOTAL	16.17	MG/KG
			ZINC, TOTAL	34.26	MG/KG
24-05	FMP-PS-24-043	8705-415-0060	ALUMINUM, TOTAL	10429.87	MG/KG
			ARSENIC, TOTAL	4.89	MG/KG
			BARIUM, TOTAL	48.37	MG/KG
			CADMIUM, TOTAL	3.07	MG/KG
			CALCIUM, TOTAL	3622.16	MG/KG
			CHROMIUM, TOTAL	14.75	MG/KG
			COPPER, TOTAL	11.27	MG/KG
			IRON, TOTAL	16397.12	MG/KG
			LEAD, TOTAL	11.22	MG/KG
			MAGNESIUM, TOTAL	2828.85	MG/KG
			MANGANESE, TOTAL	319.16	MG/KG

Table B-17

Upper Fly Ash Area Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
24-05	FMP-PS-24-043	8705-415-0060	MERCURY, TOTAL	.12	MG/KG
			NICKEL, TOTAL	20.08	MG/KG
			POTASSIUM, TOTAL	348.48	MG/KG
			VANADIUM, TOTAL	16.60	MG/KG
			ZINC, TOTAL	39.76	MG/KG
24-06	FMP-PS-24-017	8705-415-0050	ALUMINUM, TOTAL	8593.72	MG/KG
			ARSENIC, TOTAL	4.68	MG/KG
			BARIUM, TOTAL	90.88	MG/KG
			CADMIUM, TOTAL	3.26	MG/KG
			CALCIUM, TOTAL	32687.53	MG/KG
			CHROMIUM, TOTAL	12.43	MG/KG
			COBALT, TOTAL	14.67	MG/KG
			COPPER, TOTAL	18.74	MG/KG
			IRON, TOTAL	19422.99	MG/KG
			LEAD, TOTAL	10.35	MG/KG
			MAGNESIUM, TOTAL	19094.89	MG/KG
			MANGANESE, TOTAL	1165.66	MG/KG
			MERCURY, TOTAL	.13	MG/KG
			NICKEL, TOTAL	35.86	MG/KG
			POTASSIUM, TOTAL	468.71	MG/KG
			VANADIUM, TOTAL	18.74	MG/KG
			ZINC, TOTAL	44.22	MG/KG
24-07	FMP-PS-24-068	8705-426-0020	ALUMINUM, TOTAL	14636.47	MG/KG
			ARSENIC, TOTAL	7.06	MG/KG
			BARIUM, TOTAL	72.81	MG/KG
			BERYLLIUM, TOTAL	1.50	MG/KG
			CADMIUM, TOTAL	5.15	MG/KG
			CALCIUM, TOTAL	60526.34	MG/KG
			CHROMIUM, TOTAL	21.69	MG/KG
			COBALT, TOTAL	11.81	MG/KG
			COPPER, TOTAL	19.11	MG/KG
			IRON, TOTAL	23842.80	MG/KG
			LEAD, TOTAL	27.75	MG/KG
			MAGNESIUM, TOTAL	18361.10	MG/KG
			MANGANESE, TOTAL	687.36	MG/KG
			MERCURY, TOTAL	.13	MG/KG
			NICKEL, TOTAL	16.53	MG/KG
			POTASSIUM, TOTAL	1503.60	MG/KG

Table B-17

Upper Fly Ash Area Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
24-07	FMP-PS-24-068	8705-426-0020	VANADIUM, TOTAL	29.64	MG/KG
			ZINC, TOTAL	67.01	MG/KG
24-08	FMP-PS-24-066	8705-426-0010	ALUMINUM, TOTAL	14433.12	MG/KG
			ARSENIC, TOTAL	5.05	MG/KG
			BARIUM, TOTAL	70.08	MG/KG
			CADMIUM, TOTAL	4.85	MG/KG
			CALCIUM, TOTAL	113966.13	MG/KG
			CHROMIUM, TOTAL	19.19	MG/KG
			COBALT, TOTAL	12.72	MG/KG
			COPPER, TOTAL	18.96	MG/KG
			IRON, TOTAL	18726.04	MG/KG
			LEAD, TOTAL	32.98	MG/KG
			MAGNESIUM, TOTAL	29953.35	MG/KG
			MANGANESE, TOTAL	564.37	MG/KG
			NICKEL, TOTAL	25.90	MG/KG
			POTASSIUM, TOTAL	1387.80	MG/KG
			SODIUM, TOTAL	138.78	MG/KG
			VANADIUM, TOTAL	31.91	MG/KG
			ZINC, TOTAL	58.98	MG/KG
24-09	FMP-PS-24-095	8705-426-0030	ALUMINUM, TOTAL	7406.99	MG/KG
			ARSENIC, TOTAL	5.62	MG/KG
			CADMIUM, TOTAL	3.68	MG/KG
			CALCIUM, TOTAL	187187.03	MG/KG
			CHROMIUM, TOTAL	14.11	MG/KG
			COPPER, TOTAL	10.02	MG/KG
			IRON, TOTAL	14073.69	MG/KG
			LEAD, TOTAL	15.88	MG/KG
			MAGNESIUM, TOTAL	14674.92	MG/KG
			MANGANESE, TOTAL	441.72	MG/KG
			MERCURY, TOTAL	.15	MG/KG
			NICKEL, TOTAL	10.22	MG/KG
			POTASSIUM, TOTAL	818.00	MG/KG
			VANADIUM, TOTAL	19.42	MG/KG
			ZINC, TOTAL	42.53	MG/KG
24-10	FMP-PS-24-097	8705-426-0050	ALUMINUM, TOTAL	6958.84	MG/KG
			ARSENIC, TOTAL	31.17	MG/KG

Table B-17

Upper Fly Ash Area Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
24-10	FMP-PS-24-097	8705-426-0050	BARIUM, TOTAL	205.08	MG/KG
			BERYLLIUM, TOTAL	1.43	MG/KG
			CADMIUM, TOTAL	3.82	MG/KG
			CALCIUM, TOTAL	54215.80	MG/KG
			CHROMIUM, TOTAL	15.79	MG/KG
			COPPER, TOTAL	23.45	MG/KG
			IRON, TOTAL	14807.88	MG/KG
			LEAD, TOTAL	55.95	MG/KG
			MAGNESIUM, TOTAL	8523.86	MG/KG
			MANGANESE, TOTAL	780.11	MG/KG
			MERCURY, TOTAL	.26	MG/KG
			NICKEL, TOTAL	12.20	MG/KG
			POTASSIUM, TOTAL	1076.85	MG/KG
			SODIUM, TOTAL	167.51	MG/KG
			VANADIUM, TOTAL	26.32	MG/KG
			ZINC, TOTAL	46.42	MG/KG
24-11	FMP-PS-24-130	8705-466-0010	ALUMINUM, TOTAL	7557.77	MG/KG
			ARSENIC, TOTAL	10.76	MG/KG
			BARIUM, TOTAL	271.04	MG/KG
			CADMIUM, TOTAL	2.43	MG/KG
			CALCIUM, TOTAL	12069.71	MG/KG
			CHROMIUM, TOTAL	12.44	MG/KG
			COPPER, TOTAL	22.45	MG/KG
			IRON, TOTAL	7281.86	MG/KG
			LEAD, TOTAL	13.78	MG/KG
			MAGNESIUM, TOTAL	3305.51	MG/KG
			MANGANESE, TOTAL	238.04	MG/KG
			MERCURY, TOTAL	.15	MG/KG
			NICKEL, TOTAL	13.25	MG/KG
			SODIUM, TOTAL	189.35	MG/KG
			VANADIUM, TOTAL	29.48	MG/KG
			ZINC, TOTAL	36.24	MG/KG
24-12	FMP-PS-24-167	8705-466-0020	ALUMINUM, TOTAL	8156.77	MG/KG
			ARSENIC, TOTAL	5.91	MG/KG
			BARIUM, TOTAL	78.49	MG/KG
			CADMIUM, TOTAL	3.39	MG/KG
			CALCIUM, TOTAL	74419.80	MG/KG
			CHROMIUM, TOTAL	18.32	MG/KG

Table B-17

Upper Fly Ash Area Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
24-12	FMP-PS-24-167	8705-466-0020	COPPER, TOTAL	11.76	MG/KG
			IRON, TOTAL	18828.88	MG/KG
			LEAD, TOTAL	16.67	MG/KG
			MAGNESIUM, TOTAL	19299.38	MG/KG
			MANGANESE, TOTAL	832.41	MG/KG
			MERCURY, TOTAL	.14	MG/KG
			NICKEL, TOTAL	14.02	MG/KG
			POTASSIUM, TOTAL	1017.90	MG/KG
			SODIUM, TOTAL	135.72	MG/KG
			VANADIUM, TOTAL	25.56	MG/KG
			ZINC, TOTAL	49.31	MG/KG

Table B-18

Upper Fly Ash Area Organic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
24-01	FMP-PS-24-001	8705-359-0080	AROCLOR-1242	93.00	UG/KG	J
			AROCLOR-1254	147.00	UG/KG	J
24-02	FMP-PS-24-011	8705-415-0010	METHYLENE CHLORIDE	100.00	UG/KG	J*
			METHYLENE CHLORIDE	110.00	UG/KG	J*
			ACETONE	240.00	UG/KG	J*
			ACETONE	230.00	UG/KG	J*
			ACETONE	250.00	UG/KG	J*
			AROCLOR-1254	510.00	UG/KG	J
24-03	FMP-PS-24-012	8705-415-0030	AROCLOR-1254	39.00	UG/KG	J
24-04	FMP-PS-24-014	8705-415-0040	AROCLOR-1254	670.00	UG/KG	
24-05	FMP-PS-24-043	8705-415-0060	AROCLOR-1254	130.00	UG/KG	J
24-06	FMP-PS-24-017	8705-415-0050	AROCLOR-1254	360.00	UG/KG	
24-07	FMP-PS-24-068	8705-426-0020	AROCLOR-1260	420.00	UG/KG	
			AROCLOR-1242	76.00	UG/KG	J
24-08	FMP-PS-24-066	8705-426-0010	AROCLOR-1254	880.00	UG/KG	
			AROCLOR-1242	1.90	UG/KG	J
24-09	FMP-PS-24-095	8705-426-0030	AROCLOR-1242	42.00	UG/KG	J
			AROCLOR-1260	250.00	UG/KG	
24-10	FMP-PS-24-097	8705-426-0050	AROCLOR-1242	5.70	UG/KG	J
			AROCLOR-1254	290.00	UG/KG	
24-12	FMP-PS-24-167	8705-466-0020	AROCLOR-1260	28.00	UG/KG	J

J = Concentration is below quantification level; * = Common laboratory contaminant

Table B-18

Upper Fly Ash Area Organic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier

J = Concentration is below quantification level; * = Common laboratory contaminant

Table B-19

Lower Fly Ash Area Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
25-01	FMP-PS-25-009	8705-466-0030	ALUMINUM, TOTAL	7027.36	MG/KG
			ARSENIC, TOTAL	4.64	MG/KG
			CADMIUM, TOTAL	3.15	MG/KG
			CALCIUM, TOTAL	88166.01	MG/KG
			CHROMIUM, TOTAL	12.62	MG/KG
			COPPER, TOTAL	8.62	MG/KG
			IRON, TOTAL	14896.32	MG/KG
			LEAD, TOTAL	9.29	MG/KG
			MAGNESIUM, TOTAL	32006.04	MG/KG
			MANGANESE, TOTAL	462.88	MG/KG
			MERCURY, TOTAL	.16	MG/KG
			NICKEL, TOTAL	13.25	MG/KG
			POTASSIUM, TOTAL	631.20	MG/KG
			VANADIUM, TOTAL	20.19	MG/KG
			ZINC, TOTAL	42.08	MG/KG
25-02	FMP-PS-25-011	8705-466-0040	ALUMINUM, TOTAL	3857.10	MG/KG
			ARSENIC, TOTAL	5.33	MG/KG
			CADMIUM, TOTAL	2.36	MG/KG
			CALCIUM, TOTAL	140330.50	MG/KG
			CHROMIUM, TOTAL	7.95	MG/KG
			COPPER, TOTAL	9.03	MG/KG
			IRON, TOTAL	12237.80	MG/KG
			LEAD, TOTAL	12.55	MG/KG
			MAGNESIUM, TOTAL	24918.50	MG/KG
			MANGANESE, TOTAL	645.00	MG/KG
			MERCURY, TOTAL	1.78	MG/KG
			POTASSIUM, TOTAL	752.50	MG/KG
			SODIUM, TOTAL	129.00	MG/KG
			VANADIUM, TOTAL	13.11	MG/KG
			ZINC, TOTAL	30.31	MG/KG

Table B-20

Lower Fly Ash Area Organic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
25-01	FMP-PS-25-009	8705-466-0030	AROCLOR-1260	85.00	UG/KG	J
25-02	FMP-PS-25-011	8705-466-0040	AROCLOR-1260	38.00	UG/KG	J
			METHYLENE CHLORIDE	100.00	UG/KG	J*
			ACETONE	200.00	UG/KG	J*

J = Concentration is below quantification level; * = Common laboratory contaminant

Table B-21

North Lime Sludge Pond Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
47-01	FMP-PS-47-001	8703-948-0010	ALUMINUM, TOTAL	18600.00	MG/KG
			ARSENIC, TOTAL	6.30	MG/KG
			CALCIUM, TOTAL	262000.00	MG/KG
			CHROMIUM, TOTAL	14.00	MG/KG
			COPPER, TOTAL	15.00	MG/KG
			IRON, TOTAL	14600.00	MG/KG
			MAGNESIUM, TOTAL	19100.00	MG/KG
			MANGANESE, TOTAL	617.00	MG/KG
			MERCURY, TOTAL	.30	MG/KG
			POTASSIUM, TOTAL	1070.00	MG/KG
			SODIUM, TOTAL	1530.00	MG/KG
			ZINC, TOTAL	45.00	MG/KG
		8703-948-0060	SELENIUM, EP LEACHATE	192.00	UG/L
47-02	FMP-PS-47-007	8703-948-0020	ALUMINUM, TOTAL	13300.00	MG/KG
			ARSENIC, TOTAL	12.00	MG/KG
			CALCIUM, TOTAL	260000.00	MG/KG
			CHROMIUM, TOTAL	9.40	MG/KG
			COPPER, TOTAL	20.00	MG/KG
			IRON, TOTAL	8990.00	MG/KG
			MAGNESIUM, TOTAL	19700.00	MG/KG
			MANGANESE, TOTAL	546.00	MG/KG
			MERCURY, TOTAL	.30	MG/KG
			POTASSIUM, TOTAL	695.00	MG/KG
			SODIUM, TOTAL	450.00	MG/KG
			ZINC, TOTAL	38.00	MG/KG
		8703-948-0070	SELENIUM, EP LEACHATE	293.00	UG/L
47-03	FMP-PS-47-013	8703-948-0030	ALUMINUM, TOTAL	9630.00	MG/KG
			ARSENIC, TOTAL	16.00	MG/KG
			CALCIUM, TOTAL	252000.00	MG/KG
			CHROMIUM, TOTAL	22.00	MG/KG
			COPPER, TOTAL	24.00	MG/KG
			IRON, TOTAL	20600.00	MG/KG
			MAGNESIUM, TOTAL	21200.00	MG/KG
			MANGANESE, TOTAL	638.00	MG/KG
			POTASSIUM, TOTAL	1670.00	MG/KG
			SODIUM, TOTAL	304.00	MG/KG

Table B-21

North Lime Sludge Pond Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
47-03	FMP-PS-47-013	8703-948-0030	ZINC, TOTAL	75.00	MG/KG
		8703-948-0080	MERCURY, EP LEACHATE	.23	UG/L
			SELENIUM, EP LEACHATE	187.00	UG/L

Table B-22

North Lime Sludge Pond Organic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
47-01	FMP-PS-47-001	8703-948-0010	DI-N-BUTYL PHTHALATE	95.00	UG/KG	*
			ACETONE	130.00	UG/KG	*
			BUTYL BENZYL PHTHALATE	2800.00	UG/KG	
			BIS(2-ETHYLHEXYL)PHTHALATE	180.00	UG/KG	*
			1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	81.00	UG/KG	J
			CARBON DISULFIDE	9.00	UG/KG	J
			UNKNOWN HYDROCARBON	130.00	UG/KG	J
			METHYLENE CHLORIDE	21.00	UG/KG	*
47-02	FMP-PS-47-007	8703-948-0020	1,1-DICHLOROETHANE	3.00	UG/KG	J
			TOLUENE	20.00	UG/KG	*
			TOLUENE	20.00	UG/KG	*
			METHYLENE CHLORIDE	26.00	UG/KG	*
			ACETONE	150.00	UG/KG	*
			BIS(2-ETHYLHEXYL)PHTHALATE	150.00	UG/KG	*
			CARBON DISULFIDE	7.00	UG/KG	J
			ACETONE	150.00	UG/KG	*
			1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	50.00	UG/KG	J
			DI-N-BUTYL PHTHALATE	89.00	UG/KG	*
			METHYLENE CHLORIDE	26.00	UG/KG	*
47-03	FMP-PS-47-013	8703-948-0030	METHYLENE CHLORIDE	21.00	UG/KG	*
			CHLORDANE	1200.00	UG/KG	
			BUTYL BENZYL PHTHALATE	370.00	UG/KG	
			DI-N-BUTYL PHTHALATE	120.00	UG/KG	*
			ACETONE	20.00	UG/KG	J*
			AROCLOR-1248	1200.00	UG/KG	
			BIS(2-ETHYLHEXYL)PHTHALATE	310.00	UG/KG	*
			PHENOL	610.00	UG/KG	
			CARBON DISULFIDE	9.00	UG/KG	J

J = Concentration is below quantification level; * = Common laboratory contaminant

Table B-23

South Lime Sludge Pond Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
48-01	FMP-PS-48-001	8704-077-0020	ALUMINUM, TOTAL	6015.60	MG/KG
			CALCIUM, TOTAL	333762.00	MG/KG
			CHROMIUM, TOTAL	6.86	MG/KG
			COPPER, TOTAL	12.01	MG/KG
			IRON, TOTAL	6936.07	MG/KG
			MAGNESIUM, TOTAL	17678.91	MG/KG
			MANGANESE, TOTAL	717.28	MG/KG
			POTASSIUM, TOTAL	343.20	MG/KG
			ZINC, TOTAL	16.47	MG/KG
		8704-077-0070	BARIUM, EP LEACHATE	1054.00	UG/L
48-02	FMP-PS-48-014	8704-077-0050	ALUMINUM, TOTAL	4348.55	MG/KG
			BARIUM, TOTAL	73.34	MG/KG
			CALCIUM, TOTAL	298311.72	MG/KG
			CHROMIUM, TOTAL	5.97	MG/KG
			IRON, TOTAL	5041.56	MG/KG
			MAGNESIUM, TOTAL	15141.27	MG/KG
			MANGANESE, TOTAL	746.77	MG/KG
			ZINC, TOTAL	16.59	MG/KG
		8704-077-0080	BARIUM, EP LEACHATE	2091.00	UG/L
			CADMIUM, EP LEACHATE	163.00	UG/L
			LEAD, EP LEACHATE	647.00	UG/L
48-03	FMP-PS-48-027	8704-108-0010	ALUMINUM, TOTAL	5148.36	MG/KG
			CALCIUM, TOTAL	302580.00	MG/KG
			CHROMIUM, TOTAL	5.04	MG/KG
			IRON, TOTAL	6177.60	MG/KG
			LEAD, TOTAL	2.14	MG/KG
			MAGNESIUM, TOTAL	17981.64	MG/KG
			MANGANESE, TOTAL	694.80	MG/KG
			POTASSIUM, TOTAL	216.00	MG/KG
			ZINC, TOTAL	14.40	MG/KG

Table B-24

South Lime Sludge Pond Organic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
48-01	FMP-PS-48-001	8704-077-0020	BIS(2-ETHYLHEXYL)PHTHALATE	310.00	UG/KG	J*
			PHENOL	89.00	UG/KG	J
			2-BUTANONE	1800.00	UG/KG	*
			METHYLENE CHLORIDE	240.00	UG/KG	J*
			BENZOIC ACID(2)	160.00	UG/KG	J
48-02	FMP-PS-48-014	8704-077-0050	DI-N-BUTYL PHTHALATE	73.00	UG/KG	J*
			ACETONE	90.00	UG/KG	J*
			BIS(2-ETHYLHEXYL)PHTHALATE	240.00	UG/KG	J*
			METHYLENE CHLORIDE	110.00	UG/KG	J*
48-03	FMP-PS-48-027	8704-108-0010	DI-N-BUTYL PHTHALATE	47.00	UG/KG	J*
			ACETONE	140.00	UG/KG	J*
			METHYLENE CHLORIDE	190.00	UG/KG	J*
			BIS(2-ETHYLHEXYL)PHTHALATE	230.00	UG/KG	J*

J = Concentration is below quantification level; * = Common laboratory contaminant

Table B-25

Sanitary Landfill Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
49-01	FMP-PS-49-001	8704-286-0060	ALUMINUM, TOTAL	17247.25	MG/KG
			BARIUM, TOTAL	124.13	MG/KG
			CADMIUM, TOTAL	2.54	MG/KG
			CALCIUM, TOTAL	15714.06	MG/KG
			CHROMIUM, TOTAL	21.30	MG/KG
			COPPER, TOTAL	19.91	MG/KG
			IRON, TOTAL	16538.55	MG/KG
			LEAD, TOTAL	19.04	MG/KG
			MAGNESIUM, TOTAL	7367.19	MG/KG
			MANGANESE, TOTAL	247.58	MG/KG
			MERCURY, TOTAL	.20	MG/KG
			NICKEL, TOTAL	12.73	MG/KG
			POTASSIUM, TOTAL	625.32	MG/KG
			VANADIUM, TOTAL	26.63	MG/KG
			ZINC, TOTAL	63.92	MG/KG
49-02	FMP-PS-49-018	8705-305-0010	ALUMINUM, TOTAL	10229.70	MG/KG
			ARSENIC, TOTAL	3.28	MG/KG
			BARIUM, TOTAL	115.37	MG/KG
			CADMIUM, TOTAL	2.90	MG/KG
			CALCIUM, TOTAL	23196.26	MG/KG
			CHROMIUM, TOTAL	14.08	MG/KG
			COPPER, TOTAL	16.09	MG/KG
			IRON, TOTAL	18100.42	MG/KG
			LEAD, TOTAL	13.40	MG/KG
			MAGNESIUM, TOTAL	8201.64	MG/KG
			MANGANESE, TOTAL	436.02	MG/KG
			MERCURY, TOTAL	.14	MG/KG
			NICKEL, TOTAL	21.91	MG/KG
			POTASSIUM, TOTAL	491.92	MG/KG
			VANADIUM, TOTAL	20.34	MG/KG
			ZINC, TOTAL	60.81	MG/KG
		8705-305-0070	BARIUM, EP LEACHATE	3307.00	UG/L
49-03	FMP-PS-49-032	8705-305-0020	ALUMINUM, TOTAL	9667.62	MG/KG
			ARSENIC, TOTAL	5.77	MG/KG
			BARIUM, TOTAL	82.23	MG/KG
			CADMIUM, TOTAL	2.92	MG/KG
			CALCIUM, TOTAL	67619.28	MG/KG

Table B-25

Sanitary Landfill Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
49-03	FMP-PS-49-032	8705-305-0020	CHROMIUM, TOTAL	20.95	MG/KG
			COPPER, TOTAL	13.06	MG/KG
			IRON, TOTAL	15584.00	MG/KG
			LEAD, TOTAL	16.10	MG/KG
			MAGNESIUM, TOTAL	21962.24	MG/KG
			MANGANESE, TOTAL	716.45	MG/KG
			MERCURY, TOTAL	.16	MG/KG
			NICKEL, TOTAL	42.35	MG/KG
			POTASSIUM, TOTAL	811.08	MG/KG
			SODIUM, TOTAL	180.24	MG/KG
			VANADIUM, TOTAL	13.29	MG/KG
			ZINC, TOTAL	166.72	MG/KG
		8705-305-0080	BARIUM, EP LEACHATE	2502.00	UG/L
49-04	FMP-PS-49-046	8705-305-0030	ALUMINUM, TOTAL	6367.05	MG/KG
			ARSENIC, TOTAL	6.69	MG/KG
			CADMIUM, TOTAL	1.92	MG/KG
			CALCIUM, TOTAL	78377.63	MG/KG
			CHROMIUM, TOTAL	9.23	MG/KG
			COPPER, TOTAL	11.15	MG/KG
			IRON, TOTAL	13466.76	MG/KG
			LEAD, TOTAL	13.82	MG/KG
			MAGNESIUM, TOTAL	25714.35	MG/KG
			MANGANESE, TOTAL	338.44	MG/KG
			NICKEL, TOTAL	13.46	MG/KG
			POTASSIUM, TOTAL	653.82	MG/KG
			VANADIUM, TOTAL	12.11	MG/KG
			ZINC, TOTAL	39.61	MG/KG
		8705-305-0090	BARIUM, EP LEACHATE	1276.00	UG/L
49-05	FMP-PS-49-055	8705-305-0060	ALUMINUM, TOTAL	10069.43	MG/KG
			ARSENIC, TOTAL	4.84	MG/KG
			BARIUM, TOTAL	67.58	MG/KG
			CADMIUM, TOTAL	2.98	MG/KG
			CALCIUM, TOTAL	67605.72	MG/KG
			CHROMIUM, TOTAL	14.49	MG/KG
			COPPER, TOTAL	29.63	MG/KG
			IRON, TOTAL	17301.18	MG/KG

Table B-25

Sanitary Landfill Inorganic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
49-05	FMP-PS-49-055	8705-305-0060	LEAD, TOTAL	12.68	MG/KG
			MAGNESIUM, TOTAL	19765.77	MG/KG
			MANGANESE, TOTAL	558.58	MG/KG
			NICKEL, TOTAL	19.18	MG/KG
			POTASSIUM, TOTAL	724.88	MG/KG
			VANADIUM, TOTAL	17.69	MG/KG
			ZINC, TOTAL	55.64	MG/KG
		8705-305-0100	BARIUM, EP LEACHATE	2421.00	UG/L
49-06	FMP-PS-49-071	8705-342-0010	ALUMINUM, TOTAL	9493.98	MG/KG
			ARSENIC, TOTAL	5.25	MG/KG
			BARIUM, TOTAL	68.64	MG/KG
			CADMIUM, TOTAL	5.33	MG/KG
			CALCIUM, TOTAL	129975.31	MG/KG
			CHROMIUM, TOTAL	19.24	MG/KG
			COPPER, TOTAL	12.52	MG/KG
			IRON, TOTAL	21844.98	MG/KG
			LEAD, TOTAL	10.08	MG/KG
			MAGNESIUM, TOTAL	30105.25	MG/KG
			MANGANESE, TOTAL	667.87	MG/KG
			NICKEL, TOTAL	18.32	MG/KG
			POTASSIUM, TOTAL	1971.15	MG/KG
			SODIUM, TOTAL	162.33	MG/KG
			VANADIUM, TOTAL	19.71	MG/KG
			ZINC, TOTAL	50.32	MG/KG
		8705-342-0080	BARIUM, EP LEACHATE	2871.00	UG/L

Table B-26

Sanitary Landfill Organic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
49-01	FMP-PS-49-001	8704-286-0060	ACENAPHTHENE	1300.00	UG/KG	
			BUTYL BENZYL PHTHALATE	320.00	UG/KG	J
			BENZO(B)FLUORANTHENE	6700.00	UG/KG	
			ANTHRACENE	2700.00	UG/KG	
			DIBENZO(A,H)ANTHRACENE	2100.00	UG/KG	
			ACETONE	190.00	UG/KG	J*
			BENZO(A)PYRENE	7000.00	UG/KG	
			FLUORENE	1400.00	UG/KG	
			2-METHYLNAPHTHALENE	66.00	UG/KG	
			BENZO(G,H,I)PERYLENE	6000.00	UG/KG	
			DIBENZOFURAN	620.00	UG/KG	
			INDENO(1,2,3-CD)PYRENE	5700.00	UG/KG	
			BENZO(K)FLUORANTHENE	4000.00	UG/KG	
			DI-N-BUTYL PHTHALATE	55.00	UG/KG	J*
			DI-N-OCTYL PHTHALATE	350.00	UG/KG	J*
			AROCLOR-1248	180.00	UG/KG	J
49-02	FMP-PS-49-018	8705-305-0010	BENZO(A)PYRENE	100.00	UG/KG	J
			NAPHTHALENE	19000.00	UG/KG	
			ACETONE	210.00	UG/KG	J*
			PYRENE	240.00	UG/KG	J
			FLUORANTHENE	330.00	UG/KG	J
			BENZO(A)ANTHRACENE	130.00	UG/KG	J
			BENZO(K)FLUORANTHENE	84.00	UG/KG	J
			BENZO(B)FLUORANTHENE	98.00	UG/KG	J
			AROCLOR-1242	260.00	UG/KG	
			PHENANTHRENE	320.00	UG/KG	J
			METHYLENE CHLORIDE	160.00	UG/KG	J*
			2-METHYLNAPHTHALENE	11000.00	UG/KG	
49-03	FMP-PS-49-032	8705-305-0020	METHYLENE CHLORIDE	84.00	UG/KG	J*
			TOTAL XYLENES	320.00	UG/KG	
			DIBENZOFURAN	1900.00	UG/KG	
			ACENAPHTHENE	28000.00	UG/KG	
			BENZO(G,H,I)PERYLENE	4300.00	UG/KG	
			CHRYSENE	4600.00	UG/KG	
			ACETONE	130.00	UG/KG	J*
			BENZO(K)FLUORANTHENE	4900.00	UG/KG	
			INDENO(1,2,3-CD)PYRENE	3100.00	UG/KG	

J = Concentration is below quantification level; * = Common laboratory contaminant

Table B-26

Sanitary Landfill Organic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
49-03	FMP-PS-49-032	8705-305-0020	FLUORENE	2500.00	UG/KG	
			DIBENZO(A,H)ANTHRACENE	1100.00	UG/KG	
			PYRENE	6300.00	UG/KG	
			TOLUENE	180.00	UG/KG	J*
			TETRACHLOROETHENE	97.00	UG/KG	J
			ANTHRACENE	2800.00	UG/KG	
			BENZO(A)ANTHRACENE	5100.00	UG/KG	
			AROCLOR-1242	1600.00	UG/KG	J
			BENZO(A)PYRENE	4800.00	UG/KG	
			ETHYLBENZENE	91.00	UG/KG	J
49-05	FMP-PS-49-055	8705-305-0060	BIS(2-ETHYLHEXYL)PHTHALATE	150.00	UG/KG	J*
			METHYLENE CHLORIDE	130.00	UG/KG	J*
			ANTHRACENE	85.00	UG/KG	J
			PHENANTHRENE	330.00	UG/KG	J
			INDENO(1,2,3-CD)PYRENE	81.00	UG/KG	J
			PYRENE	300.00	UG/KG	J
			BENZO(A)PYRENE	120.00	UG/KG	J
			AROCLOR-1242	130.00	UG/KG	
			BENZO(B)FLUORANTHENE	120.00	UG/KG	J
			N-NITROSODIPHENYLAMINE(1)	67.00	UG/KG	J
			DI-N-OCTYL PHTHALATE	300.00	UG/KG	J*
			BENZO(G,H,I)PERYLENE	110.00	UG/KG	J
			BENZO(K)FLUORANTHENE	110.00	UG/KG	J
			CHRYSENE	170.00	UG/KG	J
			FLUORANTHENE	450.00	UG/KG	J
			BENZO(A)ANTHRACENE	150.00	UG/KG	J
			ACETONE	130.00	UG/KG	J*
49-06	FMP-PS-49-071	8705-342-0020	NAPHTHALENE	2700.00	UG/KG	
			AROCLOR-1248	565.00	UG/KG	
			DI-N-BUTYL PHTHALATE	330.00	UG/KG	J*
			BENZO(G,H,I)PERYLENE	1300.00	UG/KG	
			DIBENZO(A,H)ANTHRACENE	560.00	UG/KG	
			2,4-DIMETHYLPHENOL	240.00	UG/KG	J
			DIBENZOFURAN	1700.00	UG/KG	
			4-METHYLPHENOL	360.00	UG/KG	J
			ACENAPHTHENE	1900.00	UG/KG	
			2-BUTANONE	120.00	UG/KG	J*

J = Concentration is below quantification level; * = Common laboratory contaminant

Table B-26

Sanitary Landfill Organic Data Summary

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
49-06	FMP-PS-49-071	8705-342-0020	METHYLENE CHLORIDE	140.00	UG/KG	J*
			BIS(2-ETHYLHEXYL)PHTHALATE	49.00	UG/KG	J*
			INDENO(1,2,3-CD)PYRENE	1400.00	UG/KG	
			AROCLOR-1254	719.00	UG/KG	J
			PHENOL	310.00	UG/KG	J
			ACETONE	250.00	UG/KG	J*
			2-METHYPHENOL	96.00	UG/KG	J
			DI-N-BUTYL PHTHALATE	50.00	UG/KG	J*
			AROCLOR-1242	78.00	UG/KG	J
			2-METHYLNAPHTHALENE	1100.00	UG/KG	
		8705-342-0020DIL	PYRENE	1900.00	UG/KG	
			BENZO(K)FLUORANTHENE	1900.00	UG/KG	
			DIBENZOFURAN	1700.00	UG/KG	J
			BENZO(B)FLUORANTHENE	1900.00	UG/KG	
			BENZO(A)ANTHRACENE	1900.00	UG/KG	
			PHENANTHRENE	1900.00	UG/KG	
			BENZO(A)PYRENE	1900.00	UG/KG	
			ANTHRACENE	1900.00	UG/KG	
			FLUORANTHENE	1900.00	UG/KG	
			BENZO(G,H,I)PERYLENE	1900.00	UG/KG	J
			FLUORENE	1900.00	UG/KG	
			CHRYSENE	1900.00	UG/KG	
49-04	FMP-PS-49-046	8705-305-0030	METHYLENE CHLORIDE	100.00	UG/KG	J*
			AROCLOR-1242	110.00	UG/KG	
			ACETONE	130.00	UG/KG	J*

J = Concentration is below quantification level; * = Common laboratory contaminant

Table B-27

Pit Four Surface Water Inorganic Data Summary

Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
FMP-SW-04-001	8705-478-0010	ALUMINUM, TOTAL	1290.00	UG/L
		BICARBONATE	268.00	MG/L
		CALCIUM, TOTAL	22877.10	UG/L
		CARBONATE	216.00	MG/L
		CHLORIDE	502.21	MG/L
		COPPER, TOTAL	46.30	UG/L
		FLUORIDE	19.04	MG/L
		IRON, TOTAL	665.90	UG/L
		MAGNESIUM, TOTAL	53792.10	UG/L
		MANGANESE, TOTAL	51.20	UG/L
		PHENOL	5.01	UG/L
		PHOSPHATE	.27	MG/L
		POTASSIUM, TOTAL	230000.00	UG/L
		SODIUM, TOTAL	208219.40	UG/L
		SULFATE	67.74	MG/L
		VANADIUM, TOTAL	58.50	UG/L
	8705-478-0030	ALUMINUM, SOLUBLE	957.80	UG/L
		ARSENIC, SOLUBLE	10.30	UG/L
		CALCIUM, SOLUBLE	22276.00	UG/L
		COPPER, SOLUBLE	25.50	UG/L
		MAGNESIUM, SOLUBLE	56725.60	UG/L
		POTASSIUM, SOLUBLE	250000.00	UG/L
		SODIUM, SOLUBLE	238477.30	UG/L
		VANADIUM, SOLUBLE	59.50	UG/L

Table B-28

Pit Four Surface Water Organic Data Summary

Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
FMP-SW-04-001	8705-478-0010	1,1-DICHLOROETHENE	6.00	UG/L	
		METHYLENE CHLORIDE	4.00	UG/L	J*
		BIS(2-ETHYLHEXYL)PHTHALATE	4.00	UG/L	J*
		ACETONE	17.00	UG/L	*

J = Concentration is below quantification level; * = Common laboratory contaminant

Table B-29

Pit Five Surface Water Inorganic Data Summary

Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
FMP-SW-05-001	8705-426-0070	BICARBONATE	20.00	MG/L
		CALCIUM, TOTAL	183830.00	UG/L
		CARBONATE	40.00	MG/L
		CHLORIDE	244.34	MG/L
		CYANIDE, TOTAL	87.26	UG/L
		FLUORIDE	10.12	MG/L
		MAGNESIUM, TOTAL	387360.00	UG/L
		NITRATE NITRITE	1160.77	MG/L
		PHOSPHATE	.33	MG/L
		POTASSIUM, TOTAL	92000.00	UG/L
		SODIUM, TOTAL	1320000.00	UG/L
		SULFATE	100.32	MG/L
		TOTAL DISSOLVED SOLIDS	8.00	MG/L
		TOTAL SUSPENDED SOLIDS	11.00	MG/L
		ZINC, TOTAL	94.00	UG/L
	8705-426-0090	CALCIUM, SOLUBLE	181630.00	UG/L
		MAGNESIUM, SOLUBLE	399450.00	UG/L
		POTASSIUM, SOLUBLE	260000.00	UG/L
		SODIUM, SOLUBLE	1330000.00	UG/L
		ZINC, SOLUBLE	45.00	UG/L
FMP-SW-05-002	8705-426-0080	BICARBONATE	52.00	MG/L
		CALCIUM, TOTAL	177710.00	UG/L
		CARBONATE	40.00	MG/L
		CHLORIDE	244.34	MG/L
		CYANIDE, TOTAL	67.14	UG/L
		MAGNESIUM, TOTAL	386040.00	UG/L
		NITRATE NITRITE	1394.85	MG/L
		PHOSPHATE	.33	MG/L
		POTASSIUM, TOTAL	48000.00	UG/L
		SODIUM, TOTAL	1150000.00	UG/L
		SULFATE	102.11	MG/L
		TOTAL DISSOLVED SOLIDS	7035.00	MG/L
		TOTAL SUSPENDED SOLIDS	12.00	MG/L
	8705-426-0100	CALCIUM, SOLUBLE	182840.00	UG/L
		MAGNESIUM, SOLUBLE	405970.00	UG/L
		POTASSIUM, SOLUBLE	250000.00	UG/L
		SODIUM, SOLUBLE	1260000.00	UG/L

Table B-30

Pit Five Surface Water Organic Data Summary

Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
FMP-SW-05-001	8705-426-0070	ACETONE	7.00	UG/L	J*
		TOLUENE	1.00	UG/L	J*
		DI-N-BUTYL PHTHALATE	1.00	UG/L	J*
		METHYLENE CHLORIDE	1.00	UG/L	J*
		BENZENE	11.00	UG/L	
FMP-SW-05-002	8705-426-0080	METHYLENE CHLORIDE	2.00	UG/L	J*
		DI-N-BUTYL PHTHALATE	1.00	UG/L	J*
		ACETONE	9.00	UG/L	J*

J = Concentration is below quantification level; * = Common laboratory contaminant

Table B-31

Pit Six Surface Water Inorganic Data Summary

Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
FMP-SW-06-001	8704-203-0010	ALUMINUM, TOTAL	283.00	UG/L
		CALCIUM, TOTAL	82250.00	UG/L
		CHLORIDE	207.63	MG/L
		MAGNESIUM, TOTAL	811.00	UG/L
		NITRATE NITRITE	10.55	MG/L
		POTASSIUM, TOTAL	42000.00	UG/L
		SODIUM, TOTAL	90000.00	UG/L
		SULFATE	57.65	MG/L
		SULFATE	61.81	MG/L
		TOTAL DISSOLVED SOLIDS	622.00	MG/L
		TOTAL SUSPENDED SOLIDS	6.00	MG/L
	8704-203-0150	ALUMINUM, SOLUBLE	332.00	UG/L
		CALCIUM, SOLUBLE	80600.00	UG/L
		MAGNESIUM, SOLUBLE	555.00	UG/L
		POTASSIUM, SOLUBLE	42000.00	UG/L
		SODIUM, SOLUBLE	101000.00	UG/L
		ZINC, SOLUBLE	114.00	UG/L
FMP-SW-06-002	8704-203-0020	ALUMINUM, TOTAL	492.00	UG/L
		CALCIUM, TOTAL	111070.00	UG/L
		CHLORIDE	152.44	MG/L
		MAGNESIUM, TOTAL	681.00	UG/L
		NITRATE NITRITE	17.63	MG/L
		PHOSPHATE	.02	MG/L
		POTASSIUM, TOTAL	38000.00	UG/L
		SODIUM, TOTAL	94000.00	UG/L
		SULFATE	58.69	MG/L
		TOTAL DISSOLVED SOLIDS	686.00	MG/L
		TOTAL SUSPENDED SOLIDS	14.00	MG/L
	8704-203-0160	ALUMINUM, SOLUBLE	419.00	UG/L
		CALCIUM, SOLUBLE	102430.00	UG/L
		POTASSIUM, SOLUBLE	38000.00	UG/L
		SODIUM, SOLUBLE	104000.00	UG/L
FMP-SW-06-003	8704-203-0030	ALUMINUM, TOTAL	429.00	UG/L
		CALCIUM, TOTAL	110600.00	UG/L
		CHLORIDE	149.19	MG/L
		MAGNESIUM, TOTAL	664.00	UG/L

Table B-31

Pit Six Surface Water Inorganic Data Summary

Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
FMP-SW-06-003	8704-203-0030	NITRATE NITRITE	19.89	MG/L
		PHOSPHATE	.02	MG/L
		POTASSIUM, TOTAL	38000.00	UG/L
		SODIUM, TOTAL	90000.00	UG/L
		SULFATE	59.73	MG/L
		TOTAL DISSOLVED SOLIDS	675.00	MG/L
		TOTAL SUSPENDED SOLIDS	16.00	MG/L
	8704-203-0170	ALUMINUM, SOLUBLE	458.00	UG/L
		CALCIUM, SOLUBLE	101060.00	UG/L
		POTASSIUM, SOLUBLE	38000.00	UG/L
		SODIUM, SOLUBLE	94000.00	UG/L
FMP-SW-06-004	8704-203-0040	ALUMINUM, TOTAL	476.00	UG/L
		CALCIUM, TOTAL	109000.00	UG/L
		CHLORIDE	149.19	MG/L
		MAGNESIUM, TOTAL	725.00	UG/L
		NITRATE NITRITE	20.29	MG/L
		PHOSPHATE	.02	MG/L
		POTASSIUM, TOTAL	40000.00	UG/L
		SODIUM, TOTAL	92000.00	UG/L
		SULFATE	79.47	MG/L
		TOTAL DISSOLVED SOLIDS	662.00	MG/L
		TOTAL SUSPENDED SOLIDS	17.00	MG/L
	8704-203-0180	ALUMINUM, SOLUBLE	476.00	UG/L
		CALCIUM, SOLUBLE	109050.00	UG/L
		MAGNESIUM, SOLUBLE	725.00	UG/L
		POTASSIUM, SOLUBLE	40000.00	UG/L
		SODIUM, SOLUBLE	92000.00	UG/L
FMP-SW-06-005	8705-342-0060	CALCIUM, TOTAL	62810.00	UG/L
		CHLORIDE	174.45	MG/L
		FLUORIDE	10.62	MG/L
		MAGNESIUM, TOTAL	5483.00	UG/L
		MERCURY, TOTAL	.25	UG/L
		NITRATE	29.52	MG/L
		POTASSIUM, TOTAL	26000.00	UG/L
		SODIUM, TOTAL	114000.00	UG/L
		SULFATE	54.52	MG/L

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Table B-31

Pit Six Surface Water Inorganic Data Summary

Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
FMP-SW-06-005	8705-342-0060	SULFATE	59.68	MG/L
		TOTAL DISSOLVED SOLIDS	712.00	MG/L
		TOTAL SUSPENDED SOLIDS	7.00	MG/L
	8705-342-0070	CALCIUM, SOLUBLE	64350.00	UG/L
		MAGNESIUM, SOLUBLE	2428.00	UG/L
		POTASSIUM, SOLUBLE	23000.00	UG/L
		SODIUM, SOLUBLE	103000.00	UG/L

Table B-32

Pit Six Surface Water Organic Data Summary

Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
FMP-SW-06-001	8704-203-0010	CHLOROFORM	3.00	UG/L	J
		TETRACHLOROETHENE	2.00	UG/L	J
		METHYLENE CHLORIDE	2.00	UG/L	J*
		TOLUENE	2.00	UG/L	J*
FMP-SW-06-002	8704-203-0020	DI-N-BUTYL PHTHALATE	6.00	UG/L	J*
		CHLOROBENZENE	6.00	UG/L	
		CHLOROFORM	2.00	UG/L	J
		METHYLENE CHLORIDE	4.00	UG/L	J*
		TETRACHLOROETHENE	2.00	UG/L	J
FMP-SW-06-003	8704-203-0030	CHLOROFORM	2.00	UG/L	J
		METHYLENE CHLORIDE	2.00	UG/L	J*
		TETRACHLOROETHENE	2.00	UG/L	J
		DI-N-BUTYL PHTHALATE	1.00	UG/L	J*
		TOLUENE	1.00	UG/L	J*
FMP-SW-06-004	8704-203-0040	CHLOROFORM	2.00	UG/L	J
		BIS(2-ETHYLHEXYL)PHTHALATE	4.00	UG/L	J*
		TOLUENE	1.00	UG/L	J*
		TETRACHLOROETHENE	2.00	UG/L	J
		METHYLENE CHLORIDE	2.00	UG/L	J*
FMP-SW-06-005	8705-342-0060	BIS(2-ETHYLHEXYL)PHTHALATE	10.00	UG/L	*
		TETRACHLOROETHENE	1.00	UG/L	J
		ACETONE	3.00	UG/L	J*

J = Concentration is below quantification level; * = Common laboratory contaminant

Table B-33

Clear Well Surface Water Inorganic Data Summary

Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
FMP-SW-08-001	8705-359-0010	CALCIUM, TOTAL	84810.00	UG/L
		CHLORIDE	195.65	MG/L
		COPPER, TOTAL	30.00	UG/L
		CYANIDE, TOTAL	87.04	UG/L
		FLUORIDE	4.93	MG/L
		IRON, TOTAL	130.00	UG/L
		MAGNESIUM, TOTAL	95090.00	UG/L
		MERCURY, TOTAL	.72	UG/L
		NITRATE NITRITE	219.52	MG/L
		PHOSPHATE	.23	MG/L
		POTASSIUM, TOTAL	30000.00	UG/L
		SILVER, TOTAL	16.00	UG/L
		SODIUM, TOTAL	232000.00	UG/L
		SULFATE	133.60	MG/L
		TOTAL DISSOLVED SOLIDS	1711.00	MG/L
		TOTAL SUSPENDED SOLIDS	30.00	MG/L
	8705-359-0090	CALCIUM, SOLUBLE	86130.00	UG/L
		MAGNESIUM, SOLUBLE	94840.00	UG/L
		MERCURY, SOLUBLE	.20	UG/L
		POTASSIUM, SOLUBLE	28000.00	UG/L
		SILVER, SOLUBLE	14.00	UG/L
		SODIUM, SOLUBLE	264000.00	UG/L
		ZINC, SOLUBLE	47.00	UG/L
FMP-SW-08-002	8705-359-0020	CALCIUM, TOTAL	536350.00	UG/L
		CHLORIDE	164.47	MG/L
		FLUORIDE	6.17	MG/L
		IRON, TOTAL	295.00	UG/L
		MAGNESIUM, TOTAL	150120.00	UG/L
		MANGANESE, TOTAL	31.00	UG/L
		MERCURY, TOTAL	.31	UG/L
		NITRATE NITRITE	265.59	MG/L
		PHOSPHATE	.35	MG/L
		POTASSIUM, TOTAL	50000.00	UG/L
		SODIUM, TOTAL	512000.00	UG/L
		SULFATE	125.00	MG/L
		TOTAL DISSOLVED SOLIDS	2261.00	MG/L
		TOTAL SUSPENDED SOLIDS	29.00	MG/L
	8705-359-0100	CALCIUM, SOLUBLE	112520.00	UG/L

Table B-33

Clear Well Surface Water Inorganic Data Summary

Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
FMP-SW-08-002	8705-359-0100	MAGNESIUM, SOLUBLE	154640.00	UG/L
		MANGANESE, SOLUBLE	20.00	UG/L
		POTASSIUM, SOLUBLE	15000.00	UG/L
		SILVER, SOLUBLE	11.00	UG/L
		SODIUM, SOLUBLE	504000.00	UG/L

Table B-34

Clear Well Surface Water Organic Data Summary

Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
FMP-SW-08-001	8705-359-0010	ACETONE	5.00	UG/L	J*
		BIS(2-ETHYLHEXYL)PHTHALATE	4.00	UG/L	J*
		METHYLENE CHLORIDE	2.00	UG/L	J*
FMP-SW-08-002	8705-359-0020	CHLOROFORM	7.00	UG/L	
		DI-N-BUTYL PHTHALATE	1.00	UG/L	J*
		METHYLENE CHLORIDE	2.00	UG/L	J*
		2-NITROPHENOL	4.00	UG/L	J

J = Concentration is below quantification level; * = Common laboratory contaminant

Appendix C

APPENDIX C

QUALITY ASSURANCE SAMPLING RESULTS

Table TB

Trip Blank Organic Chemical Results

Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
FMP-TB-00-001	8703-948-0050	ACETONE	6.00	UG/L	J*
	8703-948-0050	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	7.00	UG/L	J
	8703-948-0050	METHYLENE CHLORIDE	1.00	UG/L	J*
FMP-TB-00-003	8703-997-0020	ACETONE	4.00	UG/L	J*
FMP-TB-00-004	8703-030-0020	METHYLENE CHLORIDE	2.00	UG/L	J*
	8703-030-0020	ACETONE	8.00	UG/L	J*
FMP-TB-00-005	8703-057-0020	METHYLENE CHLORIDE	2.00	UG/L	J*
FMP-TB-00-006	8704-077-0040	ACETONE	2.00	UG/L	J*
FMP-TB-00-007	8704-108-0030	ACETONE	2.00	UG/L	J*
FMP-TB-00-008	8704-121-0020	CARBON DISULFIDE	1.00	UG/L	J
	8704-121-0020	ACETONE	2.00	UG/L	J*
FMP-TB-00-009	5531-1-17	2-BUTANONE	740.00	UG/L	J*
	5531-1-17	ACETONE	710.00	UG/L	J*
	5531-1-17	TOLUENE	380.00	UG/L	J*
FMP-TB-00-011	8704-145-0040	ACETONE	4.00	UG/L	J*
FMP-TB-00-012	8704-180-0070	ACETONE	6.00	UG/L	J*
	8704-180-0070	METHYLENE CHLORIDE	3.00	UG/L	J*
FMP-TB-00-013	8704-203-0100	2-BUTANONE	10.00	UG/L	*
	8704-203-0100	METHYLENE CHLORIDE	3.00	UG/L	J*
	8704-203-0100	ACETONE	7.00	UG/L	J*
FMP-TB-00-015	8704-236-0040	METHYLENE CHLORIDE	2.00	UG/L	J*
	8704-236-0040	ACETONE	2.00	UG/L	J*

J = Concentration is below quantification level; * = Common laboratory contaminant

Table TB

Trip Blank Organic Chemical Results

Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
FMP-TB-00-016	8704-254-0080	METHYLENE CHLORIDE	3.00	UG/L	J*
	8704-254-0080	ACETONE	3.00	UG/L	J*
FMP-TB-00-017	8704-286-0040	ACETONE	4.00	UG/L	J*
	8704-286-0040	METHYLENE CHLORIDE	3.00	UG/L	J*
FMP-TB-00-018	8705-305-0040	METHYLENE CHLORIDE	2.00	UG/L	J*
	8705-305-0040	ACETONE	3.00	UG/L	J*
FMP-TB-00-019	8705-342-0050	ACETONE	3.00	UG/L	J*
	8705-342-0050	METHYLENE CHLORIDE	1.00	UG/L	J*
FMP-TB-00-020	8705-359-0040	ACETONE	2.00	UG/L	J*
	8705-359-0040	METHYLENE CHLORIDE	4.00	UG/L	J*
FMP-TB-00-021	8705-415-0020	ACETONE	4.00	UG/L	J*
	8705-415-0020	METHYLENE CHLORIDE	2.00	UG/L	J*
FMP-TB-00-022	8705-426-0040	2-BUTANONE	2.00	UG/L	J*
	8705-426-0040	ACETONE	4.00	UG/L	J*
	8705-426-0040	METHYLENE CHLORIDE	2.00	UG/L	J*
FMP-TB-00-023	8705-478-0020	2-BUTANONE	4.00	UG/L	J*
	8705-478-0020	METHYLENE CHLORIDE	2.00	UG/L	J*
	8705-478-0020	ACETONE	6.00	UG/L	J*
FMP-TB-05-002	8703-984-0020	METHYLENE CHLORIDE	1.00	UG/L	J*
	8703-984-0020	ACETONE	9.00	UG/L	J*

J = Concentration is below quantification level; * = Common laboratory contaminant

Table B-FB

Field Blank Inorganic Chemical Results

Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
FMP-FB-54-003	8704-077-0030	COPPER, TOTAL	93.00	UG/L
		LEAD, TOTAL	150.00	UG/L
		ZINC, TOTAL	1263.00	UG/L
FMP-FB-54-004	8704-145-0050	COPPER, TOTAL	587.00	UG/L
		LEAD, TOTAL	24.20	UG/L
		ZINC, TOTAL	593.00	UG/L
FMP-FB-54-005	8704-180-0060	COPPER, TOTAL	464.00	UG/L
		LEAD, TOTAL	7.40	UG/L
		ZINC, TOTAL	313.00	UG/L
FMP-FB-54-007	8704-203-0050	IRON, TOTAL	491.00	UG/L
		LEAD, TOTAL	35.30	UG/L
		ZINC, TOTAL	483.00	UG/L
FMP-FB-54-008	8704-236-0030	CALCIUM, TOTAL	673.00	UG/L
		COPPER, TOTAL	201.00	UG/L
		IRON, TOTAL	785.00	UG/L
		LEAD, TOTAL	13.00	UG/L
		MANGANESE, TOTAL	16.00	UG/L
		ZINC, TOTAL	259.00	UG/L
FMP-FB-54-009	8704-286-0050	CALCIUM, TOTAL	2030.00	UG/L
		COPPER, TOTAL	362.00	UG/L
		IRON, TOTAL	394.00	UG/L
		LEAD, TOTAL	19.40	UG/L
		ZINC, TOTAL	295.00	UG/L
FMP-FB-54-010	8705-305-0050	CALCIUM, TOTAL	875.00	UG/L
		COPPER, TOTAL	554.00	UG/L
		IRON, TOTAL	1536.00	UG/L
		LEAD, TOTAL	26.90	UG/L
		MANGANESE, TOTAL	18.00	UG/L
		ZINC, TOTAL	497.00	UG/L

Table B-FB

Field Blank Inorganic Chemical Results

Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
FMP-FB-54-011	8705-342-0040	CALCIUM, TOTAL	772.00	UG/L
		COPPER, TOTAL	647.00	UG/L
		IRON, TOTAL	993.00	UG/L
		LEAD, TOTAL	88.40	UG/L
		ZINC, TOTAL	754.00	UG/L
FMP-FB-54-012	8705-359-0030	CALCIUM, TOTAL	1212.00	UG/L
		COPPER, TOTAL	2086.00	UG/L
		IRON, TOTAL	658.00	UG/L
		LEAD, TOTAL	21.80	UG/L
		MAGNESIUM, TOTAL	1217.00	UG/L
		ZINC, TOTAL	996.00	UG/L
FMP-FB-54-013	8705-415-0070	COPPER, TOTAL	461.00	UG/L
		IRON, TOTAL	450.00	UG/L
		LEAD, TOTAL	15.10	UG/L
		ZINC, TOTAL	295.00	UG/L
FMP-FB-54-001	8703-997-00300	CALCIUM, TOTAL	17400.00	UG/L
		IRON, TOTAL	2760.00	UG/L
		MAGNESIUM, TOTAL	9480.00	UG/L
		POTASSIUM, TOTAL	1500.00	UG/L
		SODIUM, TOTAL	8400.00	UG/L
FMP-FB-54-002	8703-997-00400	COPPER, TOTAL	145.00	UG/L
		LEAD, TOTAL	354.00	UG/L
		ZINC, TOTAL	883.00	UG/L

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Table FB

Field Blank Organic Chemical Results

Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
FMP-FB-54-001	8703-997-0030	TOLUENE	3.00	UG/L	J*
	8703-997-0030	GAMMA-BHC(LINDANE)	0.05	UG/L	
FMP-FB-54-002	8703-997-0040	TETRACHLOROETHENE	2.00	UG/L	J
	8703-997-0040	METHYLENE CHLORIDE	4.00	UG/L	J*
	8703-997-0040	1,1,1-TRICHLOROETHANE	78.00	UG/L	
FMP-FB-54-003	8704-077-0030	DI-N-BUTYL PHTHALATE	3.00	UG/L	J*
	8704-077-0030	PYRENE	2.00	UG/L	J
	8704-077-0030	ACETONE	2.00	UG/L	J*
	8704-077-0030	1,1,1-TRICHLOROETHANE	24.00	UG/L	
	8704-077-0030	BIS(2-ETHTLHEXYL)PHTHALATE	5.00	UG/L	J*
FMP-FB-54-004	8704-145-0050	ACETONE	4.00	UG/L	J*
	8704-145-0050	DI-N-OCTYL PHTHALATE	3.00	UG/L	J*
	8704-145-0050	CARBON DISULFIDE	1.00	UG/L	J
FMP-FB-54-005	8704-180-0050	TOLUENE	1.00	UG/L	J*
	8704-180-0050	CHLOROFORM	14.00	UG/L	
	8704-180-0050	BIS(2-ETHTLHEXYL)PHTHALATE	5.00	UG/L	J*
	8704-180-0050	BROMODICHLOROMETHANE	2.00	UG/L	J
	8704-180-0050	METHYLENE CHLORIDE	1.00	UG/L	J*
	8704-180-0050	DI-N-BUTYL PHTHALATE	2.00	UG/L	J*
FMP-FB-54-006	8704-180-0060	CHLOROFORM	10.00	UG/L	
	8704-180-0060	TOLUENE	3.00	UG/L	J*
	8704-180-0060	BROMODICHLOROMETHANE	2.00	UG/L	J
	8704-180-0060	DI-N-OCTYL PHTHALATE	4.00	UG/L	J*
	8704-180-0060	DI-N-BUTYL PHTHALATE	3.00	UG/L	J*
FMP-FB-54-007	8704-203-0050	DI-N-BUTYL PHTHALATE	1.00	UG/L	J*
	8704-203-0050	CHLOROFORM	18.00	UG/L	
	8704-203-0050	BROMODICHLOROMETHANE	2.00	UG/L	J
	8704-203-0050	ACETONE	6.00	UG/L	J*
	8704-203-0050	METHYLENE CHLORIDE	3.00	UG/L	J*
	8704-203-0050	BIS(2-ETHTLHEXYL)PHTHALATE	2.00	UG/L	J*
FMP-FB-54-008	8704-236-0030	DI-N-OCTYL PHTHALATE	2.00	UG/L	J*
	8704-236-0030	ACETONE	9.00	UG/L	J*

J = Concentration is below quantification level; * = Common laboratory contaminant

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Table FB

Field Blank Organic Chemical Results

Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
FMP-FB-54-008	8704-236-0030	BIS(2-ETHTLHEXYL)PHTHALATE	6.00	UG/L	J*
	8704-236-0030	DI-N-BUTYL PHTHALATE	1.00	UG/L	J*
	8704-236-0030	CHLOROFORM	15.00	UG/L	
	8704-236-0030	METHYLENE CHLORIDE	2.00	UG/L	J*
FMP-FB-54-009	8704-286-0050	METHYLENE CHLORIDE	3.00	UG/L	J*
	8704-286-0050	DI-N-OCTYL PHTHALATE	2.00	UG/L	*
	8704-286-0050	CHLOROFORM	10.00	UG/L	
	8704-286-0050	AROCLOR-1248	0.80	UG/L	
	8704-286-0050	BIS(2-ETHTLHEXYL)PHTHALATE	5.00	UG/L	*
	8704-286-0050	N-NITROSODIPHENYLAMINE(1)	1.00	UG/L	
FMP-FB-54-010	8705-305-0050	ACETONE	6.00	UG/L	J*
	8705-305-0050	CHLOROFORM	8.00	UG/L	
	8705-305-0050	METHYLENE CHLORIDE	1.00	UG/L	J*
	8705-305-0050	N-NITROSODIPHENYLAMINE(1)	1.00	UG/L	J
FMP-FB-54-011	8705-342-0040	ACETONE	2.00	UG/L	J*
	8705-342-0040	BROMODICHLOROMETHANE	2.00	UG/L	J
	8705-342-0040	CHLOROFORM	10.00	UG/L	
FMP-FB-54-012	8705-359-0030	ACETONE	10.00	UG/L	J*
	8705-359=0030	CHLOROFORM	10.00	UG/L	
	8705-359-0030	METHYLENE CHLORIDE	3.00	UG/L	J*
	8705-359-0030	BROMODICHLOROMETHANE	2.00	UG/L	J
	8705-359-0030	DI-N-BUTYL PHTHALATE	1.00	UG/L	*
	8705-359-0030	TOLUENE	1.00	UG/L	J*
FMP-FB-54-013	8705-415-0070	CHLOROFORM	12.00	UG/L	
	8705-415-0070	BROMODICHLOROMETHANE	2.00	UG/L	J
	8705-415-0070	ACETONE	4.00	UG/L	J*

J = Concentration is below quantification level; * = Common laboratory contaminant

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Table FB

Field Blank Radiochemical Results

Sample Id	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
FMP-FB-54-012	CS-137	<	15.00	
	PU-238	<	.20	
	PU-239	<	.10	
	RA-226	=	.40	.10
	RA-228	<	4.00	
	RU-106	<	82.00	
	SR-90	<	1.00	
	TC-99	<	3.00	
	TH-228	<	.10	
	TH-230	=	.20	.10
	TH-232	<	.10	
	U-234	=	2.60	.50
	U-235	=	.20	.10
	U-238	=	9.60	.90

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Table B-BD

Blind Duplicate Inorganic Chemical Results

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
01-01	FMP-PS-01-001	8704-180-0020	ALUMINUM, TOTAL	3462.90	MG/KG
			BARIUM, TOTAL	365.48	MG/KG
			CALCIUM, TOTAL	6243.24	MG/KG
			CHROMIUM, TOTAL	6.35	MG/KG
			COPPER, TOTAL	20.09	MG/KG
			IRON, TOTAL	1832.56	MG/KG
			LEAD, TOTAL	15.60	MG/KG
			MAGNESIUM, TOTAL	26457.90	MG/KG
			MANGANESE, TOTAL	1473.23	MG/KG
			MERCURY, TOTAL	.26	MG/KG
			NICKEL, TOTAL	9.22	MG/KG
			POTASSIUM, TOTAL	2051.00	MG/KG
			SILVER, TOTAL	2.25	MG/KG
			SODIUM, TOTAL	1374.17	MG/KG
			VANADIUM, TOTAL	13.74	MG/KG
	FMP-PS-01-015	8704-180-0030	ALUMINUM, TOTAL	4848.48	MG/KG
			BARIUM, TOTAL	395.37	MG/KG
			BERYLLIUM, TOTAL	2.03	MG/KG
			CALCIUM, TOTAL	7117.34	MG/KG
			CHROMIUM, TOTAL	9.65	MG/KG
			COPPER, TOTAL	19.05	MG/KG
			IRON, TOTAL	2863.96	MG/KG
			LEAD, TOTAL	18.76	MG/KG
			MAGNESIUM, TOTAL	35574.00	MG/KG
			MANGANESE, TOTAL	1318.77	MG/KG
			NICKEL, TOTAL	10.92	MG/KG
			POTASSIUM, TOTAL	2286.90	MG/KG
			SODIUM, TOTAL	1702.47	MG/KG
			VANADIUM, TOTAL	15.24	MG/KG
			ZINC, TOTAL	6.09	MG/KG
02-03	FMP-PS-02-017	8704-203-0080	ALUMINUM, TOTAL	14195.55	MG/KG
			ARSENIC, TOTAL	3.98	MG/KG
			BARIUM, TOTAL	96.70	MG/KG
			CADMIUM, TOTAL	9.59	MG/KG
			CALCIUM, TOTAL	65445.47	MG/KG
			CHROMIUM, TOTAL	25.25	MG/KG
			COBALT, TOTAL	13.63	MG/KG
			COPPER, TOTAL	38.38	MG/KG

Table B-BD

Blind Duplicate Inorganic Chemical Results

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
02-03	FMP-PS-02-017	8704-203-0080	IRON, TOTAL	21366.55	MG/KG
			LEAD, TOTAL	29.00	MG/KG
			MAGNESIUM, TOTAL	26343.32	MG/KG
			MANGANESE, TOTAL	916.57	MG/KG
			NICKEL, TOTAL	35.60	MG/KG
			POTASSIUM, TOTAL	1515.00	MG/KG
			SILVER, TOTAL	11.11	MG/KG
			SODIUM, TOTAL	479.75	MG/KG
			VANADIUM, TOTAL	38.12	MG/KG
			ZINC, TOTAL	3247.15	MG/KG
		8704-203-0130	BARIUM, EP LEACHATE	9458.00	UG/L
	FMP-PS-02-018	8704-203-0090	ALUMINUM, TOTAL	10688.98	MG/KG
			BARIUM, TOTAL	62.37	MG/KG
			CADMIUM, TOTAL	3.33	MG/KG
			CALCIUM, TOTAL	44750.51	MG/KG
			CHROMIUM, TOTAL	16.17	MG/KG
			COPPER, TOTAL	26.18	MG/KG
			IRON, TOTAL	20281.86	MG/KG
			LEAD, TOTAL	20.70	MG/KG
			MAGNESIUM, TOTAL	16018.08	MG/KG
			MANGANESE, TOTAL	495.43	MG/KG
			MERCURY, TOTAL	.23	MG/KG
			NICKEL, TOTAL	28.75	MG/KG
			POTASSIUM, TOTAL	667.42	MG/KG
			SILVER, TOTAL	5.90	MG/KG
			SODIUM, TOTAL	410.72	MG/KG
			VANADIUM, TOTAL	26.95	MG/KG
			ZINC, TOTAL	78.55	MG/KG
		8704-203-0140	BARIUM, EP LEACHATE	6234.00	UG/L
03-06	FMP-PS-03-072	8704-145-0020	ALUMINUM, TOTAL	15029.31	MG/KG
			ARSENIC, TOTAL	434.34	MG/KG
			BARIUM, TOTAL	2186.96	MG/KG
			BERYLLIUM, TOTAL	5.47	MG/KG
			CADMIUM, TOTAL	2.88	MG/KG
			CALCIUM, TOTAL	59267.93	MG/KG
			CHROMIUM, TOTAL	28.23	MG/KG

Table B-BD

Blind Duplicate Inorganic Chemical Results

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
03-06	FMP-PS-03-072	8704-145-0020	COPPER, TOTAL	172.57	MG/KG
			IRON, TOTAL	15210.81	MG/KG
			LEAD, TOTAL	51.68	MG/KG
			MAGNESIUM, TOTAL	25640.90	MG/KG
			MANGANESE, TOTAL	517.71	MG/KG
			NICKEL, TOTAL	31.97	MG/KG
			POTASSIUM, TOTAL	2304.80	MG/KG
			SELENIUM, TOTAL	3.05	MG/KG
			SODIUM, TOTAL	1526.93	MG/KG
			VANADIUM, TOTAL	1404.77	MG/KG
			ZINC, TOTAL	49.26	MG/KG
		8704-145-0080	ARSENIC, EP LEACHATE	611.00	UG/L
	FMP-PS-03-088	8704-145-0030	ALUMINUM, TOTAL	8219.61	MG/KG
			ARSENIC, TOTAL	634.85	MG/KG
			BARIUM, TOTAL	985.05	MG/KG
			BERYLLIUM, TOTAL	2.76	MG/KG
			CADMIUM, TOTAL	1.91	MG/KG
			CALCIUM, TOTAL	79625.50	MG/KG
			CHROMIUM, TOTAL	16.38	MG/KG
			COPPER, TOTAL	99.80	MG/KG
			IRON, TOTAL	14612.97	MG/KG
			LEAD, TOTAL	25.57	MG/KG
			MAGNESIUM, TOTAL	21492.80	MG/KG
			MANGANESE, TOTAL	407.29	MG/KG
			NICKEL, TOTAL	22.34	MG/KG
			POTASSIUM, TOTAL	1489.60	MG/KG
			SELENIUM, TOTAL	1.29	MG/KG
			SODIUM, TOTAL	1191.68	MG/KG
			SULFIDE	1.95	MG/KG
			VANADIUM, TOTAL	692.45	MG/KG
			ZINC, TOTAL	37.87	MG/KG
04-02	FMP-PS-04-021	8704-254-0010	ALUMINUM, TOTAL	3645.60	MG/KG
			BARIUM, TOTAL	457.20	MG/KG
			CALCIUM, TOTAL	61252.80	MG/KG
			CHROMIUM, TOTAL	7.92	MG/KG
			COPPER, TOTAL	22.80	MG/KG
			FLUORIDE	124576.13	MG/KG

Table B-BD

Blind Duplicate Inorganic Chemical Results

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
04-02	FMP-PS-04-021	8704-254-0010	IRON, TOTAL	3045.60	MG/KG
			LEAD, TOTAL	39.64	MG/KG
			MAGNESIUM, TOTAL	23656.80	MG/KG
			MANGANESE, TOTAL	1752.00	MG/KG
			PHENOL	.43	MG/KG
			POTASSIUM, TOTAL	1920.00	MG/KG
			SODIUM, TOTAL	456.00	MG/KG
			SULFIDE	.50	MG/KG
			ZINC, TOTAL	13.92	MG/KG
		8704-254-0250	BARIUM, EP LEACHATE	1023.00	UG/L
	FMP-PS-04-022	8704-254-0020	ALUMINUM, TOTAL	5711.27	MG/KG
			BARIUM, TOTAL	446.63	MG/KG
			CALCIUM, TOTAL	31875.29	MG/KG
			CHROMIUM, TOTAL	8.01	MG/KG
			COPPER, TOTAL	20.35	MG/KG
			FLUORIDE	73162.28	MG/KG
			IRON, TOTAL	4791.14	MG/KG
			LEAD, TOTAL	13.71	MG/KG
			MAGNESIUM, TOTAL	15116.03	MG/KG
			MANGANESE, TOTAL	1383.43	MG/KG
			PHENOL	.47	MG/KG
			POTASSIUM, TOTAL	303.10	MG/KG
			SILVER, TOTAL	2.59	MG/KG
			SODIUM, TOTAL	303.10	MG/KG
			VANADIUM, TOTAL	13.85	MG/KG
			ZINC, TOTAL	15.80	MG/KG
		8704-254-0260	BARIUM, EP LEACHATE	1220.00	UG/L
07-05	FMP-PS-07-048	8705-359-0050	ALUMINUM, TOTAL	4378.31	MG/KG
			ARSENIC, TOTAL	7.66	MG/KG
			BARIUM, TOTAL	210.81	MG/KG
			CALCIUM, TOTAL	14599.23	MG/KG
			CHROMIUM, TOTAL	8.30	MG/KG
			COPPER, TOTAL	29.70	MG/KG
			IRON, TOTAL	3746.90	MG/KG
			LEAD, TOTAL	14.03	MG/KG
			MAGNESIUM, TOTAL	3859.06	MG/KG

Table B-BD

Blind Duplicate Inorganic Chemical Results

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
07-05	FMP-PS-07-048	8705-359-0050	MANGANESE, TOTAL	121.08	MG/KG
			NICKEL, TOTAL	11.83	MG/KG
			POTASSIUM, TOTAL	602.33	MG/KG
			SODIUM, TOTAL	540.02	MG/KG
			VANADIUM, TOTAL	16.61	MG/KG
			ZINC, TOTAL	14.53	MG/KG
		8705-359-0110	BARIUM, EP LEACHATE	2031.00	UG/L
			MERCURY, EP LEACHATE	.21	UG/L
	FMP-PS-07-049	8705-359-0060	ALUMINUM, TOTAL	6364.05	MG/KG
			ARSENIC, TOTAL	9.43	MG/KG
			BARIUM, TOTAL	89.16	MG/KG
			CADMIUM, TOTAL	1.84	MG/KG
			CALCIUM, TOTAL	51383.64	MG/KG
			CHROMIUM, TOTAL	11.55	MG/KG
			COPPER, TOTAL	26.33	MG/KG
			IRON, TOTAL	9057.51	MG/KG
			LEAD, TOTAL	16.68	MG/KG
			MAGNESIUM, TOTAL	14474.46	MG/KG
			MANGANESE, TOTAL	284.36	MG/KG
			NICKEL, TOTAL	15.93	MG/KG
			POTASSIUM, TOTAL	739.20	MG/KG
			SELENIUM, TOTAL	1.91	MG/KG
			SODIUM, TOTAL	554.40	MG/KG
			VANADIUM, TOTAL	14.09	MG/KG
			ZINC, TOTAL	31.18	MG/KG
		8705-359-0120	BARIUM, EP LEACHATE	2046.00	UG/L
			MERCURY, EP LEACHATE	.32	UG/L
08-04	FMP-PS-08-006	8704-254-0060	ALUMINUM, TOTAL	12939.30	MG/KG
			ARSENIC, TOTAL	9.11	MG/KG
			BARIUM, TOTAL	2391.15	MG/KG
			CALCIUM, TOTAL	183078.02	MG/KG
			CHROMIUM, TOTAL	41.17	MG/KG
			COPPER, TOTAL	612.98	MG/KG
			IRON, TOTAL	19618.07	MG/KG
			LEAD, TOTAL	32.26	MG/KG
			MAGNESIUM, TOTAL	34106.16	MG/KG

Table B-BD

Blind Duplicate Inorganic Chemical Results

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
08-04	FMP-PS-08-006	8704-254-0060	MANGANESE, TOTAL	1346.21	MG/KG
			MERCURY, TOTAL	.88	MG/KG
			POTASSIUM, TOTAL	2025.85	MG/KG
			SODIUM, TOTAL	2810.05	MG/KG
			VANADIUM, TOTAL	148.34	MG/KG
			ZINC, TOTAL	88.22	MG/KG
		8704-254-0300	BARIUM, EP LEACHATE	1222.00	UG/L
			MERCURY, EP LEACHATE	1.25	UG/L
	FMP-PS-08-007	8704-254-0070	ALUMINUM, TOTAL	19065.55	MG/KG
			ARSENIC, TOTAL	8.41	MG/KG
			BARIUM, TOTAL	1518.39	MG/KG
			CALCIUM, TOTAL	144365.44	MG/KG
			CHROMIUM, TOTAL	43.38	MG/KG
			COPPER, TOTAL	453.61	MG/KG
			IRON, TOTAL	19902.76	MG/KG
			LEAD, TOTAL	36.78	MG/KG
			MAGNESIUM, TOTAL	33808.06	MG/KG
			MANGANESE, TOTAL	832.64	MG/KG
			MERCURY, TOTAL	3.93	MG/KG
			POTASSIUM, TOTAL	3653.28	MG/KG
			SODIUM, TOTAL	3501.06	MG/KG
			VANADIUM, TOTAL	99.70	MG/KG
			ZINC, TOTAL	94.37	MG/KG
		8704-254-0310	BARIUM, EP LEACHATE	1319.00	UG/L
			MERCURY, EP LEACHATE	.47	UG/L
24-10	FMP-PS-24-097	8705-426-0050	ALUMINUM, TOTAL	6958.84	MG/KG
			ARSENIC, TOTAL	31.17	MG/KG
			BARIUM, TOTAL	205.08	MG/KG
			BERYLLIUM, TOTAL	1.43	MG/KG
			CADMIUM, TOTAL	3.82	MG/KG
			CALCIUM, TOTAL	54215.80	MG/KG
			CHROMIUM, TOTAL	15.79	MG/KG
			COPPER, TOTAL	23.45	MG/KG
			IRON, TOTAL	14807.88	MG/KG
			LEAD, TOTAL	55.95	MG/KG
			MAGNESIUM, TOTAL	8523.86	MG/KG

Table B-BD

Blind Duplicate Inorganic Chemical Results

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
24-10	FMP-PS-24-097	8705-426-0050	MANGANESE, TOTAL	780.11	MG/KG
			MERCURY, TOTAL	.26	MG/KG
			NICKEL, TOTAL	12.20	MG/KG
			POTASSIUM, TOTAL	1076.85	MG/KG
			SODIUM, TOTAL	167.51	MG/KG
			VANADIUM, TOTAL	26.32	MG/KG
			ZINC, TOTAL	46.42	MG/KG
	FMP-PS-24-098	8705-426-0060	ALUMINUM, TOTAL	7971.91	MG/KG
			ARSENIC, TOTAL	9.28	MG/KG
			BARIUM, TOTAL	260.30	MG/KG
			BERYLLIUM, TOTAL	1.73	MG/KG
			CADMIUM, TOTAL	3.90	MG/KG
			CALCIUM, TOTAL	9165.96	MG/KG
			CHROMIUM, TOTAL	15.63	MG/KG
			COPPER, TOTAL	23.44	MG/KG
			IRON, TOTAL	15843.95	MG/KG
			LEAD, TOTAL	25.29	MG/KG
			MAGNESIUM, TOTAL	2804.93	MG/KG
			MANGANESE, TOTAL	238.81	MG/KG
			MERCURY, TOTAL	.29	MG/KG
			NICKEL, TOTAL	14.54	MG/KG
			POTASSIUM, TOTAL	868.40	MG/KG
			SODIUM, TOTAL	151.97	MG/KG
			VANADIUM, TOTAL	28.87	MG/KG
			ZINC, TOTAL	51.66	MG/KG
49-01	FMP-PS-49-001	8704-286-0060	ALUMINUM, TOTAL	17247.25	MG/KG
			BARIUM, TOTAL	124.13	MG/KG
			CADMIUM, TOTAL	2.54	MG/KG
			CALCIUM, TOTAL	15714.06	MG/KG
			CHROMIUM, TOTAL	21.30	MG/KG
			COPPER, TOTAL	19.91	MG/KG
			IRON, TOTAL	16538.55	MG/KG
			LEAD, TOTAL	19.04	MG/KG
			MAGNESIUM, TOTAL	7367.19	MG/KG
			MANGANESE, TOTAL	247.58	MG/KG
			MERCURY, TOTAL	.20	MG/KG
			NICKEL, TOTAL	12.73	MG/KG
			POTASSIUM, TOTAL	625.32	MG/KG

Table B-BD

Blind Duplicate Inorganic Chemical Results

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure
49-01	FMP-PS-49-001	8704-286-0060	VANADIUM, TOTAL	26.63	MG/KG
			ZINC, TOTAL	63.92	MG/KG
	FMP-PS-49-002	8704-286-0070	ALUMINUM, TOTAL	10262.16	MG/KG
			CADMIUM, TOTAL	1.87	MG/KG
			CALCIUM, TOTAL	88697.78	MG/KG
			CHROMIUM, TOTAL	25.28	MG/KG
			COPPER, TOTAL	17.41	MG/KG
			IRON, TOTAL	17104.23	MG/KG
			LEAD, TOTAL	9.25	MG/KG
			MAGNESIUM, TOTAL	26527.29	MG/KG
			MANGANESE, TOTAL	427.04	MG/KG
			MERCURY, TOTAL	3.42	MG/KG
			NICKEL, TOTAL	14.04	MG/KG
			POTASSIUM, TOTAL	1217.45	MG/KG
			SODIUM, TOTAL	355.87	MG/KG
			VANADIUM, TOTAL	20.22	MG/KG
			ZINC, TOTAL	51.69	MG/KG
		8704-286-0120	BARIUM, EP LEACHATE	3053.00	UG/L
			MERCURY, EP LEACHATE	.20	UG/L

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Table BD

Blind Duplicate Organic Chemical Results

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
01-01	FMP-PS-01-001	8704-180-0020	TETRACHLOROETHENE	75.00	UG/KG	J
			AROCLOR-1254	9700.00	UG/KG	
			CHLOROFORM	150.00	UG/KG	J
			ACETONE	250.00	UG/KG	J*
			NAPHTHALENE	54.00	UG/KG	J
			2-METHYLNAPHTHALENE	220.00	UG/KG	J
			METHYLENE CHLORIDE	140.00	UG/KG	J*
			3,3'-DICHLOROBENZIDINE(3)	130.00	UG/KG	J
			PYRENE	240.00	UG/KG	J
			FLUORANTHENE	110.00	UG/KG	J
			BENZO(A)ANTHRACENE	84.00	UG/KG	J
			2-BUTANONE	1900.00	UG/KG	*
			TOLUENE	47.00	UG/KG	J*
			CHRYSENE	510.00	UG/KG	
			PHENANTHRENE	2300.00	UG/KG	
			BIS(2-ETHYLHEXYL)PHTHALATE	1700.00	UG/KG	*
			BENZO(B)FLUORANTHENE	300.00	UG/KG	J
	FMP-PS-01-015	8704-180-0030	2-METHYLNAPHTHALENE	240.00	UG/KG	J
			FLUORANTHENE	120.00	UG/KG	J
			AROCLOR-1260	7800.00	UG/KG	
			PYRENE	280.00	UG/KG	J
			PHENANTHRENE	2400.00	UG/KG	
			AROCLOR-1254	11500.00	UG/KG	
			BENZO(A)ANTHRACENE	100.00	UG/KG	J
			NAPHTHALENE	67.00	UG/KG	J
			BENZO(A)ANTHRACENE	100.00	UG/KG	J
			CHRYSENE	540.00	UG/KG	
			BENZO(B)FLUORANTHENE	330.00	UG/KG	J
			BIS(2-ETHYLHEXYL)PHTHALATE	1800.00	UG/KG	*
02-03	FMP-PS-02-017	8704-203-0080	FLUORENE	150.00	UG/KG	J
			INDENO(1,2,3-CD)PYRENE	340.00	UG/KG	J
			BENZO(G,H,I)PERYLENE	290.00	UG/KG	J
			ETHYLBENZENE	48.00	UG/KG	J
			NAPHTHALENE	190.00	UG/KG	J
			PYRENE	1600.00	UG/KG	
			BENZO(K)FLUORANTHENE	600.00	UG/KG	
			CHRYSENE	920.00	UG/KG	

J = Concentration is below quantification level; * = Common laboratory contaminant

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Table BD

Blind Duplicate Organic Chemical Results

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
02-03	FMP-PS-02-017	8704-203-0080	2-BUTANONE	2700.00	UG/KG	*
			DI-N-OCTYL PHTHALATE	240.00	UG/KG	J*
			DIBENZOFURAN	78.00	UG/KG	J
			FLUORANTHENE	2300.00	UG/KG	
			ACENAPHTHENE	80.00	UG/KG	J
			BENZO(B)FLUORANTHENE	760.00	UG/KG	
			DI-N-BUTYL PHTHALATE	380.00	UG/KG	J*
			AROCLOR-1260	740.00	UG/KG	
			BENZO(A)ANTHRACENE	860.00	UG/KG	
			ANTHRACENE	310.00	UG/KG	J
			4,4-DDT	580.00	UG/KG	
			VINYL CHLORIDE	670.00	UG/KG	
			BENZO(A)PYRENE	700.00	UG/KG	
			PHENANTHRENE	1700.00	UG/KG	
	FMP-PS-02-018	8704-203-0090	FLUORENE	2400.00	UG/KG	
			PYRENE	6400.00	UG/KG	
			DIBENZOFURAN	1200.00	UG/KG	
			BENZO(K)FLUORANTHENE	2200.00	UG/KG	
			DI-N-OCTYL PHTHALATE	140.00	UG/KG	J*
			ACENAPHTHENE	1200.00	UG/KG	
			BENZO(A)PYRENE	4300.00	UG/KG	
			2-METHYLNAPHTHALENE	550.00	UG/KG	
			DIBENZO(A,H)ANTHRACENE	740.00	UG/KG	
			NAPHTHALENE	1700.00	UG/KG	
			BENZO(G,H,I)PERYLENE	1300.00	UG/KG	
			ANTHRACENE	3500.00	UG/KG	
			AROCLOR-1260	310.00	UG/KG	J
			CHRYSENE	4200.00	UG/KG	
			BENZO(A)ANTHRACENE	5000.00	UG/KG	
			BENZO(B)FLUORANTHENE	5300.00	UG/KG	
			INDENO(1,2,3-CD)PYRENE	1600.00	UG/KG	
			DI-N-BUTYL PHTHALATE	560.00	UG/KG	*
		8704-203-0090DIL	FLUORANTHENE	17000.00	UG/KG	
			DI-N-BUTYL PHTHALATE	730.00	UG/KG	J*
			PHENANTHRENE	18000.00	UG/KG	

J = Concentration is below quantification level; * = Common laboratory contaminant

Table BD

Blind Duplicate Organic Chemical Results

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
03-06	FMP-PS-03-072	8704-145-0020	ACETONE	210.00	UG/KG	J*
			BIS(2-ETHYLHEXYL)PHTHALATE	110.00	UG/KG	J*
			AROCLOR-1254	74.00	UG/KG	J
			DI-N-BUTYL PHTHALATE	84.00	UG/KG	J*
	FMP-PS-03-088	8704-145-0030	AROCLOR-1254	220.00	UG/KG	J
			BIS(2-ETHYLHEXYL)PHTHALATE	280.00	UG/KG	J*
			DI-N-BUTYL PHTHALATE	66.00	UG/KG	J*
04-02	FMP-PS-04-021	8704-254-0010	AROCLOR-1254	296.00	UG/KG	J
			PHENANTHRENE	1000.00	UG/KG	
			BENZO(B)FLUORANTHENE	250.00	UG/KG	J
			ETHYL PARATHION	860.00	UG/KG	
			BENZO(G,H,I)PERYLENE	130.00	UG/KG	J
			FLUORENE	160.00	UG/KG	J
			FLUORANTHENE	1000.00	UG/KG	
			AROCLOR-1248	460.00	UG/KG	
			METHYL PARATHION	2100.00	UG/KG	
			ANTHRACENE	260.00	UG/KG	J
			DI-N-BUTYL PHTHALATE	490.00	UG/KG	*
			BENZO(K)FLUORANTHENE	330.00	UG/KG	J
			MALATHION	670.00	UG/KG	
			CHLOROFORM	430.00	UG/KG	
			DIBENZOFURAN	98.00	UG/KG	J
			CHRYSENE	420.00	UG/KG	J
			BENZO(A)ANTHRACENE	390.00	UG/KG	J
			TETRACHLOROETHENE	530.00	UG/KG	
			PYRENE	670.00	UG/KG	
			INDENO(1,2,3-CD)PYRENE	150.00	UG/KG	J
			NAPHTHALENE	62.00	UG/KG	J
			ACENAPHTHENE	87.00	UG/KG	J
			BENZO(A)PYRENE	320.00	UG/KG	J
	FMP-PS-04-022	8704-254-0020	AROCLOR-1254	98.00	UG/KG	J
			ACENAPHTHENE	1200.00	UG/KG	
			BENZO(A)PYRENE	4500.00	UG/KG	
			AROCLOR-1242	233.00	UG/KG	
			MALATHION	550.00	UG/KG	

J = Concentration is below quantification level; * = Common laboratory contaminant

Table BD

Blind Duplicate Organic Chemical Results

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
04-02	FMP-PS-04-022	8704-254-0020	NAPHTHALENE	1100.00	UG/KG	
			METHYL PARATHION	2000.00	UG/KG	
			ETHYL PARATHION	790.00	UG/KG	
			INDENO(1,2,3-CD)PYRENE	180.00	UG/KG	J
			2-METHYLNAPHTHALENE	730.00	UG/KG	
			DI-N-OCTYL PHTHALATE	190.00	UG/KG	J*
			DIBENZOFURAN	1400.00	UG/KG	
			FLUORENE	2200.00	UG/KG	
			DI-N-BUTYL PHTHALATE	130.00	UG/KG	J*
			BIS(2-ETHYLHEXYL)PHTHALATE	230.00	UG/KG	J*
		8704-254-0020DIL	ANTHRACENE	2500.00	UG/KG	
			FLUORANTHENE	9900.00	UG/KG	
			BENZO(B)FLUORANTHENE	3800.00	UG/KG	
			PHENANTHRENE	9400.00	UG/KG	
			BENZO(K)FLUORANTHENE	3700.00	UG/KG	
			CHRYSENE	4500.00	UG/KG	
			BENZO(A)PYRENE	4300.00	UG/KG	
			BENZO(A)ANTHRACENE	4100.00	UG/KG	
			PYRENE	6600.00	UG/KG	
07-05	FMP-PS-07-048	8705-359-0050	FLUORANTHENE	220.00	UG/KG	
			BENZO(A)ANTHRACENE	71.00	UG/KG	J
			DI-N-BUTYL PHTHALATE	54.00	UG/KG	J*
			CHRYSENE	83.00	UG/KG	J
			2-BUTANONE	70.00	UG/KG	J*
			PHENANTHRENE	110.00	UG/KG	J
			BIS(2-ETHYLHEXYL)PHTHALATE	2000.00	UG/KG	*
			BENZO(B)FLUORANTHENE	83.00	UG/KG	
			PYRENE	120.00	UG/KG	J
			PHENOL	140.00	UG/KG	J
			AROCLOR-1254	1957.00	UG/KG	
			METHYLENE CHLORIDE	100.00	UG/KG	J*
			ACETONE	180.00	UG/KG	J*
	FMP-PS-07-049	8705-359-0060	DI-N-BUTYL PHTHALATE	52.00	UG/KG	J*
			PHENOL	99.00	UG/KG	J
			AROCLOR-1254	45.00	UG/KG	J

J = Concentration is below quantification level; * = Common laboratory contaminant

Table BD

Blind Duplicate Organic Chemical Results

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
07-05	FMP-PS-07-049	8705-359-0060	AROCLOR-1242	65.00	UG/KG	J
			FLUORANTHENE	70.00	UG/KG	J
			BIS(2-ETHYLHEXYL)PHTHALATE	74.00	UG/KG	J*
			PYRENE	61.00	UG/KG	J
08-04	FMP-PS-08-006	8704-254-0060	BENZO(A)ANTHRACENE	140.00	UG/KG	J
			BIS(2-ETHYLHEXYL)PHTHALATE	270.00	UG/KG	J*
			PYRENE	290.00	UG/KG	J
			CHRYSENE	150.00	UG/KG	J
			AROCLOR-1254	132.00	UG/KG	J
			DI-N-BUTYL PHTHALATE	120.00	UG/KG	J*
			PHENANTHRENE	240.00	UG/KG	J
	FMP-PS-08-007	8704-254-0070	DIETHYL PHTHALATE	410.00	UG/KG	J
			BENZO(A)PYRENE	670.00	UG/KG	J
			FLUORENE	280.00	UG/KG	J
			PHENANTHRENE	2100.00	UG/KG	
			AROCLOR-1254	180.00	UG/KG	J
			CHRYSENE	1000.00	UG/KG	J
			INDENO(1,2,3-CD)PYRENE	270.00	UG/KG	J
			BIS(2-ETHYLHEXYL)PHTHALATE	560.00	UG/KG	J*
			FLUORANTHENE	3100.00	UG/KG	
			BENZO(K)FLUORANTHENE	750.00	UG/KG	J
			ANTHRACENE	450.00	UG/KG	J
			PYRENE	1400.00	UG/KG	J
			BENZO(G,H,I)PERYLENE	230.00	UG/KG	J
			DI-N-BUTYL PHTHALATE	1700.00	UG/KG	*
			BENZO(B)FLUORANTHENE	710.00	UG/KG	J
			BENZO(A)ANTHRACENE	890.00	UG/KG	J
24-08	FMP-PS-24-098	8705-426-0060	ACETONE	170.00	UG/KG	J*
24-10	FMP-PS-24-097	8705-426-0050	AROCLOR-1242	5.70	UG/KG	J
			AROCLOR-1254	290.00	UG/KG	
	FMP-PS-24-098	8705-426-0060	AROCLOR-1242	1.90	UG/KG	J

J = Concentration is below quantification level; * = Common laboratory contaminant

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Table BD

Blind Duplicate Organic Chemical Results

Borehole Number	Sample Id	Batch Number	Parameter	Concentration	Unit Of Measure	Qualifier
24-10	FMP-PS-24-098	8705-426-0060	AROCLOR-1254	250.00	UG/KG	
49-01	FMP-PS-49-001	8704-286-0060	BENZO(B)FLUORANTHENE	6700.00	UG/KG	
			BENZO(G,H,I)PERYLENE	6000.00	UG/KG	
			AROCLOR-1248	180.00	UG/KG	J
			INDENO(1,2,3-CD)PYRENE	5700.00	UG/KG	
			DI-N-OCTYL PHTHALATE	350.00	UG/KG	J*
			DI-N-BUTYL PHTHALATE	55.00	UG/KG	J*
			BENZO(K)FLUORANTHENE	4000.00	UG/KG	
			ACETONE	190.00	UG/KG	J*
			BENZO(A)PYRENE	7000.00	UG/KG	
			DIBENZOFURAN	620.00	UG/KG	
			FLUORENE	1400.00	UG/KG	
			2-METHYLNAPHTHALENE	66.00	UG/KG	
	FMP-PS-49-002	8704-286-0070	DI-N-OCTYL PHTHALATE	92.00	UG/KG	J*
			AROCLOR-1248	110.00	UG/KG	
			BIS(2-ETHYLHEXYL)PHTHALATE	120.00	UG/KG	J*
			BUTYL BENZYL PHTHALATE	99.00	UG/KG	J
			FLUORANTHENE	59.00	UG/KG	J
49-10	FMP-PS-49-001	8704-286-0060	ACENAPHTHENE	1300.00	UG/KG	
			ANTHRACENE	2700.00	UG/KG	
			DIBENZO(A,H)ANTHRACENE	2100.00	UG/KG	
			BUTYL BENZYL PHTHALATE	320.00	UG/KG	J

J = Concentration is below quantification level; * = Common laboratory contaminant

Appendix D

APPENDIX D

RADIOCHEMICAL ANALYSIS OF COMPOSITE SAMPLES OF WASTE PIT BORINGS

Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
01-01	CS-137	<	.50	
	NP-237	<	.10	
	PB-210	=	NOT ANALYZED	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	60.20	3.10
	RA-228	=	NOT ANALYZED	
	RU-106	<	4.00	
	SR-90	<	.40	
	TC-99	<	1.00	
	TH-228	=	16.00	2.00
	TH-230	=	1980.00	20.00
	TH-232	=	17.00	2.00
	U-234	=	429.00	5.00
	U-235	=	32.00	1.00
	U-238	=	485.00	5.00
01-02	CS-137	<	.20	
	NP-237	<	.10	
	PB-210	=	NOT ANALYZED	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	12.00	2.80
	RA-228	=	NOT ANALYZED	
	RU-106	<	2.00	
	SR-90	<	.30	
	TC-99	<	2.00	
	TH-228	=	8.60	1.60
	TH-230	=	1240.00	20.00
	TH-232	=	7.70	1.50
	U-234	=	488.00	13.00
	U-235	=	30.00	3.00
	U-238	=	1370.00	20.00
01-03	CS-137	<	1.00	
	NP-237	<	.30	
	PB-210	=	NOT ANALYZED	
	PU-238	<	.10	
	PU-239/240	<	.10	

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
01-03	RA-226	=	21.10	2.30
	RA-228	=	NOT ANALYZED	
	RU-106	<	2.00	
	SR-90	<	.60	
	TC-99	=	15.00	1.00
	TH-228	=	18.00	4.00
	TH-230	=	326.00	17.00
	TH-232	=	17.00	4.00
	U-234	=	1180.00	30.00
	U-235	=	151.00	9.00
	U-238	=	6980.00	60.00
01-04	CS-137	=	1.10	.80
	NP-237	<	.10	
	PB-210	=	NOT ANALYZED	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	36.20	2.50
	RA-228	=	NOT ANALYZED	
	RU-106	<	2.00	
	SR-90	<	.60	
	TC-99	<	2.00	
	TH-228	=	6.10	2.00
	TH-230	=	376.00	13.00
	TH-232	=	11.40	1.60
	U-234	=	451.00	5.00
	U-235	=	51.00	2.00
	U-238	=	558.00	5.00
01-05	CS-137	<	.40	
	NP-237	<	.10	
	PB-210	=	NOT ANALYZED	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	23.10	1.60
	RA-228	=	NOT ANALYZED	
	RU-106	<	3.00	
	SR-90	<	.50	
	TC-99	<	1.00	

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
01-05	TH-228	=	1.80	.20
	TH-230	=	122.00	1.00
	TH-232	=	1.80	.20
	U-234	=	244.00	3.00
	U-235	=	16.00	1.00
	U-238	=	360.00	4.00
02-01	CS-137	=	3.60	1.20
	NP-237	<	.20	
	PB-210	=	NOT ANALYZED	
	PU-238	=	.10	.10
	PU-239/240	=	.05	.02
	RA-226	=	84.30	4.20
	RA-228	=	NOT ANALYZED	
	RU-106	=	35.00	12.00
	SR-90	<	.30	
	TC-99	=	11.00	1.00
	TH-228	=	3.30	.20
	TH-230	=	3.60	.30
	TH-232	=	.60	.10
	U-234	=	564.00	19.00
	U-235	=	131.00	9.00
	U-238	=	4280.00	50.00
02-02	CS-137	<	2.00	
	NP-237	<	.40	
	PB-210	=	NOT ANALYZED	
	PU-238	=	.10	.10
	PU-239/240	=	.60	.10
	RA-226	=	412.00	12.50
	RA-228	=	NOT ANALYZED	
	RU-106	<	16.00	
	SR-90	<	1.00	
	TC-99	=	618.00	38.00
	TH-228	=	73.00	10.00
	TH-230	=	3980.00	70.00
	TH-232	=	88.00	10.00
	U-234	=	18200.00	200.00
	U-235	=	8780.00	150.00

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
02-02	U-238	=	17900.00	200.00
02-03	CS-137	<	.20	
	NP-237	<	.30	
	PB-210	=	NOT ANALYZED	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	12.20	3.70
	RA-228	=	NOT ANALYZED	
	RU-106	<	2.00	
	SR-90	<	.50	
	TC-99	=	14.00	1.00
	TH-228	=	11.00	2.00
	TH-230	=	41.00	3.00
	TH-232	=	11.00	2.00
	U-234	=	226.00	7.00
	U-235	=	21.00	2.00
	U-238	=	1070.00	20.00
02-04	CS-137	<	.70	
	NP-237	<	.10	
	PB-210	=	NOT ANALYZED	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	51.50	2.40
	RA-228	=	NOT ANALYZED	
	RU-106	<	5.00	
	SR-90	<	.90	
	TC-99	<	1.00	
	TH-228	=	37.00	5.00
	TH-230	=	2040.00	40.00
	TH-232	=	38.00	6.00
	U-234	=	303.00	3.00
	U-235	=	31.00	1.00
	U-238	=	317.00	4.00
02-05	CS-137	=	.70	.50
	NP-237	<	.10	

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
02-05	PB-210	=	NOT ANALYZED	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	28.70	1.90
	RA-228	=	NOT ANALYZED	
	RU-106	<	2.00	
	SR-90	<	.60	
	TC-99	<	2.00	
	TH-228	=	.30	.10
	TH-230	=	1.20	.20
	TH-232	=	.10	.10
	U-234	=	39.00	3.00
	U-235	=	1.00	.70
	U-238	=	53.00	4.00
03-01	CS-137	<	.70	
	NP-237	<	.10	
	PB-210	=	NOT ANALYZED	
	PU-238	<	.08	
	PU-239/240	<	.05	
	RA-226	=	3.10	.80
	RA-228	=	NOT ANALYZED	
	RU-106	<	5.00	
	SR-90	<	.50	
	TC-99	<	1.00	
	TH-228	=	1.00	.30
	TH-230	=	15.00	1.00
	TH-232	=	1.00	.30
	U-234	=	27.00	1.00
	U-235	=	2.50	.40
	U-238	=	134.00	3.00
03-02	CS-137	<	.20	
	NP-237	<	.20	
	PB-210	=	NOT ANALYZED	
	PU-238	=	.10	.10
	PU-239/240	=	.30	.10
	RA-226	=	4.30	1.40
	RA-228	=	NOT ANALYZED	

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
03-02	RU-106	<	2.00	
	SR-90	<	.90	
	TC-99	=	52.00	2.00
	TH-228	=	14.00	5.00
	TH-230	=	72.00	5.00
	TH-232	=	9.50	3.80
	U-234	=	163.00	2.00
	U-235	=	15.00	1.00
	U-238	=	285.00	3.00
03-03	CS-137	<	6.00	
	NP-237	=	.80	.40
	PB-210	=	NOT ANALYZED	
	PU-238	=	.14	.07
	PU-239/240	=	.30	.10
	RA-226	=	369.00	10.00
	RA-228	=	NOT ANALYZED	
	RU-106	<	35.00	
	SR-90	=	26.00	3.00
	TC-99	=	132.00	5.00
	TH-228	=	35.00	4.00
	TH-230	=	17000.00	100.00
	TH-232	=	72.00	6.00
	U-234	=	475.00	9.00
	U-235	=	21.00	2.00
	U-238	=	521.00	9.00
03-04	CS-137	<	5.00	
	NP-237	=	2.10	.60
	PB-210	=	NOT ANALYZED	
	PU-238	=	1.00	.10
	PU-239/240	=	14.00	1.00
	RA-226	=	198.00	9.00
	RA-228	=	NOT ANALYZED	
	RU-106	<	35.00	
	SR-90	=	2.40	.40
	TC-99	=	1110.00	80.00
	TH-228	=	82.00	8.00
	TH-230	=	21900.00	100.00

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
03-04	TH-232	=	121.00	10.00
	U-234	=	387.00	8.00
	U-235	=	16.40	1.70
	U-238	=	403.00	8.00
03-05	CS-137	<	1.00	
	NP-237	<	.40	
	PB-210	=	NOT ANALYZED	
	PU-238	<	.05	
	PU-239/240	=	.30	.10
	RA-226	=	3.40	1.30
	RA-228	=	NOT ANALYZED	
	RU-106	<	6.00	
	SR-90	<	.50	
	TC-99	=		
	TH-228	=	58.00	1.20
	TH-230	=	341.00	8.00
	TH-232	=	5.80	1.20
	U-234	=	156.00	5.00
	U-235	=	7.20	1.20
	U-238	=	156.00	5.00
03-06	CS-137	<	.60	
	NP-237	=	.30	.20
	PB-210	=	NOT ANALYZED	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	136.60	4.30
	RA-228	=	NOT ANALYZED	
	RU-106	<	4.00	
	SR-90	<	.90	
	TC-99	=	47.00	2.00
	TH-228	=	7.20	1.70
	TH-230	=	4040.00	40.00
	TH-232	=	6.90	1.90
	U-234	=	79.00	2.00
	U-235	=	5.80	.40
	U-238	=	215.00	3.00

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
03-07	CS-137	<	.80	
	NP-237	<	.20	
	PB-210	=	NOT ANALYZED	
	PU-238	=	.10	.10
	PU-239/240	<	.10	
	RA-226	=	155.00	4.50
	RA-228	=	NOT ANALYZED	
	RU-106	<	6.00	
	SR-90	<	.60	
	TC-99	=	93.00	3.00
	TH-228	=	5.90	1.60
	TH-230	=	5900.00	50.00
	TH-232	=	9.40	2.00
	U-234	=	167.00	9.00
	U-235	=	14.00	2.00
	U-238	=	1380.00	20.00
04-01	CS-137	<	.20	
	NP-237	<	.10	
	PB-210	=	NOT ANALYZED	
	PU-238	=	.10	.10
	PU-239/240	=	.10	.10
	RA-226	=	16.10	1.50
	RA-228	=	NOT ANALYZED	
	RU-106	<	2.00	
	SR-90	<	.40	
	TC-99	=	6.80	1.00
	TH-228	=	22.00	4.00
	TH-230	=	566.00	20.00
	TH-232	=	17.00	3.00
	U-234	=	366.00	5.00
	U-235	=	84.00	2.00
	U-238	=	737.00	7.00
04-02	CS-137	<	.30	
	NP-237	<	.40	
	PB-210	=	NOT ANALYZED	
	PU-238	=	.10	.10

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
04-02	PU-239/240	=	.20	.10
	RA-226	=	5.00	1.10
	RA-228	=	NOT ANALYZED	
	RU-106	<	3.00	
	SR-90	<	.40	
	TC-99	=	59.00	2.00
	TH-228	=	18.00	4.00
	TH-230	=	553.00	19.00
	TH-232	=	18.00	3.00
	U-234	=	298.00	5.00
	U-235	=	35.00	2.00
	U-238	=	509.00	6.00
04-03	CS-137	<	.50	
	NP-237	<	.20	
	PB-210	=	NOT ANALYZED	
	PU-238	=	.50	.10
	PU-239/240	=	.40	.10
	RA-226	=	18.00	1.80
	RA-228	=	NOT ANALYZED	
	RU-106	<	4.00	
	SR-90	<	.60	
	TC-99	=	31.00	2.00
	TH-228	=	24.00	5.00
	TH-230	=	369.00	19.00
	TH-232	=	21.00	5.00
	U-234	=	149.00	7.00
	U-235	=	64.00	5.00
	U-238	=	1530.00	20.00
04-04	CS-137	<	.20	
	NP-237	=	.40	.20
	PB-210	=	NOT ANALYZED	
	PU-238	=	.40	.10
	PU-239/240	=	.10	.10
	RA-226	<	20.00	
	RA-228	=	NOT ANALYZED	
	RU-106	<	2.00	
	SR-90	<	1.00	

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
04-04	TC-99	=	225.00	10.00
	TH-228	=	.30	.10
	TH-230	=	2.20	.30
	TH-232	=	.30	.10
	U-234	=	2320.00	90.00
	U-235	=	426.00	38.00
	U-238	=	15800.00	200.00
05-01	CS-137	<	2.00	
	NP-237	=	2.60	.50
	PB-210	=	NOT ANALYZED	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	495.00	96.00
	RA-228	=	NOT ANALYZED	
	RU-106	<	13.00	
	SR-90	=	4.10	1.10
	TC-99	=	423.00	20.00
	TH-228	=	41.00	3.00
	TH-230	=	3080.00	30.00
	TH-232	=	21.00	2.00
	U-234	=	430.00	5.00
	U-235	=	26.00	1.00
	U-238	=	387.00	4.00
05-02	CS-137	<	7.00	
	NP-237	=	9.30	1.20
	PB-210	=	NOT ANALYZED	
	PU-238	=	2.40	.20
	PU-239/240	=	13.00	1.00
	RA-226	=	443.00	17.00
	RA-228	=	NOT ANALYZED	
	RU-106	<	35.00	
	SR-90	=	.80	.30
	TC-99	=	1830.00	200.00
	TH-228	=	78.00	16.00
	TH-230	=	11600.00	200.00
	TH-232	=	90.00	16.00
	U-234	=	1250.00	20.00

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
05-02	U-235	=	79.00	5.00
	U-238	=	1230.00	20.00
05-03	CS-137	<	4.00	
	NP-237	=	21.00	1.00
	PB-210	=	NOT ANALYZED	
	PU-238	=	4.30	.30
	PU-239/240	=	4.80	.30
	RA-226	=	235.00	15.00
	RA-228	=	NOT ANALYZED	
	RU-106	<	35.00	
	SR-90	=	1.70	.40
	TC-99	=	887.00	67.00
	TH-228	=	68.00	6.00
	TH-230	=	5350.00	50.00
	TH-232	=	85.00	6.00
	U-234	=	790.00	10.00
	U-235	=	35.00	3.00
	U-238	=	730.00	10.00
05-04	CS-137	<	6.00	
	NP-237	=	23.00	1.00
	PB-210	=	NOT ANALYZED	
	PU-238	=	4.40	.30
	PU-239/240	=	11.00	1.00
	RA-226	=	391.00	16.00
	RA-228	=	NOT ANALYZED	
	RU-106	<	35.00	
	SR-90	=	3.30	.40
	TC-99	=	821.00	61.00
	TH-228	=	191.00	8.00
	TH-230	=	6740.00	50.00
	TH-232	=	69.00	5.00
	U-234	=	680.00	10.00
	U-235	=	36.00	3.00
	U-238	=	630.00	10.00
05-05	CS-137	=	61.00	9.00

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
05-05	NP-237	=	.30	.10
	PB-210	=	NOT ANALYZED	
	PU-238	=	.40	.10
	PU-239/240	=	.40	.10
	RA-226	=	999.00	25.00
	RA-228	=	NOT ANALYZED	
	RU-106	<	35.00	
	SR-90	<	15.00	1.00
	TC-99	=	696.00	48.00
	TH-228	=	51.00	4.00
	TH-230	=	12300.00	100.00
	TH-232	=	62.00	6.00
	U-234	=	310.00	10.00
	U-235	=	14.00	2.00
	U-238	=	460.00	10.00
05-06	CS-137	=	76.00	8.00
	NP-237	=	5.10	.50
	PB-210	=	NOT ANALYZED	
	PU-238	=	.40	.10
	PU-239/240	=	.90	.10
	RA-226	=	752.00	23.00
	RA-228	=	NOT ANALYZED	
	RU-106	<	35.00	
	SR-90	=	23.00	1.00
	TC-99	=	2990.00	350.00
	TH-228	=	97.00	9.00
	TH-230	=	20200.00	200.00
	TH-232	=	82.00	9.00
	U-234	=	370.00	10.00
	U-235	=	16.00	2.00
	U-238	=	410.00	10.00
06-01	CS-137	=	15.00	4.00
	NP-237	=	2.60	.60
	PB-210	=	NOT ANALYZED	
	PU-238	=	1.40	.20
	PU-239/240	=	15.00	1.00
	RA-226	<	30.00	

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
06-01	RA-228	=	NOT ANALYZED	
	RU-106	<	35.00	
	SR-90	=	4.00	.40
	TC-99	=	84.00	2.00
	TH-228	=	1.20	.20
	TH-230	=	41.00	1.00
	TH-232	=	1.20	.20
	U-234	=	3380.00	80.00
	U-235	=	1490.00	50.00
	U-238	=	18700.00	200.00
06-02	CS-137	=	31.00	4.00
	NP-237	=	4.50	.80
	PB-210	=	NOT ANALYZED	
	PU-238	=	.60	.20
	PU-239/240	=	9.50	.50
	RA-226	<	20.00	
	RA-228	=	NOT ANALYZED	
	RU-106	<	35.00	
	SR-90	=	1.80	.40
	TC-99	=	120.00	5.00
	TH-228	=	2.00	.20
	TH-230	=	26.00	1.00
	TH-232	=	.30	.10
	U-234	=	5330.00	100.00
	U-235	=	1750.00	60.00
	U-238	=	18700.00	200.00
06-03	CS-137	=	20.00	4.00
	NP-237	=	.90	.40
	PB-210	=	NOT ANALYZED	
	PU-238	=	.40	.10
	PU-239/240	=	4.00	.30
	RA-226	<	16.00	
	RA-228	=	NOT ANALYZED	
	RU-106	<	35.00	
	SR-90	<	.50	
	TC-99	=	164.00	7.00
	TH-228	=	.20	.10

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
06-03	TH-230	=	25.00	1.00
	TH-232	=	.20	.10
	U-234	=	2960.00	120.00
	U-235	=	350.00	40.00
	U-238	=	18000.00	300.00
06-04	CS-137	<	4.00	
	NP-237	=	1.90	.40
	PB-210	=	NOT ANALYZED	
	PU-238	=	.70	.20
	PU-239/240	=	6.30	.50
	RA-226	<	23.00	
	RA-228	=	NOT ANALYZED	
	RU-106	<	35.00	
	SR-90	=	1.30	.40
	TC-99	=	140.00	9.00
	TH-228	=	.40	.10
	TH-230	=	14.00	1.00
	TH-232	=	.40	.10
	U-234	=	2000.00	70.00
	U-235	=	580.00	40.00
	U-238	=	12500.00	200.00
07-01	CS-137	<	.60	
	NP-237	<	.10	
	PB-210	=	NOT ANALYZED	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	3.00	.70
	RA-228	=	NOT ANALYZED	
	RU-106	<	2.00	
	SR-90	<	.50	
	TC-99	<	.40	
	TH-228	<	.10	
	TH-230	=	.10	.10
	TH-232	<	.10	
	U-234	=	108.00	2.00
	U-235	=	6.30	.40
	U-238	=	139.00	2.00

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
07-02	CS-137	<	.20	
	NP-237	<	.20	
	PB-210	=	NOT ANALYZED	
	PU-238	=	.50	.10
	PU-239/240	=	.10	.10
	RA-226	=	2.50	.80
	RA-228	=	NOT ANALYZED	
	RU-106	<	2.00	
	SR-90	<	.80	
	TC-99	=	60.00	3.00
	TH-228	=	9.60	1.40
	TH-230	=	26.00	2.00
	TH-232	=	7.70	1.30
	U-234	=	415.00	6.00
	U-235	=	27.00	6.00
	U-238	=	454.00	6.00
07-03	CS-137	<	.30	
	NP-237	=	.70	.30
	PB-210	=	NOT ANALYZED	
	PU-238	=	.10	.10
	PU-239/240	=	.10	.10
	RA-226	=	3.90	1.10
	RA-228	=	NOT ANALYZED	
	RU-106	<	2.00	
	SR-90	<	.90	
	TC-99	=	32.00	1.00
	TH-228	=	.20	.10
	TH-230	=	1.60	.20
	TH-232	=	.10	.10
	U-234	=	78.00	2.00
	U-235	=	6.00	.50
	U-238	=	209.00	3.00
07-04	CS-137	<	.20	
	NP-237	<	.30	
	PB-210	=	NOT ANALYZED	

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
07-04	PU-238	=	.10	.10
	PU-239/240	=	.10	.10
	RA-226	=	2.30	.80
	RA-228	=	NOT ANALYZED	
	RU-106	<	2.00	
	SR-90	<	.80	
	TC-99	=	18.00	1.00
	TH-228	=	.30	.10
	TH-230	=	.50	.10
	TH-232	=	.10	.10
	U-234	=	75.00	1.00
	U-235	=	3.70	.30
	U-238	=	90.00	2.00
07-05	CS-137	<	.20	
	NP-237	<	.20	
	PB-210	=	NOT ANALYZED	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	<	2.00	
	RA-228	=	NOT ANALYZED	
	RU-106	<	2.00	
	SR-90	<	.50	
	TC-99	<	.40	
	TH-228	<	.20	
	TH-230	=	3.20	.60
	TH-232	<	.20	
	U-234	=	9.90	.40
	U-235	=	.50	.10
	U-238	=	22.00	1.00
07-06	CS-137	<	.30	
	NP-237	=	.70	.30
	PB-210	=	NOT ANALYZED	
	PU-238	=	.10	.10
	PU-239/240	=	.40	.10
	RA-226	=	2.60	1.00
	RA-228	=	NOT ANALYZED	
	RU-106	<	2.00	

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
07-06	SR-90	<	.90	
	TC-99	=	64.00	3.00
	TH-228	=	.20	.10
	TH-230	=	2.90	.20
	TH-232	=	.30	.10
	U-234	=	125.00	2.00
	U-235	=	6.70	.50
	U-238	=	138.00	2.00
08-01	CS-137	=	140.00	10.00
	NP-237	=	1.40	.50
	PB-210	=	NOT ANALYZED	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	21.90	4.20
	RA-228	=	NOT ANALYZED	
	RU-106	<	12.00	
	SR-90	=	2.80	.50
	TC-99	=	278.00	13.00
	TH-228	<	.20	
	TH-230	=	.30	.10
	TH-232	<	.10	
	U-234	=	242.00	5.00
	U-235	=	28.00	2.00
	U-238	=	634.00	8.00
08-02	CS-137	=	18.00	1.00
	NP-237	<	.40	
	PB-210	=	NOT ANALYZED	
	PU-238	=	.10	.10
	PU-239/240	<	.10	
	RA-226	=	21.60	2.60
	RA-228	=	NOT ANALYZED	
	RU-106	<	3.00	
	SR-90	=	1.30	.80
	TC-99	=	117.00	5.00
	TH-228	=	20.00	2.00
	TH-230	=	430.00	11.00
	TH-232	=	15.00	2.00

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
08-02	U-234	=	242.00	4.00
	U-235	=	24.00	1.00
	U-238	=	634.00	7.00
08-03	CS-137	=	450.00	20.00
	NP-237	=	.80	.40
	PB-210	=	NOT ANALYZED	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	458.00	17.00
	RA-228	=	NOT ANALYZED	
	RU-106	<	24.00	
	SR-90	=	26.00	3.00
	TC-99	<	.40	
	TH-228	=	30.00	13.00
	TH-230	=	5600.00	120.00
	TH-232	=	39.00	11.00
	U-234	=	376.00	5.00
	U-235	=	39.00	2.00
	U-238	=	548.00	6.00
08-04	CS-137	=	150.00	10.00
	NP-237	=	2.70	.70
	PB-210	=	NOT ANALYZED	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	32.00	5.60
	RA-228	=	NOT ANALYZED	
	RU-106	<	13.00	
	SR-90	=	3.80	1.10
	TC-99	<	.40	
	TH-228	<	41.00	2.00
	TH-230	=	105.00	4.00
	TH-232	<	2.80	.70
	U-234	=	299.00	5.00
	U-235	=	49.00	2.00
	U-238	=	670.00	7.00

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
24-01	CS-137	=	NOT ANALYZED	
	NP-237	=	NOT ANALYZED	
	PB-210	=	28.00	2.00
	PU-238	=	NOT ANALYZED	
	PU-239/240	=	NOT ANALYZED	
	RA-226	=	9.00	1.00
	RA-228	=	1.60	.80
	RU-106	=	NOT ANALYZED	
	SR-90	=	NOT ANALYZED	
	TC-99	=	NOT ANALYZED	
	TH-228	=	.10	.10
	TH-230	=	9.60	.50
	TH-232	<	.10	
	U-234	=	9.10	.40
	U-235	=	.40	.10
	U-238	=	19.00	1.00
24-02	CS-137	=	NOT ANALYZED	
	NP-237	=	NOT ANALYZED	
	PB-210	=	3.00	1.00
	PU-238	=	NOT ANALYZED	
	PU-239/240	=	NOT ANALYZED	
	RA-226	=	1.20	.40
	RA-228	=	.90	.60
	RU-106	=	NOT ANALYZED	
	SR-90	=	NOT ANALYZED	
	TC-99	=	NOT ANALYZED	
	TH-228	=	.20	.10
	TH-230	=	.30	.10
	TH-232	=	.20	.10
	U-234	=	2.00	.20
	U-235	=	.09	.07
	U-238	=	4.90	.40
24-03	CS-137	=	NOT ANALYZED	
	NP-237	=	NOT ANALYZED	
	PB-210	=	2.00	1.00
	PU-238	=	NOT ANALYZED	
	PU-239/240	=	NOT ANALYZED	

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
24-03	RA-226	=	.80	.30
	RA-228	=	.60	.40
	RU-106	=	NOT ANALYZED	
	SR-90	=	NOT ANALYZED	
	TC-99	=	NOT ANALYZED	
	TH-228	<	.10	
	TH-230	=	.10	.10
	TH-232	<	.10	
	U-234	=	8.20	.40
	U-235	=	.50	.10
	U-238	=	24.00	1.00
24-04	CS-137	=	NOT ANALYZED	
	NP-237	=	NOT ANALYZED	
	PB-210	=	4.00	1.00
	PU-238	=	NOT ANALYZED	
	PU-239/240	=	NOT ANALYZED	
	RA-226	=	2.10	.50
	RA-228	=	2.20	.70
	RU-106	=	NOT ANALYZED	
	SR-90	=	NOT ANALYZED	
	TC-99	=	NOT ANALYZED	
	TH-228	=	.30	.20
	TH-230	=	.50	.20
	TH-232	<	.10	
	U-234	=	5.80	.30
	U-235	=	.30	.10
	U-238	=	9.20	.40
24-05	CS-137	=	NOT ANALYZED	
	NP-237	=	NOT ANALYZED	
	PB-210	=	26.00	2.00
	PU-238	=	NOT ANALYZED	
	PU-239/240	=	NOT ANALYZED	
	RA-226	=	17.00	1.00
	RA-228	<	1.00	
	RU-106	=	NOT ANALYZED	
	SR-90	=	NOT ANALYZED	
	TC-99	=	NOT ANALYZED	

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
24-05	TH-228	=	.80	.30
	TH-230	=	10.00	1.00
	TH-232	=	.50	.20
	U-234	=	3.80	.30
	U-235	=	.20	.05
	U-238	=	5.10	.30
24-06	CS-137	=	NOT ANALYZED	
	NP-237	=	NOT ANALYZED	
	PB-210	=	4.00	1.00
	PU-238	=	NOT ANALYZED	
	PU-239/240	=	NOT ANALYZED	
	RA-226	=	5.00	1.00
	RA-228	=	1.00	.60
	RU-106	=	NOT ANALYZED	
	SR-90	=	NOT ANALYZED	
	TC-99	=	NOT ANALYZED	
	TH-228	<	.10	
	TH-230	=	.50	.10
	TH-232	<	.10	
	U-234	=	2.60	.20
	U-235	=	.10	.04
	U-238	=	3.10	.20
24-07	CS-137	=	NOT ANALYZED	
	NP-237	=	NOT ANALYZED	
	PB-210	=	2.00	1.00
	PU-238	=	NOT ANALYZED	
	PU-239/240	=	NOT ANALYZED	
	RA-226	=	.70	.50
	RA-228	=	3.00	1.00
	RU-106	=	NOT ANALYZED	
	SR-90	=	NOT ANALYZED	
	TC-99	=	NOT ANALYZED	
	TH-228	=	.70	.20
	TH-230	=	1.10	.30
	TH-232	=	.60	.20
	U-234	=	15.00	1.00
	U-235	=	.60	.10

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
24-07	U-238	=	16.00	1.00
24-08	CS-137	=	NOT ANALYZED	
	NP-237	=	NOT ANALYZED	
	PB-210	=	3.00	1.00
	PU-238	=	NOT ANALYZED	
	PU-239/240	=	NOT ANALYZED	
	RA-226	=	.70	.50
	RA-228	=	9.00	1.00
	RU-106	=	NOT ANALYZED	
	SR-90	=	NOT ANALYZED	
	TC-99	=	NOT ANALYZED	
	TH-228	=	1.30	.20
	TH-230	=	.70	.20
	TH-232	=	1.40	.20
	U-234	=	14.00	1.00
	U-235	=	.80	.10
	U-238	=	17.00	1.00
24-09	CS-137	=	NOT ANALYZED	
	NP-237	=	NOT ANALYZED	
	PB-210	=	2.00	1.00
	PU-238	=	NOT ANALYZED	
	PU-239/240	=	NOT ANALYZED	
	RA-226	=	.90	.40
	RA-228	=	10.00	1.00
	RU-106	=	NOT ANALYZED	
	SR-90	=	NOT ANALYZED	
	TC-99	=	NOT ANALYZED	
	TH-228	=	1.90	.20
	TH-230	=	.50	.10
	TH-232	=	2.10	.20
	U-234	=	15.00	1.00
	U-235	=	.80	.10
	U-238	=	42.00	1.00
24-10	CS-137	=	NOT ANALYZED	
	NP-237	=	NOT ANALYZED	

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
24-10	PB-210	=	5.00	1.00
	PU-238	=	NOT ANALYZED	
	PU-239/240	=	NOT ANALYZED	
	RA-226	=	4.10	.70
	RA-228	=	2.00	.70
	RU-106	=	NOT ANALYZED	
	SR-90	=	NOT ANALYZED	
	TC-99	=	NOT ANALYZED	
	TH-228	=	2.30	.80
	TH-230	=	11.00	2.00
	TH-232	=	2.60	.80
	U-234	=	48.00	1.00
	U-235	=	2.20	.20
	U-238	=	50.00	1.00
24-11	CS-137	=	NOT ANALYZED	
	NP-237	=	NOT ANALYZED	
	PB-210	=	3.00	1.00
	PU-238	=	NOT ANALYZED	
	PU-239/240	=	NOT ANALYZED	
	RA-226	=	1.50	.50
	RA-228	=	1.70	.70
	RU-106	=	NOT ANALYZED	
	SR-90	=	NOT ANALYZED	
	TC-99	=	NOT ANALYZED	
	TH-228	=	.20	.10
	TH-230	=	.20	.10
	TH-232	=	.10	.10
	U-234	=	3.70	.30
	U-235	=	.20	.10
	U-238	=	6.60	.40
24-12	CS-137	=	NOT ANALYZED	
	NP-237	=	NOT ANALYZED	
	PB-210	=	2.00	1.00
	PU-238	=	NOT ANALYZED	
	PU-239/240	=	NOT ANALYZED	
	RA-226	=	.60	.30
	RA-228	=	2.00	.60

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
24-12	RU-106	=	NOT ANALYZED	
	SR-90	=	NOT ANALYZED	
	TC-99	=	NOT ANALYZED	
	TH-228	<	.20	
	TH-230	<	.10	
	TH-232	<	.10	
	U-234	=	6.70	.40
	U-235	=	.20	.10
	U-238	=	9.00	.40
25-01	CS-137	=	NOT ANALYZED	
	NP-237	=	NOT ANALYZED	
	PB-210	=	4.00	1.00
	PU-238	=	NOT ANALYZED	
	PU-239/240	=	NOT ANALYZED	
	RA-226	=	2.40	.50
	RA-228	=	1.70	.40
	RU-106	=	NOT ANALYZED	
	SR-90	=	NOT ANALYZED	
	TC-99	=	NOT ANALYZED	
	TH-228	<	.10	
	TH-230	=	5.30	.40
	TH-232	<	.10	
	U-234	=	4.50	.30
	U-235	=	.10	.06
	U-238	=	5.10	.30
25-02	CS-137	=	NOT ANALYZED	
	NP-237	=	NOT ANALYZED	
	PB-210	<	1.00	
	PU-238	=	NOT ANALYZED	
	PU-239/240	=	NOT ANALYZED	
	RA-226	=	.40	.10
	RA-228	=	.90	.40
	RU-106	=	NOT ANALYZED	
	SR-90	=	NOT ANALYZED	
	TC-99	=	NOT ANALYZED	
	TH-228	<	.10	
	TH-230	=	.70	.10

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
25-02	TH-232	=	.10	.10
	U-234	=	5.70	.30
	U-235	=	.20	.06
	U-238	=	6.80	.20
47-01	CS-137	<	1.00	
	NP-237	<	.03	
	PB-210	=	NOT ANALYZED	
	PU-238	<	.06	
	PU-239/240	<	.05	
	RA-226	<	6.20	
	RA-228	=	NOT ANALYZED	
	RU-106	<	6.00	
	SR-90	=	2.20	.90
	TC-99	<	.30	
	TH-228	=	.20	.20
	TH-230	=	20.00	1.00
	TH-232	=	.20	.20
	U-234	=	2.50	.20
	U-235	=	.10	.10
	U-238	=	7.60	.40
47-02	CS-137	<	2.00	
	NP-237	<	.04	
	PB-210	=	NOT ANALYZED	
	PU-238	<	.09	
	PU-239/240	<	.05	
	RA-226	<	2.00	
	RA-228	=	NOT ANALYZED	
	RU-106	<	6.00	
	SR-90	<	.50	
	TC-99	<	.40	
	TH-228	=	.20	.10
	TH-230	=	5.00	.40
	TH-232	=	.20	.10
	U-234	=	2.50	.20
	U-235	=	.20	.10
	U-238	=	2.40	.20

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
47-03	CS-137	<	.80	
	NP-237	<	.03	
	PB-210	=	NOT ANALYZED	
	PU-238	<	.05	
	PU-239/240	<	.05	
	RA-226	<	3.90	
	RA-228	=	NOT ANALYZED	
	RU-106	<	5.00	
	SR-90	<	.50	
	TC-99	<	.30	
	TH-228	=	.20	.10
	TH-230	=	.50	.10
	TH-232	=	.20	.10
	U-234	=	2.10	.20
	U-235	=	.10	.10
	U-238	=	2.70	.20
48-01	CS-137	<	.60	
	NP-237	<	.07	
	PB-210	=	NOT ANALYZED	
	PU-238	<	.05	
	PU-239/240	<	.05	
	RA-226	<	2.30	
	RA-228	=	NOT ANALYZED	
	RU-106	<	5.00	
	SR-90	<	.50	
	TC-99	<	.40	
	TH-228	=	.30	.30
	TH-230	=	7.00	1.00
	TH-232	=	.30	.20
	U-234	=	3.10	.80
	U-235	=	.30	.30
	U-238	=	2.20	.70
48-02	CS-137	<	.60	
	NP-237	<	.03	
	PB-210	=	NOT ANALYZED	
	PU-238	<	.05	

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

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Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
48-02	PU-239/240	<	.05	
	RA-226	<	2.50	
	RA-228	=	NOT ANALYZED	
	RU-106	<	5.00	
	SR-90	<	.50	
	TC-99	<	.40	
	TH-228	=	.10	.10
	TH-230	=	1.10	.20
	TH-232	=	.10	.10
	U-234	=	1.80	.30
	U-235	=	.10	.10
	U-238	=	2.80	.30
48-03	CS-137	<	.50	
	NP-237	<	.03	
	PB-210	=	NOT ANALYZED	
	PU-238	<	.05	
	PU-239/240	<	.05	
	RA-226	<	1.10	
	RA-228	=	NOT ANALYZED	
	RU-106	<	5.00	
	SR-90	<	.50	
	TC-99	<	.30	
	TH-228	=	.20	.20
	TH-230	=	.90	.20
	TH-232	=	.20	.10
	U-234	=	2.00	.30
	U-235	=	.10	.10
	U-238	=	2.70	.30
49-01	CS-137	<	.30	
	NP-237	<	.30	
	PB-210	=	NOT ANALYZED	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	1.00	.40
	RA-228	=	NOT ANALYZED	
	RU-106	<	2.00	
	SR-90	<	.70	

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
49-01	TC-99	=		
	TH-228	<	.10	
	TH-230	=	.10	.10
	TH-232	<	.10	
	U-234	=	9.30	.50
	U-235	=	.50	.10
	U-238	=	16.00	1.00
49-02	CS-137	<	.20	
	NP-237	<	.20	
	PB-210	=	NOT ANALYZED	
	PU-238	=	.10	.10
	PU-239/240	<	.10	
	RA-226	=	1.00	.50
	RA-228	=	NOT ANALYZED	
	RU-106	<	1.00	
	SR-90	<	.30	
	TC-99	=		
	TH-228	<	.10	
	TH-230	=	.10	.10
	TH-232	<	.10	
	U-234	=	8.50	.40
	U-235	=	.40	.10
	U-238	=	13.00	1.00
49-03	CS-137	<	.20	
	NP-237	<	.10	
	PB-210	=	NOT ANALYZED	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	1.00	.50
	RA-228	=	NOT ANALYZED	
	RU-106	<	1.00	
	SR-90	<	.40	
	TC-99	<	.60	
	TH-228	<	.10	
	TH-230	=	.10	.10
	TH-232	<	.10	
	U-234	=	28.00	1.00

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
49-03	U-235	=	1.40	.20
	U-238	=	35.00	1.00
49-04	CS-137	<	.20	
	NP-237	<	.10	
	PB-210	=	NOT ANALYZED	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	.80	.30
	RA-228	=	NOT ANALYZED	
	RU-106	<	1.00	
	SR-90	<	.50	
	TC-99	<	.40	
	TH-228	<	.10	
	TH-230	<	.10	
	TH-232	<	.10	
	U-234	=	4.90	.40
	U-235	=	.40	.10
	U-238	=	12.00	1.00
49-05	CS-137	<	.30	
	NP-237	<	.10	
	PB-210	=	NOT ANALYZED	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	.50	.40
	RA-228	=	NOT ANALYZED	
	RU-106	<	2.00	
	SR-90	<	.30	
	TC-99	<	.60	
	TH-228	<	.10	
	TH-230	=	.10	.10
	TH-232	<	.10	
	U-234	=	6.40	.40
	U-235	=	.40	.10
	U-238	=	13.00	1.00
49-06	CS-137	<	.20	

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

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Radiochemical Analysis of Composite Samples of Waste Pit Borings

Borehole Number (a)	Radionuclide (b)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
49-06	NP-237	<	.20	
	PB-210	=	NOT ANALYZED	
	PU-238	<	.10	
	PU-239/240	<	.10	
	RA-226	=	.80	.20
	RA-228	=	NOT ANALYZED	
	RU-106	<	1.00	
	SR-90	<	.40	
	TC-99	<	4.00	
	TH-228	<	.10	
	TH-230	=	.20	.10
	TH-232	<	.10	
	U-234	=	8.40	.50
	U-235	=	.60	.10
	U-238	=	30.00	1.00

(a) Refer to Table 2-1 in Subsection 2.1.2 for boring numbers and grid locations
(b) RA-226 and RA-228, when reported, were measured by gamma spectrometry and reported on a dry weight basis

Radionuclide Concentrations In Surface Water Collected From Waste Storage Pits

Sample Identification	Radionuclide (a)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
FMP-SW-04-001	CS-137	<	25.00	
	NP-237	<	.20	
	PU-238	<	.20	
	PU-239	<	.10	
	RU-106	<	86.00	
	SR-90	<	2.00	
	TC-99	=	190.00	10.00
	TH-228	<	.10	
	TH-230	=	.20	.10
	TH-232	<	.10	
	U-234	=	3400.00	100.00
	U-235	=	220.00	20.00
	U-238	=	11400.00	100.00
FMP-SW-05-001	CS-137	=	51.00	15.00
	NP-237	<	.70	
	PU-238	<	.10	
	PU-239	<	.10	
	RU-106	<	76.00	
	SR-90	=	41.00	3.00
	TC-99	=	240.00	10.00
	TH-228	<	.10	
	TH-230	=	.10	.10
	TH-232	<	.10	
	U-234	=	420.00	10.00
	U-235	=	18.00	2.00
	U-238	=	400.00	10.00
FMP-SW-05-002	CS-137	=	90.00	15.00
	NP-237	<	.40	
	PU-238	<	.10	
	PU-239	<	.10	
	RU-106	<	85.00	
	SR-90	=	47.00	4.00
	TC-99	=	320.00	10.00
	TH-228	<	.10	
	TH-230	=	.10	.10
	TH-232	<	.10	
	U-234	=	410.00	10.00
	U-235	=	19.00	2.00

(a) RA-226 and RA-228, when reported, were measured by gamma spectrometry

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Radionuclide Concentrations In Surface Water Collected From Waste Storage Pits

Sample Identification	Radionuclide (a)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
FMP-SW-05-002	U-238	=	370.00	10.00
FMP-SW-06-001	CS-137	<	12.00	
	PU-238	<	.20	
	PU-239	<	.10	
	RA-226	<	.10	
	RA-228	=	4.00	1.00
	RU-106	<	57.00	
	SR-90	<	1.00	
	TC-99	=	420.00	10.00
	TH-228	<	.10	
	TH-230	=	.30	.10
	TH-232	<	.10	
	U-234	=	61.00	2.00
	U-235	=	5.00	1.00
	U-238	=	320.00	10.00
FMP-SW-06-002	CS-137	<	11.00	
	RA-226	<	.10	
	RA-228	=	6.00	1.00
	RU-106	<	63.00	
	SR-90	<	1.00	
	TC-99	=	530.00	10.00
	TH-228	<	.10	
	TH-230	=	.10	.10
	TH-232	<	.10	
	U-234	=	77.00	2.00
	U-235	=	8.00	1.00
	U-238	=	440.00	10.00
FMP-SW-06-003	CS-137	<	13.00	
	PU-238	<	.10	
	PU-239	<	.10	
	RA-226	<	.10	
	RA-228	=	7.00	1.00
	RU-106	<	94.00	
	SR-90	<	1.00	
	TC-99	=	600.00	10.00
	TH-228	<	.10	

(a) RA-226 and RA-228, when reported, were measured by gamma spectrometry

Radionuclide Concentrations In Surface Water Collected From Waste Storage Pits

Sample Identification	Radionuclide (a)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
FMP-SW-06-003	TH-230	=	.10	.10
	TH-232	<	.10	
	U-234	=	77.00	2.00
	U-235	=	9.00	1.00
	U-238	=	460.00	10.00
FMP-SW-06-004	CS-137	<	10.00	
	PU-238	<	.10	
	PU-239	<	.10	
	RA-226	<	.10	
	RA-228	=	7.00	1.00
	RU-106	<	83.00	
	SR-90	<	1.00	
	TC-99	=	400.00	10.00
	TH-228	<	.10	
	TH-230	=	.30	.20
	TH-232	<	.10	
	U-234	=	76.00	2.00
	U-235	=	9.00	1.00
	U-238	=	460.00	10.00
FMP-SW-06-005	CS-137	<	15.00	
	PU-238	<	.10	
	PU-239	<	.10	
	RA-226	<	.10	
	RA-228	=	13.00	2.00
	RU-106	<	114.00	
	SR-90	<	2.00	
	TC-99	=	590.00	10.00
	TH-228	<	.10	
	TH-230	=	.20	.20
	TH-232	<	.10	
	U-234	=	22.00	1.00
	U-235	=	1.50	.30
	U-238	=	120.00	10.00
FMP-SW-08-001	CS-137	<	10.00	
	PU-238	<	.10	
	PU-239	<	.10	

(a) RA-226 and RA-228, when reported, were measured by gamma spectrometry and

Radionuclide Concentrations In Surface Water Collected From Waste Storage Pits

Sample Identification	Radionuclide (a)	VQ	Activity Concentration (pCi/g,dry)	Uncertainty (pCi/g,dry)
FMP-SW-08-001	RA-226	=	1.10	.10
	RA-228	=	11.00	2.00
	RU-106	<	90.00	
	SR-90	<	2.00	
	TC-99	=	2000.00	100.00
	TH-228	<	.20	
	TH-230	<	.20	
	TH-232	<	.20	
	U-234	=	1900.00	100.00
	U-235	=	110.00	20.00
	U-238	=	6200.00	100.00
FMP-SW-08-002	CS-137	<	12.00	
	PU-238	<	.20	
	PU-239	<	.20	
	RA-226	=	1.10	.10
	RA-228	=	12.00	2.00
	RU-106	<	66.00	
	SR-90	<	3.00	
	TC-99	=	4000.00	100.00
	TH-228	<	.10	
	TH-230	=	.40	.20
	TH-232	<	.10	
	U-234	=	1800.00	100.00
	U-235	=	120.00	20.00
	U-238	=	5400.00	100.00

(a) RA-226 and RA-228, when reported, were measured by gamma spectrometry

Appendix E

APPENDIX E

ACTIVITY CONCENTRATIONS OF PROFILE SAMPLES

Table 3-15

Activity Concentrations Of Pit One Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
01-01	.00	1.00	RA-226	=	9.90	1.10
	.00	1.00	TH-232	=	8.20	1.20
	.00	1.00	U-238	=	197.00	15.00
	1.00	2.00	RA-226	=	46.60	2.00
	1.00	2.00	TH-232	=	24.90	4.00
	1.00	2.00	U-238	=	325.00	21.00
	2.00	3.00	RA-226	=	50.80	2.20
	2.00	3.00	TH-232	=	22.80	1.60
	2.00	3.00	U-238	=	390.00	25.00
	3.00	4.00	RA-226	=	60.00	2.30
	3.00	4.00	TH-232	=	34.70	4.70
	3.00	4.00	U-238	=	373.00	31.00
	4.00	5.00	RA-226	=	69.60	2.70
	4.00	5.00	TH-232	=	24.40	7.30
	4.00	5.00	U-238	=	545.00	29.00
	5.00	6.00	RA-226	=	72.30	3.00
	5.00	6.00	TH-232	=	31.60	4.80
	5.00	6.00	U-238	=	679.00	33.00
	6.00	7.00	RA-226	=	69.50	3.10
	6.00	7.00	TH-232	=	32.70	7.30
	6.00	7.00	U-238	=	492.00	30.00
	7.00	8.00	RA-226	=	54.20	2.40
	7.00	8.00	TH-232	=	20.60	2.40
	7.00	8.00	U-238	=	292.00	24.00
	11.00	12.00	RA-226	=	69.00	2.20
	11.00	12.00	TH-232	=	18.10	2.90
	11.00	12.00	U-238	=	227.00	20.00
01-02	.00	1.00	RA-226	=	2.50	.80
	.00	1.00	TH-232	=	2.40	.90
	.00	1.00	U-238	=	195.00	13.00
	1.00	2.00	RA-226	=	25.70	3.50
	1.00	2.00	TH-232	=	16.30	5.60
	1.00	2.00	U-238	=	1420.00	66.00
	2.00	3.00	RA-226	=	46.20	8.30
	2.00	3.00	TH-232	=	17.80	4.60
	2.00	3.00	U-238	=	488.00	58.00
	3.00	4.00	RA-226	=	31.20	2.60
	3.00	4.00	TH-232	=	7.50	2.50
	3.00	4.00	U-238	=	586.00	80.00

Table 3-15

Activity Concentrations Of Pit One Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
01-02	4.00	5.00	RA-226	=	11.10	.90
	4.00	5.00	TH-232	=	3.90	1.00
	4.00	5.00	U-238	=	108.00	12.00
	5.00	6.00	RA-226	=	7.00	1.30
	5.00	6.00	TH-232	<	2.60	
	5.00	6.00	U-238	=	387.00	27.00
	6.00	7.00	RA-226	=	3.70	1.20
	6.00	7.00	TH-232	=	5.70	2.80
	6.00	7.00	U-238	=	415.00	31.00
	7.00	8.00	RA-226	<	4.30	
	7.00	8.00	TH-232	<	6.50	
	7.00	8.00	U-238	=	663.00	28.00
	8.00	9.00	RA-226	=	3.00	.90
	8.00	9.00	TH-232	<	.30	
	8.00	9.00	U-238	=	201.00	14.00
	9.00	10.00	RA-226	=	2.20	.60
	9.00	10.00	TH-232	<	4.20	
	9.00	10.00	U-238	=	153.00	12.00
	10.00	11.00	RA-226	=	1.50	.80
	10.00	11.00	TH-232	<	5.50	
	10.00	11.00	U-238	=	219.00	16.00
	11.00	12.00	RA-226	<	4.80	
	11.00	12.00	TH-232	<	4.50	
	11.00	12.00	U-238	=	592.00	30.00
01-03	.00	1.00	RA-226	=	7.90	1.60
	.00	1.00	TH-232	=	27.00	5.00
	.00	1.00	U-238	=	591.00	22.00
	1.00	2.00	RA-226	=	9.60	3.20
	1.00	2.00	TH-232	=	19.30	2.70
	1.00	2.00	U-238	=	1770.00	50.00
	2.00	3.00	RA-226	=	1.10	.40
	2.00	3.00	TH-232	<	2.20	
	2.00	3.00	U-238	=	30.40	6.40
	3.00	4.00	RA-226	=	1.40	.50
	3.00	4.00	TH-232	=	1.00	.70
	3.00	4.00	U-238	=	19.00	3.60
	4.00	6.00	RA-226	=	1.50	.60
	4.00	6.00	TH-232	=	1.70	.50
	4.00	6.00	U-238	=	65.30	5.60

Table 3-15

Activity Concentrations Of Pit One Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
01-03	6.00	8.00	RA-226	=	5.90	.80
	6.00	8.00	TH-232	=	1.10	.80
	6.00	8.00	U-238	=	180.00	10.00
	10.00	11.00	RA-226	=	120.00	55.00
	10.00	11.00	TH-232	=	34.20	9.00
	10.00	11.00	U-238	=	2390.00	96.00
	11.00	12.00	RA-226	=	15.60	6.00
	11.00	12.00	TH-232	<	28.70	
	11.00	12.00	U-238	=	7090.00	120.00
01-04	.00	1.00	RA-226	=	14.70	5.00
	.00	1.00	TH-232	=	12.30	2.70
	.00	1.00	U-238	=	1350.00	40.00
	1.00	2.00	RA-226	=	38.20	3.50
	1.00	2.00	TH-232	=	34.20	3.50
	1.00	2.00	U-238	=	722.00	39.00
	2.00	3.00	RA-226	=	31.40	3.20
	2.00	3.00	TH-232	=	21.30	3.50
	2.00	3.00	U-238	=	576.00	35.00
	3.00	4.00	RA-226	=	57.50	3.00
	3.00	4.00	TH-232	=	31.00	3.60
	3.00	4.00	U-238	=	542.00	50.00
	4.00	5.00	RA-226	=	30.40	2.80
	4.00	5.00	TH-232	=	31.10	2.50
	4.00	5.00	U-238	=	439.00	30.00
	5.00	6.00	RA-226	=	36.40	2.40
	5.00	6.00	TH-232	=	22.40	6.00
	5.00	6.00	U-238	=	399.00	31.00
	6.00	7.00	RA-226	=	40.70	3.20
	6.00	7.00	TH-232	=	27.40	3.80
	6.00	7.00	U-238	=	413.00	34.00
	7.00	8.00	RA-226	=	53.60	3.50
	7.00	8.00	TH-232	=	32.10	3.20
	7.00	8.00	U-238	=	430.00	37.00
	8.00	9.00	RA-226	=	108.00	5.50
	8.00	9.00	TH-232	=	26.80	7.30
	8.00	9.00	U-238	=	628.00	51.00
	9.00	10.00	RA-226	=	93.40	4.60
	9.00	10.00	TH-232	=	35.20	4.20
	9.00	10.00	U-238	=	449.00	51.00

Table 3-15

Activity Concentrations Of Pit One Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
01-04	10.00	11.00	RA-226	=	45.10	3.00
	10.00	11.00	TH-232	=	34.30	2.80
	10.00	11.00	U-238	=	434.00	31.00
	11.00	12.00	RA-226	=	61.50	3.50
	11.00	12.00	TH-232	=	36.40	3.50
	11.00	12.00	U-238	=	488.00	35.00
01-05	.00	1.00	RA-226	=	1.60	.40
	.00	1.00	TH-232	<	3.30	
	.00	1.00	U-238	=	9.10	4.00
	1.00	2.00	RA-226	=	1.40	.50
	1.00	2.00	TH-232	=	1.30	.40
	1.00	2.00	U-238	=	22.20	4.60
	2.00	3.00	RA-226	=	2.60	.80
	2.00	3.00	TH-232	=	4.00	.80
	2.00	3.00	U-238	=	29.80	8.00
	3.00	4.00	RA-226	=	8.30	1.20
	3.00	4.00	TH-232	=	13.60	1.80
	3.00	4.00	U-238	=	123.00	13.00
	4.00	5.00	RA-226	=	39.20	2.80
	4.00	5.00	TH-232	=	57.00	7.00
	4.00	5.00	U-238	=	358.00	29.00
	5.00	6.00	RA-226	=	1.50	.40
	5.00	6.00	TH-232	=	1.60	.60
	5.00	6.00	U-238	=	25.40	4.40
	6.00	7.00	RA-226	=	6.20	1.00
	6.00	7.00	TH-232	=	4.10	1.00
	6.00	7.00	U-238	=	31.50	9.20
	7.00	8.00	RA-226	=	18.60	1.30
	7.00	8.00	TH-232	=	13.80	3.00
	7.00	8.00	U-238	=	126.00	15.00
	8.00	9.00	RA-226	=	46.20	4.00
	8.00	9.00	TH-232	=	40.90	13.00
	8.00	9.00	U-238	=	593.00	34.00
	9.00	10.00	RA-226	=	50.70	3.80
	9.00	10.00	TH-232	=	43.90	6.80
	9.00	10.00	U-238	=	748.00	38.00
	10.00	11.00	RA-226	=	42.10	2.10
	10.00	11.00	TH-232	=	41.90	3.50
	10.00	11.00	U-238	=	613.00	32.00

Table 3-15

Activity Concentrations Of Pit One Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
01-05	11.00	12.00	RA-226	=	55.40	3.00
	11.00	12.00	TH-232	=	47.20	7.60
	11.00	12.00	U-238	=	304.00	37.00

159 records selected.

Table 3-16

Activity Concentrations Of Pit Two Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
02-01	.00	1.00	RA-226	=	13.50	1.30
	.00	1.00	TH-232	<	6.10	
	.00	1.00	U-238	=	40.30	11.00
	1.00	2.00	RA-226	=	3.80	.90
	1.00	2.00	TH-232	=	5.20	1.20
	1.00	2.00	U-238	=	208.00	11.00
	2.00	4.00	RA-226	=	3.40	2.20
	2.00	4.00	TH-232	<	11.70	
	2.00	4.00	U-238	=	439.00	23.00
	4.00	5.00	RA-226	=	9.70	3.20
	4.00	5.00	TH-232	=	24.30	4.60
	4.00	5.00	U-238	=	4370.00	80.00
	5.00	6.00	RA-226	<	6.00	
	5.00	6.00	TH-232	<	16.70	
	5.00	6.00	U-238	=	4420.00	93.00
	6.00	7.00	RA-226	=	19.60	3.00
	6.00	7.00	TH-232	=	24.20	3.00
	6.00	7.00	U-238	=	1570.00	42.00
	7.00	8.00	RA-226	=	361.00	9.00
	7.00	8.00	TH-232	=	563.00	12.00
	7.00	8.00	U-238	=	1440.00	87.00
02-02	1.00	2.00	RA-226	<	34.30	
	1.00	2.00	TH-232	<	41.60	
	1.00	2.00	U-238	=	5170.00	123.00
	8.00	9.00	RA-226	=	176.00	8.00
	8.00	9.00	TH-232	=	80.00	16.00
	8.00	9.00	U-238	=	398.00	88.00
	9.00	10.00	RA-226	=	613.00	12.00
	9.00	10.00	TH-232	=	57.40	15.00
	9.00	10.00	U-238	=	365.00	72.00
02-03	.00	1.00	RA-226	<	8.70	
	.00	1.00	TH-232	=	5.60	4.30
	.00	1.00	U-238	=	3490.00	98.00
	1.00	2.00	RA-226	=	12.00	3.60
	1.00	2.00	TH-232	=	34.20	4.00
	1.00	2.00	U-238	=	2270.00	70.00
	2.00	3.00	RA-226	=	2.90	1.40

Table 3-16

Activity Concentrations Of Pit Two Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
02-03	2.00	3.00	TH-232	=	5.00	2.00
	2.00	3.00	U-238	=	393.00	29.00
	3.00	4.00	RA-226	=	62.20	3.00
	3.00	4.00	TH-232	<	10.10	
	3.00	4.00	U-238	=	463.00	31.00
	6.00	8.00	RA-226	=	11.00	1.20
	6.00	8.00	TH-232	<	2.40	
	6.00	8.00	U-238	=	32.40	8.10
	8.00	10.00	RA-226	=	53.70	3.00
	8.00	10.00	TH-232	<	10.50	
	8.00	10.00	U-238	=	845.00	48.00
02-04	.00	1.00	RA-226	=	1.10	.50
	.00	1.00	TH-232	=	1.90	.50
	.00	1.00	U-238	=	45.10	6.00
	1.00	2.00	RA-226	=	1.20	.40
	1.00	2.00	TH-232	=	.90	.50
	1.00	2.00	U-238	=	32.10	8.80
	2.00	3.00	RA-226	<	1.60	
	2.00	3.00	TH-232	=	2.00	.60
	2.00	3.00	U-238	=	20.50	5.00
	3.00	4.00	RA-226	<	1.00	
	3.00	4.00	TH-232	=	.80	.30
	3.00	4.00	U-238	=	9.30	3.20
	4.00	6.00	RA-226	=	1.90	.60
	4.00	6.00	TH-232	<	3.50	
	4.00	6.00	U-238	=	70.70	8.00
	6.00	8.00	RA-226	<	1.70	
	6.00	8.00	TH-232	=	2.70	.50
	6.00	8.00	U-238	=	36.90	6.50
	8.00	9.00	RA-226	=	257.00	7.00
	8.00	9.00	TH-232	=	36.40	7.20
	8.00	9.00	U-238	=	300.00	90.00
	9.00	10.00	RA-226	=	135.00	6.00
	9.00	10.00	TH-232	=	120.00	7.00
	9.00	10.00	U-238	=	432.00	70.00
02-05	.00	1.00	RA-226	=	1.80	.40
	.00	1.00	TH-232	=	2.10	.50

Table 3-16

Activity Concentrations Of Pit Two Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
02-05	.00	1.00	U-238	=	33.50	5.80
	1.00	2.00	RA-226	=	13.30	1.00
	1.00	2.00	TH-232	<	2.70	
	1.00	2.00	U-238	=	30.50	7.50
	2.00	3.00	RA-226	=	1.50	.50
	2.00	3.00	TH-232	=	1.00	.40
	2.00	3.00	U-238	=	9.60	4.40
	4.00	5.00	RA-226	=	1.00	.50
	4.00	5.00	TH-232	=	.80	.70
	4.00	5.00	U-238	=	14.20	4.50
	5.00	6.00	RA-226	<	1.00	
	5.00	6.00	TH-232	=	3.90	.80
	5.00	6.00	U-238	=	11.60	5.20
	6.00	8.00	RA-226	<	1.70	
	6.00	8.00	TH-232	=	.80	.50
	6.00	8.00	U-238	=	39.90	6.00
	8.00	9.00	RA-226	=	384.00	11.00
	8.00	9.00	TH-232	=	70.80	10.00
	8.00	9.00	U-238	=	354.00	72.00
	9.00	10.00	RA-226	=	197.00	9.00
	9.00	10.00	TH-232	=	113.00	73.00
	9.00	10.00	U-238	=	485.00	81.00

96 records selected.

Table 3-17

Activity Concentrations Of Pit Three Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
03-01	.00	1.00	RA-226	=	.90	.80
	.00	1.00	TH-232	=	1.50	.60
	.00	1.00	U-238	=	12.20	3.10
	1.00	2.00	RA-226	<	.70	
	1.00	2.00	TH-232	=	1.50	.60
	1.00	2.00	U-238	=	21.90	3.50
	2.00	3.00	RA-226	=	.80	.30
	2.00	3.00	TH-232	=	1.00	.40
	2.00	3.00	U-238	=	15.60	3.20
	3.00	4.00	RA-226	=	2.00	.80
	3.00	4.00	TH-232	=	2.70	.90
	3.00	4.00	U-238	=	144.00	10.00
	4.00	7.00	RA-226	=	.90	.80
	4.00	7.00	TH-232	=	1.80	.70
	4.00	7.00	U-238	=	17.50	5.20
03-02	.00	1.00	RA-226	<	.60	
	.00	1.00	TH-232	<	1.10	
	.00	1.00	U-238	=	11.50	2.40
	1.00	2.00	RA-226	=	1.50	.60
	1.00	2.00	TH-232	<	1.90	
	1.00	2.00	U-238	=	56.50	6.00
	2.00	3.00	RA-226	=	1.90	.60
	2.00	3.00	TH-232	=	1.50	.70
	2.00	3.00	U-238	=	54.10	5.50
	3.00	4.00	RA-226	=	2.20	.90
	3.00	4.00	TH-232	=	3.80	.90
	3.00	4.00	U-238	=	151.00	10.00
	6.00	7.00	RA-226	=	.80	.60
	6.00	7.00	TH-232	=	2.00	.60
	6.00	7.00	U-238	=	79.00	5.50
	7.00	8.00	RA-226	<	.70	
	7.00	8.00	TH-232	=	1.50	.90
	7.00	8.00	U-238	=	88.70	6.00
	8.00	9.00	RA-226	<	.80	
	8.00	9.00	TH-232	=	3.40	.90
	8.00	9.00	U-238	=	108.00	6.40
	9.00	10.00	RA-226	=	1.20	.60
	9.00	10.00	TH-232	<	1.80	
	9.00	10.00	U-238	=	70.90	5.20

300

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Table 3-17

Activity Concentrations Of Pit Three Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
03-02	10.00	11.00	RA-226	=	1.30	.60
	10.00	11.00	TH-232	=	1.80	.40
	10.00	11.00	U-238	=	75.10	5.10
	11.00	12.00	RA-226	=	2.10	.60
	11.00	12.00	TH-232	=	1.30	.70
	11.00	12.00	U-238	=	64.30	6.00
	12.00	13.00	RA-226	=	1.00	.70
	12.00	13.00	TH-232	=	2.00	.90
	12.00	13.00	U-238	=	90.00	6.10
	13.00	14.00	RA-226	=	15.40	1.20
	13.00	14.00	TH-232	=	17.40	4.80
	13.00	14.00	U-238	=	131.00	9.00
	14.00	16.00	RA-226	=	4.70	.90
	14.00	16.00	TH-232	=	10.60	1.10
	14.00	16.00	U-238	=	156.00	13.00
	16.00	17.00	RA-226	=	4.30	1.20
	16.00	17.00	TH-232	=	20.40	1.40
	16.00	17.00	U-238	=	160.00	9.10
	17.00	18.00	RA-226	=	5.40	1.10
	17.00	18.00	TH-232	=	15.40	5.50
	17.00	18.00	U-238	=	143.00	10.00
	18.00	19.00	RA-226	=	6.60	1.10
	18.00	19.00	TH-232	=	12.70	1.10
	18.00	19.00	U-238	=	113.00	10.00
	19.00	20.00	RA-226	=	3.80	1.30
	19.00	20.00	TH-232	=	12.40	4.80
	19.00	20.00	U-238	=	151.00	9.20
03-03	.00	1.00	RA-226	=	1.60	.50
	.00	1.00	TH-232	=	1.30	.50
	.00	1.00	U-238	=	22.00	4.00
	1.00	2.00	RA-226	=	3.40	1.10
	1.00	2.00	TH-232	=	4.60	1.20
	1.00	2.00	U-238	=	45.40	9.50
	4.00	5.00	RA-226	=	113.00	113.00
	4.00	5.00	TH-232	=	9.80	4.40
	4.00	5.00	U-238	=	181.00	37.00
	5.00	6.00	RA-226	=	149.00	4.50
	5.00	6.00	TH-232	=	10.00	3.50
	5.00	6.00	U-238	=	59.40	26.00

Table 3-17

Activity Concentrations Of Pit Three Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
03-03	6.00	7.00	RA-226	=	220.00	4.80
	6.00	7.00	TH-232	=	12.40	5.90
	6.00	7.00	U-238	=	128.00	35.00
	7.00	8.00	RA-226	=	142.00	5.00
	7.00	8.00	TH-232	=	11.80	4.60
	7.00	8.00	U-238	=	97.80	32.00
	8.00	9.00	RA-226	=	196.00	5.00
	8.00	9.00	TH-232	=	13.20	5.20
	8.00	9.00	U-238	=	117.00	35.00
	9.00	10.00	RA-226	=	168.00	5.00
	9.00	10.00	TH-232	=	11.70	4.00
	9.00	10.00	U-238	=	149.00	36.00
	10.00	11.00	RA-226	=	206.00	6.00
	10.00	11.00	TH-232	=	14.90	6.80
	10.00	11.00	U-238	=	136.00	50.00
	11.00	12.00	RA-226	=	172.00	5.00
	11.00	12.00	TH-232	=	9.90	4.80
	11.00	12.00	U-238	=	145.00	36.00
	12.00	13.00	RA-226	=	161.00	5.00
	12.00	13.00	TH-232	=	9.90	5.00
	12.00	13.00	U-238	=	121.00	32.00
	13.00	14.00	RA-226	=	372.00	8.00
	13.00	14.00	TH-232	=	15.60	5.20
	13.00	14.00	U-238	=	106.00	50.00
	14.00	15.00	RA-226	=	164.00	6.00
	14.00	15.00	TH-232	=	16.70	5.60
	14.00	15.00	U-238	=	176.00	28.00
	15.00	16.00	RA-226	=	185.00	5.00
	15.00	16.00	TH-232	=	14.30	4.20
	15.00	16.00	U-238	=	142.00	28.00
	16.00	18.00	RA-226	=	75.60	3.20
	16.00	18.00	TH-232	=	11.70	3.50
	16.00	18.00	U-238	=	249.00	13.00
	18.00	19.00	RA-226	=	394.00	7.00
	18.00	19.00	TH-232	=	21.90	10.60
	18.00	19.00	U-238	<	115.00	
	19.00	20.00	RA-226	=	117.00	3.60
	19.00	20.00	TH-232	<	5.00	
	19.00	20.00	U-238	=	178.00	24.00

Table 3-17

Activity Concentrations Of Pit Three Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
03-04	.00	1.00	RA-226	=	4.60	1.30
	.00	1.00	TH-232	=	1.60	1.00
	.00	1.00	U-238	<	15.50	
	1.00	2.00	RA-226	=	4.10	1.30
	1.00	2.00	TH-232	<	4.30	
	1.00	2.00	U-238	=	222.00	17.00
	2.00	3.00	RA-226	=	82.90	4.80
	2.00	3.00	TH-232	=	53.70	37.00
	2.00	3.00	U-238	=	194.00	25.00
	3.00	4.00	RA-226	=	146.00	6.00
	3.00	4.00	TH-232	=	64.10	4.80
	3.00	4.00	U-238	=	245.00	40.00
	4.00	5.00	RA-226	=	165.00	6.30
	4.00	5.00	TH-232	=	33.20	12.00
	4.00	5.00	U-238	=	75.90	25.00
	5.00	6.00	RA-226	=	1.50	15.00
	5.00	6.00	TH-232	=	38.00	4.50
	5.00	6.00	U-238	=	157.00	37.00
	6.00	7.00	RA-226	=	150.00	9.00
	6.00	7.00	TH-232	=	99.50	7.00
	6.00	7.00	U-238	=	334.00	45.00
	7.00	8.00	RA-226	=	153.00	7.60
	7.00	8.00	TH-232	=	97.30	8.00
	7.00	8.00	U-238	=	197.00	35.00
	8.00	9.00	RA-226	=	81.10	6.00
	8.00	9.00	TH-232	=	34.80	7.20
	8.00	9.00	U-238	=	112.00	22.00
	9.00	10.00	RA-226	=	109.00	6.60
	9.00	10.00	TH-232	=	55.60	8.80
	9.00	10.00	U-238	=	239.00	27.00
	10.00	11.00	RA-226	=	80.00	6.50
	10.00	11.00	TH-232	=	33.40	5.60
	10.00	11.00	U-238	=	158.00	23.00
	11.00	12.00	RA-226	=	97.50	5.60
	11.00	12.00	TH-232	=	36.40	11.00
	11.00	12.00	U-238	=	219.00	23.00
	12.00	13.00	RA-226	=	83.80	5.00
	12.00	13.00	TH-232	=	48.20	17.00
	12.00	13.00	U-238	=	177.00	33.00
	13.00	14.00	RA-226	=	82.50	5.60
	13.00	14.00	TH-232	=	44.60	8.20

Table 3-17

Activity Concentrations Of Pit Three Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
03-04	13.00	14.00	U-238	=	209.00	32.00
	14.00	15.00	RA-226	=	82.30	6.00
	14.00	15.00	TH-232	=	41.80	5.70
	14.00	15.00	U-238	=	198.00	29.00
	15.00	16.00	RA-226	=	139.00	5.70
	15.00	16.00	TH-232	=	37.90	5.60
	15.00	16.00	U-238	=	102.00	33.00
	16.00	17.00	RA-226	=	139.00	7.00
	16.00	17.00	TH-232	=	34.10	8.50
	16.00	17.00	U-238	=	130.00	33.00
	17.00	18.00	RA-226	=	186.00	7.00
	17.00	18.00	TH-232	=	39.90	6.00
	17.00	18.00	U-238	=	87.10	37.00
	18.00	19.00	RA-226	=	205.00	5.00
	18.00	19.00	TH-232	=	38.20	10.30
	18.00	19.00	U-238	=	74.50	36.00
	19.00	20.00	RA-226	=	80.70	3.00
	19.00	20.00	TH-232	=	31.10	5.40
	19.00	20.00	U-238	=	189.00	36.00
03-05	.00	1.00	RA-226	<	.70	
	.00	1.00	TH-232	=	1.30	.50
	.00	1.00	U-238	=	15.80	3.40
	1.00	2.00	RA-226	=	.70	.40
	1.00	2.00	TH-232	<	.30	
	1.00	2.00	U-238	<	9.20	
	2.00	3.00	RA-226	=	.70	.40
	2.00	3.00	TH-232	=	.70	.40
	2.00	3.00	U-238	=	8.70	2.60
	3.00	4.00	RA-226	=	.60	.30
	3.00	4.00	TH-232	<	.30	
	3.00	4.00	U-238	<	5.00	
	4.00	5.00	RA-226	=	.80	.60
	4.00	5.00	TH-232	=	1.10	.40
	4.00	5.00	U-238	=	3.40	2.00
	5.00	6.00	RA-226	<	1.70	
	5.00	6.00	TH-232	<	.40	
	5.00	6.00	U-238	=	14.90	4.00
	8.00	9.00	RA-226	=	4.60	1.20
	8.00	9.00	TH-232	=	8.50	3.70

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Table 3-17

Activity Concentrations Of Pit Three Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
03-05	8.00	9.00	U-238	=	220.00	20.00
	9.00	10.00	RA-226	=	1.10	.60
	9.00	10.00	TH-232	=	2.70	1.10
	9.00	10.00	U-238	=	163.00	13.00
	10.00	11.00	RA-226	=	5.00	.90
	10.00	11.00	TH-232	=	8.00	.80
	10.00	11.00	U-238	=	50.10	9.40
	11.00	12.00	RA-226	<	4.10	
	11.00	12.00	TH-232	=	2.10	.90
	11.00	12.00	U-238	=	191.00	19.00
	12.00	13.00	RA-226	=	2.30	.90
	12.00	13.00	TH-232	=	3.90	1.00
	12.00	13.00	U-238	=	150.00	13.00
	13.00	14.00	RA-226	<	2.50	
	13.00	14.00	TH-232	<	7.10	
	13.00	14.00	U-238	=	261.00	21.00
	14.00	15.00	RA-226	=	1.50	.50
	14.00	15.00	TH-232	=	.90	.40
	14.00	15.00	U-238	=	228.00	20.00
	15.00	16.00	RA-226	=	1.30	.60
	15.00	16.00	TH-232	<	5.60	
	15.00	16.00	U-238	=	115.00	11.00
	16.00	17.00	RA-226	=	2.10	.60
	16.00	17.00	TH-232	<	4.50	
	16.00	17.00	U-238	=	386.00	21.00
	17.00	18.00	RA-226	=	2.00	.60
	17.00	18.00	TH-232	=	1.80	.60
	17.00	18.00	U-238	=	238.00	14.00
	18.00	19.00	RA-226	=	3.00	.80
	18.00	19.00	TH-232	<	3.30	
	18.00	19.00	U-238	=	324.00	25.00
	19.00	20.00	RA-226	=	3.80	1.00
	19.00	20.00	TH-232	<	2.30	
	19.00	20.00	U-238	=	477.00	23.00
03-06	.00	1.00	RA-226	<	.90	
	.00	1.00	TH-232	=	.90	.50
	.00	1.00	U-238	=	3.30	1.50
	1.00	2.00	RA-226	=	4.50	.70
	1.00	2.00	TH-232	=	2.20	1.20

Table 3-17

Activity Concentrations Of Pit Three Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
03-06	1.00	2.00	U-238	=	49.30	6.30
	2.00	3.00	RA-226	=	2.10	.80
	2.00	3.00	TH-232	<	5.40	
	2.00	3.00	U-238	=	48.20	8.70
	3.00	4.00	RA-226	=	3.10	.70
	3.00	4.00	TH-232	=	2.00	.70
	3.00	4.00	U-238	=	39.50	8.30
	6.00	7.00	RA-226	=	656.00	9.00
	6.00	7.00	TH-232	=	10.90	3.50
	6.00	7.00	U-238	=	110.00	37.50
	7.00	8.00	RA-226	=	574.00	9.00
	7.00	8.00	TH-232	=	24.70	8.50
	7.00	8.00	U-238	=	128.00	52.00
	8.00	9.00	RA-226	=	37.70	2.30
	8.00	9.00	TH-232	=	3.90	2.50
	8.00	9.00	U-238	=	58.30	20.90
	9.00	10.00	RA-226	=	11.30	1.60
	9.00	10.00	TH-232	=	2.70	1.40
	9.00	10.00	U-238	=	57.80	10.00
	10.00	11.00	RA-226	=	93.00	3.60
	10.00	11.00	TH-232	=	5.80	2.70
	10.00	11.00	U-238	=	95.60	22.00
	11.00	12.00	RA-226	=	56.50	2.00
	11.00	12.00	TH-232	=	7.30	3.50
	11.00	12.00	U-238	=	126.00	16.00
	12.00	13.00	RA-226	=	10.30	2.00
	12.00	13.00	TH-232	=	.30	.20
	12.00	13.00	U-238	=	9.30	4.20
	13.00	14.00	RA-226	<	.80	
	13.00	14.00	TH-232	<	1.50	
	13.00	14.00	U-238	=	7.50	3.50
03-07	.00	1.00	RA-226	=	11.10	1.10
	.00	1.00	TH-232	<	2.20	
	.00	1.00	U-238	=	34.70	4.80
	1.00	2.00	RA-226	=	52.20	8.10
	1.00	2.00	TH-232	<	13.50	
	1.00	2.00	U-238	<	49.20	
	2.00	3.00	RA-226	=	230.00	6.00
	2.00	3.00	TH-232	<	11.50	

Table 3-17

Activity Concentrations Of Pit Three Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
03-07	2.00	3.00	U-238	=	230.00	62.00
	3.00	4.00	RA-226	=	5.30	1.40
	3.00	4.00	TH-232	=	1.50	.70
	3.00	4.00	U-238	=	208.00	11.00
	4.00	5.00	RA-226	=	261.00	4.50
	4.00	5.00	TH-232	<	23.70	
	4.00	5.00	U-238	=	157.00	29.00
	5.00	6.00	RA-226	=	55.20	2.40
	5.00	6.00	TH-232	<	9.80	
	5.00	6.00	U-238	=	206.00	21.00
	6.00	7.00	RA-226	=	160.00	3.50
	6.00	7.00	TH-232	<	17.70	
	6.00	7.00	U-238	=	135.00	25.00
	7.00	8.00	RA-226	=	7.10	.90
	7.00	8.00	TH-232	<	7.10	
	7.00	8.00	U-238	=	394.00	16.00
	8.00	9.00	RA-226	=	26.30	1.90
	8.00	9.00	TH-232	=	2.60	1.30
	8.00	9.00	U-238	=	302.00	32.00
	9.00	10.00	RA-226	=	3.50	1.20
	9.00	10.00	TH-232	<	8.80	
	9.00	10.00	U-238	=	140.00	37.00
	10.00	11.00	RA-226	=	2.70	.90
	10.00	11.00	TH-232	=	2.20	1.00
	10.00	11.00	U-238	=	590.00	22.00
	11.00	12.00	RA-226	=	.80	.60
	11.00	12.00	TH-232	<	5.90	
	11.00	12.00	U-238	=	41.00	8.00

303 records selected.

Table 3-18

Activity Concentrations Of Pit Four Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
04-01	.00	1.00	RA-226	<	.70	
	.00	1.00	TH-232	<	2.40	
	.00	1.00	U-238	=	6.90	2.80
	1.00	2.00	RA-226	=	.70	.60
	1.00	2.00	TH-232	=	.60	.30
	1.00	2.00	U-238	=	3.30	2.60
	2.00	4.00	RA-226	<	1.80	
	2.00	4.00	TH-232	=	1.60	.60
	2.00	4.00	U-238	=	68.60	6.20
	6.00	7.00	RA-226	=	12.00	.90
	6.00	7.00	TH-232	=	118.00	9.00
	6.00	7.00	U-238	=	5960.00	97.00
	7.00	8.00	RA-226	=	31.00	3.50
	7.00	8.00	TH-232	=	38.60	6.80
	7.00	8.00	U-238	=	1150.00	56.00
	8.00	9.00	RA-226	=	14.90	2.50
	8.00	9.00	TH-232	=	5.30	2.60
	8.00	9.00	U-238	=	242.00	21.00
	9.00	10.00	RA-226	=	11.20	1.60
	9.00	10.00	TH-232	<	4.80	
	9.00	10.00	U-238	=	182.00	16.00
	10.00	11.00	RA-226	=	13.60	2.50
	10.00	11.00	TH-232	=	9.20	1.00
	10.00	11.00	U-238	=	391.00	25.00
	11.00	12.00	RA-226	=	38.00	3.00
	11.00	12.00	TH-232	=	8.50	2.50
	11.00	12.00	U-238	=	367.00	26.00
	12.00	13.00	RA-226	=	31.00	2.40
	12.00	13.00	TH-232	=	7.00	1.70
	12.00	13.00	U-238	=	274.00	23.00
	13.00	14.00	RA-226	=	11.60	1.70
	13.00	14.00	TH-232	=	1.20	.90
	13.00	14.00	U-238	=	184.00	18.00
	14.00	15.00	RA-226	=	3.00	1.50
	14.00	15.00	TH-232	=	11.10	3.60
	14.00	15.00	U-238	=	405.00	27.00
	15.00	16.00	RA-226	=	2.80	1.60
	15.00	16.00	TH-232	=	11.70	1.50
	15.00	16.00	U-238	=	175.00	19.00
	16.00	17.00	RA-226	=	9.20	2.20
	16.00	17.00	TH-232	=	15.20	2.00

Table 3-18

Activity Concentrations Of Pit Four Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
04-01	16.00	17.00	U-238	=	380.00	26.00
	17.00	18.00	RA-226	=	10.20	1.90
	17.00	18.00	TH-232	=	16.30	1.90
	17.00	18.00	U-238	=	212.00	26.00
	18.00	19.00	RA-226	=	13.20	2.60
	18.00	19.00	TH-232	=	21.90	2.40
	18.00	19.00	U-238	=	369.00	26.00
	19.00	20.00	RA-226	=	16.40	2.20
	19.00	20.00	TH-232	=	26.20	2.50
	19.00	20.00	U-238	=	288.00	33.00
04-02	.00	2.00	RA-226	=	1.20	.50
	.00	2.00	TH-232	<	.50	
	.00	2.00	U-238	=	11.10	3.60
	2.00	3.00	RA-226	=	1.10	.90
	2.00	3.00	TH-232	<	.60	
	2.00	3.00	U-238	=	234.00	17.00
	3.00	4.00	RA-226	<	.10	
	3.00	4.00	TH-232	=	.90	.40
	3.00	4.00	U-238	=	33.20	4.50
	4.00	6.00	RA-226	=	1.70	.80
	4.00	6.00	TH-232	<	3.50	
	4.00	6.00	U-238	=	121.00	7.50
	6.00	7.00	RA-226	=	6.00	2.50
	6.00	7.00	TH-232	=	7.40	2.60
	6.00	7.00	U-238	=	826.00	40.00
	7.00	8.00	RA-226	=	2.40	1.80
	7.00	8.00	TH-232	=	3.50	1.70
	7.00	8.00	U-238	=	564.00	35.00
	8.00	10.00	RA-226	=	4.80	1.60
	8.00	10.00	TH-232	=	6.60	1.80
	8.00	10.00	U-238	=	472.00	30.00
	10.00	11.00	RA-226	=	1.30	.90
	10.00	11.00	TH-232	=	6.10	1.30
	10.00	11.00	U-238	=	261.00	21.00
	11.00	12.00	RA-226	=	4.00	1.10
	11.00	12.00	TH-232	=	5.20	.90
	11.00	12.00	U-238	=	255.00	18.00
	14.00	16.00	RA-226	=	12.20	2.50
	14.00	16.00	TH-232	=	19.00	2.60

Table 3-18

Activity Concentrations Of Pit Four Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
04-02	14.00	16.00	U-238	=	304.00	22.00
	16.00	18.00	RA-226	=	16.10	2.60
	16.00	18.00	TH-232	=	19.90	2.60
	16.00	18.00	U-238	=	421.00	25.00
	18.00	20.00	RA-226	=	26.60	3.30
	18.00	20.00	TH-232	=	24.90	2.60
	18.00	20.00	U-238	=	552.00	28.00
04-03	.00	1.00	RA-226	=	1.00	.40
	.00	1.00	TH-232	=	1.00	.40
	.00	1.00	U-238	=	16.70	3.60
	1.00	2.00	RA-226	=	2.00	.60
	1.00	2.00	TH-232	=	1.50	1.00
	1.00	2.00	U-238	=	37.30	5.90
	2.00	4.00	RA-226	<	1.80	
	2.00	4.00	TH-232	=	.70	.60
	2.00	4.00	U-238	=	39.00	5.00
	4.00	5.00	RA-226	=	4.80	1.00
	4.00	5.00	TH-232	=	6.80	1.50
	4.00	5.00	U-238	=	273.00	17.00
	5.00	6.00	RA-226	=	41.60	5.90
	5.00	6.00	TH-232	=	58.00	5.00
	5.00	6.00	U-238	=	4590.00	89.00
	6.00	7.00	RA-226	=	39.90	5.80
	6.00	7.00	TH-232	=	50.60	5.30
	6.00	7.00	U-238	=	2460.00	75.00
	7.00	8.00	RA-226	=	18.90	3.50
	7.00	8.00	TH-232	=	39.70	5.80
	7.00	8.00	U-238	=	578.00	41.00
	8.00	9.00	RA-226	=	8.20	4.00
	8.00	9.00	TH-232	=	19.00	5.00
	8.00	9.00	U-238	=	1640.00	60.00
	9.00	10.00	RA-226	=	30.00	3.10
	9.00	10.00	TH-232	=	14.40	3.20
	9.00	10.00	U-238	=	409.00	27.00
	10.00	11.00	RA-226	=	26.50	2.80
	10.00	11.00	TH-232	=	17.40	2.40
	10.00	11.00	U-238	=	606.00	27.00
	11.00	12.00	RA-226	=	39.00	2.80
	11.00	12.00	TH-232	=	6.80	4.20

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Table 3-18

Activity Concentrations Of Pit Four Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
04-03	11.00	12.00	U-238	=	1390.00	51.00
	12.00	13.00	RA-226	=	18.30	2.40
	12.00	13.00	TH-232	=	10.20	3.00
	12.00	13.00	U-238	=	632.00	33.00
	13.00	14.00	RA-226	=	11.90	1.50
	13.00	14.00	TH-232	=	3.30	1.70
	13.00	14.00	U-238	=	329.00	20.00
	14.00	15.00	RA-226	=	18.20	2.60
	14.00	15.00	TH-232	=	9.80	2.50
	14.00	15.00	U-238	=	555.00	27.00
	15.00	16.00	RA-226	=	2.40	.90
	15.00	16.00	TH-232	<	5.30	
	15.00	16.00	U-238	=	226.00	15.00
	16.00	17.00	RA-226	=	19.10	2.90
	16.00	17.00	TH-232	=	11.50	1.30
	16.00	17.00	U-238	=	794.00	39.00
	17.00	18.00	RA-226	=	9.10	1.30
	17.00	18.00	TH-232	=	9.20	1.50
	17.00	18.00	U-238	=	371.00	25.00
	18.00	19.00	RA-226	=	7.20	2.00
	18.00	19.00	TH-232	=	6.80	1.90
	18.00	19.00	U-238	=	493.00	27.00
	19.00	20.00	RA-226	=	7.40	1.50
	19.00	20.00	TH-232	=	13.30	2.40
	19.00	20.00	U-238	=	516.00	26.00
04-04	.00	2.00	RA-226	=	.80	.60
	.00	2.00	TH-232	<	3.10	
	.00	2.00	U-238	=	111.00	10.00
	2.00	4.00	RA-226	<	5.30	
	2.00	4.00	TH-232	=	9.70	3.80
	2.00	4.00	U-238	=	1830.00	50.00
	6.00	7.00	RA-226	<	4.90	
	6.00	7.00	TH-232	=	58.20	28.00
	6.00	7.00	U-238	=	2150.00	135.00
	7.00	8.00	RA-226	<	4.80	
	7.00	8.00	TH-232	<	7.80	
	7.00	8.00	U-238	=	2140.00	306.00
	8.00	9.00	RA-226	<	46.10	
	8.00	9.00	TH-232	<	70.80	

Table 3-18

Activity Concentrations Of Pit Four Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
04-04	8.00	9.00	U-238	=	13400.00	202.00
	9.00	10.00	RA-226	=	27.50	11.40
	9.00	10.00	TH-232	=	467.00	17.00
	9.00	10.00	U-238	=	13100.00	228.00
	12.00	13.00	RA-226	=	76.20	50.00
	12.00	13.00	TH-232	=	321.00	19.00
	12.00	13.00	U-238	=	12300.00	252.00
	13.00	14.00	RA-226	=	37.90	13.00
	13.00	14.00	TH-232	=	95.70	13.00
	13.00	14.00	U-238	=	9840.00	185.00
	14.00	16.00	RA-226	=	42.40	16.00
	14.00	16.00	TH-232	=	90.50	13.00
	14.00	16.00	U-238	=	10000.00	226.00
	18.00	20.00	RA-226	=	56.20	23.00
	18.00	20.00	TH-232	=	98.90	19.00
	18.00	20.00	U-238	=	16100.00	426.00

174 records selected.

Table 3-19

Activity Concentrations Of Pit Five Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
05-01	.00	.50	RA-226	=	158.00	5.50
	.00	.50	TH-232	=	26.90	6.70
	.00	.50	U-238	=	181.00	35.20
05-02	.00	1.70	RA-226	=	6.30	1.30
	.00	1.70	TH-232	=	21.30	5.30
	.00	1.70	U-238	=	409.00	26.00
	1.70	3.30	RA-226	=	42.10	2.80
	1.70	3.30	TH-232	=	49.00	2.80
	1.70	3.30	U-238	=	508.00	33.00
	3.30	5.00	RA-226	=	104.00	3.50
	3.30	5.00	TH-232	=	16.10	3.20
	3.30	5.00	U-238	=	321.00	34.00
	5.00	6.70	RA-226	=	300.00	7.00
	5.00	6.70	TH-232	=	55.70	5.50
	5.00	6.70	U-238	<	200.00	
	6.70	8.30	RA-226	=	247.00	6.20
	6.70	8.30	TH-232	=	23.50	8.40
	6.70	8.30	U-238	=	72.80	33.00
	8.30	10.00	RA-226	=	102.00	3.70
	8.30	10.00	TH-232	=	7.50	3.60
	8.30	10.00	U-238	=	84.00	25.00
	10.00	10.70	RA-226	=	171.00	6.00
	10.00	10.70	TH-232	<	24.10	
	10.00	10.70	U-238	=	135.00	35.00
	10.70	12.30	RA-226	=	84.20	3.50
	10.70	12.30	TH-232	=	13.00	2.50
	10.70	12.30	U-238	=	212.00	75.00
	12.30	14.00	RA-226	=	64.20	3.00
	12.30	14.00	TH-232	=	14.70	3.20
	12.30	14.00	U-238	=	243.00	27.00
05-03	.00	1.70	RA-226	=	2.00	1.10
	.00	1.70	TH-232	=	7.40	1.10
	.00	1.70	U-238	=	214.00	15.00
	1.70	3.30	RA-226	=	37.70	3.10
	1.70	3.30	TH-232	=	164.00	26.70
	1.70	3.30	U-238	=	233.00	29.00
	3.30	5.00	RA-226	=	127.00	3.50

Table 3-19

Activity Concentrations Of Pit Five Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
05-03	3.30	5.00	TH-232	=	10.20	3.90
	3.30	5.00	U-238	<	92.50	
	5.00	6.70	RA-226	=	140.00	4.00
	5.00	6.70	TH-232	=	11.90	4.80
	5.00	6.70	U-238	<	99.90	
	6.70	8.30	RA-226	=	94.90	3.40
	6.70	8.30	TH-232	=	12.80	6.00
	6.70	8.30	U-238	=	49.80	23.20
	8.30	10.00	RA-226	=	167.00	5.00
	8.30	10.00	TH-232	=	45.40	4.20
	8.30	10.00	U-238	<	105.00	
	10.00	11.70	RA-226	=	114.00	4.00
	10.00	11.70	TH-232	=	16.50	5.50
	10.00	11.70	U-238	=	58.00	28.00
	11.70	13.30	RA-226	=	138.00	4.10
	11.70	13.30	TH-232	=	12.10	4.00
	11.70	13.30	U-238	=	136.00	25.00
	13.30	15.00	RA-226	=	161.00	4.10
	13.30	15.00	TH-232	=	9.70	2.70
	13.30	15.00	U-238	=	166.00	17.00
	15.00	16.70	RA-226	=	26.00	2.20
	15.00	16.70	TH-232	=	21.00	2.10
	15.00	16.70	U-238	=	101.00	13.00
	16.70	18.30	RA-226	=	21.40	1.90
	16.70	18.30	TH-232	=	18.30	1.60
	16.70	18.30	U-238	=	246.00	22.00
	18.30	20.00	RA-226	=	6.40	1.70
	18.30	20.00	TH-232	=	50.60	2.30
	18.30	20.00	U-238	=	256.00	16.00
	20.00	21.70	RA-226	=	5.60	2.10
	20.00	21.70	TH-232	=	36.50	2.20
	20.00	21.70	U-238	=	291.00	31.00
	21.70	23.30	RA-226	=	9.90	1.30
	21.70	23.30	TH-232	=	24.90	2.00
	21.70	23.30	U-238	=	88.50	16.00
	23.30	25.00	RA-226	=	2.30	1.20
	23.30	25.00	TH-232	=	17.70	1.30
	23.30	25.00	U-238	=	176.00	15.00
	25.00	26.30	RA-226	=	5.70	1.90
	25.00	26.30	TH-232	=	37.10	1.30
	25.00	26.30	U-238	=	267.00	22.00

Table 3-19

Activity Concentrations Of Pit Five Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
05-03	26.30	28.00	RA-226	=	56.00	3.00
	26.30	28.00	TH-232	=	33.80	5.60
	26.30	28.00	U-238	=	204.00	27.00
05-04	.00	1.70	RA-226	=	9.40	3.60
	.00	1.70	TH-232	=	391.00	16.00
	.00	1.70	U-238	=	177.00	36.00
	1.70	3.30	RA-226	=	83.50	3.30
	1.70	3.30	TH-232	=	51.80	6.80
	1.70	3.30	U-238	=	151.00	27.00
	3.30	5.00	RA-226	=	32.90	3.50
	3.30	5.00	TH-232	=	125.00	11.00
	3.30	5.00	U-238	=	230.00	29.00
	5.00	6.70	RA-226	=	85.10	16.00
	5.00	6.70	TH-232	=	17.50	5.40
	5.00	6.70	U-238	<	111.00	
	6.70	8.30	RA-226	=	141.00	5.00
	6.70	8.30	TH-232	=	34.00	11.40
	6.70	8.30	U-238	=	60.10	15.00
	8.30	10.00	RA-226	=	128.00	3.60
	8.30	10.00	TH-232	=	8.20	5.00
	8.30	10.00	U-238	=	67.50	13.00
	10.00	11.70	RA-226	=	110.00	3.30
	10.00	11.70	TH-232	=	17.00	3.40
	10.00	11.70	U-238	=	88.20	27.00
	11.70	13.30	RA-226	=	115.00	4.00
	11.70	13.30	TH-232	=	18.20	8.00
	11.70	13.30	U-238	=	63.40	25.00
	13.30	15.00	RA-226	=	140.00	4.00
	13.30	15.00	TH-232	=	32.70	4.20
	13.30	15.00	U-238	<	114.00	
	15.00	16.70	RA-226	=	8.70	1.60
	15.00	16.70	TH-232	=	51.20	2.50
	15.00	16.70	U-238	=	449.00	33.00
	16.70	18.30	RA-226	=	60.40	2.60
	16.70	18.30	TH-232	=	14.60	6.70
	16.70	18.30	U-238	=	138.00	32.00
	18.30	20.00	RA-226	=	54.70	2.60
	18.30	20.00	TH-232	=	16.90	2.40
	18.30	20.00	U-238	=	158.00	36.00

Table 3-19

Activity Concentrations Of Pit Five Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
05-04	20.00	21.70	RA-226	=	6.90	1.40
	20.00	21.70	TH-232	=	32.40	2.10
	20.00	21.70	U-238	=	646.00	29.00
	21.70	23.30	RA-226	=	10.20	1.40
	21.70	23.30	TH-232	=	26.70	1.70
	21.70	23.30	U-238	=	157.00	15.00
	23.30	25.00	RA-226	=	6.50	1.40
	23.30	25.00	TH-232	=	19.00	5.20
	23.30	25.00	U-238	=	152.00	14.00
	25.00	26.00	RA-226	=	189.00	4.60
	25.00	26.00	TH-232	=	57.60	12.00
	25.00	26.00	U-238	=	95.20	40.00
	26.00	27.70	RA-226	=	7.00	1.30
	26.00	27.70	TH-232	=	18.10	1.40
	26.00	27.70	U-238	=	170.00	18.00
	27.70	29.30	RA-226	=	14.90	1.50
	27.70	29.30	TH-232	=	21.10	1.60
	27.70	29.30	U-238	=	136.00	18.00
05-05	.00	1.70	RA-226	=	20.20	3.00
	.00	1.70	TH-232	=	22.10	5.00
	.00	1.70	U-238	=	243.00	34.00
	1.70	3.30	RA-226	=	131.00	6.00
	1.70	3.30	TH-232	=	580.00	68.00
	1.70	3.30	U-238	<	214.00	
	3.30	5.00	RA-226	=	196.00	5.00
	3.30	5.00	TH-232	=	15.80	4.00
	3.30	5.00	U-238	<	203.00	
	5.00	6.70	RA-226	=	157.00	4.80
	5.00	6.70	TH-232	=	8.40	6.80
	5.00	6.70	U-238	<	180.00	
	6.70	8.30	RA-226	=	119.00	3.80
	6.70	8.30	TH-232	=	12.40	4.20
	6.70	8.30	U-238	=	103.00	32.00
	8.30	10.00	RA-226	=	268.00	5.20
	8.30	10.00	TH-232	=	20.20	8.30
	8.30	10.00	U-238	<	142.00	
	10.00	11.70	RA-226	=	119.00	3.50
	10.00	11.70	TH-232	=	14.10	3.00
	10.00	11.70	U-238	=	80.30	14.40

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Table 3-19

Activity Concentrations Of Pit Five Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
05-05	11.70	13.30	RA-226	=	156.00	4.00
	11.70	13.30	TH-232	=	10.90	3.70
	11.70	13.30	U-238	<	96.80	
	13.30	15.00	RA-226	=	194.00	5.50
	13.30	15.00	TH-232	=	9.70	3.00
	13.30	15.00	U-238	<	104.00	
05-06	.00	1.70	RA-226	=	117.00	3.60
	.00	1.70	TH-232	=	40.50	3.50
	.00	1.70	U-238	=	59.30	7.10
	1.70	3.30	RA-226	=	166.00	4.40
	1.70	3.30	TH-232	=	11.20	4.40
	1.70	3.30	U-238	<	66.00	
	3.30	5.00	RA-226	=	182.00	5.60
	3.30	5.00	TH-232	=	8.40	5.10
	3.30	5.00	U-238	<	39.10	
	5.00	6.60	RA-226	=	155.00	3.70
	5.00	6.60	TH-232	=	8.90	5.00
	5.00	6.60	U-238	<	57.40	
	6.60	8.30	RA-226	=	147.00	3.60
	6.60	8.30	TH-232	=	14.40	3.40
	6.60	8.30	U-238	<	32.80	
	8.30	10.00	RA-226	=	160.00	4.10
	8.30	10.00	TH-232	=	20.70	5.60
	8.30	10.00	U-238	<	61.50	
	10.00	10.80	RA-226	=	101.00	3.00
	10.00	10.80	TH-232	=	6.80	3.30
	10.00	10.80	U-238	<	27.10	
	10.80	12.50	RA-226	=	72.60	2.50
	10.80	12.50	TH-232	=	7.20	2.80
	10.80	12.50	U-238	=	97.70	50.00

186 records selected.

Table 3-20

Activity Concentrations Of Pit Six Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
06-01	1.20	2.80	RA-226	<	9.10	
	1.20	4.50	RA-226	<	22.20	
	1.20	2.80	TH-232	<	13.60	
	1.20	4.50	TH-232	<	31.70	
	1.20	2.80	U-238	=	8370.00	150.00
	1.20	4.50	U-238	=	10900.00	154.00
06-02	.70	2.30	RA-226	<	14.40	
	.70	2.30	TH-232	<	20.50	
	.70	2.30	U-238	=	9740.00	151.00
06-03	.00	1.70	RA-226	<	8.10	
	.00	1.70	TH-232	<	9.90	
	.00	1.70	U-238	=	3750.00	100.00
	1.70	3.30	RA-226	<	13.30	
	1.70	3.30	TH-232	<	21.40	
	1.70	3.30	U-238	=	4100.00	90.00
	3.30	5.00	RA-226	<	10.10	
	3.30	5.00	TH-232	<	17.40	
	3.30	5.00	U-238	=	2810.00	75.00
	5.00	6.70	RA-226	<	9.60	
	5.00	6.70	TH-232	<	14.90	
	5.00	6.70	U-238	=	3990.00	110.00
	6.70	8.30	RA-226	<	6.50	
	6.70	8.30	TH-232	<	8.70	
	6.70	8.30	U-238	=	3140.00	102.00
	8.30	10.00	RA-226	<	17.20	
	8.30	10.00	TH-232	<	14.90	
	8.30	10.00	U-238	=	5560.00	95.00
	10.00	11.70	RA-226	<	10.70	
	10.00	11.70	TH-232	<	19.40	
	10.00	11.70	U-238	=	4430.00	120.00
	11.70	13.30	RA-226	<	6.90	
	11.70	13.30	TH-232	<	19.50	
	11.70	13.30	U-238	=	4400.00	130.00
	13.30	15.00	RA-226	<	12.60	
	13.30	15.00	TH-232	<	10.50	
	13.30	15.00	U-238	=	4720.00	130.00

Table 3-20

Activity Concentrations Of Pit Six Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
06-04	.00	1.60	RA-226	<	8.80	
	.00	1.60	TH-232	<	23.60	
	.00	1.60	U-238	=	7450.00	8.50
	1.60	3.30	RA-226	<	15.70	
	1.60	3.30	TH-232	<	21.80	
	1.60	3.30	U-238	=	5750.00	73.00
	3.30	5.00	RA-226	<	12.40	
	3.30	5.00	TH-232	<	17.50	
	3.30	5.00	U-238	=	6040.00	71.00
	5.00	6.60	RA-226	<	9.00	
	5.00	6.60	TH-232	<	14.10	
	5.00	6.60	U-238	=	4200.00	90.00
	6.60	8.30	RA-226	<	9.90	
	6.60	8.30	TH-232	<	22.10	
	6.60	8.30	U-238	=	3520.00	81.00
	8.30	10.00	RA-226	<	8.00	
	8.30	10.00	TH-232	<	24.20	
	8.30	10.00	U-238	=	3430.00	76.00

54 records selected.

Table 3-21

Activity Concentrations Of Burn Pit Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
07-01	.00	1.00	RA-226	=	2.10	.50
	.00	1.00	TH-232	=	1.60	.70
	.00	1.00	U-238	=	7.00	3.50
	1.00	2.00	RA-226	=	2.50	.50
	1.00	2.00	TH-232	=	1.70	.80
	1.00	2.00	U-238	=	28.30	5.20
	2.00	3.00	RA-226	<	1.60	
	2.00	3.00	TH-232	<	3.20	
	2.00	3.00	U-238	<	5.50	
	3.00	4.00	RA-226	=	.60	.40
	3.00	4.00	TH-232	<	.30	
	3.00	4.00	U-238	<	7.80	
	4.00	6.00	RA-226	=	.60	.30
	4.00	6.00	TH-232	=	.70	.60
	4.00	6.00	U-238	<	5.30	
	6.00	7.00	RA-226	<	1.10	
	6.00	7.00	TH-232	=	1.20	.70
	6.00	7.00	U-238	=	15.40	3.90
	7.00	8.00	RA-226	<	.30	
	7.00	8.00	TH-232	=	1.50	.50
	7.00	8.00	U-238	=	8.20	2.50
	8.00	9.00	RA-226	=	.40	.20
	8.00	9.00	TH-232	<	3.00	
	8.00	9.00	U-238	=	2.70	2.10
	9.00	10.00	RA-226	=	.70	.40
	9.00	10.00	TH-232	=	1.10	.30
	9.00	10.00	U-238	<	12.90	
07-02	.00	1.00	RA-226	=	1.10	.40
	.00	1.00	TH-232	<	3.10	
	.00	1.00	U-238	=	10.60	2.90
	1.00	2.00	RA-226	=	2.00	.60
	1.00	2.00	TH-232	=	2.00	.50
	1.00	2.00	U-238	=	42.10	6.00
	2.00	4.00	RA-226	=	.80	.50
	2.00	4.00	TH-232	=	1.70	1.00
	2.00	4.00	U-238	=	153.00	9.00
	4.00	5.00	RA-226	=	1.20	.40
	4.00	5.00	TH-232	<	2.40	
	4.00	5.00	U-238	=	8.20	3.30

Table 3-21

Activity Concentrations Of Burn Pit Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
07-02	5.00	6.00	RA-226	=	.50	.30
	5.00	6.00	TH-232	=	.80	.40
	5.00	6.00	U-238	<	11.40	
	8.00	9.00	RA-226	=	2.00	.60
	8.00	9.00	TH-232	=	1.40	.50
	8.00	9.00	U-238	=	24.40	5.80
	9.00	10.00	RA-226	=	.40	.30
	9.00	10.00	TH-232	<	.30	
	9.00	10.00	U-238	<	5.90	
	10.00	11.00	RA-226	=	.90	.40
	10.00	11.00	TH-232	<	3.10	
	10.00	11.00	U-238	<	6.90	
	11.00	12.00	RA-226	=	1.00	.50
	11.00	12.00	TH-232	=	1.20	.50
	11.00	12.00	U-238	<	9.00	
07-03	.00	1.00	RA-226	=	1.20	.60
	.00	1.00	TH-232	=	4.50	1.00
	.00	1.00	U-238	=	191.00	13.00
	1.00	2.00	RA-226	=	1.70	1.00
	1.00	2.00	TH-232	=	3.70	1.00
	1.00	2.00	U-238	=	130.00	14.00
	2.00	4.00	RA-226	=	2.00	.90
	2.00	4.00	TH-232	=	8.70	1.00
	2.00	4.00	U-238	=	72.20	7.60
	10.00	12.00	RA-226	=	2.60	1.00
	10.00	12.00	TH-232	=	15.10	1.70
	10.00	12.00	U-238	=	392.00	23.00
	12.00	14.00	RA-226	=	1.30	.50
	12.00	14.00	TH-232	=	1.90	.70
	12.00	14.00	U-238	=	46.30	6.50
07-04	.00	1.00	RA-226	=	1.50	.80
	.00	1.00	TH-232	=	2.70	1.20
	.00	1.00	U-238	=	223.00	16.00
	1.00	2.00	RA-226	<	2.50	
	1.00	2.00	TH-232	=	1.10	.50
	1.00	2.00	U-238	=	22.00	5.30
	2.00	3.00	RA-226	=	.70	.50

Table 3-21

Activity Concentrations Of Burn Pit Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
07-04	2.00	3.00	TH-232	=	1.20	.80
	2.00	3.00	U-238	=	72.20	6.60
	3.00	4.00	RA-226	=	1.70	.50
	3.00	4.00	TH-232	=	1.10	.70
	3.00	4.00	U-238	=	29.40	5.40
	4.00	5.00	RA-226	=	2.00	.80
	4.00	5.00	TH-232	=	2.90	.90
	4.00	5.00	U-238	=	165.00	15.00
	5.00	6.00	RA-226	=	2.30	.50
	5.00	6.00	TH-232	=	2.00	.60
	5.00	6.00	U-238	=	9.40	4.50
	6.00	8.00	RA-226	=	2.50	.80
	6.00	8.00	TH-232	=	2.90	.80
	6.00	8.00	U-238	=	337.00	15.00
	8.00	9.00	RA-226	=	3.70	.90
	8.00	9.00	TH-232	<	2.40	
	8.00	9.00	U-238	=	218.00	17.00
	9.00	10.00	RA-226	=	2.60	.90
	9.00	10.00	TH-232	=	7.80	.80
	9.00	10.00	U-238	=	95.20	9.00
	10.00	11.00	RA-226	=	23.00	3.20
	10.00	11.00	TH-232	=	69.40	4.10
	10.00	11.00	U-238	=	334.00	31.00
	11.00	12.00	RA-226	=	2.80	.80
	11.00	12.00	TH-232	=	5.00	.80
	11.00	12.00	U-238	=	60.30	7.50
	14.00	16.00	RA-226	=	1.00	.30
	14.00	16.00	TH-232	=	1.30	.30
	14.00	16.00	U-238	=	4.80	3.10
07-05	.00	1.00	RA-226	<	.80	
	.00	1.00	TH-232	=	1.40	.70
	.00	1.00	U-238	=	10.30	4.50
	1.00	2.00	RA-226	=	.90	.40
	1.00	2.00	TH-232	=	.80	.40
	1.00	2.00	U-238	=	16.40	3.00
	2.00	3.00	RA-226	=	2.70	1.00
	2.00	3.00	TH-232	=	4.60	.90
	2.00	3.00	U-238	=	29.70	8.20
	3.00	4.00	RA-226	=	1.90	.80

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Table 3-21

Activity Concentrations Of Burn Pit Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
07-05	3.00	4.00	TH-232	=	1.20	.90
	3.00	4.00	U-238	=	14.90	4.00
	4.00	5.00	RA-226	=	2.40	.50
	4.00	5.00	TH-232	=	1.10	.80
	4.00	5.00	U-238	=	14.40	4.80
	5.00	6.00	RA-226	=	1.90	.60
	5.00	6.00	TH-232	=	1.40	.90
	5.00	6.00	U-238	=	11.70	4.80
	6.00	7.00	RA-226	=	24.80	3.10
	6.00	7.00	TH-232	=	60.00	4.10
	6.00	7.00	U-238	=	219.00	28.00
	7.00	8.00	RA-226	=	.80	.60
	7.00	8.00	TH-232	=	9.60	1.00
	7.00	8.00	U-238	=	310.00	13.00
	12.00	14.00	RA-226	=	2.30	1.20
	12.00	14.00	TH-232	=	6.50	1.30
	12.00	14.00	U-238	=	111.00	12.00
	14.00	16.00	RA-226	=	1.00	.80
	14.00	16.00	TH-232	=	2.10	1.10
	14.00	16.00	U-238	=	30.10	5.80
07-06	.00	1.00	RA-226	=	2.20	.60
	.00	1.00	TH-232	=	1.80	.60
	.00	1.00	U-238	=	72.90	6.80
	1.00	2.00	RA-226	=	1.70	.60
	1.00	2.00	TH-232	=	2.00	.80
	1.00	2.00	U-238	=	88.70	7.20
	2.00	3.00	RA-226	=	1.80	.60
	2.00	3.00	TH-232	=	2.20	.70
	2.00	3.00	U-238	=	12.40	4.50
	3.00	4.00	RA-226	=	1.50	.50
	3.00	4.00	TH-232	<	1.40	
	3.00	4.00	U-238	=	9.20	4.00
	4.00	5.00	RA-226	=	1.80	.60
	4.00	5.00	TH-232	=	1.30	.60
	4.00	5.00	U-238	=	6.40	4.80
	5.00	6.00	RA-226	=	1.30	.80
	5.00	6.00	TH-232	=	2.30	.80
	5.00	6.00	U-238	=	9.00	4.80
	6.00	8.00	RA-226	=	3.50	1.00

Table 3-21

Activity Concentrations Of Burn Pit Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
07-06	6.00	8.00	TH-232	=	9.80	1.30
	6.00	8.00	U-238	=	290.00	15.00
	8.00	10.00	RA-226	=	1.60	.60
	8.00	10.00	TH-232	=	5.40	1.40
	8.00	10.00	U-238	=	268.00	27.00
	10.00	12.00	RA-226	<	2.40	
	10.00	12.00	TH-232	<	5.00	
	10.00	12.00	U-238	=	14.80	4.10

162 records selected.

Table 3-22

Activity Concentrations Of Upper Fly Ash Area Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
24-01	.00	2.00	RA-226	=	31.50	1.80
	.00	2.00	TH-232	=	3.40	2.80
	.00	2.00	U-238	<	58.20	
	2.00	3.00	RA-226	=	2.70	.70
	2.00	3.00	TH-232	<	.50	
	2.00	3.00	U-238	=	9.90	6.50
	3.00	4.00	RA-226	=	.70	.50
	3.00	4.00	TH-232	=	1.00	.40
	3.00	4.00	U-238	<	14.60	
	4.00	6.00	RA-226	=	1.90	.80
	4.00	6.00	TH-232	=	1.90	.80
	4.00	6.00	U-238	=	16.20	4.80
	6.00	7.00	RA-226	=	1.40	.70
	6.00	7.00	TH-232	<	2.20	
	6.00	7.00	U-238	<	9.10	
	7.00	8.00	RA-226	=	1.00	.60
	7.00	8.00	TH-232	=	.90	.40
	7.00	8.00	U-238	<	7.30	
24-02	.00	2.00	RA-226	<	3.70	
	.00	2.00	TH-232	=	7.60	1.10
	.00	2.00	U-238	<	27.50	
	2.00	4.00	RA-226	=	.60	.30
	2.00	4.00	TH-232	=	1.40	.60
	2.00	4.00	U-238	<	7.60	
	4.00	6.00	RA-226	=	1.00	.80
	4.00	6.00	TH-232	=	1.90	.70
	4.00	6.00	U-238	<	16.20	
	6.00	8.00	RA-226	=	.60	.50
	6.00	8.00	TH-232	=	1.30	.50
	6.00	8.00	U-238	<	11.30	
	10.00	11.00	RA-226	=	.50	.40
	10.00	11.00	TH-232	=	.60	.50
	10.00	11.00	U-238	<	9.80	
	11.00	12.00	RA-226	=	.80	.50
	11.00	12.00	TH-232	<	.30	
	11.00	12.00	U-238	<	12.10	
	12.00	13.00	RA-226	=	.80	.60
	12.00	13.00	TH-232	=	.80	.50
	12.00	13.00	U-238	=	3.70	2.60

Table 3-22

Activity Concentrations Of Upper Fly Ash Area Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
24-02	13.00	14.00	RA-226	=	1.00	.30
	13.00	14.00	TH-232	=	1.00	.40
	13.00	14.00	U-238	<	8.70	
	14.00	16.00	RA-226	=	1.00	.60
	14.00	16.00	TH-232	=	1.70	.60
	14.00	16.00	U-238	<	11.20	
	16.00	17.00	RA-226	<	1.20	
	16.00	17.00	TH-232	=	.50	.30
	16.00	17.00	U-238	=	2.70	1.00
	17.00	18.00	RA-226	=	.50	.30
	17.00	18.00	TH-232	<	.30	
	17.00	18.00	U-238	<	7.90	
	18.00	19.00	RA-226	=	.50	.30
	18.00	19.00	TH-232	=	.50	.40
	18.00	19.00	U-238	<	9.40	
	19.00	20.00	RA-226	<	1.20	
	19.00	20.00	TH-232	=	.90	.40
	19.00	20.00	U-238	<	11.10	
24-03	.00	2.00	RA-226	=	.70	.30
	.00	2.00	TH-232	=	1.00	.40
	.00	2.00	U-238	=	17.80	4.70
	2.00	3.00	RA-226	<	1.00	
	2.00	3.00	TH-232	=	1.00	.50
	2.00	3.00	U-238	=	14.30	3.90
	3.00	4.00	RA-226	=	.80	.50
	3.00	4.00	TH-232	<	5.00	
	3.00	4.00	U-238	=	7.80	3.10
	4.00	5.00	RA-226	=	.60	.40
	4.00	5.00	TH-232	<	3.10	
	4.00	5.00	U-238	=	6.20	2.40
	5.00	6.00	RA-226	<	1.10	
	5.00	6.00	TH-232	=	.60	.40
	5.00	6.00	U-238	=	5.00	3.10
	6.00	7.00	RA-226	=	.80	.60
	6.00	7.00	TH-232	=	1.20	.50
	6.00	7.00	U-238	<	13.50	
	7.00	8.00	RA-226	=	1.20	.30
	7.00	8.00	TH-232	<	.80	
	7.00	8.00	U-238	=	3.80	1.50

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Table 3-22

Activity Concentrations Of Upper Fly Ash Area Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
24-03	8.00	9.00	RA-226	<	.70	
	8.00	9.00	TH-232	=	.70	.60
	8.00	9.00	U-238	<	13.00	
	9.00	10.00	RA-226	=	.80	.40
	9.00	10.00	TH-232	=	.80	.50
	9.00	10.00	U-238	<	10.60	
24-04	.00	1.00	RA-226	=	4.80	1.00
	.00	1.00	TH-232	<	5.90	
	.00	1.00	U-238	<	29.00	
	1.00	2.00	RA-226	=	.90	.60
	1.00	2.00	TH-232	=	1.40	.70
	1.00	2.00	U-238	=	11.10	5.60
	2.00	3.00	RA-226	=	1.10	.90
	2.00	3.00	TH-232	=	.90	.50
	2.00	3.00	U-238	=	9.80	3.60
	3.00	4.00	RA-226	=	1.10	.50
	3.00	4.00	TH-232	=	1.00	.60
	3.00	4.00	U-238	<	8.70	
24-05	.00	1.00	RA-226	=	46.00	1.10
	.00	1.00	TH-232	<	7.30	
	.00	1.00	U-238	<	32.80	
	1.00	2.00	RA-226	=	34.00	2.10
	1.00	2.00	TH-232	<	7.30	
	1.00	2.00	U-238	<	46.20	
	2.00	3.00	RA-226	=	1.20	.80
	2.00	3.00	TH-232	=	1.10	.50
	2.00	3.00	U-238	=	9.30	3.60
	3.00	4.00	RA-226	<	1.20	
	3.00	4.00	TH-232	<	.40	
	3.00	4.00	U-238	<	16.00	
	4.00	5.00	RA-226	=	1.70	.90
	4.00	5.00	TH-232	<	.60	
	4.00	5.00	U-238	<	9.30	
	5.00	6.00	RA-226	=	.80	.50
	5.00	6.00	TH-232	<	.40	
	5.00	6.00	U-238	<	7.00	
	6.00	7.00	RA-226	=	1.20	.50

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Table 3-22

Activity Concentrations Of Upper Fly Ash Area Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
24-05	6.00	7.00	TH-232	<	.50	
	6.00	7.00	U-238	<	14.70	
	7.00	8.00	RA-226	=	1.00	.40
	7.00	8.00	TH-232	<	3.80	
	7.00	8.00	U-238	<	14.20	
24-06	.00	1.00	RA-226	=	5.60	.80
	.00	1.00	TH-232	<	4.60	
	.00	1.00	U-238	<	32.90	
	1.00	2.00	RA-226	=	1.70	.40
	1.00	2.00	TH-232	=	2.10	.50
	1.00	2.00	U-238	<	18.30	
	2.00	3.00	RA-226	=	.60	.40
	2.00	3.00	TH-232	<	.80	
	2.00	3.00	U-238	<	15.40	
	3.00	4.00	RA-226	=	1.10	.50
	3.00	4.00	TH-232	=	1.00	.70
	3.00	4.00	U-238	<	13.10	
	4.00	5.00	RA-226	=	.60	.30
	4.00	5.00	TH-232	=	.50	.30
	4.00	5.00	U-238	<	5.00	
	5.00	6.00	RA-226	<	.30	
	5.00	6.00	TH-232	<	4.70	
	5.00	6.00	U-238	<	12.70	
	6.00	8.00	RA-226	=	.60	.30
	6.00	8.00	TH-232	=	.80	.30
	6.00	8.00	U-238	<	8.10	
24-07	.00	1.00	RA-226	=	4.50	1.60
	.00	1.00	TH-232	=	25.20	1.70
	.00	1.00	U-238	=	38.60	9.70
	1.00	2.00	RA-226	=	1.30	.40
	1.00	2.00	TH-232	=	1.90	.60
	1.00	2.00	U-238	=	12.30	3.70
	2.00	3.00	RA-226	=	.80	.40
	2.00	3.00	TH-232	=	1.50	.60
	2.00	3.00	U-238	=	15.20	3.70
	3.00	4.00	RA-226	<	1.30	
	3.00	4.00	TH-232	=	1.00	.50

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Table 3-22

Activity Concentrations Of Upper Fly Ash Area Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
24-07	3.00	4.00	U-238	=	5.50	2.50
	4.00	5.00	RA-226	=	1.00	.60
	4.00	5.00	TH-232	=	1.00	.60
	4.00	5.00	U-238	<	6.80	
	5.00	6.00	RA-226	<	1.90	
	5.00	6.00	TH-232	<	1.50	
	5.00	6.00	U-238	<	10.00	
	6.00	8.00	RA-226	<	.80	
	6.00	8.00	TH-232	<	.30	
	6.00	8.00	U-238	<	12.30	
24-08	.00	1.30	RA-226	<	2.10	
	.00	1.30	TH-232	=	36.50	2.20
	.00	1.30	U-238	=	30.00	10.10
	4.00	5.00	RA-226	<	.10	
	4.00	5.00	TH-232	=	1.20	.40
	4.00	5.00	U-238	<	11.50	
	5.00	6.00	RA-226	=	.60	.40
	5.00	6.00	TH-232	=	.80	.30
	5.00	6.00	U-238	<	5.30	
	6.00	8.00	RA-226	=	.50	.40
	6.00	8.00	TH-232	=	1.10	.30
	6.00	8.00	U-238	<	8.00	
24-09	.00	1.00	RA-226	<	5.50	
	.00	1.00	TH-232	=	78.10	2.90
	.00	1.00	U-238	<	39.30	
	1.00	2.00	RA-226	<	5.10	
	1.00	2.00	TH-232	=	101.00	2.90
	1.00	2.00	U-238	<	41.40	
	2.00	4.00	RA-226	=	2.60	.90
	2.00	4.00	TH-232	=	4.20	.60
	2.00	4.00	U-238	=	12.30	3.60
	4.00	6.00	RA-226	=	1.90	.60
	4.00	6.00	TH-232	=	3.90	.80
	4.00	6.00	U-238	<	27.40	
	6.00	8.00	RA-226	=	1.70	.60
	6.00	8.00	TH-232	=	6.70	1.30
	6.00	8.00	U-238	=	22.10	7.20

Table 3-22

Activity Concentrations Of Upper Fly Ash Area Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
24-09	8.00	9.00	RA-226	=	1.20	.80
	8.00	9.00	TH-232	=	2.60	.70
	8.00	9.00	U-238	=	10.70	4.20
	9.00	10.00	RA-226	=	.90	.50
	9.00	10.00	TH-232	=	.80	.40
	9.00	10.00	U-238	=	6.30	3.70
	10.00	11.00	RA-226	<	1.80	
	10.00	11.00	TH-232	=	.90	.40
	10.00	11.00	U-238	<	7.10	
	11.00	12.00	RA-226	=	.90	.30
	11.00	12.00	TH-232	<	1.60	
	11.00	12.00	U-238	<	10.50	
	12.00	13.00	RA-226	=	.70	.30
	12.00	13.00	TH-232	<	2.50	
	12.00	13.00	U-238	<	8.30	
	13.00	14.00	RA-226	=	.80	.60
	13.00	14.00	TH-232	=	.80	.40
	13.00	14.00	U-238	<	9.00	
24-10	.00	1.00	RA-226	<	1.80	
	.00	1.00	TH-232	=	1.80	.90
	.00	1.00	U-238	=	19.80	5.40
	1.00	2.00	RA-226	=	1.20	.40
	1.00	2.00	TH-232	<	.40	
	1.00	2.00	U-238	=	11.80	4.20
	2.00	3.00	RA-226	=	2.50	.70
	2.00	3.00	TH-232	=	1.60	1.00
	2.00	3.00	U-238	=	20.20	5.00
	3.00	4.00	RA-226	=	2.70	1.00
	3.00	4.00	TH-232	=	2.90	1.30
	3.00	4.00	U-238	=	23.50	7.60
	4.00	5.00	RA-226	=	3.70	.60
	4.00	5.00	TH-232	=	2.70	1.00
	4.00	5.00	U-238	<	7.70	
	5.00	6.00	RA-226	=	2.40	.80
	5.00	6.00	TH-232	=	3.50	.80
	5.00	6.00	U-238	<	16.50	
	6.00	7.00	RA-226	=	2.00	.70
	6.00	7.00	TH-232	=	2.50	.80
	6.00	7.00	U-238	=	18.00	4.30

Table 3-22

Activity Concentrations Of Upper Fly Ash Area Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
24-10	7.00	8.00	RA-226	=	3.00	.80
	7.00	8.00	TH-232	<	4.30	
	7.00	8.00	U-238	<	14.70	
	8.00	9.00	RA-226	=	2.80	.80
	8.00	9.00	TH-232	=	2.40	.80
	8.00	9.00	U-238	<	8.30	
	9.00	10.00	RA-226	=	3.00	.80
	9.00	10.00	TH-232	=	1.50	.80
	9.00	10.00	U-238	<	11.00	
	10.00	11.00	RA-226	=	2.90	.60
	10.00	11.00	TH-232	=	2.60	.80
	10.00	11.00	U-238	<	7.70	
	11.00	12.00	RA-226	=	2.10	.60
	11.00	12.00	TH-232	=	1.60	.50
	11.00	12.00	U-238	<	6.90	
	12.00	13.00	RA-226	=	2.10	.60
	12.00	13.00	TH-232	=	3.00	.90
	12.00	13.00	U-238	<	15.60	
	13.00	14.00	RA-226	=	1.50	.50
	13.00	14.00	TH-232	=	1.00	.60
	13.00	14.00	U-238	<	11.50	
	14.00	15.00	RA-226	<	.70	
	14.00	15.00	TH-232	=	.80	.60
	14.00	15.00	U-238	<	5.20	
	15.00	16.00	RA-226	=	2.50	.80
	15.00	16.00	TH-232	=	1.50	.60
	15.00	16.00	U-238	=	135.00	8.00
	16.00	17.00	RA-226	=	2.90	.90
	16.00	17.00	TH-232	=	1.50	.90
	16.00	17.00	U-238	=	40.50	6.50
	17.00	18.00	RA-226	=	4.00	.80
	17.00	18.00	TH-232	<	2.10	
	17.00	18.00	U-238	=	81.60	7.50
	18.00	19.00	RA-226	=	2.60	.60
	18.00	19.00	TH-232	<	1.40	
	18.00	19.00	U-238	=	74.40	6.30
	19.00	20.00	RA-226	=	1.20	.40
	19.00	20.00	TH-232	<	.80	
	19.00	20.00	U-238	=	8.90	4.00
	20.00	21.00	RA-226	=	7.00	.90
	20.00	21.00	TH-232	<	3.00	

Table 3-22

Activity Concentrations Of Upper Fly Ash Area Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
24-10	20.00	21.00	U-238	=	139.00	9.00
	21.00	22.00	RA-226	=	7.90	1.10
	21.00	22.00	TH-232	<	3.70	
	21.00	22.00	U-238	=	160.00	11.00
	22.00	24.00	RA-226	=	5.10	1.10
	22.00	24.00	TH-232	=	2.20	1.00
	22.00	24.00	U-238	=	104.00	11.00
	24.00	26.00	RA-226	=	1.40	.70
	24.00	26.00	TH-232	<	.40	
	24.00	26.00	U-238	=	10.00	3.50
24-11	.00	1.00	RA-226	=	1.70	.80
	.00	1.00	TH-232	=	2.20	1.00
	.00	1.00	U-238	<	15.10	
	1.00	2.00	RA-226	=	1.10	.50
	1.00	2.00	TH-232	=	1.30	.60
	1.00	2.00	U-238	=	17.00	3.50
	2.00	3.00	RA-226	=	1.00	.70
	2.00	3.00	TH-232	=	1.50	.80
	2.00	3.00	U-238	=	13.70	4.00
	3.00	4.00	RA-226	<	.80	
	3.00	4.00	TH-232	=	1.50	.80
	3.00	4.00	U-238	=	9.10	3.50
	4.00	5.00	RA-226	<	.90	
	4.00	5.00	TH-232	=	1.30	.80
	4.00	5.00	U-238	<	10.90	
	5.00	6.00	RA-226	=	1.70	.90
	5.00	6.00	TH-232	=	1.00	.60
	5.00	6.00	U-238	=	7.60	4.20
	6.00	7.00	RA-226	=	1.70	.60
	6.00	7.00	TH-232	=	2.20	.70
	6.00	7.00	U-238	=	11.90	5.00
	7.00	8.00	RA-226	=	2.90	.60
	7.00	8.00	TH-232	=	3.10	.60
	7.00	8.00	U-238	<	10.30	
	8.00	9.00	RA-226	=	1.80	1.00
	8.00	9.00	TH-232	=	2.60	.90
	8.00	9.00	U-238	<	10.70	
	9.00	10.00	RA-226	=	2.60	.90
	9.00	10.00	TH-232	=	2.00	1.20

Table 3-22

Activity Concentrations Of Upper Fly Ash Area Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
24-11	9.00	10.00	U-238	<	10.20	
	10.00	11.00	RA-226	=	2.10	.70
	10.00	11.00	TH-232	=	2.90	.60
	10.00	11.00	U-238	<	9.30	
	11.00	12.00	RA-226	=	2.00	.60
	11.00	12.00	TH-232	=	2.20	1.50
	11.00	12.00	U-238	<	9.20	
	12.00	13.00	RA-226	=	1.90	.60
	12.00	13.00	TH-232	=	1.80	.70
	12.00	13.00	U-238	<	16.40	
	13.00	14.00	RA-226	=	2.10	.90
	13.00	14.00	TH-232	=	1.90	1.00
	13.00	14.00	U-238	<	9.60	
	14.00	15.00	RA-226	=	2.00	1.40
	14.00	15.00	TH-232	=	2.20	.80
	14.00	15.00	U-238	<	15.00	
	15.00	16.00	RA-226	=	2.60	.80
	15.00	16.00	TH-232	=	2.20	1.40
	15.00	16.00	U-238	<	6.20	
	16.00	17.00	RA-226	=	1.80	.60
	16.00	17.00	TH-232	=	2.90	.90
	16.00	17.00	U-238	<	9.80	
	17.00	18.00	RA-226	=	1.50	.80
	17.00	18.00	TH-232	=	3.30	.90
	17.00	18.00	U-238	<	10.10	
	18.00	19.00	RA-226	<	2.50	
	18.00	19.00	TH-232	=	3.60	.80
	18.00	19.00	U-238	<	9.50	
	19.00	20.00	RA-226	=	2.00	.80
	19.00	20.00	TH-232	=	2.20	.80
	19.00	20.00	U-238	<	8.50	
	20.00	21.00	RA-226	<	2.30	
	20.00	21.00	TH-232	=	3.50	.90
	20.00	21.00	U-238	<	10.80	
	21.00	22.00	RA-226	=	2.30	1.20
	21.00	22.00	TH-232	=	2.90	.80
	21.00	22.00	U-238	<	17.60	
	22.00	23.00	RA-226	=	2.10	.90
	22.00	23.00	TH-232	<	4.70	
	22.00	23.00	U-238	<	11.30	
	23.00	24.00	RA-226	=	1.80	.70

Table 3-22

Activity Concentrations Of Upper Fly Ash Area Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
24-11	23.00	24.00	TH-232	=	2.60	.70
	23.00	24.00	U-238	<	13.00	
	24.00	25.00	RA-226	=	1.90	.90
	24.00	25.00	TH-232	=	1.10	.60
	24.00	25.00	U-238	=	14.10	6.90
	25.00	26.00	RA-226	=	1.90	.80
	25.00	26.00	TH-232	=	2.40	1.00
	25.00	26.00	U-238	<	18.70	
	26.00	27.00	RA-226	=	1.30	.60
	26.00	27.00	TH-232	=	1.70	1.10
	26.00	27.00	U-238	=	6.30	4.40
	27.00	28.00	RA-226	=	1.60	.60
	27.00	28.00	TH-232	=	2.40	.80
	27.00	28.00	U-238	=	5.30	2.40
	28.00	29.00	RA-226	=	1.20	.90
	28.00	29.00	TH-232	<	3.70	
	28.00	29.00	U-238	<	12.00	
	29.00	30.00	RA-226	=	1.80	.80
	29.00	30.00	TH-232	=	1.60	1.00
	29.00	30.00	U-238	=	15.90	3.80
	30.00	31.00	RA-226	=	1.40	.80
	30.00	31.00	TH-232	=	1.90	.60
	30.00	31.00	U-238	=	2.60	2.00
	31.00	32.00	RA-226	=	1.00	.30
	31.00	32.00	TH-232	=	1.00	.30
	31.00	32.00	U-238	<	3.50	
	32.00	33.00	RA-226	=	.80	.50
	32.00	33.00	TH-232	=	.80	.30
	32.00	33.00	U-238	<	4.40	
	33.00	34.00	RA-226	=	1.00	.40
	33.00	34.00	TH-232	=	.60	.40
	33.00	34.00	U-238	<	4.30	
24-12	.00	1.00	RA-226	<	.10	
	.00	1.00	TH-232	<	2.30	
	.00	1.00	U-238	<	9.00	
	1.00	2.00	RA-226	=	1.10	.30
	1.00	2.00	TH-232	=	.70	.60
	1.00	2.00	U-238	<	7.60	
	2.00	4.00	RA-226	=	.60	.40

Table 3-22

Activity Concentrations Of Upper Fly Ash Area Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
24-12	2.00	4.00	TH-232	=	.60	.30
	2.00	4.00	U-238	<	9.30	
	4.00	6.00	RA-226	=	.90	.30
	4.00	6.00	TH-232	=	1.10	.50
	4.00	6.00	U-238	=	5.30	2.80
	6.00	7.00	RA-226	=	.70	.40
	6.00	7.00	TH-232	=	.90	.40
	6.00	7.00	U-238	=	13.20	3.10
	7.00	8.00	RA-226	=	1.40	1.00
	7.00	8.00	TH-232	=	2.00	.60
	7.00	8.00	U-238	=	22.00	4.20
	8.00	10.00	RA-226	=	1.20	.90
	8.00	10.00	TH-232	=	1.00	.60
	8.00	10.00	U-238	=	5.90	3.90
	10.00	12.00	RA-226	=	1.00	.50
	10.00	12.00	TH-232	=	4.30	.60
	10.00	12.00	U-238	=	12.80	5.60
	12.00	14.00	RA-226	=	.60	.50
	12.00	14.00	TH-232	=	1.50	.60
	12.00	14.00	U-238	=	6.30	3.90
	16.00	17.00	RA-226	<	1.70	
	16.00	17.00	TH-232	<	.30	
	16.00	17.00	U-238	<	5.40	
	17.00	18.00	RA-226	<	.80	
	17.00	18.00	TH-232	=	.70	.40
	17.00	18.00	U-238	<	4.20	

414 records selected.

Table 3-23

Activity Concentrations Of Lower Fly Ash Area Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
25-01	.00	2.00	RA-226	=	4.30	.90
	.00	2.00	TH-232	<	1.80	
	.00	2.00	U-238	<	8.10	
	2.00	3.00	RA-226	=	3.00	.40
	2.00	3.00	TH-232	<	1.10	
	2.00	3.00	U-238	<	6.60	
	3.00	4.00	RA-226	=	.50	.40
	3.00	4.00	TH-232	<	1.80	
	3.00	4.00	U-238	<	3.80	
	4.00	5.00	RA-226	<	.80	
	4.00	5.00	TH-232	=	.40	.30
	4.00	5.00	U-238	<	2.50	
	5.00	6.00	RA-226	<	.40	
	5.00	6.00	TH-232	=	.50	.20
	5.00	6.00	U-238	<	5.10	
	6.00	7.00	RA-226	<	.50	
	6.00	7.00	TH-232	<	1.20	
	6.00	7.00	U-238	<	5.70	
	7.00	8.00	RA-226	<	.80	
	7.00	8.00	TH-232	=	.80	.50
	7.00	8.00	U-238	<	7.00	
25-02	.00	1.00	RA-226	<	1.80	
	.00	1.00	TH-232	=	.60	.50
	.00	1.00	U-238	=	18.20	4.20
	1.00	2.00	RA-226	=	1.10	.50
	1.00	2.00	TH-232	=	1.10	.40
	1.00	2.00	U-238	=	5.30	2.60
	2.00	3.00	RA-226	=	1.70	.90
	2.00	3.00	TH-232	<	5.80	
	2.00	3.00	U-238	=	8.60	3.60
	3.00	4.00	RA-226	<	.80	
	3.00	4.00	TH-232	=	1.10	.50
	3.00	4.00	U-238	<	7.90	
	4.00	5.00	RA-226	<	.50	
	4.00	5.00	TH-232	<	1.70	
	4.00	5.00	U-238	<	4.40	
	5.00	6.00	RA-226	<	.90	
	5.00	6.00	TH-232	<	.40	
	5.00	6.00	U-238	<	9.90	

Table 3-23

Activity Concentrations Of Lower Fly Ash Area Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
25-02	6.00	8.00	RA-226	<	.60	
	6.00	8.00	TH-232	<	2.00	
	6.00	8.00	U-238	<	3.60	
	8.00	9.00	RA-226	<	1.60	
	8.00	9.00	TH-232	<	.30	
	8.00	9.00	U-238	<	4.00	
	9.00	10.00	RA-226	=	.80	.40
	9.00	10.00	TH-232	<	2.60	
	9.00	10.00	U-238	=	4.10	2.60
	10.00	11.00	RA-226	<	.90	
	10.00	11.00	TH-232	=	.40	.30
	10.00	11.00	U-238	<	5.50	
	11.00	12.00	RA-226	=	.30	.10
	11.00	12.00	TH-232	<	.80	
	11.00	12.00	U-238	=	2.30	.80
	12.00	13.00	RA-226	=	.70	.30
	12.00	13.00	TH-232	<	.30	
	12.00	13.00	U-238	<	7.30	
	13.00	14.00	RA-226	=	.70	.50
	13.00	14.00	TH-232	<	.40	
	13.00	14.00	U-238	<	3.50	
	14.00	16.00	RA-226	<	1.00	
	14.00	16.00	TH-232	<	1.80	
	14.00	16.00	U-238	<	4.00	

63 records selected.

Table 3-24

Activity Concentrations Of North Lime Sludge Pond Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
47-01	.00	.50	RA-226	=	.70	.50
	.00	.50	TH-232	=	.90	.30
	.00	.50	U-238	=	5.80	2.20
	.50	1.80	RA-226	<	.60	
	.50	1.80	TH-232	<	2.40	
	.50	1.80	U-238	=	2.30	1.90
	1.80	3.50	RA-226	<	1.30	
	1.80	3.50	TH-232	<	.40	
	1.80	3.50	U-238	<	8.30	
47-02	.50	2.20	RA-226	<	.60	
	.50	2.20	TH-232	=	.50	.20
	.50	2.20	U-238	=	1.70	1.10
	2.20	3.80	RA-226	<	.50	
	2.20	3.80	TH-232	<	.40	
	2.20	3.80	U-238	<	4.30	
	3.80	5.50	RA-226	<	.70	
	3.80	5.50	TH-232	<	.30	
	3.80	5.50	U-238	=	2.80	1.60
47-03	2.00	3.60	RA-226	<	1.30	
	2.00	3.60	TH-232	=	.50	.20
	2.00	3.60	U-238	<	6.80	
	3.60	5.30	RA-226	<	.10	
	3.60	5.30	TH-232	<	1.30	
	3.60	5.30	U-238	<	3.80	
	5.30	7.00	RA-226	=	.90	.40
	5.30	7.00	TH-232	<	1.40	
	5.30	7.00	U-238	=	6.90	5.20

27 records selected.

Table 3-25

Activity Concentrations Of South Lime Sludge Pond Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
48-01	2.00	3.00	RA-226	<	1.70	
	2.00	3.00	TH-232	=	.60	.20
	2.00	3.00	U-238	=	6.70	2.80
	3.00	4.00	RA-226	<	1.20	
	3.00	4.00	TH-232	<	.50	
	3.00	4.00	U-238	<	7.40	
	4.00	5.00	RA-226	<	1.30	
	4.00	5.00	TH-232	<	.20	
	4.00	5.00	U-238	=	2.80	1.40
	5.00	6.00	RA-226	<	.60	
	5.00	6.00	TH-232	<	.20	
	5.00	6.00	U-238	<	4.20	
	6.00	7.00	RA-226	<	1.40	
	6.00	7.00	TH-232	<	.30	
	6.00	7.00	U-238	=	4.10	1.40
	7.00	8.00	RA-226	<	1.30	
	7.00	8.00	TH-232	<	1.50	
	7.00	8.00	U-238	<	5.60	
48-02	.00	2.00	RA-226	<	.20	
	.00	2.00	TH-232	<	.40	
	.00	2.00	U-238	=	4.00	2.70
	2.00	3.00	RA-226	<	1.60	
	2.00	3.00	TH-232	<	2.60	
	2.00	3.00	U-238	<	4.80	
	3.00	4.00	RA-226	<	.10	
	3.00	4.00	TH-232	<	.30	
	3.00	4.00	U-238	=	2.70	1.20
	4.00	5.00	RA-226	<	.10	
	4.00	5.00	TH-232	<	.30	
	4.00	5.00	U-238	<	11.20	
	5.00	6.00	RA-226	<	2.20	
	5.00	6.00	TH-232	<	.40	
	5.00	6.00	U-238	<	5.50	
	6.00	7.00	RA-226	<	1.50	
	6.00	7.00	TH-232	<	1.50	
	6.00	7.00	U-238	=	2.00	1.60
	7.00	8.00	RA-226	<	1.40	
	7.00	8.00	TH-232	=	.40	.20
	7.00	8.00	U-238	<	12.00	

Table 3-25

Activity Concentrations Of South Lime Sludge Pond Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
48-02	8.00	9.00	RA-226	<	.20	
	8.00	9.00	TH-232	<	1.10	
	8.00	9.00	U-238	<	1.80	
48-03	.00	1.00	RA-226	<	.20	
	.00	1.00	TH-232	<	.40	
	.00	1.00	U-238	=	3.20	1.60
	1.00	2.00	RA-226	<	.10	
	1.00	2.00	TH-232	<	.40	
	1.00	2.00	U-238	<	10.10	
	2.00	3.00	RA-226	=	1.10	.50
	2.00	3.00	TH-232	<	.70	
	2.00	3.00	U-238	<	9.80	
	3.00	4.00	RA-226	=	2.00	.80
	3.00	4.00	TH-232	<	.60	
	3.00	4.00	U-238	<	13.40	
	4.00	5.00	RA-226	<	1.00	
	4.00	5.00	TH-232	<	.40	
	4.00	5.00	U-238	<	5.60	
	5.00	6.00	RA-226	<	.70	
	5.00	6.00	TH-232	<	.40	
	5.00	6.00	U-238	=	4.70	3.50
	6.00	7.00	RA-226	<	.50	
	6.00	7.00	TH-232	=	.30	.20
	6.00	7.00	U-238	<	7.20	
	7.00	8.00	RA-226	<	.90	
	7.00	8.00	TH-232	<	.20	
	7.00	8.00	U-238	<	6.90	
	8.00	9.00	RA-226	<	1.00	
	8.00	9.00	TH-232	<	2.30	
	8.00	9.00	U-238	=	4.40	1.30

69 records selected.

Table 3-26

Activity Concentrations Of Sanitary Landfill Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
49-01	.00	1.00	RA-226	=	1.80	.40
	.00	1.00	TH-232	=	1.00	.60
	.00	1.00	U-238	=	18.20	3.60
	1.00	2.00	RA-226	<	.60	
	1.00	2.00	TH-232	=	.70	.50
	1.00	2.00	U-238	=	6.70	3.50
	2.00	4.00	RA-226	=	.80	.50
	2.00	4.00	TH-232	<	5.30	
	2.00	4.00	U-238	=	6.10	3.90
	4.00	6.00	RA-226	=	4.60	.70
	4.00	6.00	TH-232	=	1.90	.70
	4.00	6.00	U-238	=	35.10	5.80
	6.00	7.00	RA-226	<	1.50	
	6.00	7.00	TH-232	<	2.20	
	6.00	7.00	U-238	=	9.30	4.00
	7.00	8.00	RA-226	=	.60	.20
	7.00	8.00	TH-232	<	.30	
	7.00	8.00	U-238	<	7.30	
	10.00	12.00	RA-226	<	1.00	
	10.00	12.00	TH-232	=	1.20	.50
	10.00	12.00	U-238	<	6.10	
	12.00	13.00	RA-226	<	.60	
	12.00	13.00	TH-232	=	1.00	.60
	12.00	13.00	U-238	=	8.10	5.60
	13.00	14.00	RA-226	=	.90	.40
	13.00	14.00	TH-232	<	2.60	
	13.00	14.00	U-238	<	11.30	
	14.00	16.00	RA-226	<	1.00	
	14.00	16.00	TH-232	=	.80	.60
	14.00	16.00	U-238	<	15.50	
	16.00	17.00	RA-226	=	.90	.30
	16.00	17.00	TH-232	<	.30	
	16.00	17.00	U-238	<	5.00	
	17.00	18.00	RA-226	=	.90	.40
	17.00	18.00	TH-232	=	.70	.30
	17.00	18.00	U-238	<	10.50	
49-02	.00	1.00	RA-226	<	.90	
	.00	1.00	TH-232	=	2.00	.60
	.00	1.00	U-238	=	15.40	3.60

Table 3-26

Activity Concentrations Of Sanitary Landfill Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
49-02	1.00	2.00	RA-226	<	1.10	
	1.00	2.00	TH-232	=	1.00	.50
	1.00	2.00	U-238	=	4.90	2.60
	2.00	3.00	RA-226	=	.70	.50
	2.00	3.00	TH-232	=	1.30	.50
	2.00	3.00	U-238	=	7.10	2.60
	3.00	4.00	RA-226	=	.70	.30
	3.00	4.00	TH-232	<	4.70	
	3.00	4.00	U-238	<	9.60	
	4.00	5.00	RA-226	=	.70	.60
	4.00	5.00	TH-232	<	3.20	
	4.00	5.00	U-238	=	3.50	2.40
	5.00	6.00	RA-226	=	.60	.30
	5.00	6.00	TH-232	<	.30	
	5.00	6.00	U-238	<	9.20	
	6.00	8.00	RA-226	=	.90	.40
	6.00	8.00	TH-232	=	1.00	.50
	6.00	8.00	U-238	=	5.30	2.60
	8.00	9.00	RA-226	=	.90	.50
	8.00	9.00	TH-232	=	1.00	.40
	8.00	9.00	U-238	<	12.70	
	9.00	10.00	RA-226	=	.70	.50
	9.00	10.00	TH-232	=	1.10	.50
	9.00	10.00	U-238	<	12.60	
	10.00	11.00	RA-226	=	1.10	.40
	10.00	11.00	TH-232	=	1.00	.60
	10.00	11.00	U-238	<	8.30	
	11.00	12.00	RA-226	=	1.40	.50
	11.00	12.00	TH-232	=	1.60	.60
	11.00	12.00	U-238	=	4.30	2.40
49-03	.00	2.00	RA-226	<	.20	
	.00	2.00	TH-232	=	2.40	.80
	.00	2.00	U-238	=	19.30	7.50
	2.00	4.00	RA-226	<	.70	
	2.00	4.00	TH-232	=	1.20	.50
	2.00	4.00	U-238	=	6.10	3.10
	4.00	5.00	RA-226	=	.70	.40
	4.00	5.00	TH-232	<	3.50	
	4.00	5.00	U-238	=	4.40	3.80

Table 3-26

Activity Concentrations Of Sanitary Landfill Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
49-03	5.00	6.00	RA-226	=	1.00	.40
	5.00	6.00	TH-232	=	1.30	.40
	5.00	6.00	U-238	=	13.70	4.00
	6.00	8.00	RA-226	<	5.20	
	6.00	8.00	TH-232	=	79.70	4.00
	6.00	8.00	U-238	=	338.00	226.00
	8.00	10.00	RA-226	<	1.90	
	8.00	10.00	TH-232	=	17.10	2.90
	8.00	10.00	U-238	=	146.00	16.00
	10.00	12.00	RA-226	<	2.00	
	10.00	12.00	TH-232	=	12.80	1.50
	10.00	12.00	U-238	=	198.00	16.00
	12.00	13.00	RA-226	<	1.40	
	12.00	13.00	TH-232	=	3.10	.90
	12.00	13.00	U-238	=	48.90	7.10
	13.00	14.00	RA-226	<	1.70	
	13.00	14.00	TH-232	<	.40	
	13.00	14.00	U-238	=	9.20	2.80
	14.00	15.00	RA-226	<	.80	
	14.00	15.00	TH-232	=	.60	.40
	14.00	15.00	U-238	<	7.00	
	15.00	16.00	RA-226	=	.80	.40
	15.00	16.00	TH-232	=	1.10	.50
	15.00	16.00	U-238	=	6.30	2.60
49-04	.00	2.00	RA-226	=	.50	.30
	.00	2.00	TH-232	<	.30	
	.00	2.00	U-238	<	4.60	
	2.00	3.00	RA-226	=	1.00	.50
	2.00	3.00	TH-232	<	.30	
	2.00	3.00	U-238	<	10.30	
	3.00	4.00	RA-226	=	.90	.40
	3.00	4.00	TH-232	=	1.00	.50
	3.00	4.00	U-238	<	9.30	
	4.00	5.00	RA-226	<	1.50	
	4.00	5.00	TH-232	<	.30	
	4.00	5.00	U-238	<	4.70	
	5.00	6.00	RA-226	=	1.10	.60
	5.00	6.00	TH-232	=	1.00	.50
	5.00	6.00	U-238	<	8.60	

Table 3-26

Activity Concentrations Of Sanitary Landfill Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
49-04	6.00	8.00	RA-226	<	.70	
	6.00	8.00	TH-232	<	.30	
	6.00	8.00	U-238	<	5.30	
49-05	.00	2.00	RA-226	=	.80	.50
	.00	2.00	TH-232	=	1.60	.40
	.00	2.00	U-238	=	5.90	2.40
	2.00	3.00	RA-226	=	.70	.50
	2.00	3.00	TH-232	=	1.20	.50
	2.00	3.00	U-238	=	9.40	2.70
	3.00	4.00	RA-226	<	.50	
	3.00	4.00	TH-232	<	2.30	
	3.00	4.00	U-238	=	4.20	2.10
	4.00	5.00	RA-226	=	.60	.40
	4.00	5.00	TH-232	=	1.10	.70
	4.00	5.00	U-238	=	14.80	3.50
	5.00	6.00	RA-226	=	.70	.50
	5.00	6.00	TH-232	=	.80	.30
	5.00	6.00	U-238	<	7.70	
	6.00	7.00	RA-226	<	.10	
	6.00	7.00	TH-232	=	1.20	.30
	6.00	7.00	U-238	<	8.10	
	7.00	8.00	RA-226	<	.90	
	7.00	8.00	TH-232	<	1.40	
	7.00	8.00	U-238	<	10.60	
	8.00	9.00	RA-226	=	.90	.30
	8.00	9.00	TH-232	<	.30	
	8.00	9.00	U-238	<	9.80	
	9.00	10.00	RA-226	=	.40	.30
	9.00	10.00	TH-232	=	1.30	.40
	9.00	10.00	U-238	<	3.90	
	10.00	11.00	RA-226	=	.60	.40
	10.00	11.00	TH-232	=	.80	.30
	10.00	11.00	U-238	=	3.20	2.60
	11.00	12.00	RA-226	=	.60	.40
	11.00	12.00	TH-232	=	.60	.40
	11.00	12.00	U-238	<	10.40	
	13.00	14.00	RA-226	<	1.80	
	13.00	14.00	TH-232	<	1.40	
	13.00	14.00	U-238	=	11.30	2.00

Table 3-26

Activity Concentrations Of Sanitary Landfill Profile Samples

Borehole	Begin Depth (feet)	End Depth (feet)	Radionuclide	Vq	Activity Concentration (pCi/g)	Uncertainty Value (pCi/g)
49-06	.00	1.00	RA-226	<	1.60	
	.00	1.00	TH-232	=	1.00	.40
	.00	1.00	U-238	=	13.90	4.80
	1.00	2.00	RA-226	<	2.50	
	1.00	2.00	TH-232	=	1.20	.80
	1.00	2.00	U-238	=	8.80	4.80
	4.00	6.00	RA-226	<	1.80	
	4.00	6.00	TH-232	=	.80	.50
	4.00	6.00	U-238	=	8.20	3.70
	6.00	7.00	RA-226	=	.70	.40
	6.00	7.00	TH-232	<	4.30	
	6.00	7.00	U-238	<	7.50	
	7.00	8.00	RA-226	=	.80	.40
	7.00	8.00	TH-232	=	1.20	.60
	7.00	8.00	U-238	<	8.30	
	10.00	11.00	RA-226	<	2.80	
	10.00	11.00	TH-232	<	4.10	
	10.00	11.00	U-238	<	8.10	
	11.00	12.00	RA-226	<	.20	
	11.00	12.00	TH-232	=	1.10	.60
	11.00	12.00	U-238	<	13.20	
	12.00	13.00	RA-226	<	.90	
	12.00	13.00	TH-232	=	.70	.40
	12.00	13.00	U-238	=	3.80	2.00
	13.00	14.00	RA-226	=	.60	.40
	13.00	14.00	TH-232	=	.80	.40
	13.00	14.00	U-238	<	6.60	
	14.00	15.00	RA-226	=	.80	.50
	14.00	15.00	TH-232	<	6.00	
	14.00	15.00	U-238	=	3.30	2.70
	15.00	16.00	RA-226	<	1.30	
	15.00	16.00	TH-232	<	3.20	
	15.00	16.00	U-238	<	5.70	
	16.00	17.00	RA-226	<	.80	
	16.00	17.00	TH-232	<	.40	
	16.00	17.00	U-238	<	16.10	
	17.00	18.00	RA-226	=	.80	.50
	17.00	18.00	TH-232	<	.40	
	17.00	18.00	U-238	<	12.30	

195 records selected.

Appendix F

APPENDIX F

GEOLOGICAL DESCRIPTION OF WASTE PIT BORINGS

Pit No. 1

The location of pit no. 1 is shown in Figure 1.1. This pit is overgrown with grass and is fairly level with a gentle slope towards a drainage ditch running alongside pit no. 4 on the east and towards the clear well to the south. A total of five borings was completed in pit no. 1 at the locations shown in Figure 2.2. These borings were completed using the drilling rig and split-spoon sampling method described in Subsection 2.1.4.

In all the borings an apparent cover layer, 0.5- to 1.0-foot thick, consisting of dark yellowish brown to very dark brown clay was observed. As the intent was to stop short of the bottom, in no instance was any underlying natural material or liner encountered, indicating that the waste is at least 11 to 11.5 feet thick in pit no 1. Each boring was completed to a total depth of 12 feet. The observations of the underlying material made at each boring are summarized as follows:

- Boring 1 - 1 to 7 feet: Very dark brown silt with some clay, maybe fly ash. 7 to 12 feet: light gray silt with some dark yellowish brown clay, moist throughout, becoming wet at about 8 feet.

- Boring 2 - 1 to 10 feet: Light gray material with a semisolid consistency, traces of bright yellow clay-like material, moist throughout. 10 to 12 feet: Light gray medium-grained sand grading down into white coarse sand with traces of black and bright yellow material.

- Boring 3 - 1 to 12 feet: Grayish brown material with a semisolid or grease-like consistency. Some lime green material, possibly UF_4, observed from 1 to 2 feet. Becoming moist at 6 feet. Bright yellow semisolid material observed from 10 to 11 feet grading back into grayish brown material.

- Boring 4 - 0.5 to 12 feet: Dark gray silt with trace clay becoming damp at 4 feet and wet at about 7 feet. Some white silt in occasional, thin layers. White specks throughout samples from 4 to 12 feet, some red specks observed in sample from 8 to 12 feet. Brown paper observed in sample from 6 to 8 feet.

- Boring 5 - Cover material may contain some fly ash and probably extends to a depth of 2 feet. 2 to 7 feet: Brown to yellowish brown clay, moist below 1 foot. 7 to 12 feet: black silty material with a grease-like texture grading downward into a bright yellow, laminated, clay-like material with a grease-like texture, slightly moist and soft.

The results of these borings indicate that the waste material is at least 12 feet thick in pit no. 1. The Standard Penetration Resistance or N values recorded while collecting these samples were typically in the range of 50 to 100 for the first 2 feet. This is indicative of the dry, relatively compact nature of the cover material. Below the cover, typical N values ranged from 10 to 20, reflecting the relatively moist and soft nature of the waste material. To avoid buried objects, these boring locations were chosen using the results of the preliminary geophysical data analysis.

Pit No. 2

Pit no. 2 is grown over with grass and is fairly level with a gentle slope towards a drainage ditch running alongside pit no. 4 on the east. A total of five borings was completed. These borings were completed to total depths of 10 feet using the drilling rig and split-spoon sampling method.

The observations of the underlying material made at each boring are summarized as follows:

- Boring 1 - 0 to 0.5 foot: Brown clay. 0.5 to 8 feet: Black medium- to coarse-grained sand sized material, possibly fly ash, traces of lime green clayey material, becoming wet below 6 to 7 feet, some yellowish brown and white soft clay-like material from 7 to 8 feet, semisolid consistency. No recovery from 8 to 10 feet.

- Boring 2 - 0 to 2 feet: Brown and yellowish brown clay with traces of lime green and bright yellow clayey material. No recovery from 2 to 8 feet, chunks of concrete up to 1 inch in diameter block tip of spoon.

- Borings 3, 4, and 5 - 0 to 0.75 foot: Yellowish brown clay with trace silt and abundant grass roots that appear to be cover material. 0.75 to 10 feet: Alternating layers of black sand sized material, possibly fly ash and clay and silt sized material with a semisolid consistency. Some gravel was also present in this interval. The colors of this material include: yellowish brown, olive gray, very pale brown, and white. This material is very soft and moist. Occasionally, sand sized grains of the material are present and they are sometimes cemented together into chunks.

The results from these borings indicate that the waste material in pit no. 2 is at least 10 feet thick. The N values recorded while collecting these samples were typically in the range of 10 to 100 through the boring. Using the preliminary results of the geophysics data analysis, the boring locations were chosen so as to avoid areas where the presence of buried objects was suspected.

Pit No. 3

Pit no. 3 is overgrown with grass and is fairly level with a steep slope down to the perimeter fence and road on the west and a gentle slope towards a drainage ditch running alongside the burn pit on the east. A total of seven borings was completed. These borings were completed using the drilling rig and split-spoon sampling method.

In all the borings an apparent cover layer was observed. It ranged in thickness from 0.75 to 8.0 feet thick and consisted of yellowish brown to very dark gray clay with some fine- to coarse-grained sand, trace gravel, and abundant rootlets. N values in this material were generally greater than 10 and ranged as high as 39.

Historical data indicated that the maximum pit depth was 27 feet. Consequently, it was decided that borings should extend no deeper than 20 feet and should be terminated upon the first indication that natural underlying material had been penetrated.

Boring 1 was completed near the greenhouse on the north side of the pit. This boring was terminated after approximately 8 feet because good recovery could not be obtained with the split-spoon sampler. Some wood fragments were recovered in the sampler, and anecdotal evidence indicated that pallets had been buried in this area.

The other borings were very similar in overall stratigraphy. Beneath the cover material mentioned previously, a layer of black, medium- to coarse-grained sand sized material, possibly fly ash, was observed from 0.75 to 14 feet in boring 2, from 1 to 5 feet in boring 3, and from 1 to 4 feet in boring 6. In these borings, this material was then underlain by a very soft, moist to wet, semisolid material that varied in color from reddish brown, brown, gray, to white. In the other borings, this material underlay the cover and the black material was not present. In borings 4 and 5, this material extended to the bottom of the boring at 20 feet below the ground surface. Borings 6 and 7 were terminated at 12 and 14 feet, respectively, because the natural underlying material may have been encountered. This material consisted of yellowish brown to brown clay with some rock clasts 1 inch across.

In contrast to the N values greater than 10 recorded in the cover material, the N values recorded in the semisolid material underlying the cover were generally less than 5 and often 0. Occasionally, the sampler was driven simply by the weight of the hammer.

Using the preliminary results of the geophysics data analysis, the boring locations where chosen so as to avoid areas where the presence of buried objects was suspected.

Pit No. 4

Pit no. 4 is level and had no vegetative cover at the time of the investigation. An earthen berm surrounds the pit to retain surface water runoff. A total of four borings was advanced into the pit. Boring and sampling methods used were identical to those described previously.

All borings on pit no. 4 were advanced to a depth of 20 feet. Similar material was encountered in each boring. The following summary of boring 2 is typical of all borings in the pit:

- Boring 2 - 0 to 4.5 feet: Yellowish brown clay, trace silt, little medium to fine gravel, damp. 4.5 to 20 feet: Very dark gray silt and very fine sand sized material. The material is saturated below 9 feet. Sand sized material similar to table salt occurs at 7.5 feet. Weak red staining occurs in the saturated zone and white fine sand size specks occur in the unsaturated zone. Layers of brownish yellow clay sized material occur at 10.5 feet and 17 feet.

Pit no. 4 boring locations were based on results of the preliminary geophysical data analysis to avoid buried objects.

Pit No. 5

Pit no. 5 is still open and is partially covered with water ranging in depth from 3 feet near the east end to 0 feet two-thirds of the length of the pit to the west. Therefore, at the time of this sampling the western third of the pit was exposed. This pit is lined with a synthetic rubber liner, as is pit no. 6. A total of six borings was completed in the pit. These borings were completed using the piston ring sampler and pontoon boat.

Historical data indicated that the maximum pit depth was 30 feet. The sampler was advanced by hand until it was stopped by the waste material or the rubber liner. Care was taken to advance the sampler as gently as possible to minimize the chance that the liner might be damaged. Waste thickness measured ranged from 3 to 29.4 feet, and in each boring the sample was advanced to the liner.

Data collected from these borings indicate that this pit contains waste material only and that no naturally occurring, geologic materials are present. The stratigraphy of this waste material may be summarized as follows:

- The first 2 to 4 feet of waste material consisted of dark brown watery material with some sand sized grains of material. In each of the borings an approximate 0.5-foot crust of relatively dried out and hard waste material overlay the underlying soft material. Other colors observed in this interval include very dark gray and black.

- Beneath this upper interval, a wet, semisolid material with very little cohesion was observed to the bottom of each boring. Overall, this material had a reddish color. When a sample was composited, for example, the overall color would be a dull reddish brown. However, the semisolid material occurred in a variety of other colors either as streaks or distinct layers. These colors included: reddish brown, yellowish red, yellowish brown, yellow, light gray, pinkish gray, greenish gray, reddish gray, pale green, blue green, brown, very dark brown, and black.

Occasionally, during the insertion of the sampler, brief resistance was encountered from thin crusts at various depths in the waste material. These probably formed as the pit was being filled and the material dried, forming a crust while exposed to the air.

Pit No. 6

Pit no. 6 is entirely covered with water with an average depth of 2 feet. A total of four borings was completed in pit no. 6. These borings were completed using the ring sampler method.

Borings were advanced until the pit liner was encountered or until material impenetrable to the manually operated ring sampler was encountered. Boring depths varied from 4 to 14.5 feet. In each case this represents the thickness of the waste.

The following summary of boring 4 is typical of borings in pit no. 6.

- Boring 4 - 0 to 1.7 inches: Dark olive gray coarse to fine sand sized material, trace gravel sized material, some clay sized material, saturated, soft yellow modules of clay sized material present. 1.7 to 7.8 feet: Black medium to coarse sand sized material, some clay sized material and yellow clay modules, saturated, loose, petroleum sheen covering individual grains and liquid in sample. Olive, gray, yellow, and white staining throughout. 7.8 to 8.3 feet: Yellow coarse to fine sand sized material, trace fine gravel, and some clay sized material. Black staining throughout, saturated. 8.3 to 10 feet: Black coarse to fine sand sized material, some clay sized material. Yellow and white staining throughout, saturated.

Burn Pit

The burn pit is overgrown with grass and is fairly level. A 2- to 3-foot deep ditch cuts across the area on the west side and drains toward pit no. 2. A total of six borings was completed in the burn pit. These borings were completed using the drilling rig and split-spoon sampling method previously described.

In all the borings an apparent cover layer was observed. It ranged in thickness from 0 to 2 feet and consisted of yellowish brown clay with some fine- to coarse-grained sand, trace gravel, and abundant rootlets. N values in this material were generally greater than 10 and ranged as high as 55.

Historical data indicated that the maximum pit depth was 20 feet. Consequently, it was decided that borings should extend no deeper than 16 feet and should be terminated upon the first indication that natural, underlying material had been penetrated. Overall data from the borings indicate that the waste ranges in thickness from 9 to as many as 16 feet at boring 3.

The data collected from the borings indicated at least two distinct areas in the burn pit ranging in depth from 9 to 12 feet. The first area is in the northern half of the pit and was defined from borings 1, 2, and 3. The stratigraphy of these borings consisted of the following:

- Cover material consisting of yellowish brown clay with some sand and silt, ranging in thickness from 1 to 2 feet. N values in this material ranged from 47 to 105.

- In boring 1, a layer of white, silt sized semisolid material extended from 2 to 6 feet. N values ranged from 2 to 26.

- In borings 2 and 3, black sand sized material, ranging in thickness from 1 to 3 feet, was found beneath the cover.

- A layer of clay with sand and silt mixed with some fill material extends beneath the sand or silt sized material to a depth of 12 to 16 feet. The fill material included glass, aluminum pop tops, aluminum wire, wood chips and splinters, and partially decayed grass. In boring 3, only wet wood chips were recovered from 4 to 10 feet. N values ranged from 21 to 117.

In contrast, the stratigraphy of borings 4, 5, and 6 is similar to the borings from pits 2 and 3. The stratigraphy of these borings consisted of the following:

- Cover consisting of dark brown or dark yellowish brown clay with some sand and silt and ranging in thickness from 1 to 2 feet was observed in all three borings. N values in this material ranged from 36 to 49.

- A layer of very dark gray, fine- to medium-grained sand sized material was observed beneath the cover in all three borings and ranged in thickness from 5 to 7 feet. In boring 4 this material had a charred appearance. N values ranged from 10 to 35.

- Beneath the sand sized material was a layer of silt sized, semisolid material occurring in 0.25- to 0.50-inch bands in the following colors: weak red, reddish yellow, pinkish white, pinkish gray, gray, pale green, pink, very dark gray, yellow, and white. This layer ranged in thickness from 3 to 5.5 feet. N values ranged from 2 to 9.

- Underlying this layer is a light olive gray to light olive brown clay which may be natural material. N values in this material ranged from 9 to 33.

As at the other pits, the preliminary results of the geophysics data analysis were used to locate the borings so as to avoid areas where the presence of buried objects was suspected.

North Lime Sludge Pond

The lime sludge pond is located in the Waste Storage Area. This pond is approximately 60 feet wide and 150 feet long and is covered with water ranging in depth from 4.5 to 7 feet. At the time of this sampling, the southeastern corner of the pond was filled with waste material. A total of three borings was completed in the pond using the piston sampler and pontoon boat.

All three borings were advanced by hand until the sampler encountered what is believed to be the natural, underlying material. Borings 1, 2, and 3 were completed to depths of 3.5, 5.5, and 7 feet, respectively. In each case, this depth represents the thickness of the waste material. The log for boring 2 is summarized as follows and is very similar to borings 1 and 3.

- Boring 2 - 0 to 2.1 feet: Light gray, soupy liquid with some silt. 2.1 to 3.8 feet: Grayish brown semisolid. 3.8 to 5.5 feet: Very dark gray to black semisolid, fragments of dark brown silt with clay present. Sampler refusal at 5.5 feet.

In borings 1 and 2 a dark brown silt with clay was also encountered at 3.5 and 7 feet, respectively.

The boring locations in this pond were chosen to be on a diagonal line from the discharge to the pond in the south-eastern corner extending to the northwestern corner. It was reasoned that this would provide good samples through the thickest part of the waste and the best data on waste thickness.

South Lime Sludge Pond

The lime sludge pond is located in the Waste Storage Area. This pond is immediately to the south of the north lime sludge pond. The lime sludge pond has been inactive for some time and is now overgrown with grass. Observations made on the surface and in the boreholes indicate that no cover material is present. The surface is level and is surrounded by the old pond berm that is approximately 2 to 3 feet high, as is the north lime sludge pond. This pond is about 60 feet wide and 150 feet long. A total of three borings was completed on the pond using a tripod and split-spoon sampler.

All three borings were advanced by driving casing and cleaning out the hole between samples. Each boring was terminated immediately upon reaching what is believed to be the natural, underlying material. Borings 1, 2, and 3 were completed to a depth of 12 feet. In these borings the waste was found to be 11.2, 11.5, and 11.2 feet deep respectively.

The logs for each boring were very similar. The waste may be described as a clay-like, semisolid material with very low cohesion. For example, in each borehole the N values ranged from 0 to 4. In boring 3 the sampler was advanced solely by the weight of the hammer (130 lb) until the underlying silt was encountered. The color of the waste material was either white, light gray, light greenish gray, very pale brown, or very dark gray. Most often the dominant color was white with the other colors present in streaks or blotches. Also brown specks of material were present in some of the samples.

These boring locations were chosen to provide good areal coverage of the pond thereby providing representative samples for analysis and information on waste thickness.

Sanitary Landfill

The landfill is partially grass covered and generally flat with small dirt and rubble mounds covering approximately 25 percent of the area. A ditch that forms the north boundary of the landfill provides drainage for the area. A total of six borings was completed on the landfill.

All borings were advanced through fill material until natural, undisturbed material was encountered. Boring depths varied from 8 to 18 feet depending on fill depth. Similar fill material was encountered at each boring location and included roofing material, wood, glass, metal, and plastic. The following summary of boring 3 is typical of borings on the sanitary landfill:

- Boring 3 - 0 to 6.2 feet: Light olive brown clay with trace silt, trace medium to fine sand, a little medium to fine gravel, damp. 6.2 to 12.8 feet: Black fine sand and silt sized material that is slightly cemented with fiber board and hard dense white foam (roofing material), damp to wet. 12.8 to 14 feet: Light olive brown clay, moist. 14 to 16 feet: Yellowish brown clay with trace fine gravel, dense, fairly hard.

Cover material appeared to be present in each boring, except boring 1, and ranged in depth from 2 to perhaps as many as 6 feet at boring 3. This material is defined as "cover" because no fill material was evident. A description of this cover material is provided previously in the boring 3 summary. Fill thickness varied from 4 feet in boring 4 to 16 feet in boring 1. These boring locations were chosen so that samples of the fill could be obtained. However, preliminary results of the geophysical survey were used to locate the borings away from areas of the greatest magnetic, electromagnetic conductivity, and ground penetrating radar anomalies.

Upper Fly Ash Area

The fly ash area is level to gently rolling with a steep slope forming the southern boundary. Grass and occasional scrub trees cover the central and eastern sections while the western section is wooded. A total of 12 borings was completed on the upper fly ash.

All borings were advanced through fill material until the naturally occurring undisturbed regolith was encountered. Fill thickness ranged from 4 to 34 feet.

The upper fly ash area can be divided into three areas based on the fill material present. Fly ash was encountered in the eastern section of the area where fill material is deepest. In addition to fly ash, building rubble such as concrete, gravel, asphalt, masonry, and steel rebar were discarded in the upper fly ash pile area. These materials are found in the central section of the area where medium fill depths occur. In the eastern section, shallow fill depths occur with no fly ash and very little rubble present.

The following is a summary of three boring logs representative of the three unique areas encountered in the upper fly ash area. The first is in the western section, the second in the central section, and the third is in the eastern section:

- Boring 11 - 0 to 0.6 feet: Very dark gray silt with some coarse to fine sand and a little fine gravel, fly ash. 0.6 to 4.2 feet: Brown clay with a little coarse to fine sand and trace medium to fine gravel. 4.2 to 31.2 feet: Very dark gray silt with some coarse to fine sand and a little fine gravel, fly ash. 31.2 to 34 feet: Dark gray clay with a trace of fine sand and a little silt, undisturbed. Moisture content was high at the fly ash clay interface.

- Boring 9 - 0 to 11 feet: Yellowish brown clay grading to dark yellowish brown clay with some medium to fine gravel and a little silt. The gravel is angular and small pieces of concrete and brick are present. 11 to 14 feet: Light yellowish brown clay with a trace fine gravel and a trace of medium to fine sand, undisturbed, moist.

- Boring 4 - 0 to 22 feet: Dark yellowish brown clay with a little silt and a little coarse to fine dravel. This material is not in its natural state. 2.2 to 4 feet: Dark grayish brown clay with a trace silt, grades to dark yellowish brown. Areas of oxidation throughout, undisturbed.

These boring locations were chosen using the preliminary results of a surface radiological survey. They were located at or near significant radiological anomalies to provide data on the vertical extent of radionuclides.

Lower Fly Ash Area

The lower fly ash area was an active disposal area for fly ash at the time of the investigation. The focus of the investigation in this area was the storm sewer outfall ditch that runs along the southeast side of the fly ash pile. A total of 2 borings was completed in this area.

Both boring locations were based on data collected during a surface radiological survey. The borings were located to provide additional information on the vertical extent of radionuclides. The material encountered at both locations was natural and undisturbed with the exception of the first 3 feet of boring 1, in which small amounts of brick concrete and plastic were found. Boring 1 was advanced 8 feet while boring 2 was advanced 14 feet, approximately 2 feet below the water table. The following is a summary of both borings.

- Boring 1 - 0 to 3 feet: Very dark brown clay with some silt, trace fine sand, and a little medium to fine gravel. Concrete and brick pieces near upper 7 inches, moist throughout, piece of plastic at 3 feet. 3 to 4 feet: Yellowish brown clay with trace silt and some medium to fine sand and gravel, moist, undisturbed. 4 to 8 feet: Yellowish brown sand and gravel with a decrease in fines toward the bottom, moist throughout, undisturbed.

- Boring 2 - 0 to 2.6 feet: Dark brown interbedding of sand and gravel with occasional clay lenses, moist, undisturbed. 2.6 to 8.7 feet: Yellowish brown sand and gravel, undisturbed, moist. 8.7 to 14 feet: Brown sand and gravel, moist to wet, clean, undisturbed.