ANALYTICAL RESULTS FROM AN ENVIRONMENTAL INVESTIGATION OF SIX SITES ON KIRTLAND AIR FORCE BASE, NEW MEXICO, 1993-94

By Ralph Wilcox

U.S. GEOLOGICAL SURVEY
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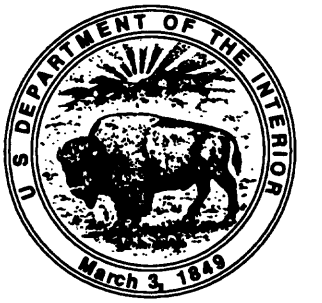

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CONVERSION FACTORS AND VERTICAL DATUM

Multiply	By	To obtain
inch	2.540	centimeter
foot	0.3048	meter
mile	1.609	kilometer
square foot	0.09290	square meter
acre	4,047	square meter
gallon	3.785	liter

Temperatures in degrees Fahrenheit (°F) or degrees Celsius (°C) can be converted as follows:

$$°F = 9/5\ (°C) + 32$$

$$°C = 5/9\ (°F - 32)$$

Sea level: In this report "sea level" refers to the National Geodetic Vertical Datum of 1929--a geodetic datum derived from a general adjustment of the first-order level nets of the United States and Canada, formerly called Sea Level Datum of 1929.

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ABSTRACT

The analytical results of a field environmental investigation of six sites on Kirtland Air Force Base, New Mexico, are presented. The field data were collected September 9, 1993, through February 3, 1994. The six sites investigated include: (1) silver recovery units (site 22), (2) a buried caustic drain line (site 23), (3) a neutralization pit (site 24), (4) an evaporation/infiltration pond (site 25), (5) the Manzano fire training area (site 26), and (6) a waste oil underground storage tank (site 27). Samples of soil, pond sediment, soil gas, and water and sediment in floor drains were collected and analyzed in the investigation. Sediment and water samples collected from floor drains were analyzed for silver at site 22. Soil samples collected adjacent to sites 23-25 and pond-sediment samples collected from site 25 were analyzed for metals, fluoride, and pH. Soil samples collected from site 26 were analyzed for total petroleum hydrocarbons, ignitability, metals, volatile and semivolatile organic compounds, dioxins, and polynuclear aromatic hydrocarbons. Soil-gas samples collected adjacent to site 26 were qualitatively analyzed for volatile organic compounds using a portable gas chromatograph. Soil samples adjacent to site 27 were analyzed for total petroleum hydrocarbons, metals, volatile and semivolatile organic compounds, and pH. Field quality-control samples (equipment blanks, trip blanks, and duplicates) were analyzed along with the environmental samples. Quality-control sample results are presented.

INTRODUCTION

The objective of this investigation is to characterize possible environmental contamination at six sites on Kirtland Air Force Base (AFB), New Mexico (table 1, back of the report). The six sites were investigated on Kirtland AFB because past or current site activities could have resulted in contamination of soil, pond sediment, and water and sediment in drains. The investigation was performed in cooperation with the U.S. Air Force Center for Environmental Excellence, Brooks AFB, Texas.

Purpose and Scope

This report presents the analytical results of a field investigation of six sites on Kirtland AFB, New Mexico (figs. 1 and 2 and table 1). The six sites investigated include: (1) silver recovery units (site 22), (2) a buried caustic drain line (site 23), (3) a neutralization pit (site 24), (4) an evaporation/infiltration pond (site 25), (5) the Manzano fire training area (site 26), and (6) a waste oil underground storage tank (site 27). The scope of the investigation includes the collection and analysis of environmental samples of soil, pond sediment, soil gas, and water and sediment in floor drains. Field quality-control (QC) samples were collected and analyzed in association with the environmental samples. This report contains descriptions of the analytical results of the environmental samples and the associated field QC samples.

Description of the Study Area

Kirtland AFB is located southeast of and adjacent to the city of Albuquerque, in central New Mexico (fig. 1). The area designated as Kirtland AFB presently (1994) includes 52,287 acres owned, leased, or operated by the U.S. Air Force, some in conjunction with the U.S. Department of Energy and the U.S. Forest Service. At present, the basic missions of Kirtland AFB are training, research, and the development of weapons.

Sites 22-25 and 27 are located in the northwestern part of Kirtland AFB (fig. 2), which is mostly an urban/industrial area with some urban residential areas. Site 26 is located in a relatively undeveloped area between the riding club and the Manzano area (fig. 2).

SITE DESCRIPTIONS AND ANALYTICAL RESULTS

Site 22--Silver Recovery Units (WP-47)

Site 22 is composed of four floor drains in the Kirtland AFB Photographic Laboratory in the north part of building 1000 that previously have received discharge from silver recovery units (fig. 3): one drain in room 128, location 2201; two drains in room 116, locations 2202 and 2203; and one drain in room 132, location 2204. Silver recovery units electrolytically recover silver, a by-product of the photographic process. Spent photographic "fixer" is run through a special cartridge within the unit. Wastewater from the unit discharges to the floor drain, which ultimately flows to the sanitary sewer. If a silver recovery unit malfunctions or operates inefficiently silver could be discharged.

The drain in room 132 has been inactive for several years. Silver recovery units have been active intermittently at the other three locations, but none of the drains was receiving wastewater from a silver recovery unit at the time of sampling (September 1993).

Samples of the material in the traps of the four floor drains were collected, as described later in the section on floor-drain sampling, and analyzed for silver. Tap water had been flowing into the floor drains at locations 2201, 2202, and 2203 prior to sampling. The aqueous and sediment fractions of the samples from these locations were separated at the laboratory, and each fraction was analyzed for silver. The sample from location 2204 consisted of dry pieces of rust. Table 2 (back of the report) contains the silver-concentration data reported in the samples collected at this site.

Site 23--Buried Caustic Drain Line (ST-270), Site 24--Neutralization Pit (ST-271), and Site 25--Evaporation/Infiltration Pond (ST-273)

Sites 23, 24, and 25 are located east of building 617 (fig. 4). Building 617 contains the Phillips Laboratory Chemical Laser Facility. The facility is currently active and has been operating since about 1974.

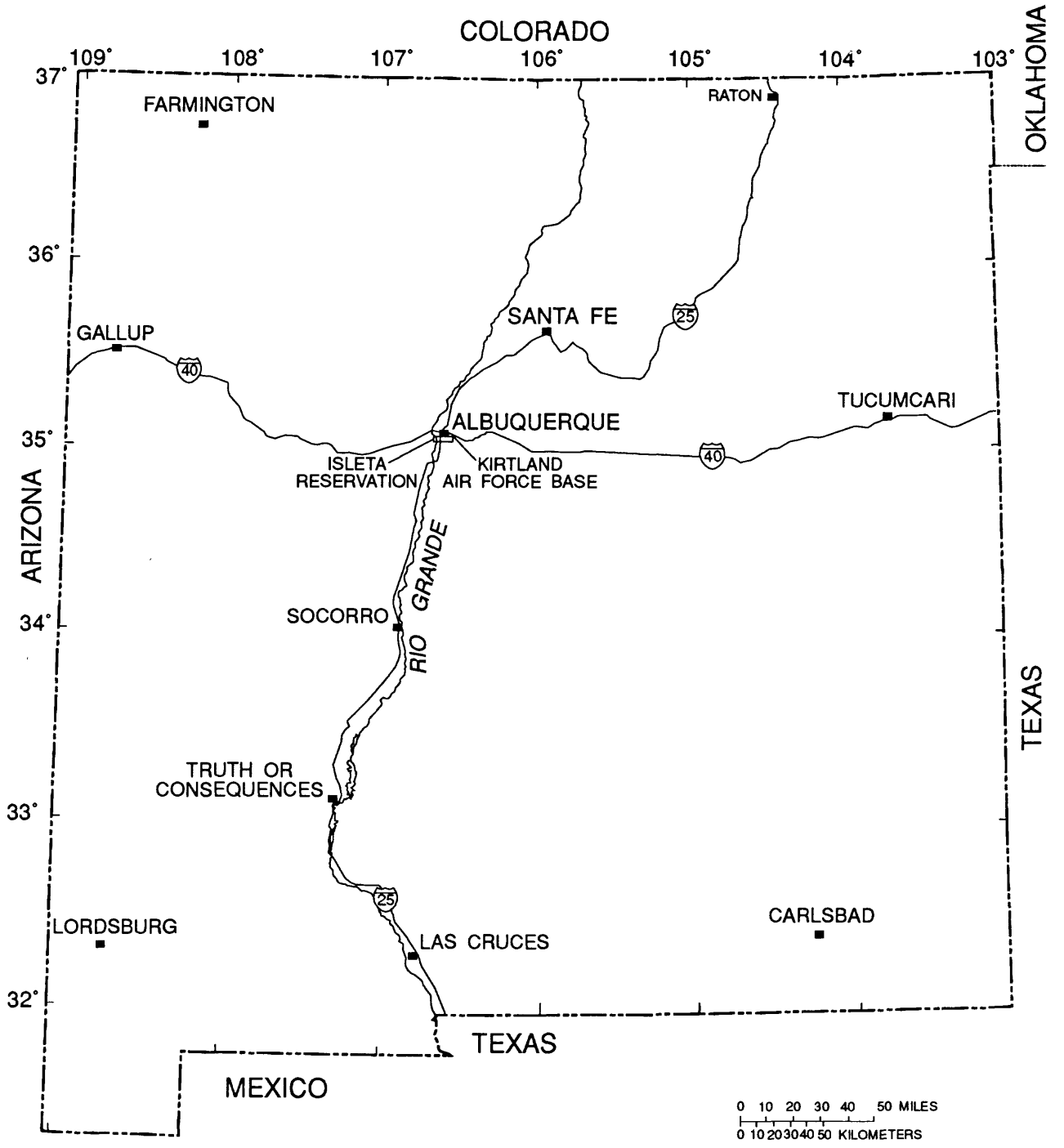

Figure 1.--Location of Kirtland Air Force Base, New Mexico.

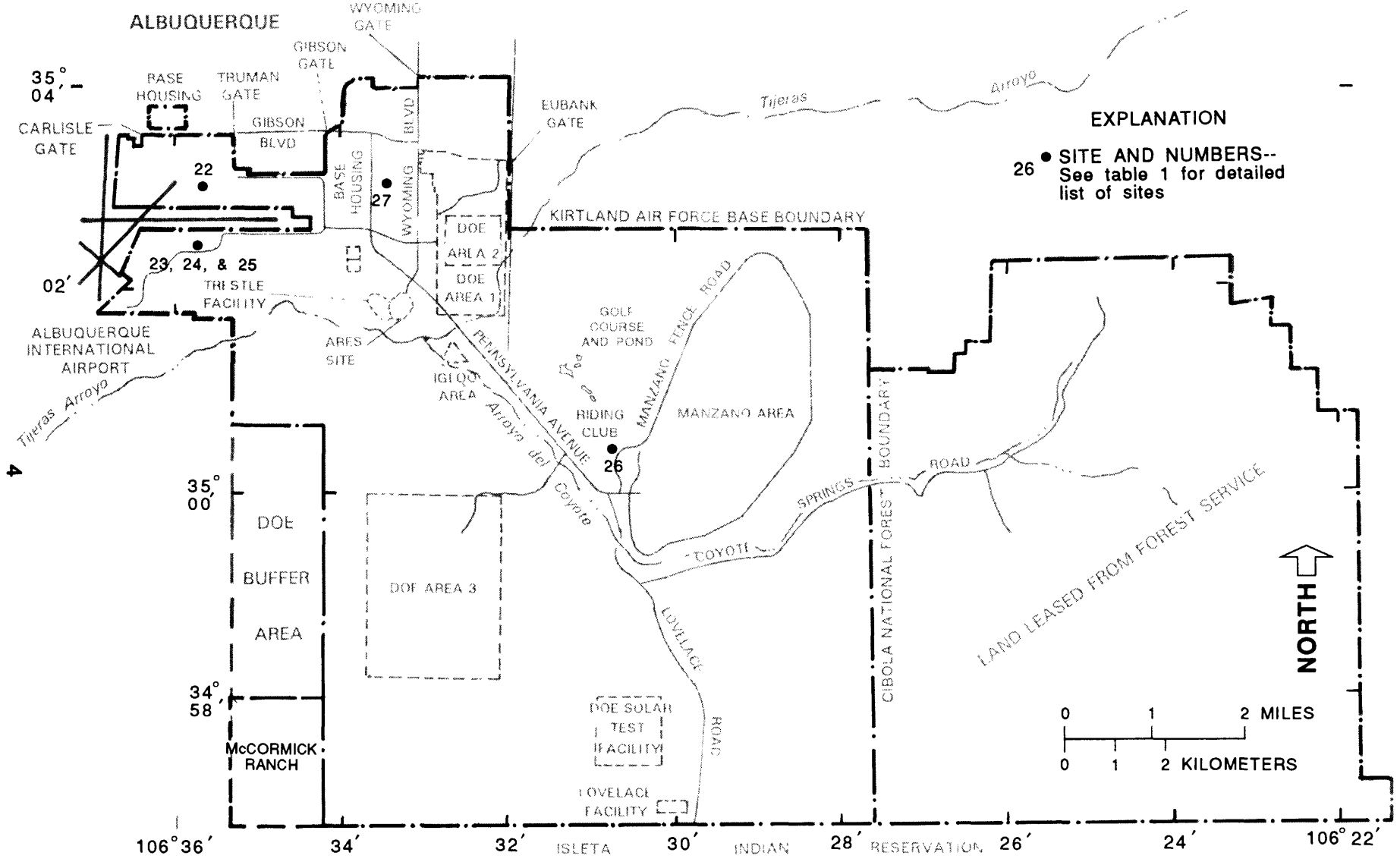

Figure 2.--Location of investigation sites 22 through 27, Kirtland Air Force Base, New Mexico.

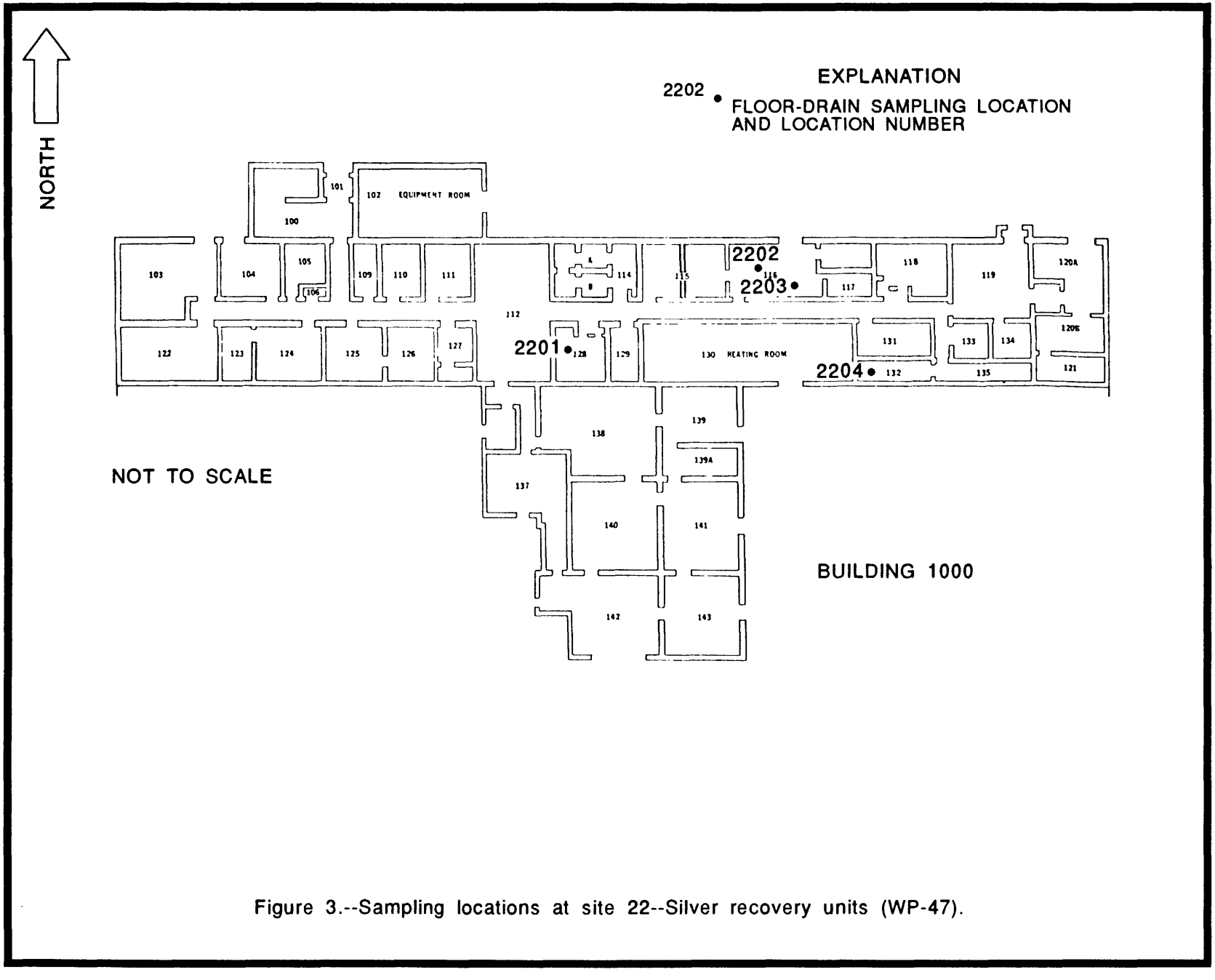

Figure 3.--Sampling locations at site 22--Silver recovery units (WP-47).

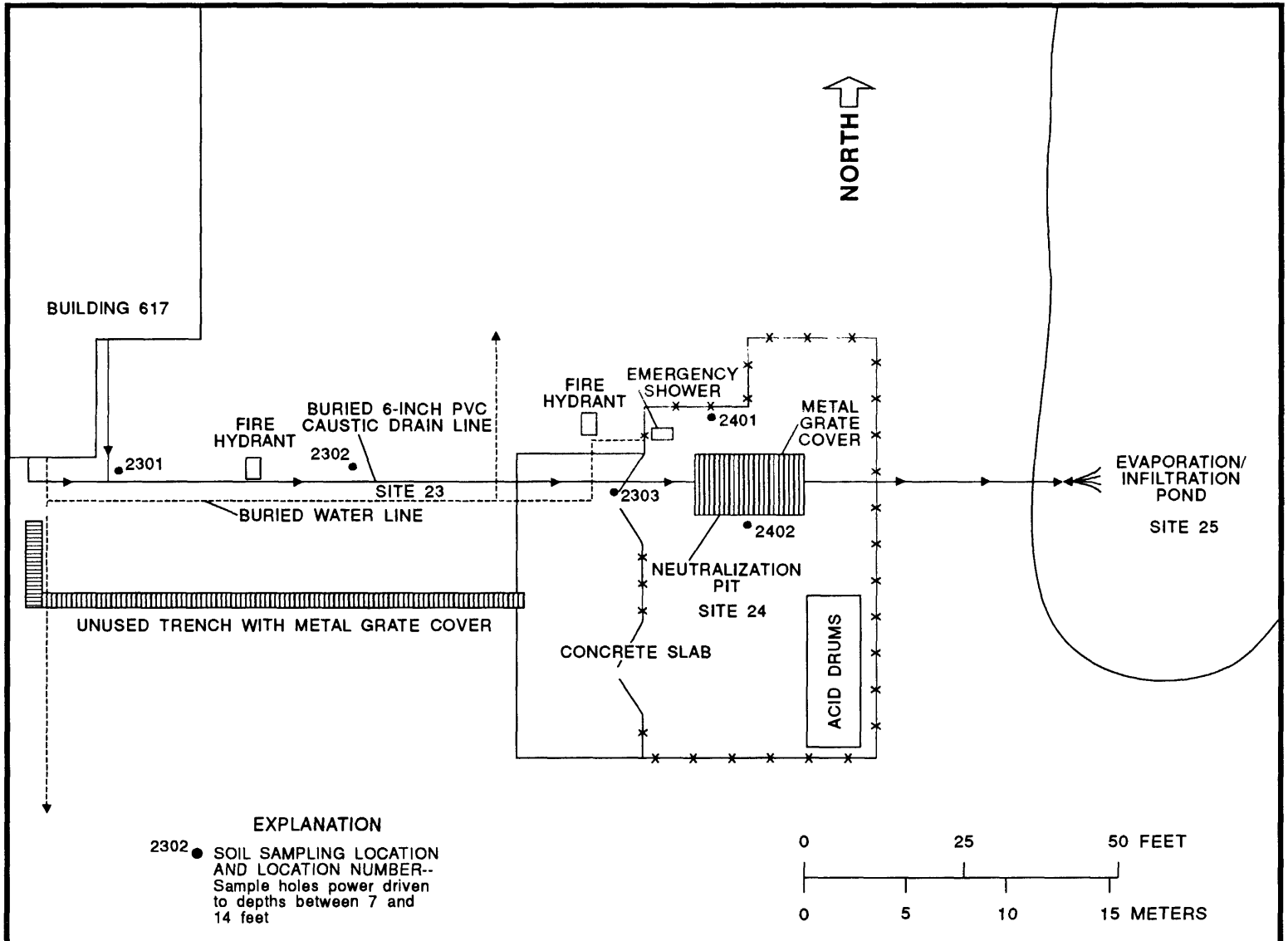

Figure 4.--Soil sampling locations at site 23--Buried caustic drain line (ST-270) and site 24--Neutralization pit (ST-271).

The caustic drain line is constructed of 6-inch polyvinyl chloride (PVC) pipe. A south-flowing drain originates inside building 617, and an east-flowing drain originates along the southern edge of the building. The drains converge near the southeastern corner of building 617 (fig. 4). The east-flowing drain line is buried (base of pipe) approximately 0.7 foot at its origin. The base of the drain pipe is approximately 2.2 feet below land surface where it discharges into the neutralization pit. The drain conveys diluted, spent laser fuel from the building 617 complex. The laser fuel is an equal mixture of hydrogen peroxide (70 percent semiconductor grade) fixed with potassium hydroxide. Deuterated hydrogen peroxide also has been used in small amounts. When the fuel is depleted it is flushed out of the laser with tap water and pumped into the caustic drain. The depleted fuel has a very high pH. The drain also conveys liquid wastes received from scrubbers in building 617. Potassium hydroxide is used to scrub chlorine and iodine gases.

The neutralization pit is a concrete box measuring 8.5 feet wide by 16.5 feet long by 6.1 feet deep. The top of the pit is open to the atmosphere and covered with a metal grate. The base of the pit is approximately 1 foot thick, and the thickness of the walls is not known. The concrete is visibly pitted on the base and the lower part of the walls of the pit, but no cracks or holes are visible. In the neutralization pit the depleted laser fuel and/or scrubber wastes are neutralized by adding either hydrochloric or sulfuric acid until the pH is reduced to 7. In the past nitric acid may have been used as the neutralizing agent. The pH-neutral water is then pumped out of the pit and into the evaporation/infiltration pond.

The evaporation/infiltration pond is approximately 40 feet wide by 120 feet long and 6 feet deep at the center (fig. 5). Neutralized water flows into the pond through a 2.5-inch PVC pipe located in the southwest portion of the pond. The pond is estimated to receive approximately 400,000 gallons of neutralized water per year. The water is allowed to evaporate and infiltrate into the fine-grained sandy base.

Soil samples were collected from three locations adjacent to the caustic drain line (fig. 4), using soil sampling methods described later for hydraulically driven holes. The soil sample locations are approximately 2 feet to the side of the drain. One composite soil sample was collected at each location. The samples were composited over a 2-foot depth interval; the top of the sample interval was 3 feet beneath the drain. The soil samples were analyzed for metals (including antimony, mercury, selenium, and thallium), fluoride, pH, and moisture. Table 3 (back of the report) contains the analyte data reported in the samples collected at sites 23, 24, and 25. Only analytes with reported concentrations in one or more environmental samples are listed in table 3.

Soil samples were collected from two locations adjacent to the neutralization pit (fig. 4) using the same methodology as at the caustic drain. The sample locations were placed as close to the pit as possible. Sample location 2401 is located 6.8 feet north of the pit because the drilling equipment could not be maneuvered closer along the north side. One composite soil sample was collected from the 12- to 14-foot depth interval. Sample location 2402 is located approximately 1 foot south of the pit. Two composite soil samples were collected from the 9.1- to 11.0-foot and 14.5- to 16.5-foot depth intervals. The soil samples were analyzed for the same analytes as samples collected at the caustic drain, except for the deep sample collected at location 2402, which was analyzed only for metals (excluding mercury) (table 3).

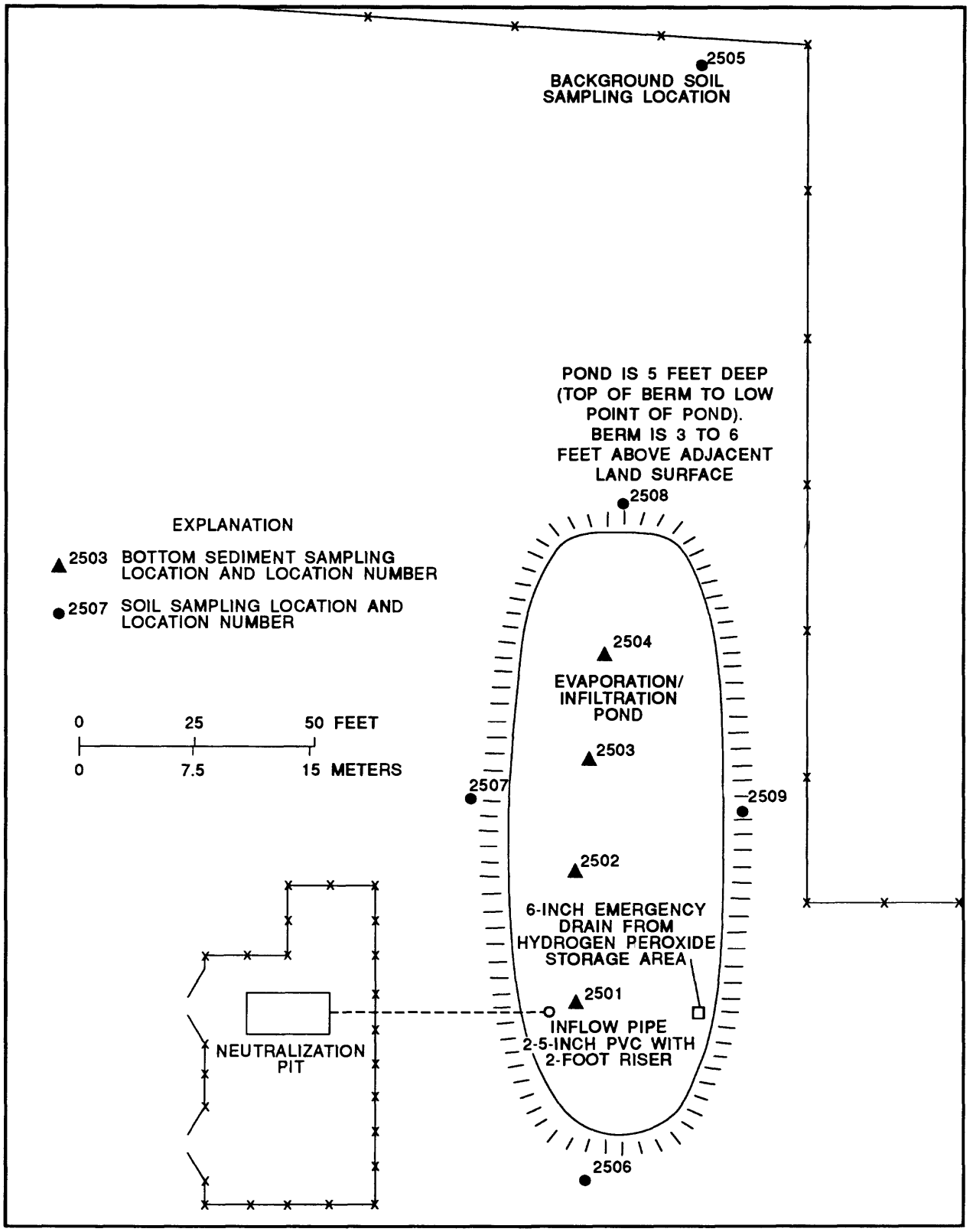

Figure 5.--Sampling locations at site 25--Evaporation/infiltration pond (ST-273).

Bottom-sediment samples were collected at four locations in the evaporation/infiltration pond (fig. 5) using the methods described later in the section on pond-sediment sampling. At the time of sampling (September 9, 1993) the pond was approximately 1 foot deep at the sampling locations. Bottom-sediment samples were analyzed for the same analytes as soil samples collected at the caustic drain (table 3).

Soil samples were collected from four locations adjacent to the pond (fig. 5) and one location approximately 100 feet north of the pond (background soil sampling location for sites 23, 24, and 25) using the methodologies described later for pond sediment and hydraulically driven holes. Soil samples were collected at the surface and a composite sample from the 8.0- to 10.0-foot depth interval at each of the four locations adjacent to the pond (eight soil samples total). These soil samples were analyzed for lead. A composite soil sample was collected from the 4.0- to 8.0-foot depth interval at the background location (2505) and analyzed for the same analytes as the soil samples collected at the caustic drain (table 3).

Site 26--Manzano Fire Training Area (FT-14)

Site 26 is located near the Manzano area (fig. 2). The site, which is abandoned, consists of two burn pits about 60 feet apart (fig. 6). Each pit contains about 400 square feet of soil darkened with carbonaceous material. The total area of the western pit is about 500 square feet, and the area of the eastern pit is slightly more than 1,000 square feet. Both pits are 2 to 3 feet deep, with earthen berms that rise 1 to 2 feet above the surrounding land surface. Information is limited on the procedures used and the duration and frequency of fire training exercises. The site may have been abandoned for 20 years.

Soil samples were collected from 11 locations in the burn pits (fig. 6) using soil sampling methods described later for hand augering, hollow-stem augering, and hydraulically driven holes. In the western pit a soil sample was collected near the surface (0.2-foot depth) at each location and then every 5 feet to a depth of 21 feet (composite samples from depths of 4 to 6 feet, 9 to 11 feet, 14 to 16 feet, and 19 to 21 feet). At location 2603 additional, deeper soil samples were collected approximately every 10 feet to a depth of 83 feet (composite samples from depths of 29 to 31 feet, 39 to 41 feet, 50 to 51 feet, 60 to 61 feet, 70 to 71 feet, and a point sample at 83 feet). In the eastern pit a soil sample was collected at the surface (0.2-foot depth) at each location and then every 5 feet to a depth of 11 feet (composite samples from depths of 4 to 6 feet and 9 to 11 feet).

Soil samples collected at the Manzano fire training area were screened for VOC contamination in the field by measuring with a Photovac TIP that had been calibrated with isobutylene calibration gas having a concentration of 100 parts per million plus or minus 5 percent. Table 4 (back of the report) lists the field screening measurements for this site.

Soil samples collected at the Manzano fire training area were analyzed for total petroleum hydrocarbons, ignitability, metals (including antimony, mercury, selenium, and thallium), VOC's, semivolatile organic compounds, dioxins, polynuclear aromatic hydrocarbons, and moisture. Table 5 (back of the report) contains the analyte data reported for the samples collected at site 26. Only analytes with reported concentrations in one or more environmental samples are listed in table 5.

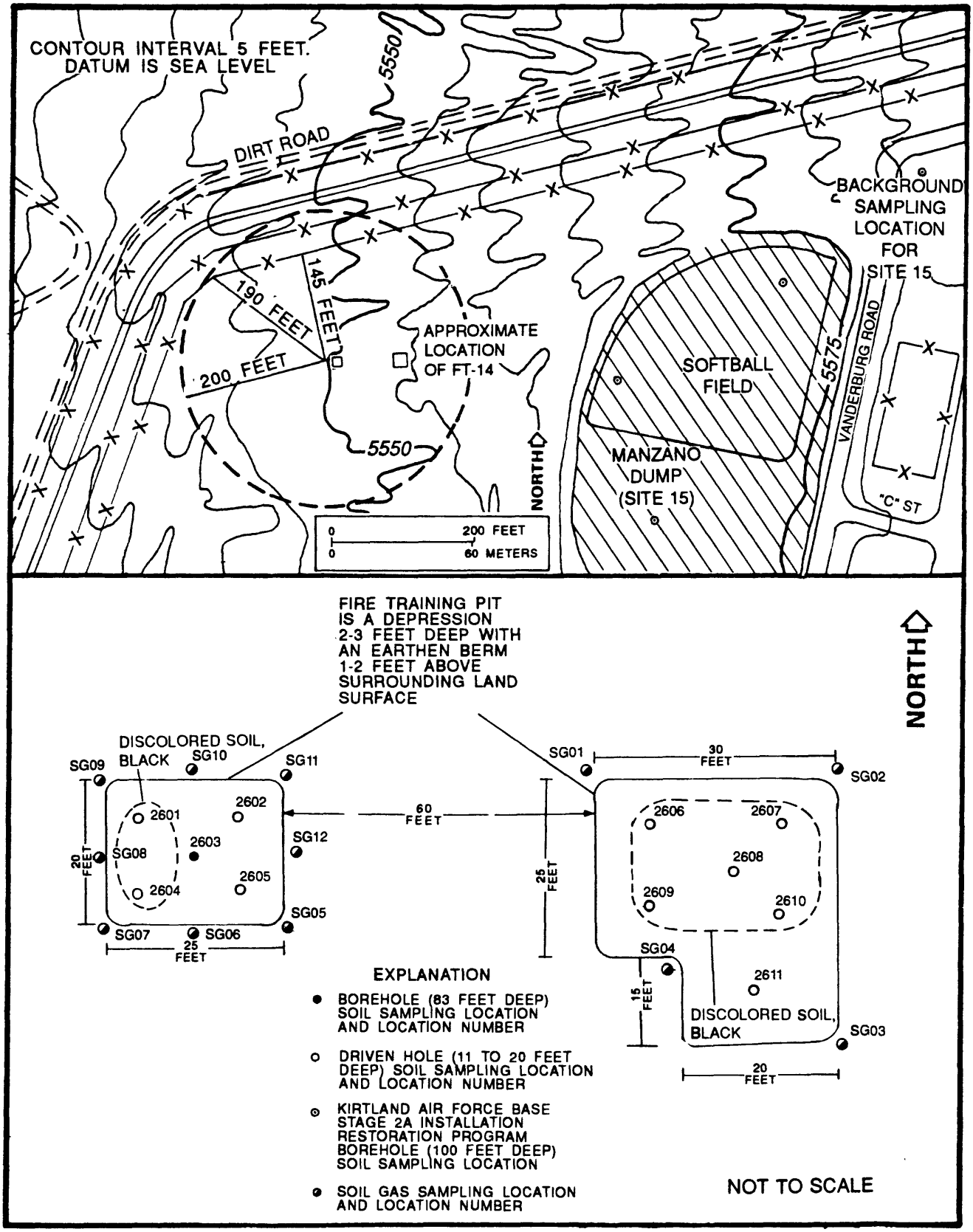

Figure 6.--Approximate sampling locations and topography at site 26--Manzano fire training area (FT-14).

A soil-gas survey was conducted at site 26 using the soil-gas sampling method described later. Soil gas was sampled at 12 locations (fig. 6): four locations surrounding the eastern pit and eight locations surrounding the western pit. No VOC's were detected in the soil-gas samples.

Site 27--Waste Oil Underground Storage Tank (ST-326)

Site 27 is located west of building 20375, the auto hobby shop (fig. 7). The tank is used for temporary storage of waste engine oil and dry cleaning solvent used at the auto hobby shop. The site is active, and the tank may have been in place for 20 to 30 years. The tank is filled by a drain in building 20375. The drain line is attached at a "T" to a vertical discharge pipe attached to the top of the tank. A contractor periodically (every 3 to 4 months) pumps out the contents of the tank through the discharge pipe. The storage tank is constructed of stainless steel and has a capacity of 500 gallons. The base of the tank is buried 7.5 feet beneath the top of a concrete box located at the surface. The orientation of the tank is not known.

Soil samples were collected from four locations adjacent to the storage tank (fig. 7) and one location 139 feet north-northwest of the tank (background soil sampling location for site 27) using the soil-sampling method described later for hydraulically driven holes. Each of the four sample locations adjacent to the tank is located 7 feet from the tank discharge pipe. Two composite soil samples were collected at each location: an upper sample with the top of the composited depth interval at the base of the tank and a lower sample with the top of the composited depth interval 5 feet below the base of the tank. Two composite soil samples were collected at the background location from depth intervals of 6 to 12 feet and 13 to 15 feet.

Soil samples collected at site 27 were screened for VOC contamination in the field by measuring with a Photovac TIP that had been calibrated with isobutylene calibration gas with a concentration of 100 parts per million plus or minus 5 percent. The screening measurements ranged from 0.4 to 1.0 part per million.

The soil samples collected at the waste oil underground storage tank were analyzed for total petroleum hydrocarbons, metals (including antimony, mercury, selenium, and thallium), VOC's, semivolatile organic compounds, pH, and moisture. Table 6 (back of the report) contains the analyte data reported for the samples collected at site 27. Only analytes with reported concentrations in environmental samples are listed in table 6.

Field Quality-Control Sample Results

The trip blank sample is used to determine if environmental samples (samples collected at the sites) have been contaminated by VOC's while the samples are being held in the field or being shipped to the laboratory. All environmental samples were shipped to Rocky Mountain Analytical Laboratory (RMAL), a division of ENSECO, Inc., in Arvada, Colorado, for VOC analysis. The samples were accompanied by a trip blank sample that was also analyzed for VOC's. The trip blank samples were prepared with reagent water by the laboratory and shipped to the field. A trip blank sample was placed in the cooler that would hold samples for VOC analysis at the beginning of each field sampling day. The trip blank sample stayed with the environmental samples until they were unpacked at the laboratory. Twelve trip blanks were analyzed during this investigation. Not all the trip blanks contained detected VOC's. The VOC's detected in the trip blanks are listed in table 7 (back of the report).

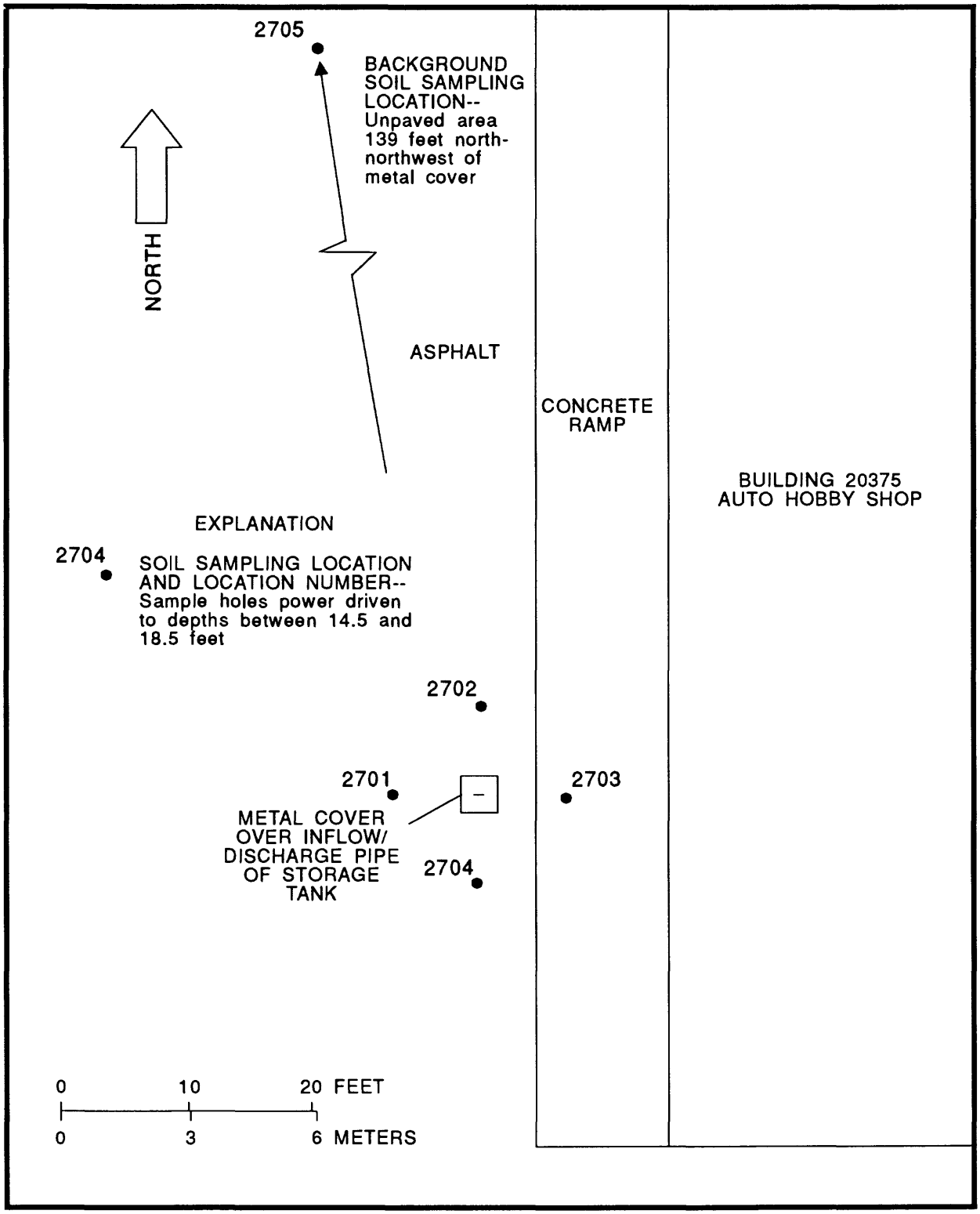

Figure 7.--Soil sampling locations at site 27--Waste oil underground storage tank (ST-326).

The equipment blank sample is used to determine if environmental samples have been contaminated by field sampling equipment. One equipment blank sample was collected for each day of sample collection. The equipment blank samples were prepared by pouring reagent water through the sampling device and collecting the water in sample containers. Equipment blank samples were analyzed for the same constituents as the environmental samples collected at each site. Sixteen equipment blank samples were collected during this investigation. The analytes detected in 15 of the equipment blanks are listed in table 8 (back of the report). The 16th equipment blank sample was collected at site 22 and was analyzed only for silver; none was detected.

The duplicate sample is used to determine the precision of analytical results. Precision is defined as the degree of similarity between independent measurements of the same quantity, without reference to the known or true value. The precision of analytical data can be assessed by calculating the relative percent difference (RPD) between environmental samples and duplicate samples. The smaller the RPD is, the more precise and reproducible the analytical data are. The RPD is calculated using the following formula:

$$RPD = \frac{\text{absolute value (environmental sample - duplicate sample)} \times 100}{\text{(environmental sample + duplicate sample)} / 2} \quad (1)$$

One field duplicate sample was collected for every 10 environmental samples and analyzed for the same constituents as the environmental samples. A duplicate sample was collected by splitting an environmental sample into two sets of sample containers. The duplicate samples were assigned consecutive sample numbers and shipped to RMAL as environmental samples. Ten duplicate samples were collected during this investigation. The RPD's for analytes detected in duplicate samples are listed in table 9 (back of the report). The RPD has been calculated only for analytes detected in both the environmental sample and the environmental duplicate sample.

FIELD DATA-COLLECTION TECHNIQUES

A total of 113 samples of soil, pond sediment, floor-drain water and sediment, and soil gas were collected at the six sites from September 9, 1993, through February 3, 1994 (figs. 3-7). Samples are identified by a 12-character string of letters and numbers. For example, the field sample identification number KAFB260502-1 is derived as follows: KAFB signifies Kirtland AFB, 26 signifies the investigation site, 05 signifies the sample location, 02 signifies the second sample collected at this location, and -1 signifies a soil or predominantly sediment sample. A field sample number ending with -2 would signify a water sample.

Soil Sampling

Soil sampling began September 14, 1993. The initial phase of soil sampling at sites 23-27 was completed November 17, 1993. Soil samples were collected using the following three methods: (1) shallow (0.2-foot depth) samples were collected with a hand auger, (2) intermediate (0.2- to 50-foot depth) samples were collected using the Geoprobe[1] coring system, and (3) deep (greater than 50-foot depth) samples were collected using a hollow-stem auger coring method.

[1]The use of brand names in this report is for identification purposes only and does not constitute endorsement by the U.S. Geological Survey.

Soil samples were collected from near land surface (0.2-foot depth) at site 26 (fig. 6) with a stainless steel hand auger. Sample jars were filled by pouring in the auger contents. Samples collected for volatile organic compound (VOC) analysis were shipped in 40-milliliter glass vials. The hand auger was decontaminated prior to use at each sampling location by the following method: (1) scrubbing with a Liqui-nox and potable water solution, (2) rinsing with potable water, (3) rinsing with deionized water, (4) rinsing with pesticide-free grade methanol, and (5) rinsing with pesticide-free grade hexane and allowing to dry.

The Geoprobe coring system was used to collect soil samples between depths of 0.2 and 50 feet at sites 23, 24, 25, 26, and 27. Soil samples were collected by driving a 2-foot-long steel core barrel, containing an inner sleeve, through the appropriate depth interval. The inner sleeve filled with soil as the core barrel was driven downward. Soil samples that were analyzed for inorganic compounds were collected in acetate or brass sleeves, and those analyzed for organic compounds were collected in brass sleeves. The brass sleeves are 2 feet in length and approximately 1 inch in diameter. A plastic outer cover holds together four 6-inch sections of brass sleeve. Samples for VOC analysis were prepared by separating one of the middle 6-inch sections of sleeve, covering the ends with oil-free aluminum foil, and capping the ends. Sample jars for other analyses were then directly filled from the remaining sections of brass sleeve.

The Geoprobe coring tools (drill rods, core barrels, and associated equipment) were decontaminated prior to use at each sampling location by washing with a high-pressure hot water solution of Liqui-nox and potable water and rinsing with high-pressure hot potable water. The acetate and brass sleeves were decontaminated in the same manner as the drilling tools, followed by a rinse with deionized water.

Soil samples from depths of 50 feet or more at site 26 (borehole 2603) (fig. 6) were collected in a steel split-spoon core barrel using the hollow-stem auger drilling method. The U.S. Geological Survey (USGS) Wyoming District provided support for hollow-stem auger drilling and associated soil sampling. Samples were collected for VOC analysis by pushing a brass sleeve, 6 inches long and approximately 1 inch in diameter, into the core. The ends of the brass sleeve were covered with oil-free aluminum foil, then capped. Sample jars for other analyses were then filled by pushing them into the core.

The back of the drill rig and the augers were decontaminated prior to moving onto the drill site by washing with a high-pressure hot water solution of Liqui-nox and potable water and rinsing with high-pressure hot potable water. The split-spoon sample barrel was decontaminated prior to each sample run in the same manner as described above for the hand auger.

Pond-Sediment Sampling

Pond-sediment samples were collected September 9, 1993. Sediment samples were collected from the bottom of the evaporation/infiltration pond (site 25) by pushing sample jars directly into the sediment. Soil samples were collected at the land surface adjacent to the pond using the same technique.

Floor-Drain Sampling

Floor-drain samples were collected September 21-22, 1993. Samples of water and sediment from the traps of four floor drains at site 22 (fig. 3) were collected with a plastic scoop or peristaltic pump. The floor drain at location 2204 was sampled with a scoop made from a 250-milliliter polyethylene sample bottle. At the time of sampling, this drain had not been used for several years, and the trap contained what appeared to be pieces of rust.

The other three floor drains at this site were sampled with a peristaltic pump. The suction end of the pump tubing was placed at the base of the trap, about 2 feet below the floor surface, and an acetate tube was used to stir up sediment in the trap as a water and sediment sample was pumped from each trap. The peristaltic pump tubing and the acetate tube were decontaminated prior to use at each sampling location by the following method: (1) washing with a Liqui-nox and potable water solution, (2) rinsing with potable water, and (3) rinsing with deionized water.

Soil-Gas Sampling

A soil-gas survey was conducted at site 26 (fig. 6) on January 19-20, 1994. At each soil-gas location a steel probe rod was hydraulically driven to a depth of 5 feet with the Geoprobe drilling system. The tip of each probe rod was equipped with a disposable steel drive point. The probe rod was retracted approximately 1 inch to drop the disposable drive point and to expose the open hole for soil-gas withdrawal. A low-volume vacuum pump was used to withdraw soil gas at a rate of approximately 200 milliliters per minute. The flow of soil gas was monitored with a flowmeter to ensure that the soil-gas probe was not plugged and that soil gas was being collected. Two liters of soil gas were withdrawn to purge the system prior to collection of a soil-gas sample for analysis. The soil-gas samples were collected with gas-tight syringes through a septum in a sampling port located in line between the probe and the vacuum pump.

The soil-gas samples were analyzed with a Photovac 10S50 gas chromatograph equipped with a photoionization detector (10.6-electron volt lamp potential) and a dimethyl polysiloxane capillary column. The gas chromatograph was configured for precolumn backflush operation.

Standards were prepared daily at two concentrations (table 10, back of the report) from a stock-standard solution obtained from the USGS National Water Quality Laboratory. The methodology used to prepare the working standards is described by Brock (1990). Standards were analyzed as required to monitor changing response factors and retention times. Other QC samples (instrument blanks, equipment blanks, and ambient conditions blanks) were analyzed to check for possible sources of false-positive results.

LABORATORY ANALYTICAL PROCEDURES

RMAL performed chemical analyses of soil, sediment, and water samples. Dioxin analyses were performed by ENSECO California Analytical Laboratory. The analytical methods used in this investigation and the sources of the analytical methods are listed in table 11 (back of the report).

Detection Limits and Quantitation Limits

The instrument detection limit (IDL) is the smallest signal above background noise that an instrument can reliably detect. IDL's are laboratory specific and are determined on the basis of the analytical results of seven replicate standards on 3 nonconsecutive days.

The method detection limit (MDL) (table 12, back of the report) is the minimum concentration of an analyte that can be identified, measured, and reported with 99-percent confidence that the analyte concentration is greater than zero. MDL's are laboratory specific and are determined on the basis of the analytical results of a minimum of seven replicate samples spiked at one to five times the expected detection limit.

The practical quantitation limit (PQL) (table 12) is the lowest level that can be reliably determined within specified limits of precision and accuracy during routine laboratory operating conditions. The laboratory uses the term reporting limit (RL) instead of QL.

PQL's are determined by the laboratory approximately annually for each analyte in each method. The PQL's are based on MDL data for organic and wet chemistry analyses and on IDL data for metals analyses. The PQL's are generally two to five times the IDL's or MDL's. PQL's are adjusted for sample dilution. Results between IDL/MDL and PQL are flagged with the letter J as estimates because, by definition, the reliability of the data at this level is questionable.

Laboratory Quality-Assurance/Quality-Control Procedures

The laboratory quality-assurance/quality-control (QA/QC) program consisted of operational controls used to ensure that the generated data meet predefined requirements for precision and accuracy and that the instituted system documents the effectiveness of these controls. The QA/QC program has provisions to meet the following three objectives: (1) monitor the laboratory's daily performance of an analytical method, (2) assess the effect of a specific sample matrix on the performance of the analytical method, and (3) monitor long-term performance to detect trends or systematic error. Laboratory performance QC was based on the use of a standard control matrix to generate precision and accuracy data that were compared on a daily basis to control limits. This information, in conjunction with method blank data, was used to assess daily laboratory performance. Matrix-specific QC is based on the use of actual environmental samples for precision and accuracy determinations, and commonly relies on the analysis of matrix spikes, matrix duplicates, and matrix spike duplicates. This information, supplemented with field blank results, was used to assess the effect of the matrix and field conditions on analytical data. The laboratory reported all laboratory QC results with each set of environmental sample results. The quality assessment of the data was based on the results of laboratory and field QC results.

Laboratory performance QC was provided as a standard part of every routine analysis through the analysis of laboratory control samples (LCS's). The LCS's include duplicate control samples (DCS's), single control samples (SCS's), and method blanks. LCS's are well-characterized, laboratory-generated samples used to monitor the laboratory's day-to-day performance of routine analytical methods. Certain LCS's were used to monitor the precision and accuracy of the analytical process, and others were used to identify any background interference or contamination of the analytical system that could lead to the reporting of elevated concentration levels or false positive data. Results of the LCS's were compared to well-defined laboratory acceptance criteria to determine whether the laboratory system was "in control." Controlling lab operations with LCS's (as opposed to matrix spike/matrix spike duplicate samples) is advantageous because LCS's can differentiate low recoveries due to procedural errors from those due to matrix effects. The three types of LCS's are described below.

Duplicate Control Samples

Duplicate control samples (DCS's) were used to monitor the precision and accuracy of the analytical system on an ongoing basis. Each DCS consists of a standard control matrix that was spiked with a group of target compounds representative of the method analyte. A DCS pair was analyzed for every 20 samples processed by the method. DCS's were analyzed with environmental samples to provide evidence that the laboratory was performing the method within accepted QC guidelines for accuracy and precision.

Accuracy (average recovery of each analyte in the DCS pair) and precision (RPD between each analyte in the DCS pair) data were compared to control limits that were established for each of the analytes contained in the DCS. The control limits for analytes spiked into DCS were defined on the basis of historical DCS data. Control limits for accuracy for each analyte were based on the historical average recovery (mean of the average recoveries of the DCS pairs) plus or minus three standard deviation units. Control limits for precision for each analyte were based on the historical RPD and range from zero (no difference between DCS results) to the average RPD plus three standard deviation units.

Analytical data generated with a DCS pair that is within the established control limits were judged to be in control. Data generated with a DCS pair that is outside the control limits were considered suspect and were repeated or reported with qualifiers.

DCS's were established for each routine analytical method. Reagent water was used as the control matrix for the analysis of aqueous samples. The DCS compounds were spiked into reagent water and carried through the appropriate steps of the analysis. The control matrix for solid samples for organic analyses was standard Ottawa sand, an American Society for Testing Materials-approved material used for highway construction, due to its fine degree of homogeneity. The DCS compounds were spiked into the Ottawa sand and carried through the appropriate steps of the analysis. The DCS for solid samples for metals analyses was a spiked sand obtained from a commercial source. The DCS for some wet chemistry analytes was obtained from a commercial source.

Single Control Samples

As previously stated, a DCS pair was analyzed for every 20 samples to measure the precision and accuracy of an analysis on an ongoing basis. Samples were often analyzed in lots of less than 20, however, due to holding time or turnaround time requirements. Because it was necessary to have a measure of laboratory performance with each batch of samples processed, the laboratory instituted the SCS program.

An SCS consists of a control matrix spiked with surrogate compounds appropriate to the method being used. In cases where no surrogate was available (for example, metals or conventional analyses), the analytes used for the DCS are spiked into the control sample. An SCS was prepared for each sample lot for which the DCS pair was not analyzed. Recovery data generated from the SCS were compared to control limits that had been established for each of the compounds being monitored. Control limits for analytes spiked into SCS were defined on the basis of historical data. Control limits for SCS components were based on the historical average recovery in the SCS plus or minus three standard deviation units.

Analytical data generated with an SCS within the control limits were judged to be in control. Data generated with an SCS outside of acceptance criteria were considered suspect and were reanalyzed or reported with qualifiers. The protocols for evaluating SCS's were identical to those established for DCS's.

Method Blanks

Method blanks, also known as reagent, analytical, or preparation blanks, were analyzed to assess the level of background interference or contamination that existed in the analytical system and that might lead to the reporting of elevated concentration levels or false positive data. As part of the standard laboratory QC program, a method blank was analyzed with every batch of samples processed. A method blank consists of reagents specific to the method that were carried through every aspect of the procedure, including preparation, clean up, and analysis. The results of the method blank analysis were evaluated, in conjunction with other QC information, to determine the acceptability of the data generated for that batch of samples.

Ideally, the concentration of target analytes in the method blank would be below the quantitation limit for that analyte. In practice, however, some common laboratory solvents and metals were difficult to eliminate to the levels reported in environmental analyses. Therefore, criteria for determining method blank acceptability were based on consideration of the analytical techniques used, analytes reported, and reporting limits required.

If the blank did not meet acceptance criteria, the source of contamination was investigated and appropriate corrective action was taken and documented. Investigation included an evaluation of the data to determine the extent and effect of the contamination on the sample results. Corrective actions included a reanalysis of the blank and/or repreparation and reanalysis of the blank and all associated samples. Sample results were not corrected for blank contamination.

Matrix-Specific Quality Control

Matrix-specific QC was used to assess the effects of a sample matrix on the analytical data. The main elements of matrix-specific QC in this investigation were analyzing matrix spikes and matrix spike duplicates and monitoring the recovery of surrogate compounds from environmental samples.

A matrix spike is an environmental sample spiked with known concentrations of analytes in the laboratory. A matrix spike duplicate is a duplicate environmental sample spiked in the same manner as the matrix spike, although the spiked concentrations may be different. The matrix spike and matrix spike duplicate, in addition to an unspiked sample, were taken separately through the entire analytical procedure, and the recovery of the analytes was calculated. The results were compared to determine the effects of the matrix on the precision and accuracy of the analysis. Results are expressed as percent recovery and RPD.

Surrogate Recoveries

Surrogates are organic compounds similar to analytes in chemical behavior but not normally found in environmental samples. Surrogates were added to samples to monitor the effect of the matrix on the accuracy of the analysis. Results are reported in terms of percent recovery.

The laboratory added surrogates to samples that required gas chromatograph/mass spectrometry analysis and reported these surrogate recoveries in the sample data package. The surrogate recoveries were used by the laboratory primarily to assess matrix effects. Obvious problems with sample preparation and analysis, such as evaporation to dryness or a leaking septum, that can lead to poor surrogate spike recoveries were ruled out prior to attributing the low surrogate recoveries to matrix effects.

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Table 1.--Investigation sites and site numbers, Kirtland Air Force Base, New Mexico
[Site locations shown in figure 2. --, unknown]

Site name	U.S. Geological Survey site number	Kirtland Air Force Base site number	U.S. Environmental Protection Agency number
Silver recovery units	22	WP-47	8-6
Buried caustic drain line	23	ST-270	9-14
Neutralization pit	24	ST-271	9-15
Evaporation/ infiltration pond	25	ST-273	9-16
Manzano fire training area	26	FT-14	--
Waste oil underground storage tank	27	ST-326	8-35

Table 2.--Concentration of silver in water and sediment samples from floor drains at site 22--Silver recovery units (WP-47)

[Method numbers listed in table 7. Site location shown in figure 3. Reported in milligrams per liter for water and in milligrams per kilogram (dry weight) for sediment. ND, not detected; J, estimated value, below quantitation limit; --, no data]

Field sample identification:			KAFB220102-2		KAFB220103-2		KAFB220201-2		KAFB220301-2		KAFB220401-1	
Batch identification (water):			031351-0002		031351-0003		031351-0004		031351-0005		--	
Batch identification (sediment):			031351-0007		031351-0008		031351-0009		031351-0010		031351-0006	
Method and analysis	Media	Action level	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit
SW7761												
Silver	Water	[1]0.05	ND	0.0010	0.00065	0.00050	0.0040 J	0.0050	0.0072	0.0050	--	--
Silver	Sediment	400	412,000	50.0	241,000	50.0	6,330	10.0	68.5	5.0	14.8	10.0

[1] New Mexico Water Quality Control Commission ground-water standard.

Table 3.--Analytical results of soil samples from sites 23, 24, and 25

[Method numbers listed in table 7. Site locations shown in figures 4 and 5. Values in milligrams per kilogram (dry weight) unless otherwise indicated. --, no data; J estimated value, below quantitation limit; ND, not detected]

Field sample identification:		KAFB230101-1		KAFB230201-1		KAFB230301-1		KAFB240101-1	
Batch identification:		031199-0020		031199-0021		031199-0022		031199-0023	
Depth (feet):		4.0 to 6.0		4.5 to 6.5		5.0 to 7.0		12.0 to 14.0	
Method number and analysis	Action level	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit
E300.0									
Fluoride	--	12.8	1.2	9.5	1.1	8.0	1.1	10.7	1.2
SW6010									
Aluminum	--	6,920	69.3	7,150	32.6	6,620	33.3	19,400	35.1
Barium	5,600	140	2.3	83.8	1.1	159	1.1	49.2	1.2
Beryllium	0.16	0.20 J	0.92	0.37 J	0.44	0.44	0.44	1.0	0.47
Cadmium	40	ND	1.2	0.37 J	0.54	ND	0.55	ND	0.59
Calcium	--	98,100	115	79,200	54.4	74,200	55.5	49,000	58.5
Chromium	400	3.1 J	4.6	4.8	4.4	3.7 J	4.4	14.5	4.7
Cobalt	--	3.0 J	9.2	3.4 J	4.4	2.6 J	4.4	7.3	4.7
Copper	--	ND	4.6	3.2	2.2	3.0	2.2	9.0	2.3
Iron	--	7,110	11.5	8,160	5.4	6,970	5.5	18,300	5.9
Lead	--	ND	11.5	ND	5.4	ND	5.5	9.5	5.9
Magnesium	--	4,100	92.4	3,990	43.5	3,510	44.4	7,230	46.8
Manganese	400	80.9	2.3	144	1.1	94.6	1.1	312	1.2
Nickel	1,600	6.6 J	13.9	8.5	6.5	6.8	6.7	14.6	7.0
Potassium	--	931	231	811	109	741	111	3,740	117
Sodium	--	ND	231	ND	109	ND	111	ND	117
Vanadium	--	21.9	6.9	20.3	3.3	19.1	3.3	47.0	3.5
Zinc	24,000	14.4	4.6	19.3	2.2	19.1	2.2	46.4	2.3
SW7471									
Mercury	24	ND	0.12	ND	0.11	0.070 J	0.11	0.091 J	0.12
SW9045									
pH (pH units)	--	8.7	--	8.8	--	9.4	--	8.1	--

Table 3.--Analytical results of soil samples from sites 23, 24, and 25--Continued

Field sample identification:		KAFB240201-1		KAFB240202-1		KAFB250101-1		KAFB250201-1	
Batch identification:		031199-0026		033656-0002		031138-0001		031138-0002	
Depth (feet):		9.1 to 11.0		14.5 to 16.5		0.2		0.2	
Method number and analysis	Action level	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit
E300.0									
Fluoride	--	6.1	1.1	--	--	2.2	1.3	ND	80.2
SW6010									
Aluminum	--	14,600	33.1	8,800	33.2	1,500	39.2	6,900	48.1
Arsenic	24	45.6	33.1	ND	33.2	ND	39.2	ND	48.1
Barium	5,600	284	1.1	105	1.1	16.6	1.3	89.8	1.6
Beryllium	0.16	6.0	0.44	0.90	0.44	ND	0.52	ND	0.64
Cadmium	40	5.6	0.55	ND	0.55	ND	0.65	ND	0.80
Calcium	--	80,900	55.2	19,900	55.3	1,800	65.3	2,510	80.2
Chromium	400	6.2	4.4	5.9	4.4	7.0	5.2	8.0	6.4
Cobalt	--	53.9	4.4	5.2	4.4	2.2 J	5.2	2.1 J	6.4
Copper	--	30.6	2.2	6.1	2.2	17.0	2.6	50.9	3.2
Iron	--	15,000	5.5	11,000	5.5	11,900	6.5	10,800	8.0
Lead	--	55.6	5.5	7.1	5.5	45.4	6.5	39.5	8.0
Magnesium	--	9,960	44.1	4,840	44.2	899	52.2	2,390	64.2
Manganese	400	300	1.1	319	1.1	67.2	1.3	76.1	1.6
Molybdenum	400	49.3	4.4	ND	4.4	ND	5.2	ND	6.4
Nickel	1,600	63.0	6.6	8.7	6.6	3.6 J	7.8	6.7 J	9.6
Potassium	--	6,870	110	1,630	111	1,500	131	5,500	160
Silver	400	4.2 J	4.4	ND	4.4	ND	5.2	ND	6.4
Sodium	--	11,000	110	ND	332	33.2 J	131	ND	160
Tin	--	194	55.2	ND	55.3	ND	65.3	23.0 J	80.2
Vanadium	--	78.6	3.3	22.2	3.3	25.9	3.9	14.3	4.8
Zinc	24,000	74.9	2.2	30.4	2.2	46.7	2.6	46.6	3.2
SW7041									
Antimony	32	ND	4.4	ND	4.4	4.6	2.6	ND	6.4
SW7471									
Mercury	24	ND	0.11	--	--	0.14	0.13	ND	0.16
SW9045									
pH (pH units)	--	9.7	--	--	--	9.3	--	9.3	--

Table 3.--Analytical results of soil samples from sites 23, 24, and 25--Continued

Field sample identification:		KAFB250301-1		KAFB250401-1		KAFB250501-1		KAFB250502-1	
Batch identification:		031138-0003		031138-0004		031199-0025		031199-0024	
Depth (feet):		0.2		0.2		4.0 to 8.0		4.0 to 8.0	
Method number and analysis	Action level	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit
E300.0									
Fluoride	--	4.2	1.8	4.3	1.9	7.0	1.2	8.6	1.1
SW6010									
Aluminum	--	10,100	55.3	6,650	55.9	6,170	36.3	6,470	33.8
Barium	5,600	186	1.8	109	1.9	428	1.2	256	1.1
Beryllium	0.16	0.35 J	0.74	ND	0.75	0.39 J	0.48	0.37 J	0.45
Calcium	--	9,300	92.2	14,100	93.2	88,300	60.5	71,000	56.3
Chromium	400	18.7	7.4	10.5	7.5	2.5 J	4.8	3.6 J	4.5
Cobalt	--	3.7 J	7.4	2.1 J	7.5	3.3 J	4.8	2.7 J	4.5
Copper	--	172	3.7	96.3	3.7	2.0 J	2.4	1.5 J	2.3
Iron	--	15,100	9.2	10,700	9.3	7,050	6.0	6,850	5.6
Lead	--	271	9.2	237	9.3	ND	6.0	ND	5.6
Magnesium	--	4,450	73.7	3,630	74.6	3,650	48.4	3,210	45.0
Manganese	400	115	1.8	92.0	1.9	92.8	1.2	87.6	1.1
Nickel	1,600	15.1	11.1	9.8 J	11.2	6.2 J	7.3	5.4 J	6.8
Potassium	--	9,520	184	6,460	186	713	121	759	113
Tin	--	ND	92.2	ND	93.2	ND	60.5	ND	56.3
Vanadium	--	17.3	5.5	14.9	5.6	20.4	3.6	19.0	3.4
Zinc	24,000	192	3.7	147	3.7	14.2	2.4	13.9	2.3
SW7471									
Mercury	24	0.15 J	0.18	0.31	0.19	ND	0.12	ND	0.11
SW7841									
Thallium	6.4	ND	3.7	ND	7.5	ND	2.4	0.25 J	2.3
SW9045									
pH (pH units)	--	9.1	--	9.2	--	8.5	--	8.6	--

Table 3.--Analytical results of soil samples from sites 23, 24, and 25--Concluded

Field sample identification:		KAFB250601-1		KAFB250602-1		KAFB250701-1		KAFB250702-1	
Batch identification:		033656-0003		033656-0004		033656-0005		033656-0006	
Depth (feet):		0.2		0.2		0.2		8.0 to 10.0	
Method number and analysis	Action level	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit
SW6010									
Aluminum	--	--	--	5,750	33.4	--	--	--	--
Barium	5,600	--	--	116	1.1	--	--	--	--
Beryllium	0.16	--	--	0.35 J	0.45	--	--	--	--
Calcium	--	--	--	36,400	55.7	--	--	--	--
Chromium	400	--	--	4.6	4.5	--	--	--	--
Cobalt	--	--	--	3.1 J	4.5	--	--	--	--
Copper	--	--	--	5.4	2.2	--	--	--	--
Iron	--	--	--	7,480	5.6	--	--	--	--
Lead	--	ND	5.1	4.2 J	5.6	6.2	5.1	4.2 J	5.8
Magnesium	--	--	--	2,550	44.5	--	--	--	--
Manganese	400	--	--	103	1.1	--	--	--	--
Nickel	1,600	--	--	5.8 J	6.7	--	--	--	--
Potassium	--	--	--	1,410	111	--	--	--	--
Vanadium	--	--	--	18.8	3.3	--	--	--	--
Zinc	24,000	--	--	20.3	2.2	--	--	--	--

Field sample identification:		KAFB250801-1		KAFB250802-1		KAFB250901-1		KAFB250902-1	
Batch identification:		033656-0007		033656-0008		033656-0009		033656-0010	
Depth (feet):		0.2		8.0 to 10.0		0.2		8.0 to 10.0	
Analysis	Action level	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit
SW6010									
Lead	--	7.2	5.1	ND	6.1	5.8	5.2	ND	5.6

Table 4.--Volatile organic compound field screening measurements of soil samples from site 26--Manzano fire training area

[Locations shown in figure 6. Units are in parts per million. NM, no measurement; --, no sample collected at this depth]

Sample depth (feet)	Soil sampling location										
	2601	2602	2603	2604	2605	2606	2607	2608	2609	2610	2611
0.2	4.9	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 - 6	23.2	4.0	53	0.8	0.6	2.7	1.8	8.2	3.0	0.2	0.6
9 - 11	65	43	77	48	47	0.3	NM	1.2	2.0	0.2	0.5
14 - 16	81	114	167	19	98	--	--	--	--	--	--
19 - 21	92	116	40	2.4	1.4	--	--	--	--	--	--
29 - 31	--	--	54	--	--	--	--	--	--	--	--
39 - 41	--	--	85	--	--	--	--	--	--	--	--
50 - 51	--	--	0.0	--	--	--	--	--	--	--	--
60 - 61	--	--	0.0	--	--	--	--	--	--	--	--
70 - 71	--	--	0.0	--	--	--	--	--	--	--	--
83	--	--	0.0	--	--	--	--	--	--	--	--

Table 5.--Analytical results of soil samples from site 26

[Method numbers listed in table 7. Site location shown in figure 6. Values in milligrams per kilogram (dry weight). Ignitability in degrees Fahrenheit. --, no data; >, greater than; ND, not detected; J, estimated value, below quantitation limit]

Field sample identification:		KAFB260101-1		KAFB260102-1		KAFB260103-1		KAFB260104-1	
Batch identification:		031199-0003		031199-0017		031847-0016		031847-0017	
Depth (feet):		0.2		4.0 to 6.0		9.0 to 11.0		14.0 to 16.0	
Method number and analysis	Action level	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit
E418.1									
Total petroleum hydrocarbons	--	35,500	1,570	5,590	324	15,200	1,620	15,200	661
SW1010									
Ignitability	--	>160	--	>160	--	>160	--	>160	--
SW6010									
Aluminum	--	7,470	31.5	12,900	32.4	9,260	32.4	8,230	33.0
Barium	5,600	257	1.0	134	1.1	175	1.1	86.7	1.1
Beryllium	0.16	0.44	0.42	0.65	0.43	0.58	0.43	0.52	0.44
Cadmium	40	2.0	0.52	ND	0.54	ND	0.54	ND	0.55
Calcium	--	8,250	52.5	13,300	54.0	32,500	54.0	27,100	55.0
Chromium	400	30.4	4.2	13.9	4.3	9.4	4.3	9.4	4.4
Cobalt	--	7.7	4.2	10.6	4.3	7.3	4.3	6.9	4.4
Copper	--	16.7	2.1	26.5	2.2	27.3	2.2	24.1	2.2
Iron	--	21,800	5.2	26,000	5.4	19,300	5.4	17,200	5.5
Lead	--	1,890	5.2	7.2	5.4	16.0	5.4	11.0	5.5
Magnesium	--	4,860	42.0	7,230	43.2	5,690	43.2	5,310	44.0
Manganese	400	267	1.0	456	1.1	328	1.1	273	1.1
Molybdenum	400	ND	4.2	ND	4.3	ND	4.3	ND	4.4
Nickel	1,600	11.6	6.3	14.8	6.5	10.2	6.5	10.1	6.6
Potassium	--	2,390	105	3,820	108	2,380	108	1,930	110
Vanadium	--	41.8	3.1	50.8	3.2	36.3	3.2	36.1	3.3
Zinc	24,000	436	2.1	62.0	2.2	44.6	2.2	39.2	2.2
SW8240									
2-Butanone (MEK)	48,000	0.013 J	0.052	0.021	0.011	ND	0.11	ND	2.2
2-Hexanone	--	ND	0.052	0.0030 J	0.011	ND	0.11	ND	2.2
Acetone	8,000	0.15	0.052	0.035	0.011	0.362	0.11	ND	2.2
Ethylbenzene	8,000	ND	0.010	ND	0.0022	0.067	0.022	0.47	0.44
Methylene chloride	93	0.010 J	0.016	0.0016 J	0.0032	0.012 J	0.032	ND	0.66
Toluene	16,000	ND	0.016	0.0044	0.0032	0.023 J	0.032	0.34 J	1.1
Xylenes (total)	16,000	ND	0.026	ND	0.0054	0.69	0.054	2.6	1.1
SW8270									
1,2,4-Trichlorobenzene	800	ND	16	ND	1.6	7.0	6.5	12	3.3
2-Methylnaphthalene	--	ND	16	ND	1.6	11	6.5	11	3.3
Fluorene	3,200	ND	7.9	ND	0.81	1.2 J	3.2	0.90 J	1.7
Naphthalene	--	ND	10	ND	1.0	1.9 J	4.1	2.0 J	2.1
Phenanthrene	--	ND	14	ND	1.5	2.6 J	5.8	2.1 J	3.0
Bis(2-Ethylhexyl)phthalate	50	5.6 J	14	2.1	1.4	2.7 J	5.6	1.8 J	2.9
SW8310									
Benzo(a)anthracene	--	ND	0.010	ND	0.011	0.18	0.011	ND	0.011
Benzo(a)pyrene	0.1	0.030	0.010	ND	0.011	0.024	0.011	0.014	0.011
Benzo(b)fluoranthene	--	0.065	0.010	0.014	0.011	0.028	0.011	0.017	0.011
Chrysene	--	0.074 J	0.10	ND	0.11	0.14	0.11	0.030 J	0.11
Fluoranthene	3,200	ND	0.10	ND	0.11	0.46	0.11	0.24	0.11
Fluorene	3,200	ND	0.10	ND	0.11	1.1	0.11	0.50	0.11
Naphthalene	--	ND	1.0	ND	1.1	0.96 J	1.1	0.57 J	1.1
Phenanthrene	--	ND	0.42	ND	0.43	3.0	0.43	1.5	0.44
Pyrene	2,400	0.33	0.21	ND	0.22	ND	0.22	ND	0.22

Table 5.--Analytical results of soil samples from site 26--Continued

Field sample identification:		KAFB260105-1		KAFB260201-1		KAFB260202-1		KAFB260203-1	
Batch identification:		031847-0018		031199-0004		031847-0005		031847-006	
Depth (feet):		19.0 to 21.0		0.2		4.0 to 6.0		9.0 to 11.0	
Method number and analysis	Action level	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit
E418.1									
Total petroleum hydrocarbons	--	23,800	1,570	2,560	159	1,490	61.9	18,800	1,630
SW1010									
Ignitability	--	>160	--	>160	--	>160	--	>160	--
SW6010									
Aluminum	--	7,680	31.5	8,650	31.8	10,800	30.9	10,400	32.6
Barium	5,600	85.0	1.0	483	1.1	147	1.0	161	1.1
Beryllium	0.16	0.50	0.42	0.46	0.42	0.66	0.41	0.69	0.44
Cadmium	40	ND	0.52	1.9	0.53	ND	0.52	ND	0.54
Calcium	--	12,300	52.5	4,890	53.1	11,900	51.6	25,700	54.4
Chromium	400	32.9	4.2	51.5	4.2	11.8	4.1	8.1	4.4
Cobalt	--	8.4	4.2	7.1	4.2	9.4	4.1	7.5	4.4
Copper	--	38.8	2.1	19.2	2.1	30.4	2.1	31.1	2.2
Iron	--	18,600	5.2	21,100	5.3	23,500	5.2	19,100	5.4
Lead	--	12.7	5.2	2,570	5.3	20.7	5.2	18.7	5.4
Magnesium	--	6,450	42.0	5,530	42.5	6,700	41.3	6,350	43.5
Manganese	400	333	1.0	305	1.1	481	1.0	333	1.1
Molybdenum	400	9.4	4.2	ND	4.2	ND	4.1	ND	4.4
Nickel	1,600	9.7	6.3	10.4	6.4	13.2	6.2	11.3	6.5
Potassium	--	2,250	105	2,710	106	3,690	103	2,560	109
Sodium	--	ND	105	ND	106	67.7 J	103	106 J	109
Tin	--	46.8 J	52.5	ND	53.1	ND	51.6	ND	54.4
Vanadium	--	36.2	3.1	37.4	3.2	43.5	3.1	35.6	3.3
Zinc	24,000	52.1	2.1	544	2.1	58.9	2.1	50.8	2.2
SW8240									
Methylene chloride	93	ND	1.3	0.0078	0.0032	0.0014 J	0.0031	0.0097 J	0.020
Xylenes (total)	16,000	8.6	2.1	ND	0.0053	ND	0.0052	0.043	0.034
SW8270									
1,2,4-Trichlorobenzene	800	18	6.3	ND	3.2	ND	0.31	0.81 J	3.3
2-Methylnaphthalene	--	36	6.3	ND	3.2	ND	0.31	3.2 J	3.3
Acenaphthene	4,800	1.2 J	6.3	ND	3.2	ND	0.31	0.48 J	3.3
Acenaphthylene	--	0.45 J	2.5	ND	1.3	ND	0.12	ND	1.3
Dibenzofuran	--	0.83 J	5.2	ND	2.7	ND	0.26	ND	2.7
Fluorene	3,200	2.4 J	3.1	ND	1.6	ND	0.15	0.63 J	1.6
Naphthalene	--	5.6	4.0	ND	2.0	ND	0.20	0.76 J	2.1
Phenanthrene	--	3.7 J	5.7	ND	2.9	ND	0.28	1.1 J	2.9
Bis(2-Ethylhexyl)phthalate	50	1.2 J	5.5	0.37 J	2.8	ND	0.27	1.3 J	2.8
SW8310									
Benzo(a)anthracene	--	0.11	0.010	ND	0.011	ND	0.010	ND	0.011
Benzo(a)pyrene	0.1	0.020	0.010	ND	0.011	ND	0.010	0.035	0.011
Benzo(b)fluoranthene	--	0.023	0.010	ND	0.011	ND	0.010	0.042	0.011
Chrysene	--	0.097 J	0.10	ND	0.11	ND	0.10	0.11	0.11
Fluoranthene	3,200	0.39	0.10	ND	0.11	ND	0.10	0.29	0.11
Fluorene	3,200	1.1	0.10	ND	0.11	ND	0.10	0.53	0.11
Naphthalene	--	2.5	1.0	ND	1.1	ND	1.0	0.45 J	1.1
Phenanthrene	--	3.0	0.42	ND	0.42	ND	0.41	0.96	0.44

Table 5.--Analytical results of soil samples from site 26--Continued

Field sample identification:		KAFB260204-1		KAFB260205-1		KAFB260301-1		KAFB260302-1	
Batch identification:		031847-0007		031847-0008		031199-0005		031847-0009	
Depth (feet):		14.0 to 16.0		19.0 to 21.0		0.2		4.0 to 6.0	
Method number ana analysis	Action level	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit
E418.1									
Total petroleum hydrocarbons	--	12,700	1,590	4,690	318	2,430	157	16,600	1,590
SW1010									
Ignitability	--	>160	--	>160	--	>160	--	>160	--
SW6010									
Aluminum	--	7,250	31.8	9,400	31.8	11,100	31.5	10,200	31.8
Barium	5,600	115	1.1	111	1.1	176	1.0	146	1.1
Beryllium	0.16	0.50	0.42	0.51	0.42	0.54	0.42	0.62	0.42
Cadmium	40	0.41 J	0.53	ND	0.53	1.2	0.52	0.32 J	0.53
Calcium	--	18,100	53.0	19,400	53.0	4,740	52.5	12,500	53.0
Chromium	400	10.1	4.2	11.1	4.2	13.6	4.2	12.8	4.2
Cobalt	--	7.5	4.2	8.6	4.2	9.2	4.2	9.1	4.2
Copper	--	43.2	2.1	54.0	2.1	15.7	2.1	20.4	2.1
Iron	--	20,900	5.3	20,600	5.3	27,700	5.2	23,700	5.3
Lead	--	16.8	5.3	41.6	5.3	980	5.2	140	5.3
Magnesium	--	5,200	42.4	7,360	42.4	7,710	42.0	5,900	42.4
Manganese	400	263	1.1	358	1.1	406	1.0	429	1.1
Nickel	1,600	11.4	6.4	18.7	6.4	12.7	6.3	18.7	6.4
Potassium	--	1,910	106	2,340	106	4,570	105	3,240	106
Sodium	--	104 J	106	ND	106	ND	105	117	106
Vanadium	--	42.1	3.2	43.0	3.2	49.1	3.1	45.2	3.2
Zinc	24,000	46.8	2.1	65.7	2.1	269	2.1	70.4	2.1
SW8240									
2-Butanone (MEK)	48,000	0.31 J	2.1	ND	1.3	0.0028 J	0.010	ND	1.5
Acetone	8,000	ND	2.1	ND	1.3	0.012	0.010	0.19 J	1.5
Methylene chloride	93	ND	0.64	ND	0.40	0.0018 J	0.0031	ND	0.45
Xylenes (total)	16,000	1.7	1.1	0.51 J	0.66	ND	0.0052	0.43 J	0.76
SW8270									
1,2,4-Trichlorobenzene	800	0.40 J	3.2	ND	0.32	ND	3.1	ND	1.6
2,6-Dinitrotoluene	--	ND	3.2	0.11 J	0.32	ND	3.1	ND	1.6
2-Methylnaphthalene	--	6.4	3.2	ND	0.32	ND	3.1	2.9	1.6
Acenaphthene	4,800	0.36 J	3.2	ND	0.32	ND	3.1	0.20 J	1.6
Fluorene	3,200	0.62 J	1.6	ND	0.16	ND	1.6	0.38 J	0.80
Naphthalene	--	1.5 J	2.0	ND	0.20	ND	2.0	0.49 J	1.0
Phenanthrene	--	1.2 J	2.9	ND	0.29	ND	2.8	0.78 J	1.4
Pyrene	2,400	ND	2.6	0.10 J	0.26	ND	2.6	ND	1.3
Bis(2-Ethylhexyl)phthalate	50	0.72 J	2.8	0.26 J	0.28	ND	2.7	1.9	1.4
SW8310									
Benzo(a)anthracene	--	0.27	0.011	ND	0.011	ND	0.010	0.16	0.011
Benzo(a)pyrene	0.1	0.035	0.011	ND	0.011	ND	0.010	0.024	0.011
Benzo(b)fluoranthene	--	0.042	0.011	ND	0.011	ND	0.010	0.036	0.011
Benzo(g,h,i)perylene	--	ND	0.011	0.035	0.011	ND	0.010	ND	0.011
Chrysene	--	0.12	0.11	ND	0.11	ND	0.10	0.070 J	0.11
Fluoranthene	3,200	0.42	0.11	0.077 J	0.11	ND	0.10	0.28	0.11
Fluorene	3,200	0.99	0.11	0.035 J	0.11	ND	0.10	0.43	0.11
Naphthalene	--	1.8	1.1	ND	1.1	ND	1.0	0.17 J	1.1
Phenanthrene	--	2.3	0.42	0.23 J	0.42	ND	0.42	1.2	0.42

Table 5.--Analytical results of soil samples from site 26--Continued

Field sample identification:		KAFB260303-1		KAFB260304-1		KAFB260305-1		KAFB260306-1	
Batch identification:		031847-0012		031847-0013		031847-0014		031847-0015	
Depth (feet):		9.0 to 11.0		14.0 to 16.0		14.0 to 16.0		19.0 to 21.0	
Method number and analysis	Action level	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit
E418.1									
Total petroleum hydrocarbons	--	18,000	1,610	18,000	1,610	16,500	1,630	3,280	158
SW1010									
Ignitability	--	>160	--	>160	--	>160	--	>160	--
SW6010									
Aluminum	--	10,500	32.2	6810	32.2	8,140	32.6	8,110	31.5
Arsenic	24	ND	32.2	6.3 J	32.2	ND	32.6	ND	31.5
Barium	5,600	155	1.1	125	1.1	176	1.1	70.5	1.1
Beryllium	0.16	0.66	0.43	0.48	0.43	0.52	0.44	0.50	0.42
Calcium	--	19,800	53.6	18,100	53.7	30,000	54.4	6,490	52.5
Chromium	400	11.4	4.3	10.0	4.3	10.7	4.4	8.7	4.2
Cobalt	--	8.0	4.3	5.9	4.3	7.7	4.4	8.7	4.2
Copper	--	34.2	2.1	25.2	2.1	61.1	2.2	57.7	2.1
Iron	--	22,700	5.4	14,100	5.4	17,900	5.4	18,800	5.3
Lead	--	13.2	5.4	26.4	5.4	13.5	5.4	11.0	5.3
Magnesium	--	5,860	42.9	4,890	43.0	6,180	43.5	6,290	42.0
Manganese	400	342	1.1	226	1.1	305	1.1	333	1.1
Nickel	1,600	10.8	6.4	10.9	6.4	11.1	6.5	11.0	6.3
Potassium	--	2,380	107	1,350	107	1,900	109	2,020	105
Sodium	--	25.9 J	107	119	107	ND	109	220	105
Vanadium	--	43.2	3.2	29.5	3.2	36.2	3.3	34.5	3.2
Zinc	24,000	50.7	2.1	38.0	2.1	53.9	2.2	59.7	2.1
SW8240									
2-Butanone (MEK)	48,000	ND	3.6	1.3 J	7.2	ND	5.4	ND	0.11
Ethylbenzene	8,000	ND	0.71	ND	1.4	1.1 J	1.1	ND	0.021
Methylene chloride	93	ND	1.1	ND	2.1	1.6 J	1.6	0.027 J	0.032
Toluene	16,000	ND	1.8	ND	3.6	0.64 J	2.7	ND	0.032
Xylenes (total)	16,000	2.8	1.8	4.6	3.6	6.3	2.7	0.039 J	0.053
SW8270									
2-Methylnaphthalene	--	22	3.2	57	3.2	39	3.3	4.2	1.6
Acenaphthene	4,800	0.95 J	3.2	1.4 J	3.2	1.1 J	3.3	0.2 J	1.6
Acenaphthylene	--	0.41 J	1.3	0.49 J	1.3	0.38 J	1.3	ND	0.63
Dibenzofuran	--	ND	2.7	0.86 J	2.7	0.76 J	2.7	ND	1.3
Fluorene	3,200	1.8	1.6	2.2	1.6	1.8	1.6	0.35 J	0.79
Naphthalene	--	3.2	2.0	10	2.0	6.1	2.1	0.45 J	1.0
Phenanthrene	--	2.9 J	2.9	3.5	2.9	2.8 J	2.9	0.52 J	1.4
Bis(2-Ethylhexyl)phthalate	50	0.76 J	2.8	0.79 J	2.8	0.92 J	2.8	ND	1.4
SW8310									
Benzo(a)anthracene	--	0.19	0.011	ND	0.011	0.14	0.011	ND	0.011
Benzo(a)pyrene	0.1	0.032	0.011	0.023	0.011	0.22	0.011	ND	0.011
Benzo(b)fluoranthene	--	0.031	0.011	0.023	0.011	0.021	0.011	ND	0.011
Fluoranthene	3,200	0.42	0.11	0.39	0.11	0.38	0.11	0.057 J	0.11
Fluorene	3,200	1.5	0.11	1.7	0.11	1.5	0.11	0.18	0.11
Naphthalene	--	2.2	1.1	5.2	1.1	5.7	1.1	0.25 J	1.1
Phenanthrene	--	3.1	0.43	2.9	0.43	3.25	0.44	0.44	0.42

Table 5.--Analytical results of soil samples from site 26--Continued

Field sample identification:		KAFB260307-1		KAFB260308-1		KAFB260309-1		KAFB260310-1	
Batch identification:		031905-0015		031905-0016		032342-0003		032342-0004	
Depth (feet):		29.0 to 31.0		39.0 to 41.0		50.0 to 51.0		60.0 to 61.0	
Method number and analysis	Action level	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit
E418.1									
Total petroleum hydrocarbons	--	222	30.8	2,030	157	ND	30.5	ND	30.8
SW1010									
Ignitability	--	>160	--	>160	--	>160	--	>160	--
SW6010									
Aluminum	--	8,260	30.8	10,300	31.5	6,320	30.5	7,020	30.8
Barium	5,600	66.7	1.0	89.1	1.0	66.5	1.0	61.1	1.0
Beryllium	0.16	0.48	0.41	0.59	0.42	0.33 J	0.41	0.36 J	0.41
Calcium	--	7,000	51.3	12,100	52.5	6,550	50.8	9,570	51.4
Chromium	400	12.7	4.1	26.9	4.2	7.9	4.1	7.9	4.1
Cobalt	--	7.8	4.1	9.0	4.2	6.6	4.1	6.9	4.1
Copper	--	37.1	2.1	27.4	2.1	14.1	2.0	13.9	2.1
Iron	--	19,500	5.1	25,100	5.2	15,600	5.1	14,600	5.1
Lead	--	2.7	0.0	46.8	5.2	.7.2	5.1	6.1	5.1
Magnesium	--	6,290	41.0	6,890	42.0	5,220	40.7	5,880	41.1
Manganese	400	350	1.0	399	1.0	310	1.0	324	1.0
Nickel	1,600	12.3	6.2	128	6.3	8.2	6.1	9.7	6.2
Potassium	--	2,580	103	2,610	105	1,790	102	2,180	103
Sodium	--	ND	103	153	105	ND	305	ND	308
Vanadium	--	35.1	3.1	48.9	3.1	28.2	3.1	26.5	3.1
Zinc	24,000	50.7	2.1	60.3	2.1	42.2	2.0	42.2	2.1
SW8240									
4-Methyl-2-pentanone (MIBK)	--	0.0046 J	0.010	ND	0.010	ND	0.010	ND	0.010
Acetone	8,000	ND	0.010	0.0066 J	0.010	ND	0.010	ND	0.010
Methylene chloride	93	0.0013 J	0.0031	0.0015 J	0.0031	ND	0.0030	0.0092	0.0031
Xylenes (total)	16,000	0.0039 J	0.0051	ND	0.0052	ND	0.0051	ND	0.0051
SW8270									
2-Methylnaphthalene	--	ND	0.31	0.56	0.31	ND	0.31	ND	0.31
Fluorene	3,200	ND	0.15	0.065 J	0.16	ND	0.15	ND	0.15
Phenanthrene	--	ND	0.28	0.087 J	0.28	ND	0.27	ND	0.28
Bis(2-Ethylhexyl)phthalate	50	0.085 J	0.27	0.24 J	0.27	ND	0.27	ND	0.27

Table 5.--Analytical results of soil samples from site 26--Continued

Field sample identification:		KAFB260311-1		KAFB260312-1		KAFB260313-1		KAFB260401-1	
Batch identification:		032342-0005		032342-0006		032342-0007		031199-0006	
Depth (feet):		60.0 to 61.0		70.0 to 71.0		83		0.2	
Method number and analysis	Action level	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit
E418.1									
Total petroleum hydrocarbons	--	ND	30.8	ND	31.7	ND	31.6	61,500	3,420
SW1010									
Ignitability	--	>160	--	>160	--	>160	--	>160	--
SW6010									
Aluminum	--	8,330	30.8	7,650	31.7	9,280	31.6	13,400	34.2
Barium	5,600	79.7	1.0	74.2	1.1	134	1.1	213	1.1
Beryllium	0.16	0.44	0.41	0.44	0.42	0.47	0.42	0.64	0.46
Cadmium	40	ND	0.51	ND	0.53	0.32 J	0.53	8.0	0.57
Calcium	--	12,200	51.4	12,000	52.8	11,800	52.6	6,650	57.0
Chromium	400	9.6	4.1	9.7	4.2	9.9	4.2	17.5	4.6
Cobalt	--	8.1	4.1	6.9	4.2	6.9	4.2	12.3	4.6
Copper	--	17.1	2.1	13.8	2.1	26.1	2.1	20.9	2.3
Iron	--	18,700	5.1	15,200	5.3	14,900	5.3	30,200	5.7
Lead	--	6.8	5.1	7.2	5.3	6.5	5.3	1,610	5.7
Magnesium	--	7,100	41.1	5,850	42.2	4,270	42.1	8,470	45.6
Manganese	400	394	1.0	305	1.1	328	1.1	426	1.1
Nickel	1,600	10.7	6.2	10.0	6.3	10.2	6.3	15.9	6.8
Potassium	--	2,950	103	2,110	106	2,070	105	4,950	114
Sodium	--	ND	308	ND	317	ND	316	126	114
Vanadium	--	33.5	3.1	29.1	3.2	27.6	3.2	58.8	3.4
Zinc	24,000	51.5	2.1	41.2	2.1	40.7	2.1	594	2.3
SW7740									
Selenium	400	ND	0.51	ND	0.53	ND	0.53	0.5 J	1.1
SW8240									
2-Butanone (MEK)	48,000	ND	0.010	ND	0.011	ND	0.011	0.0091 J	0.011
Acetone	8,000	ND	0.010	ND	0.011	ND	0.011	0.075	0.011
Methylene chloride	93	ND	0.0031	0.0022 J	0.0032	0.0016 J	0.0032	0.011	0.0034
SW8270									
Bis(2-Ethylhexyl)phthalate	50	ND	0.27	ND	0.27	ND	0.27	6.3 J	15
SW8310									
Benzo(a)pyrene	0.1	ND	0.010	ND	0.011	ND	0.011	0.021	0.011
Benzo(b)fluoranthene	--	ND	0.010	ND	0.011	ND	0.011	0.046	0.011
Chrysene	--	ND	0.10	ND	0.11	ND	0.11	0.15	0.11
Fluoranthene	3,200	ND	0.10	ND	0.11	ND	0.11	0.086 J	0.11

Table 5.--Analytical results of soil samples from site 26--Continued

Field sample identification:		KAFB260402-1		KAFB260403-1		KAFB260404-1		KAFB260405-1	
Batch identification:		031905-0003		031905-0004		031905-0005		031905-0006	
Depth (feet):		4.0 to 6.0		9.0 to 11.0		14.0 to 16.0		14.0 to 16.0	
Method number and analysis	Action level	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit
E418.1									
Total petroleum hydrocarbons	--	792	31.4	21,200	1,620	2,000	156	1,430	159
SW1010									
Ignitability	--	>160	--	>160	--	>160	--	>160	--
SW6010									
Aluminum	--	7,160	31.4	10,100	32.4	9,320	31.2	8,090	31.8
Barium	5,600	75.2	1.0	154	1.1	103	1.0	93.9	1.1
Beryllium	0.16	0.51	0.42	0.60	0.43	0.57	0.42	0.50	0.42
Cadmium	40	ND	0.52	ND	0.54	0.35 J	0.52	ND	0.53
Calcium	--	5,050	52.4	19,000	.0	9,900	52.1	11,300	53.0
Chromium	400	8.7	4.2	12.7	4.3	14.6	4.2	13.8	4.2
Cobalt	--	7.2	4.2	7.4	4.3	9.4	4.2	7.8	4.2
Copper	--	23.4	2.1	34.3	2.2	45.3	2.1	34.5	2.1
Iron	--	18,000	5.2	18,500	5.4	28,600	5.2	21,700	5.3
Lead	--	7.1	5.2	5.9	5.4	76.3	5.2	30.2	5.3
Magnesium	--	4,020	41.9	5,120	43.2	6,000	41.7	5,130	42.4
Manganese	400	274	1.0	324	1.1	370	1.0	291	1.1
Nickel	1,600	8.5	6.3	10.8	6.5	12.9	6.2	12.5	6.4
Potassium	--	1,870	105	2,220	108	2,170	104	1,960	106
Vanadium	--	32.8	3.1	33.4	3.2	56.7	3.1	41.0	3.2
Zinc	24,000	36.1	2.1	44.0	2.2	51.6	2.1	43.7	2.1
SW8240									
2-Butanone (MEK)	48,000	0.0029 J	0.010	ND	0.11	ND	0.010	ND	0.011
2-Hexanone	--	ND	0.010	ND	0.11	0.0019 J	0.010	ND	0.011
Acetone	8,000	ND	0.010	ND	0.11	ND	0.010	ND	0.011
Ethylbenzene	8,000	ND	0.0021	0.017 J	0.022	ND	0.0021	ND	0.0021
Methylene chloride	93	ND	0.0031	0.014 J	0.032	0.0013 J	0.0031	0.0018 J	0.0032
Tetrachloroethene	800	ND	0.0021	0.019 J	0.022	ND	0.0021	ND	0.0021
Xylenes (total)	16,000	ND	0.0052	0.081	0.054	0.0013 J	0.0052	ND	0.0053
SW8270									
2-Methylnaphthalene	--	ND	0.31	18	6.5	ND	0.31	ND	0.32
Acenaphthene	4,800	ND	0.13	0.92 J	6.5	ND	0.31	ND	0.32
Fluorene	3,200	ND	0.16	1.4 J	3.2	ND	0.16	ND	0.16
Naphthalene	--	ND	0.20	2.0 J	4.1	ND	0.20	ND	0.20
Phenanthrene	--	ND	0.28	2.2 J	5.8	ND	0.28	ND	0.29
Bis(2-Ethylhexyl)phthalate	50	ND	0.27	ND	5.6	0.17 J	0.27	0.13 J	0.28
SW8310									
Chrysene	--	ND	0.10	0.0621 J	0.11	ND	0.10	ND	0.11
Fluoranthene	3,200	ND	0.10	0.185	0.11	ND	0.10	ND	0.11
Fluorene	3,200	ND	0.10	0.574	0.11	ND	0.10	ND	0.11
Naphthalene	--	ND	1.0	0.595 J	1.1	ND	1.0	ND	1.1
Phenanthrene	--	ND	0.42	1.38	0.43	ND	0.42	ND	0.42

Table 5.--Analytical results of soil samples from site 26--Continued

Field sample identification:		KAFB260406-1		KAFB260501-1		KAFB260502-1		KAFB260503-1	
Batch identification:		031905-0007		031199-0007		031199-0008		031905-0008	
Depth (feet):		19.0 to 21.0		0.2		0.2		4.0 to 6.0	
Method number and analysis	Action level	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit
E418.1									
Total petroleum hydrocarbons	--	3,740	162	5,970	317	7,240	317	1,120	61.6
SW1010									
Ignitability	--	>160	--	>160	--	>160	--	>160	--
SW6010									
Aluminum	--	8,340	32.4	6,480	31.7	4,720	31.7	7,280	30.8
Barium	5,600	88.3	1.1	194	1.1	205	1.1	79.4	1.0
Beryllium	0.16	0.46	0.43	0.45	0.42	0.32 J	0.42	0.55	0.41
Cadmium	40	ND	0.54	1.1	0.53	0.68	0.53	0.42 J	0.51
Calcium	--	13,700	54.0	3,630	52.8	3,300	52.8	6,200	51.4
Chromium	400	10.4	4.3	20.0	4.2	14.6	4.2	9.6	4.1
Cobalt	--	6.6	4.3	5.6	4.2	4.3	4.2	8.0	4.1
Copper	--	53.8	2.2	13.1	2.1	10.7	2.1	40.2	2.1
Iron	--	16,900	5.4	15,500	5.3	12,600	5.3	18,600	5.1
Lead	--	10.0	5.4	1,530	5.3	1,430	5.3	15.2	5.1
Magnesium	--	5,910	43.2	4,260	42.3	2,940	42.2	4,130	41.1
Manganese	400	318	1.1	230	1.1	155	1.1	321	1.0
Nickel	1,600	10.7	6.5	9.6	6.3	8.4	6.3	8.9	6.2
Potassium	--	2,270	108	1,860	106	1,110	106	2,210	103
Sodium	--	ND	108	ND	106	ND	106	173	103
Vanadium	--	32.4	3.2	30.5	3.2	26.3	3.2	34.5	3.1
Zinc	24,000	48.6	2.2	201	2.1	133	2.1	43.4	2.1
SW7740									
Selenium	400	ND	0.54	0.39 J	1.1	0.51 J	1.1	ND	0.51
SW8240									
2-Hexanone	--	ND	0.011	ND	0.011	ND	0.011	0.0018 J	0.010
Acetone	8,000	ND	0.011	ND	0.011	0.016	0.011	ND	0.010
Ethylbenzene	8,000	0.0015 J	0.0022	ND	0.0021	ND	0.0021	0.0011 J	0.0021
Methylene chloride	93	0.0025 J	0.0032	0.0051	0.0032	0.0074	0.0032	0.0021 J	0.0031
Tetrachloroethene	800	0.0013 J	0.0022	ND	0.0021	ND	0.0021	0.0011 J	0.0021
Toluene	16,000	0.0014 J	0.0032	ND	0.0032	ND	0.0032	0.0017 J	0.0031
Xylenes (total)	16,000	0.0031 J	0.0054	ND	0.0053	ND	0.0053	0.0020 J	0.0051
SW8270									
1,2,4-Trichlorobenzene	800	0.81 J	1.3	ND	3.2	ND	16	0.79 J	1.2
2,4-Dinitrophenol	160	ND	6.9	0.68 J	17	ND	84	ND	6.6
Benzoic acid	32,000	ND	13	6.7 J	32	ND	160	ND	12
Pentachlorophenol	5.8	ND	4.3	0.87 J	11	ND	53	ND	4.1
Bis(2-Ethylhexyl)phthalate	50	0.23 J	1.1	ND	2.7	5.5 J	14	0.26 J	1.1
SW8310									
Benzo(b)fluoranthene	--	ND	0.011	ND	0.011	0.015	0.011	ND	0.010

Table 5.--Analytical results of soil samples from site 26--Continued

Field sample identification:		KAFB260504-1		KAFB260505-1		KAFB260506-1		KAFB260507-1	
Batch identification:		031905-0009		031905-0010		031905-0011		031905-0012	
Depth (feet):		9.0 to 11.0		9.0 to 11.0		12.0 to 15.0		19.0 to 21.0	
Method number and analysis	Action level	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit
E418.1									
Total petroleum hydrocarbons	--	19,500	1,590	24,500	1,610	33,600	1,610	252	30.8
SW1010									
Ignitability	--	>160	--	>160	--	>160	--	>160	--
SW6010									
Aluminum	--	9,640	31.8	9,360	32.2	6,390	32.2	9,550	30.8
Barium	5,600	177	1.1	156	1.1	99.0	1.1	86.6	1.0
Beryllium	0.16	0.58	0.42	0.59	0.43	0.50	0.43	0.55	0.41
Cadmium	40	ND	0.53	ND	0.54	ND	0.54	0.43 J	0.51
Calcium	--	31,500	53.0	34,700	53.7	25,800	53.7	9,710	51.4
Chromium	400	9.2	4.2	10.4	4.3	11.3	4.3	13.3	4.1
Cobalt	--	7.1	4.2	6.7	4.3	4.6	4.3	9.3	4.1
Copper	--	27.4	2.1	30.3	2.1	29.9	2.1	69.9	2.1
Iron	--	18,500	5.3	18,300	5.4	13,400	5.4	21,600	5.1
Lead	--	12.1	5.3	16.6	5.4	36.5	5.4	7.6	5.1
Magnesium	--	5,800	42.4	5,340	42.9	3,960	42.9	7,360	41.1
Manganese	400	351	1.1	298	1.1	182	1.1	444	1.0
Nickel	1,600	10.1	6.4	9.7	6.4	11.5	6.4	12.9	6.2
Potassium	--	2,970	106	2,340	107	1,540	107	3,130	103
Sodium	--	ND	106	133	107	ND	107	115	103
Vanadium	--	35.0	3.2	35.2	3.2	27.7	3.2	40.1	3.1
Zinc	24,000	45.3	2.1	41.0	2.1	34.0	2.1	72.8	2.1
SW8240									
Ethylbenzene	8,000	ND	0.42	0.22 J	0.43	ND	0.43	0.0014 J	0.0021
Tetrachloroethene	800	ND	0.64	ND	0.64	ND	0.64	0.0013 J	0.0021
Toluene	16,000	ND	1.1	ND	1.1	ND	1.1	0.020	0.0031
Xylenes (total)	16,000	1.5	1.1	2.0	1.1	ND	1.1	0.0034 J	0.0051
SW8270									
2-Methylnaphthalene	--	8.6	6.4	7.9	6.4	2.3	1.6	ND	0.31
Acenaphthene	4,800	ND	6.4	0.98 J	6.4	0.25 J	1.6	ND	0.31
Fluorene	3,200	1.6 J	3.2	1.5 J	3.2	0.34 J	0.81	ND	0.15
Naphthalene	--	1.4 J	4.0	1.2 J	4.1	0.36 J	1.0	ND	0.20
Phenanthrene	--	2.8 J	5.7	2.6 J	5.8	0.67 J	1.4	ND	0.28
Bis(2-Ethylhexyl)phthalate	50	0.91 J	5.5	0.84 J	5.6	0.28 J	1.4	0.102 J	0.27
SW8310									
Benzo(a)anthracene	--	0.219	0.011	0.237	0.011	0.064	0.011	ND	0.010
Benzo(a)pyrene	0.1	0.0315	0.011	0.0339	0.011	ND	0.011	ND	0.010
Benzo(b)fluoranthene	--	0.0329	0.011	0.0342	0.011	ND	0.011	ND	0.010
Benzo(g,h,i)perylene	--	ND	0.011	0.0180	0.011	ND	0.011	ND	0.010
Chrysene	--	0.106 J	0.11	0.150	0.11	ND	0.11	ND	0.10
Fluoranthene	3,200	0.369	0.11	0.405	0.11	0.12	0.11	ND	0.10
Fluorene	3,200	0.963	0.11	1.06	0.11	0.32	0.11	ND	0.10
Naphthalene	--	0.696 J	1.1	0.772 J	1.1	0.21 J	1.1	ND	1.0
Phenanthrene	--	2.07	0.42	2.40	0.43	0.71	0.43	ND	0.41

Table 5.--Analytical results of soil samples from site 26--Continued

Field sample identification:		KAFB260601-1		KAFB260602-1		KAFB260603-1		KAFB260701-1	
Batch identification:		031199-0011		031847-0003		031847-0004		031199-0012	
Depth (feet):		0.2		4.0 to 6.0		9.0 to 11.0		0.2	
Method number and analysis	Action level	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit
E418.1									
Total petroleum hydrocarbons	--	159	31.7	ND	31.4	ND	30.9	2,480	156
SW1010									
Ignitability	--	>160	--	>160	--	>160	--	>160	--
SW6010									
Aluminum	--	8,690	31.7	11,100	31.4	8,370	30.9	11,000	31.1
Barium	5,600	108	1.1	133	1.0	125	1.0	420	1.0
Beryllium	0.16	0.50	0.42	0.66	0.42	0.52	0.41	0.54	0.41
Cadmium	40	ND	0.53	ND	0.52	ND	0.51	0.52	0.52
Calcium	--	5,900	52.9	18,600	52.4	37,200	51.5	5,970	51.9
Chromium	400	10.1	4.2	9.9	4.2	7.2	4.1	13.6	4.1
Cobalt	--	7.9	4.2	9.4	4.2	6.6	4.1	10.2	4.1
Copper	--	16.0	2.1	28.2	2.1	44.7	2.1	16.9	2.1
Iron	--	20,000	5.3	22,800	5.2	16,400	5.1	28,000	5.2
Lead	--	279	5.3	10.3	5.2	10.2	5.1	1,550	5.2
Magnesium	--	5,520	42.3	6,840	41.9	7,210	41.2	7,330	41.5
Manganese	400	372	1.1	443	1.0	317	1.0	457	1.0
Nickel	1,600	11.1	6.3	12.6	6.3	10.9	6.2	13.4	6.2
Potassium	--	2,590	106	3,500	105	2,460	103	3,810	104
Sodium	--	ND	106	38.0 J	105	44.2 J	103	ND	104
Vanadium	--	36.9	3.2	42.9	3.1	30.5	3.1	51.9	3.1
Zinc	24,000	139	2.1	57.7	2.1	54.3	2.1	558	2.1
SW8240									
Acetone	8,000	ND	0.011	ND	0.010	ND	0.010	0.0058 J	0.010
Methylene chloride	93	ND	0.0032	0.0013 J	0.0031	0.00121 J	0.0031	0.0035	0.0031
Toluene	16,000	ND	0.0032	ND	0.0031	ND	0.0031	0.0070	0.0031
Xylenes (total)	16,000	ND	0.0053	ND	0.0052	ND	0.0051	0.0056	0.0052
SW8270									
Butyl benzyl phthalate	16,000	ND	0.31	0.25 J	0.30	ND	0.30	ND	1.5
Di-n-butyl phthalate	8,000	ND	0.32	0.10 J	0.31	ND	0.31	ND	1.6
Bis(2-Ethylhexyl)phthalate	50	0.12 J	0.27	ND	0.27	0.087 J	0.27	1.4	1.3

Table 5.--Analytical results of soil samples from site 26--Continued

Field sample identification:		KAFB260702-1		KAFB260703-1		KAFB260801-1		KAFB260802-1	
Batch identification:		031771-0006		031771-0007		031199-0013		031771-0010	
Depth (feet):		4.0 to 6.0		9.0 to 11.0		0.2		4.0 to 6.0	
Method number and analysis	Action level	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit
E418.1									
Total petroleum hydrocarbons	--	ND	30.8	ND	31.0	1,100	62.3	ND	30.9
SW1010									
Ignitability	--	>160	--	>160	--	>160	--	>160	--
SW6010									
Aluminum	--	8,870	30.8	7,960	31.0	12,700	31.1	1,600	30.9
Barium	5,600	99.2	1.0	117	1.0	275	1.0	114	1.0
Beryllium	0.16	0.58	0.41	0.56	0.41	0.68	0.42	0.70	0.41
Cadmium	40	ND	0.51	ND	0.52	0.72	0.52	ND	0.52
Calcium	--	14,300	51.3	29,600	51.7	8,520	51.9	14,400	51.5
Chromium	400	6.7	4.1	7.0	4.1	13.8	4.2	8.9	4.1
Cobalt	--	7.3	4.1	6.5	4.1	11.6	4.2	9.0	4.1
Copper	--	24.7	2.1	38.0	2.1	19.1	2.1	40.1	2.1
Iron	--	16,500	5.1	15,700	5.2	25,200	5.2	19,700	5.2
Lead	--	4.9 J	5.1	6.1	5.2	915	5.2	7.2	5.2
Magnesium	--	5,400	41.1	5,810	41.3	8,780	41.5	7,180	41.2
Manganese	400	351	1.0	323	1.0	566	1.0	461	1.0
Nickel	1,600	9.5	6.2	11.4	6.2	15.9	6.2	13.5	6.2
Potassium	--	2,710	103	1,980	103	4,310	104	3,840	103
Vanadium	--	30.9	3.1	28.8	3.1	44.7	3.1	36.4	3.1
Zinc	24,000	45.8	2.1	48.6	2.1	292	2.1	62.5	2.1
SW7841									
Thallium	6.4	ND	1.0	0.23 J	1.0	ND	2.1	0.21 J	1.0
SW8240									
Acetone	8,000	ND	0.010	ND	0.010	0.013	0.010	ND	0.010
Methylene chloride	93	0.0012 J	0.0031	0.0024 J	0.0031	0.0018 J	0.0031	0.0062	0.0031
SW8270									
Bis(2-Ethylhexyl)phthalate	50	ND	0.27	ND	0.27	0.2 J	0.27	ND	0.27

Table 5.--Analytical results of soil samples from site 26--Continued

Field sample identification:		KAFB260803-1		KAFB260901-1		KAFB260902-1		KAFB260903-1	
Batch identification:		031771-0011		031199-0014		031771-0012		031771-0013	
Depth (feet):		9.0 to 11.0		0.2		4.0 to 6.0		4.0 to 6.0	
Method number and analysis	Action level	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit
E418.1									
Total petroleum hydrocarbons	--	ND	31.1	2,480	154	ND	31.2	138	31.0
SW1010									
Ignitability	--	>160	--	>160	--	>160	--	>160	--
SW6010									
Aluminum	--	9,090	31.1	6,230	30.8	8,000	31.2	9,230	31.0
Barium	5,600	109	1.0	154	1.0	106	1.0	131	1.0
Beryllium	0.16	0.57	0.41	0.33 J	0.41	0.60	0.42	0.61	0.41
Calcium	--	7,420	51.8	3,760	51.3	11,000	52.1	12,000	51.7
Chromium	400	9.0	4.1	5.5	4.1	6.8	4.2	8.1	4.1
Cobalt	--	8.2	4.1	5.2	4.1	6.8	4.2	8.2	4.1
Copper	--	50.8	2.1	9.5	2.1	27.0	2.1	28.6	2.1
Iron	--	18,600	5.2	13,000	5.1	14,100	5.2	17,600	5.2
Lead	--	36.8	5.2	760	5.1	5.7	5.2	6.5	5.2
Magnesium	--	6,710	41.4	4,170	41.0	5,190	41.7	5,810	41.4
Manganese	400	401	1.0	269	1.0	349	1.0	400	1.0
Nickel	1,600	16.5	6.2	6.8	6.2	9.9	6.2	11.2	6.2
Potassium	--	2,620	104	2,170	103	3,130	104	3,640	103
Vanadium	--	31.2	3.1	22.3	3.1	26.3	3.1	33.0	3.1
Zinc	24,000	66.6	2.1	163	2.1	43.7	2.1	48.7	2.1
SW8240									
2-Butanone (MEK)	48,000	ND	0.010	0.0031 J	0.010	ND	0.010	ND	0.010
Acetone	8,000	ND	0.010	0.014	0.010	ND	0.010	ND	0.010
Methylene chloride	93	0.0059	0.0031	ND	0.0031	0.0068	0.0031	0.0043	0.0031
Toluene	16,000	ND	0.0031	ND	0.0031	0.0020 J	0.0031	ND	0.0031
Xylenes (total)	16,000	ND	0.0052	ND	0.0051	0.0016 J	0.0052	ND	0.0052
SW8270									
Di-n-octyl phthalate	--	ND	0.25	0.12 J	0.25	ND	0.25	ND	0.25
Bis(2-Ethylhexyl)phthalate	50	0.096 J	0.27	0.26 J	0.27	ND	0.27	0.086 J	0.27

Table 5.--Analytical results of soil samples from site 26--Continued

Field sample identification:		KAFB260904-1		KAFB261001-1		KAFB261002-1		KAFB261003-1	
Batch identification:		031771-0014		031199-0015		031771-0004		031771-0005	
Depth (feet):		9.0 to 11.0		0.2		4.0 to 6.0		9.0 to 11.0	
Method number and analysis	Action level	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit
E418.1									
Total petroleum hydrocarbons	--	ND	31.2	122	30.8	ND	31.1	ND	30.9
SW1010									
Ignitability	--	>160	--	>160	--	>160	--	>160	--
SW6010									
Aluminum	--	7,870	31.2	12,400	30.8	8,660	31.1	8,100	30.9
Barium	5,600	125	1.0	158	1.0	126	1.0	80.9	1.0
Beryllium	0.16	0.53	0.42	0.60	0.41	0.58	0.41	0.61	0.41
Cadmium	40	0.47 J	0.52	0.34 J	0.51	ND	0.52	ND	0.51
Calcium	--	17,600	51.9	7,260	51.4	22,300	51.8	6,420	51.5
Chromium	400	11.4	4.2	13.6	4.1	8.0	4.1	10.9	4.1
Cobalt	--	7.0	4.2	11.1	4.1	7.6	4.1	6.8	4.1
Copper	--	48.6	2.1	19.8	2.1	47.9	2.1	81.9	2.1
Iron	--	15,400	5.2	26,800	5.1	15,300	5.2	18,100	5.1
Lead	--	62.5	5.2	158	5.1	7.1	5.2	7.0	5.1
Magnesium	--	5,360	41.5	7,770	41.1	5,970	41.4	4,770	41.2
Manganese	400	326	1.0	510	1.0	356	1.0	310	1.0
Molybdenum	400	ND	4.2	ND	4.1	ND	4.1	ND	4.1
Nickel	1,600	122	6.2	15.8	6.2	11.5	6.2	11.1	6.2
Potassium	--	2,030	104	3,920	103	2,700	104	2,170	103
Sodium	--	ND	104	ND	103	ND	104	67.0 J	103
Vanadium	--	27.3	3.1	50.0	3.1	29.4	3.1	33.4	3.1
Zinc	24,000	58.7	2.1	97.9	2.1	54.2	2.1	59.8	2.1
SW7841									
Thallium	6.4	ND	1.0	ND	2.1	0.22 J	1.0	ND	1.0
SW8240									
Acetone	8,000	ND	0.010	0.0088 J	0.010	ND	0.010	0.0091 J	0.010
Methylene chloride	93	0.0066	0.0031	ND	0.0031	0.0012 J	0.0031	0.0014 J	0.0031
Xylenes (total)	16,000	ND	0.0052	ND	0.0051	ND	0.0052	0.0013 J	0.0051
SW8270									
Di-n-octyl phthalate	--	ND	0.25	0.065 J	0.25	ND	0.25	ND	0.25
Bis(2-Ethylhexyl)phthalate	50	0.30	0.27	0.077 J	0.27	ND	0.27	ND	0.27
SW8310									
Benzo(b)fluoranthene	--	ND	0.010	0.015	0.010	ND	0.010	ND	0.010

Table 5.--Analytical results of soil samples from site 26--Concluded

Field sample identification:		KAFB261101-1		KAFB261102-1		KAFB261103-1	
Batch identification:		031199-0016		031694-0006		031771-0003	
Depth (feet):		0.2		4.0 to 6.0		9.0 to 11.0	
Method number and analysis	Action level	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit
E418.1							
Total petroleum hydrocarbons	--	121	30.7	103	31.2	ND	31.3
SW1010							
Ignitability	--	>160	--	>160	--	>160	--
SW6010							
Aluminum	--	11,200	30.7	8,790	31.2	6,710	31.3
Arsenic	24	ND	30.7	ND	31.2	ND	31.3
Barium	5,600	100	1.0	98.2	1.0	113	1.0
Beryllium	0.16	0.59	0.41	0.59	0.42	0.53	0.42
Calcium	--	12,100	51.1	14,300	51.9	45,900	52.2
Chromium	400	12.6	4.1	8.4	4.2	5.8	4.2
Cobalt	--	10.4	4.1	8.1	4.2	4.8	4.2
Copper	--	15.9	2.0	59.6	2.1	89.8	2.1
Iron	--	27,500	5.1	18,500	5.2	10,500	5.2
Lead	--	235	5.1	7.7	5.2	4.2 J	5.2
Magnesium	--	7,420	40.9	6,140	41.5	5,190	41.8
Manganese	400	470	1.0	421	1.0	202	1.0
Molybdenum	400	ND	4.1	ND	4.2	ND	4.2
Nickel	1,600	13.3	6.1	13.1	6.2	18.1	6.3
Potassium	--	3,750	102	2,650	104	1,730	104
Silver	0.05	ND	4.1	ND	4.2	ND	4.2
Sodium	--	ND	102	ND	104	ND	104
Vanadium	--	51.6	3.1	33.0	3.1	19.5	3.1
Zinc	24,000	375	2.0	63.4	2.1	56.6	2.1
SW8240							
Acetone	8,000	ND	0.010	0.0057 J	0.010	0.0059 J	0.010
Methylene chloride	93	ND	0.0031	0.0014 J	0.0031	0.0013 J	0.0031
Xylenes (total)	16,000	ND	0.0051	0.0045 J	0.0052	0.0016 J	0.0052
SW8270							
Di-n-octyl phthalate	--	ND	0.25	0.42	0.25	ND	0.25
Bis(2-Ethylhexyl)phthalate	50	ND	0.27	0.76	0.27	0.56	0.27

Table 6.--Analytical results of soil samples from site 27

[Method numbers listed in table 7. Site location shown in figure 7. Values in milligrams per kilogram (dry weight) unless otherwise indicated. ---, no data; J, estimated value, below quantitation limit; ND, not detected]

Field sample identification:		KAFB270101-1		KAFB270102-1		KAFB270201-1		KAFB270202-1	
Batch identification:		031609-0003		031609-0004		031609-0005		031609-0006	
Depth (feet):		6.5 to 10.5		11.5 to 14.5		7.0 to 11.0		12.5 to 18.5	
Method number and analysis	Action level	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit
SW6010									
Aluminum	--	7,810	32.5	5,590	32.1	11,200	33.7	6,610	33.8
Barium	5,600	128	1.1	174	1.1	156	1.1	185	1.1
Beryllium	0.16	0.52	0.43	0.44	0.43	0.74	0.45	0.44 J	0.45
Cadmium	40	ND	0.54	ND	0.53	0.50 J	0.56	ND	0.56
Calcium	--	26,000	54.2	38,500	53.4	56,400	56.2	19,200	56.4
Chromium	400	6.4	4.3	6.5	4.3	9.2	4.5	6.4	4.5
Cobalt	--	5.9	4.3	4.3	4.3	6.3	4.5	4.3 J	4.5
Copper	--	6.2	2.2	9.6	2.1	7.5	2.2	8.3	2.3
Iron	--	14,300	5.4	11,300	5.3	15,300	5.6	12,000	5.6
Lead	--	5.2 J	5.4	4.0 J	5.3	6.1	5.6	4.0 J	5.6
Magnesium	--	5,670	43.4	4,020	42.8	6,930	45.0	3,240	45.1
Manganese	400	289	1.1	210	1.1	255	1.1	152	1.1
Nickel	1,600	8.6	6.5	80.3	6.4	10.7	6.7	6.2 J	6.8
Potassium	--	1,470	108	1,200	107	1,930	112	1,480	113
Sodium	--	245	108	ND	107	350	112	112 J	113
Vanadium	--	29.4	3.3	24.4	3.2	33.3	3.4	22.1	3.4
Zinc	24,000	36.6	2.2	29.0	2.1	37.5	2.2	23.9	2.3
SW8240									
1,1,1-Trichloroethane	--	ND	0.0033	ND	0.0032	0.00101 J	0.0034	ND	0.0034
1,2-Dichloropropane	--	0.00342	0.0033	ND	0.0032	ND	0.0034	ND	0.0034
Acetone	8,000	0.00573 J	0.011	ND	0.011	0.00513 J	0.011	0.00396 J	0.011
Methylene chloride	93	0.00197 J	0.0033	0.00251 J	0.0032	0.00241 J	0.0034	0.00226 J	0.0034
SW9045									
pH (pH units)	--	9.3	--	8.9	--	9.1	--	9.1	--

Table 6.--Analytical results of soil samples from site 27--Continued

Field sample identification:		KAFB270301-1		KAFB270302-1		KAFB270401-1		KAFB270402-1	
Batch identification:		031609-0007		031609-0008		031609-0017		031609-0018	
Depth (feet):		8.0 to 12.3		13.0 to 17.0		7.0 to 13.0		13.0 to 17.0	
Method number and analysis	Action level	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit
SW6010									
Aluminum	--	9,080	33.4	6,650	32.3	5,880	33.0	6,540	32.9
Barium	5,600	66.8	1.1	112	1.1	101	1.1	53.0	1.1
Beryllium	0.16	0.51	0.45	0.40 J	0.43	0.42 J	0.44	0.42 J	0.44
Calcium	--	45,700	55.6	21,700	53.8	18,000	55.0	25,500	54.8
Chromium	400	8.1	4.5	5.8	4.3	6.3	4.4	6.9	4.4
Cobalt	--	5.5	4.5	3.8 J	4.3	4.2 J	4.4	4.5	4.4
Copper	--	8.6	2.2	5.9	2.2	16.6	2.2	8.1	2.2
Iron	--	13,600	5.6	11,100	5.4	10,900	5.5	11,300	5.5
Lead	--	6.1	5.6	5.0 J	5.4	ND	5.5	5.6	5.5
Magnesium	--	6,470	44.5	3,400	43.0	4,050	44.0	3,570	43.8
Manganese	400	287	1.1	170	1.1	229	1.1	176	1.1
Nickel	1,600	9.6	6.7	6.7	6.5	7.3	6.6	8.3	6.6
Potassium	--	1,600	111	1,370	108	1,230	110	1,420	110
Sodium	--	ND	111	169	108	188	110	330	110
Vanadium	--	33.4	3.3	20.4	3.2	21.8	3.3	20.5	3.3
Zinc	24,000	34.8	2.2	23.7	2.2	28.9	2.2	25.1	2.2
SW8240									
1,1,1-Trichloroethane	--	0.00129 J	0.0033	0.00143 J	0.0032	ND	0.0033	ND	0.0033
Acetone	8,000	ND	0.011	ND	0.011	ND	0.011	0.00549 J	0.011
Methylene chloride	93	0.00197 J	0.0033	0.00188 J	0.0032	0.00176 J	0.0033	0.00107 J	0.0033
SW8270									
bis(2-Ethylhexyl)phthalate	50	ND	0.29	ND	0.28	ND	0.29	0.143 J	0.28
SW9045									
pH (pH units)	--	9.1	--	9.1	--	9.2	--	9.0	--

Table 6.--Analytical results of soil samples from site 27--Concluded

Field sample identification:		KAFB270501-1		KAFB270502-1		KAFB270503-1	
Batch identification:		031694-0003		031694-0004		031694-0005	
Depth (feet):		6.0 to 12.0		6.0 to 12.0		13.0 to 15.0	
Method number and analysis	Action level	Results	Quantitation limit	Results	Quantitation limit	Results	Quantitation limit
SW6010							
Aluminum	--	5,750	32.1	6,230	32.1	8,870	34.0
Barium	5,600	42.7	1.1	56.1	1.1	156	1.1
Beryllium	0.16	0.84	0.43	0.49	0.43	0.61	0.45
Cadmium	40	ND	0.53	0.50 J	0.54	0.38 J	0.57
Calcium	--	47,900	53.5	45,200	53.5	55,300	56.7
Chromium	400	4.8	4.3	4.1 J	4.3	7.0	4.5
Cobalt	--	4.1 J	4.3	4.2 J	4.3	7.2	4.5
Copper	--	17.5	2.1	9.5	2.1	10.1	2.3
Iron	--	10,600	5.3	10,700	5.4	13,200	5.7
Lead	--	ND	5.3	4.0 J	5.4	ND	5.7
Magnesium	--	5,210	42.8	5,730	42.8	7,530	45.4
Manganese	400	154	1.1	185	1.1	321	1.1
Nickel	1,600	6.7	6.4	7.5	6.4	60.3	6.8
Potassium	--	1,130	107	1,260	107	1,980	113
Silver	0.05	ND	4.3	ND	4.3	ND	4.5
Sodium	--	ND	107	ND	107	ND	113
Vanadium	--	29.8	3.2	29.0	3.2	31.1	3.4
Zinc	24,000	25.0	2.1	27.6	2.1	38.0	2.3
SW8240							
Acetone	8,000	0.0179 J	0.027	0.00675 J	0.011	ND	0.028
Methylene chloride	93	0.00313 J	0.0080	0.00185 J	0.0032	0.0149	0.0085
SW9045							
pH (pH units)	--	8.4	--	8.4	--	8.0	--

Table 7.--Volatile organic compounds detected in 12 trip blank samples

[Concentrations are in micrograms per liter; J, estimated value, below quantitation limit]

Constituent	Concentration		Number of reported detections	Number of reported detections above quantitation limit
	Low	High		
Acetone	6.4 J	15	3	1
Methylene chloride	1.2 J	3.1	7	1

Table 8.--Analytes detected in 15 equipment blank samples

[J, estimated value, below quantitation limit; mg/L, milligrams per liter; µg/L, micrograms per liter; --, no data]

Constituent (units)	Concentration		Number of blanks analyzed for compound	Number of reported detections	Number of reported detections above quantitation limit
	Low	High			
Aluminum (mg/L)	0.058 J	0.095 J	15	2	0
Barium (mg/L)	0.0012 J	0.0063 J	15	3	0
Calcium (mg/L)	0.14 J	0.81	15	12	1
Copper (mg/L)	0.0068 J	0.030	15	2	1
Iron (mg/L)	0.052	0.19	15	5	5
Lead (mg/L)	0.41 J	0.055 J	15	2	0
Manganese (mg/L)	0.0021 J	0.081 J	15	3	0
Mercury (mg/L)	0.00012 J	0.00014 J	15	2	0
Nickel (mg/L)	--	0.023 J	15	1	0
Sodium (mg/L)	0.90 J	3.4	15	8	7
Zinc (mg/L)	0.011 J	0.038	15	6	3
Total petroleum hydrocarbons (mg/L)	--	1.0	11	1	1
Acetone (µg/L)	4.2 J	12	12	2	1
Methylene chloride (µg/L)	1.0 J	1.4 J	12	7	0
Bis(2-Ethylhexyl) phthalate (µg/L)	2.1 J	16.7	11	6	1

Table 9.--Analytical results of duplicate samples

[J, estimated value, below quantitation limit; >, greater than; NC, not calculated. Method numbers listed in table 7. Analytes measured in milligrams per kilogram unless otherwise indicated]

Environmental sample KAFB220102-2
Duplicate sample KAFB220103-2

Property or constituent	Environmental sample	Duplicate sample	Relative percent difference
Silver (sediment)	412,000	241,000	52.37

Environmental sample KAFB250501-1
Duplicate sample KAFB250502-1

Property or constituent	Environmental sample	Duplicate sample	Relative percent difference
Aluminum	6,170	6,470	4.75
Barium	428	256	50.29
Beryllium	0.39 J	0.37 J	5.26
Calcium	88,300	71,000	21.72
Chromium	2.5 J	3.6 J	36.07
Cobalt	3.3 J	2.7 J	20.00
Copper	2.0 J	1.5 J	28.57
Fluoride	5.8	7.6	26.87
Iron	7,050	6,850	2.88
Magnesium	3,650	3,210	12.83
Manganese	92.8	87.6	5.76
Nickel	6.2 J	5.4 J	13.79
Potassium	713	759	6.25
Vanadium	20.4	19.0	7.11
Zinc	14.2	13.9	2.14
pH (pH units)	8.5	8.6	1.17

Table 9.--Analytical results of duplicate samples--Continued

Environmental sample KAFB260304-1
Duplicate sample KAFB260305-1

Property or constituent	Environmental sample	Duplicate sample	Relative percent difference
2-Methylnaphthalene	57	39	37.50
Acenaphthene	1.4 J	1.1 J	24.00
Acenaphthylene	0.49 J	0.38 J	25.29
Aluminum	6,810	8,140	17.79
Barium	125	176	33.89
Benzo(a)pyrene	0.023	0.0205	11.49
Benzo(b)fluoranthene	0.023	0.0190	19.05
Beryllium	0.48	0.52	8.00
Calcium	18,100	30,000	49.48
Chromium	10.0	10.7	6.76
Cobalt	5.9	7.7	26.47
Copper	25.2	61.1	83.20
Dibenzofuran	0.86 J	0.76 J	12.35
Fluoranthene	0.39	0.346	11.96
Fluorene, by method SW8270	2.2	1.8	20.00
Fluorene, by method SW8310	1.7	1.5	12.50
Ignitability (degrees Fahrenheit)	>160	>160	NC
Iron	14,100	17,900	23.75
Lead	26.4	13.5	64.66
Magnesium	4,890	6,180	23.31
Manganese	226	305	29.76
Naphthalene, by method SW8270	10	6.1	48.45
Naphthalene, by method SW8310	5.2	5.7	9.17
Nickel	10.9	11.1	1.82
Phenanthrene, by method SW8270	3.5	2.8 J	22.22
Phenanthrene, by method SW8310	2.9	3.25	11.38
Potassium	1,350	1,900	33.85
Total petroleum hydrocarbons	18,000	16,500	8.70
Vanadium	29.5	36.2	20.40
Xylenes (total)	4.6	6.3	31.19
Zinc	38.0	53.9	34.60
Bis(2-Ethylhexyl)phthalate	0.79 J	0.92 J	15.21

Table 9.--Analytical results of duplicate samples--Continued

Environmental sample KAFB260310-1
Duplicate sample KAFB260311-1

Property or constituent	Environmental sample	Duplicate sample	Relative percent difference
Aluminum	7,020	8,330	17.07
Barium	61.1	79.7	26.42
Beryllium	0.36 J	0.44	20.00
Calcium	9,570	12,200	24.16
Chromium	7.9	9.6	19.43
Cobalt	6.9	8.1	16.00
Copper	13.9	17.1	20.65
Ignitability (degrees Fahrenheit)	>160	>160	NC
Iron	14,600	18,700	24.62
Lead	6.1	6.8	10.85
Magnesium	5,880	7,100	18.80
Manganese	324	394	19.50
Nickel	9.7	10.7	9.80
Potassium	2,180	2,950	30.02
Vanadium	26.5	33.5	23.33
Zinc	42.2	51.5	19.85

Environmental sample KAFB260404-1
Duplicate sample KAFB260405-1

Property or constituent	Environmental sample	Duplicate sample	Relative percent difference
Aluminum	9,320	8,090	14.13
Barium	103	93.9	9.24
Beryllium	0.57	0.50	13.08
Calcium	9,900	11,300	13.21
Chromium	14.6	13.8	5.63
Cobalt	9.4	7.8	18.60
Copper	45.3	34.5	27.07
Ignitability (degrees Fahrenheit)	>160	>160	NC
Iron	28,600	21,700	27.44
Lead	76.3	30.2	86.57
Magnesium	6,000	5,130	15.63
Manganese	370	291	23.90
Methylene chloride	0.0013 J	0.0018 J	32.26
Nickel	12.9	12.5	3.15
Potassium	2,170	1,960	10.17
Total petroleum hydrocarbons	2,000	1,430	33.24
Vanadium	56.7	41.0	32.14
Zinc	51.6	43.7	16.58
Bis(2-Ethylhexyl)phthalate	0.17 J	0.13 J	26.67

Table 9.--Analytical results of duplicate samples--Continued

Environmental sample KAFB260501-1
Duplicate sample KAFB260502-1

Property or constituent	Environmental sample	Duplicate sample	Relative percent difference
Aluminum	6,480	4,720	31.43
Barium	194	205	5.51
Beryllium	0.45	0.32 J	33.77
Cadmium	1.1	0.68	47.19
Calcium	3,630	3,300	9.52
Chromium	20.0	14.6	31.21
Cobalt	5.6	4.3	26.26
Copper	13.1	10.7	20.17
Ignitability (degrees Fahrenheit)	>160	>160	NC
Iron	15,500	12,600	20.64
Lead	1,530	1,430	6.76
Magnesium	4,260	2,940	36.67
Manganese	230	155	38.96
Methylene chloride	0.0051	0.0074	36.80
Nickel	9.6	8.4	13.33
Potassium	1,860	1,110	50.51
Selenium	0.39 J	0.51 J	26.67
Total petroleum hydrocarbons	5,970	7,240	19.23
Vanadium	30.5	26.3	14.79
Zinc	201	133	40.72

Table 9.--Analytical results of duplicate samples--Continued

Environmental sample KAFB260504-1
Duplicate sample KAFB260505-1

Property or constituent	Environmental sample	Duplicate sample	Relative percent difference
2-Methylnaphthalene	8.6	7.9	8.49
Aluminum	9,640	9,360	2.95
Barium	177	156	12.61
Benzo(a)anthracene	0.219	0.237	7.89
Benzo(a)pyrene	0.0315	0.0339	7.34
Benzo(b)fluoranthene	0.0329	0.0342	3.87
Beryllium	0.58	0.59	1.71
Calcium	31,500	34,700	9.67
Chromium	9.2	10.4	12.24
Chrysene	0.106 J	0.150	34.37
Cobalt	7.1	6.7	5.80
Copper	27.4	30.3	10.05
Fluoranthene	0.369	0.405	9.30
Fluorene, by method SW8270	1.6 J	1.5 J	6.42
Fluorene, by method SW8310	0.963	1.06	9.59
Ignitability (degrees Fahrenheit)	>160	>160	NC
Iron	18,500	18,300	1.09
Lead	12.1	16.6	31.36
Magnesium	5,800	5,340	8.26
Manganese	351	298	16.33
Naphthalene, by method SW8270	1.4 J	1.2 J	15.39
Naphthalene, by method SW8310	0.696 J	0.772 J	10.35
Nickel	10.1	9.7	4.04
Phenanthrene, by method SW8270	2.8 J	2.6	7.41
Phenanthrene, by method SW8310	2.07	2.40	14.77
Potassium	2,970	2,340	23.73
Total petroleum hydrocarbons	19,500	24,500	22.73
Vanadium	35.0	35.2	0.57
Xylenes (total)	1.5	2.0	28.57
Zinc	45.3	41.0	9.97
Bis(2-Ethylhexyl)phthalate	0.91 J	0.84 J	8.00

Table 9.--Analytical results of duplicate samples--Concluded

Environmental sample KAFB260902-1
Duplicate sample KAFB260903-1

Property or constituent	Environmental sample	Duplicate sample	Relative percent difference
Aluminum	8,000	9,230	14.28
Barium	106	131	21.10
Beryllium	0.60	0.61	1.65
Calcium	11,000	12,000	8.70
Chromium	6.8	8.1	17.45
Cobalt	6.8	8.2	18.67
Copper	27.0	28.6	5.76
Ignitability (degrees Fahrenheit)	>160	>160	NC
Iron	14,100	17,600	22.08
Lead	5.7	6.5	13.11
Magnesium	5,190	5,810	11.27
Manganese	349	400	13.62
Methylene chloride	0.0068	0.0043	45.05
Nickel	9.9	11.2	12.32
Potassium	3,130	3,640	15.07
Vanadium	26.3	33.0	22.60
Zinc	43.7	48.7	10.82

Environmental sample KAFB270501-1
Duplicate sample KAFB270502-1

Property or constituent	Environmental sample	Duplicate sample	Relative percent difference
Acetone	0.0179 J	0.00675 J	90.47
Aluminum	5,750	6,230	8.01
Barium	42.7	56.1	27.13
Beryllium	0.84	0.49	52.63
Calcium	47,900	45,200	5.80
Chromium	4.8	4.1 J	15.73
Cobalt	4.1 J	4.2 J	2.41
Copper	17.5	9.5	59.26
Iron	10,600	10,700	0.94
Magnesium	5,210	5,730	9.51
Manganese	154	185	18.29
Methylene chloride	0.00313 J	0.00185 J	51.41
Nickel	6.7	7.5	11.27
Potassium	1,130	1,260	10.88
Vanadium	29.8	29.0	2.72
Zinc	25.0	27.6	9.89
pH (pH units)	8.4	8.4	0.00

Table 10.--Concentration of volatile organic compounds in standards for the gas chromatograph

[Concentrations are in micrograms per liter]

Constituent	Concentration	
	Low standard	High standard
trans-1,2-Dichloroethene	1.2	4.0
cis-1,2-Dichloroethene	9.6	32.0
Benzene	3.9	12.9
Trichloroethene	4.5	15.3
Toluene	3.8	12.6
Tetrachloroethene	8.9	29.7
m-Xylene	9.2	30.6

Table 11.--Analytical methods and sources

[Method sources: D, American Society for Testing Materials (1984); E, U.S. Environmental Protection Agency (1983); SW, U.S. Environmental Protection Agency (1986)]

Property or constituent	Method source and number	
	Soil	Water
Soil moisture content	D2216	Not applicable
Fluoride	E300	E300
Total petroleum hydrocarbons	E418.1	E418.1
Ignitability	SW1010	Not applicable
ICP screen	SW6010	SW6010
Antimony	SW7041	SW7041
Mercury	SW7471	SW7470
Selenium	SW7740	SW7740
Silver	SW7761	SW7761
Thallium	SW7841	SW7841
Volatile organic compounds	SW8240	SW8240
Semivolatile organic compounds	SW8270	SW8270
Dioxins and furans	SW8280	SW8280
Polynuclear aromatic hydrocarbons	SW8310	SW8310
Soil pH	SW9045	Not applicable

Table 12.--Method detection limits and practical quantitation limits

[Method numbers listed in table 7. NA, not applicable; mg/kg, milligrams per kilogram; mg/L, milligrams per liter; °F, degrees Fahrenheit; µg/L, micrograms per liter; µg/kg, micrograms per kilogram; ng/L, nannograms per liter]

Method number	Property or constituent	Reporting unit		Method detection limit		Practical quantitation limit	
		Soil	Water	Soil	Water	Soil	Water
ASTM D2216	Soil moisture	Percent	NA	0.1	NA	NA	NA
E300	Fluoride	mg/kg	mg/L	0.03	0.06	1	0.2
E418.1	Total petroleum hydrocarbons	mg/kg	mg/L	14	0.9	30	1
SW1010	Ignitability	°F	NA	NA	NA	NA	NA
SW6010	ICP screen:	mg/kg	mg/L				
	Aluminum			5.8	0.058	30	0.3
	Arsenic			5.7	0.057	30	0.3
	Barium			0.1	0.001	1	0.01
	Beryllium			0.1	0.001	0.4	0.004
	Cadmium			0.3	0.003	0.5	0.005
	Calcium			11	0.11	50	0.5
	Chromium			1	0.01	4	0.04
	Cobalt			0.9	0.009	4	0.04
	Copper			0.5	0.005	2	0.02
	Iron			4.8	0.048	5	0.05
	Lead			3.5	0.035	5	0.2
	Magnesium			7.8	0.078	40	0.4
	Manganese			0.2	0.002	1	0.01
	Molybdenum			0.9	0.009	4	0.04
	Nickel			1.4	0.014	6	0.06
	Potassium			100	1	100	5
	Silver			1	0.01	4	0.04
	Sodium			17	0.17	100	1
	Tin			12	0.12	50	0.5
	Vanadium			0.6	0.006	3	0.03
	Zinc			0.9	0.009	2	0.02
SW7041	Antimony	mg/kg	mg/L	1.5	0.015	2	0.02
SW7471 (soil) SW7470 (water)	Mercury	mg/kg	mg/L	0.05	0.0001	0.1	0.0002
SW7740	Selenium	mg/kg	mg/L	0.2	0.002	0.5	0.005
SW7761	Silver	mg/kg	mg/L	0.05	0.0005		
SW7841	Thallium	mg/kg	mg/L	0.2	0.002	1	0.01
SW8240	Volatile organic compounds:	mg/kg	µg/L				
	Acetone			0.00386	3.86	0.015	15
	Benzene			0.00020	0.20	0.001	1
	Bromodichloromethane			0.00021	0.21	0.001	1
	Bromoform			0.00056	0.56	0.002	2
	Bromomethane			0.00040	0.40	0.002	2
	2-Butanone			0.0022	2.2	0.009	9
	Carbon disulfide			0.00080	0.80	0.003	3
	Carbon tetrachloride			0.00030	0.30	0.001	1
	Chlorobenzene			0.00019	0.19	0.001	1
	Dibromochloromethane			0.00035	0.35	0.001	1

Table 12.--Method detection limits and practical quantitation limits--Continued

Method number	Property or constituent	Reporting unit		Method detection limit		Practical quantitation limit	
		Soil	Water	Soil	Water	Soil	Water
SW8240 (continued)	Chloroethane	mg/kg	µg/L	0.00102	1.02	0.004	4
	2-Chloroethyl vinyl ether			--[1]	--[1]	0.022	22
	Chloroform			0.00020	0.20	0.001	1
	Chloromethane			0.00058	0.58	0.002	2
	1,1-Dichloroethane			0.00038	0.38	0.002	2
	1,2-Dichloroethane			0.00035	0.35	0.001	1
	1,1-Dichloroethene			0.00059	0.59	0.002	2
	trans-1,2-Dichloroethene			0.00055	0.55	0.002	2
	1,2-Dichloropropane			0.00032	0.32	0.001	1
	cis-1,3-Dichloropropene			0.00070	0.70	0.003	3
	trans-1,3-Dichloropropene			0.00025	0.25	0.001	1
	Ethylbenzene			0.00018	0.18	0.001	1
	2-Hexanone			0.00123	1.23	0.005	5
	Methylene chloride			0.00025	0.25	0.001	1
	4-Methyl-2-pentanone			0.0012	1.2	0.005	5
	Styrene			0.00019	0.19	0.001	1
	1,1,2,2-Tetrachloroethane			0.00087	0.87	0.003	3
	Tetrachloroethene			0.00021	0.21	0.001	1
	Toluene			0.00033	0.33	0.001	1
	1,1,1-Trichloroethane			0.00029	0.29	0.001	1
	1,1,2-Trichloroethane			0.00051	0.51	0.002	2
	Trichloroethene			0.00025	0.25	0.001	1
	Vinyl acetate			0.00072	0.72	0.003	3
	Vinyl chloride			0.00042	0.42	0.002	2
	Xylenes(total)			0.00070	0.70	0.003	3
SW8270	Semivolatile organic compounds:	mg/kg	µg/L				
	Acenaphthene			0.074	2.22	0.295	9
	Acenaphthylene			0.031	0.93	0.124	4
	Anthracene			0.048	1.45	0.193	6
	Benzoic acid			--[1]	--[1]	3.200	100
	Benzo(a)anthracene			0.021	0.63	0.083	3
	Benzo(b)fluoranthene			0.067	2.02	0.269	8
	Benzo(k)fluoranthene			0.099	2.97	0.300	10
	Benzo(g,h,i)perylene			0.093	2.79	0.300	10
	Benzo(a)pyrene			0.075	2.26	0.300	9
	Benzyl alcohol			0.080	2.39	0.300	10
	bis(2-Chloroethoxy)methane			0.061	1.83	0.244	7
	bis(2-Chloroethyl)ether			0.040	1.20	0.160	5
	bis(2-Chloroisopropyl)ether			0.028	0.83	0.300	10
	bis(2-Ethylhexyl)phthalate			0.065	1.96	0.260	8
	4-Bromophenyl phenyl ether			0.063	1.90	0.253	8
	Butylbenzyl phthalate			0.072	2.17	0.289	9
	4-Chloroaniline			0.075	2.26	0.300	9
	4-Chlorophenyl phenyl ether			0.052	1.57	0.209	6
	2-Chloronaphthalene			0.068	2.03	0.270	8
	Chrysene			0.029	0.86	0.114	3
	Dibenz(a,h)anthracene			0.105	3.15	0.300	10
	Dibenzofuran			0.063	1.88	0.250	8
	Di-n-butyl phthalate			0.088	2.63	0.300	10

Table 12.--Method detection limits and practical quantitation limits--Continued

Method number	Property or constituent	Reporting unit		Method detection limit		Practical quantitation limit	
		Soil	Water	Soil	Water	Soil	Water
SW8270 (continued)	1,2-Dichlorobenzene	mg/kg	µg/L	0.038	1.14	0.152	5
	1,3-Dichlorobenzene			0.037	1.10	0.147	4
	1,4-Dichlorobenzene			0.028	0.85	0.114	10
	3,3'-Dichlorobenzidine			0.148	4.44	0.300	10
	Diethyl phthalate			0.016	0.48	1.400	48
	Dimethyl phthalate			0.020	0.59	0.720	24
	2,4-Dinitrotoluene			0.078	2.35	0.300	9
	2,6-Dinitrotoluene			0.085	2.55	0.300	10
	Di-n-octyl phthalate			0.059	1.77	0.235	7
	Fluoranthene			0.058	1.74	0.232	7
	Fluorene			0.038	1.14	0.152	5
	Hexachlorobenzene			0.119	3.58	0.300	10
	Hexachlorobutadiene			0.118	3.54	0.300	10
	Hexachlorocyclopentadiene			--[1]	--[1]	0.300	--[1]
	Hexachloroethane			0.037	1.11	0.148	4
	Indeno(1,2,3-c,d)pyrene			0.075	2.26	0.300	9
	Isophorone			0.037	1.13	0.150	5
	2-Methylnaphthalene			0.104	3.12	0.300	10
	Naphthalene			0.048	1.43	0.191	6
	2-Nitroaniline			0.020	0.59	1.600	50
	3-Nitroaniline			0.040	1.20	0.160	5
	4-Nitroaniline			0.125	3.74	1.600	50
	Nitrobenzene			0.057	1.72	0.229	7
	N-Nitrosodiphenylamine			0.110	3.31	0.300	10
	N-Nitroso-di-n-propylamine			0.027	0.82	0.300	10
	Phenanthrene			0.068	2.03	0.271	8
	Pyrene			0.061	1.85	0.246	7
	1,2,4-Trichlorobenzene			0.090	2.71	0.300	10
	4-Chloro-3-methylphenol			0.089	2.67	0.300	10
	2-Chlorophenol			0.038	1.15	0.153	5
	2,4-Dichlorophenol			0.076	2.29	0.300	9
	2,4-Dimethylphenol			0.091	2.72	0.300	10
	4,6-Dinitro-2-methylphenol			0.065	1.94	1.600	50
	2,4-Dinitrophenol			0.115	3.45	1.600	50
	2-Methylphenol			0.056	1.69	0.225	7
	4-Methylphenol			0.054	1.61	0.214	6
	2-Nitrophenol			0.063	1.90	0.253	8
	4-Nitrophenol			0.095	2.86	1.600	50
	Pentachlorophenol			0.110	3.29	1.000	30
	Phenol			0.079	2.38	0.300	10
	2,4,5-Trichlorophenol			0.105	3.16	0.421	13
	2,4,6-Trichlorophenol			0.033	1.00	0.133	4
SW8280	Dioxins and furans	µg/kg	ng/L	[2]10	[2]10		
SW8310	PAH's:	mg/kg	µg/L				
	Naphthalene			0.0054	0.45		18
	Acenaphthylene			0.0147	1.23		23
	Acenaphthene			0.0076	0.63		18
	Fluorene			0.0070	0.58		2
	Phenanthrene			0.0126	1.05		6
	Anthracene			0.0210	1.75		7

Table 12.--Method detection limits and practical quantitation limits-Concluded

Method number	Property or constituent	Reporting unit		Method detection limit		Practical quantitation limit	
		Soil	Water	Soil	Water	Soil	Water
SW8310 (continued)	Fluoranthrene	mg/kg	µg/L	0.0117	0.98		2
	Pyrene			0.0197	1.64		3
	Benzo(a)anthracene			0.0124	1.03		[3]1
	Chrysene			0.0126	1.05		1.5
	Benzo(b)fluoranthene			0.0133	1.10		[3]1
	Benzo(k)fluoranthene			0.0057	0.48		1
	Benzo(a)pyrene			0.0156	1.30		[3]1
	Dibenzo(a,h)anthracene			0.0124	1.03		[3]1
	Benzo(g,h,i)perylene			0.0128	1.07		[3]1
	Indeno(1,2,3-cd)pyrene			0.0119	0.99		[3]1
SW9045	Soil pH	pH units	NA	NA	NA	NA	NA

[1]Method detection limit is not listed because it is questionable. This isdue to chemical reactions or instability of the analyte during analysis by the specified method, resulting in erratic recoveries during tests to determine the method detection limit.

[2]Method detection limit per congener as in method SW8280.

[3]Practical quantitation limit is questionable if it is less than or equal to the method detection limit.

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