ENERGY TECHNOLOGY ENGINEERING CENTER
SIMI HILLS, CALIFORNIA

= Area 4

FEDERAL FACILITY REVIEW

PRELIMINARY ASSESSMENT/SITE INSPECTION
FINAL REPORT

Prepared For

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Waste Programs Enforcement
San Francisco, CA 94105

Work Assignment No.	:	C09055
EPA Region	:	9
Date Prepared	:	September 21, 1993
Contract No.	:	68-W9-0009
PRC No	:	012-C09055242
Prepared by	:	PRC Environmental Management, Inc.
PRC Project Manager	:	Ksenija Mikulicic
Telephone No.	:	415/543-4880

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF FIGURES

LIST OF TABLES

LIST OF TABLES (CONTINUED)

Table

FEDERAL FACILITY PRELIMINARY ASSESSMENT/SITE INSPECTION
FINAL REPORT

DATE: September 21, 1993

SUBMITTED TO: Carolyn Douglas, Federal Facilities Coordinator
U.S. Environmental Protection Agency, Region 9

PREPARED BY: Carolyn Mast, PRC Environmental Management, Inc.
San Francisco, California

THROUGH: Ksenija Mikulicic, PRC Project Manager

FACILITY: Energy Technology Engineering Center
Simi Hills, California

EPA ID NO.: CA3890090001 and CAD00629972

EPA CONTRACT: 68-W9-0009

1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA), Region 9 under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA), has requested PRC Environmental Management, Inc., (PRC) to conduct a preliminary assessment/site inspection (PA/SI) at the Energy Technology Engineering Center (ETEC) facility in Simi Hills, California.

ETEC was identified as a potential hazardous waste site and entered into the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) in 1987 (Reference 1). A PA was performed for the EPA in 1989 by Ecology and Environment (E and E). The purpose of the PA was to review existing information on the site and its environs to assess the threat(s), if any, posed to public health, welfare, or the environment and to determine if further investigation under CERCLA or SARA was warranted. After reviewing the PA, EPA decided that further investigation of ETEC would be necessary to more completely evaluate the site using EPA's Hazard Ranking System (HRS) criteria. The HRS assesses the relative threat associated with the actual or potential releases of hazardous substances from the site. The HRS is the primary method for determining a site's eligibility for placement on EPA's National Priorities List (NPL). The NPL identifies sites at which EPA may conduct remedial response actions. This PA/SI report is the result of PRC's evaluation of the submitted data.

1.1 APPARENT PROBLEM

There are 13 potential areas of contamination at ETEC. Seven of these areas have contaminant concentrations greatly exceeding background levels for a variety of substances. The seven areas of high concern are as follows:

- Old Conservation Yard (Container Storage Area)
- Radioactive Materials Disposal Facility (RMDF)
- Building 5 Coal Gasification
- Building 56 Landfill
- Building 59 Former Space Nuclear Auxiliary Systems (SNAP) Reactor Facility
- Building 133
- Building 886

Presently, Building 59 is being remediated and the Building 886 area is undergoing cleanup and is scheduled for closure.

In addition to the seven areas of high concern, there are six areas of potential contamination that require further action: The Empire State Atomic Development Authority (ESADA), the New Conservation Yard, the Southeast Drum Storage Yard, Building 20, Building 29, and Building 100 Trench.

There are 15 inactive leachfields existing in Area IV for which no information is available (Reference 2).

2.0 SITE BACKGROUND

The following sections provide the site location, description, operational history, and regulatory involvement.

2.1 LOCATION

ETEC is part of the Santa Susana Field Laboratory (SSFL). SSFL is located 29 miles northwest of Los Angeles, California, on the southeastern edge of Ventura County. SSFL is located on a plateau in the Simi Hills, east of which lie Los Angeles and the San Fernando Valley. SSFL encompasses 2,668 acres of rugged terrain (Reference 2). Figure 1 depicts a facility location map of SSFL relative to nearby communities.

SSFL is divided into four operational areas (Areas I through IV) and a buffer zone. ETEC is located in the northwest portion of SSFL in Area IV at Township 2 north, Range 17 west, and Section 24 south (34 , 14', 30.0" north latitude, 118 , 36', 12.0" west longitude). Some of the various buildings at SSFL have been considered to be solid waste management units (SWMU) as shown on Figure 2 (Reference 2).

2.2 SITE DESCRIPTION

Area IV encompasses 290 acres located in the northwest portion of SSFL; ETEC consists of approximately 90 of the 290 acres. The RMDF and Buildings 5, 20, 56, and 59 are located in Area IV outside of ETEC. Fifteen leachfields are located both at ETEC and outside of ETEC within Area IV. All other sources of concern mentioned in this report are located at ETEC (Reference 3). All of Area IV has the same EPA identification (ID) number except Building 133. Area IV's EPA ID number is CA3890090001; Building 133's EPA ID number is CAD00629972. To avoid confusion, ETEC will be referred to as Area IV throughout this report.

The legal property owner of Area IV is Rockwell International (Rockwell), which presently operates Area IV with an option contract with the Department of Energy (DOE) (Reference 2). All of Area IV is utilized under a variety of DOE contracts. Area IV's main purpose is to provide engineering development and testing of components for DOE's Liquid Metal Fast Breeder Reactor Program (Reference 2).

Buildings in active use at Area IV consist of a DOE site office, an engineering office, small scale laboratories, and the Sodium Component Test Installation (SCTI). All other test facilities are inactive and are undergoing decontamination, decommissioning, and demolition (Reference 4).

Of the approximately 800 people who work at SSFL, 120 people work at Area IV. There are no residents at Area IV (Reference 5). The nearest residence is located at the Brandise Bardin Institute, approximately 1 mile north of Area IV (Reference 6). Area IV is surrounded by a chain link fence to the west, east, and south and by sheer cliffs to the north. A security guard is on duty 24 hours a day (Reference 5).

The Brandise Bardin Institute and Sage Ranch are located in the area surrounding Area IV. The Brandise Bardin Institute, situated on 3,000 acres located to the north and northwest of Area IV, is a cultural and educational institution that houses 8 to 10 resident employees, 450 residents, and 125 day camp attendees. These populations are at their highest during the spring and summer months (Reference 6). Sage Ranch, also known as the Ahmmonson and Jordan Ranch, is situated on several hundred acres of land consisting of undeveloped native hills, an avocado orchard, and a house that

has been converted into a visitor's center (Reference 4). The avocado orchard is 3 miles north of Area IV and is approximately 100 acres in size (Reference 5). There are 2 miles of open space between the Brandise Bardin Institute and Sage Ranch properties and the Area IV boundary.

2.3 OPERATIONAL HISTORY

Area IV has been used by DOE and its predecessor agencies since 1954 and became known as Area IV in 1966 (Reference 7). Prior to 1966, DOE programs consisted mainly of nuclear reactor testing. DOE initially began operations at Area IV to form an energy program for the Atomic Energy Commission to conduct energy-related research (Reference 4). Since 1966, portions of Area IV have been used for storage, treatment, and disposal of a variety of chemicals. Other Area IV operational activities include the following:

- Sodium wastes and construction debris were burned or disposed of via exothermic reactions (Reference 2).
- Irradiated reactor fuel was prepared for reprocessing (Reference 2).
- Fuel decladding projects (a process where used nuclear material is removed from stainless steel tubes and sent off site for reprocessing) was performed (References 2 and 7).
- Coal gasification (research that developed alternative fuel supplies from coal) was performed (References 2 and 7).
- Containment of sodium metal is still occurring in underground cold traps (Reference 2).
- Storage of drums containing sodium reaction products, asbestos, hydrocarbons, and nonhazardous construction materials and equipment is presently occurring on the premises (Reference 2).

All test facilities at Area IV are undergoing decontamination, decommissioning, and demolition except SCTI, which is 1 acre in size and contains a large sodium heater that generates electricity for Southern California Edison (Reference 8).

The following provides information on the operational history of the 13 potential areas of concern at Area IV including the seven areas of high concern.

Old Conservation Yard (Container Storage Area)

The Old Conservation Yard is located in the northeastern section of Area IV covering 120,000 square feet. The yard operated from the early 1960s to the early 1980s as an unlined drum storage yard and during the 1970s was used to store hundreds of drums with unknown contents. The Old

Conservation Yard is currently inactive. Presently there are no on-going cleanup activities occurring at the Old Conservation Yard (Reference 2).

There is no analytical or inventory information available on the contents of the drums stored at the Old Conservation Yard. Radioactive and hydrocarbon-contaminated soil was removed from the Old Conservation Yard in July 1989 (Reference 2).

Radioactive Materials Disposal Facility (RMDF)

The RMDF encompasses approximately 43,560 square feet of the north-central portion of Area IV (Reference 4). Operations at the RMDF began in 1959 and involve the handling, treatment, and storage of high-activity and low-level radioactive wastes and materials. The RMDF includes Buildings 21, 22, 34, 44, 75, 621, 658, 665, 668, the RMDF drainage pond, and an inactive leachfield. The buildings at the RMDF are mainly used to manage radionuclides such as strontium-90, cesium-137, and low-level radioactive fuel. Particulate matter collected in the air filters includes uranium, plutonium, cesium-137, strontium-90, krypton-85, and promethium-147 as mixed fission products and cobalt-60 and europium-152 as activation products. Between 1978 and 1980 a variety of radioactive releases have occurred at many buildings at the RMDF (Reference 2). A tentative closure date is set for 1995 or later (Reference 2).

Activities at Building 21 within the RMDF involved the evaporation and solidification of radioactive wastes. Rinse water produced from the treatment of radioactive materials was collected from the floor drains into a 200-gallon double-lined underground storage tank (UST). The UST was removed in 1972, and its piping was removed in 1985 and 1986. There is an area of darkened asphalt outside Building 21. The darkened area is a result of a radioactive spill that was later painted over to contain the radiation. High-efficiency particulate air (HEPA) filters are on site to remove airborne radioactive particulates. Gross alpha, beta, and gamma radiation is monitored and then discharged through a 130-foot-high stack into the atmosphere. A 5-gallon container of metallic sodium was being stored within Building 21 (Reference 2).

The RMDF's Building 22 is a storage facility for high-level radioactive materials and waste and mixed waste. Presently, there is a 2-liter container of radioactive mercury and a 9-pound container of silicon oil stored within Building 22. An 8,000-gallon, double-lined UST, installed in 1987, is located on the premises. The contents of this UST is unknown (Reference 2).

The RMDF's Building 75 is also a storage facility. The building is used to store low-level radioactive waste and mixed waste and is an interim storage facility of transuranic waste. Presently radioactive waste stored at Building 75 is packaged for off-site shipment (Reference 2).

Building 621 within the RMDF is a storage area used for mixed wastes and radioactive materials used in research. During the last inspection, a 700-gallon container of waste antifreeze was also being stored in Building 621 (Reference 2).

The other buildings located at the RMDF are Building 34, Administrative and Engineering Offices; Building 44, Health Physics Services; Building 658, security; Building 665, emergency decontamination supplies storage; and Building 668, hazardous materials storage shed (Reference 2).

The RMDF drainage pond contains sediment and water and is used to collect runoff from upgradient areas in Area IV. An ambient air sampler, which monitors gamma radiation, is floated in the drainage pond. There is also an air sampler located across the ravine that samples airborne radioactivity (Reference 2). The pond has approximately a 67,500-gallon capacity (Reference 7). The drainage pond has been sealed with a coat of asphalt to prevent leakage. The pond contains an alarm system to signal when radioactive material enters the pond (Reference 2).

The RMDF leachfield, located below ground surface (bgs), operated from 1959 to 1961. The leachfield is 3,600 square feet and was used for sanitary wastewater from the radioactive waste processing area, located at the west end of Building 21. In 1961, a central sanitary sewer system for the SSFL was constructed, putting the RMDF leachfield out of operation (Reference 2). The leachfield has no runon-runoff control system (Reference 1). In 1962 or 1963, radioactive water from the RMDF processing system leaked into the RMDF leachfield. Excavation consisted of removal of 36,000 cubic feet of contaminated soil that was shipped off site as radioactive waste. In 1978, the leachfield was excavated to bedrock, the cracks were filled with tar, and the whole area was backfilled to below the original grade.

Building 5, Coal Gasification Facility

Building 5, the Coal Gasification Facility encompasses an area of 16,000 square feet and is located at the former Old Molten Salt Test Facility. The building was operational from 1958 to 1963 when it was used for conducting molten research and again from 1977 through 1981 for the gasification of coal. Coal gasification was conducted as an experiment at the facility and is no longer in operation.

The coal gasification experiment converted low sulfur coal to a gaseous form. The coal gasification, stated above, generated a "green liquor" wastewater that contained organics, sulfur compounds, and ashes. The green liquor was filtered, the ash was disposed of, the sulfur was

stripped and removed in the form of sodium sulfate, and the sodium was recycled. During operation, approximately 8,000 gallons of green liquor were generated and disposed of as hazardous waste.

Two storage tanks are located at the Coal Gasification Facility: one is an 8,000-gallon aboveground tank; the other is an UST that contains waste sodium hydroxide. Decommissioning of the area is expected in 1993 according to Rockwell (Reference 2).

There is documentation of releases from the Coal Gasification Facility. On March 16, 1979, an unknown quantity of molten salt mixed with 500 to 1,000 gallons of cyanide and metal-contaminated water spilled due to a tank overflow. The liquid was flushed into storm channels that drain into the R-2A discharge pond. Another spill occurred on February 11, 1980, consisting of several hundred gallons of sodium bicarbonate solution contaminated with coal ash. This spill was due to overfilling a storage tank. On May 7, 1981, an unknown quantity of molten salt carbonate was spilled at the Process Development Unit (PDU) due to equipment and gasket failures. The spill flushed liquid into storm channels that drain into the R-2A discharge pond (Reference 2).

Building 56 Landfill

The Building 56 Landfill is approximately 10,890 square feet in size and is located on the northwestern edge of Area IV approximately 300 feet west of Building 59. From the early 1960s to 1981, drums were stored on top of the landfill. The drums contained oils, alcohols, sodium reaction products, grease, phosphoric acid, and asbestos. In 1969, soil was brought to the landfill from the area near Building 59, the former SNAP facility, which was never built, and from the Sodium Component Test Installation (SCTI) (Reference 2). It is not known if hazardous wastes were deposited in the landfill. The drums were removed in 1981 (Reference 2).

No documentation of materials disposed of at the landfill is available (Reference 7). The landfill is not covered or contained in any way (Reference 4).

Building 59 Former Space Nuclear Auxiliary Systems (SNAP) Reactor Facility

Building 59, which encompasses 10,000 square feet, was built in 1962 as a test facility for SNAP reactors. The SNAP reactor is secured in a stainless steel vessel inside a concrete vault. The structure is located below grade and is surrounded by 100 feet of soil on all four sides. This vessel simulates space conditions and is made of high-density concrete to shield instrumentation lines and controls from the reactor. The concrete is between 2 to 4 feet thick (Reference 7).

The SNAP reactor operated on zirconium hydride fuel, which activates cobalt-60 and europium-152. During the operation of the reactor, neutrons were activated and bombarded other materials, producing primary activation products such as cobalt-60, iron-55, and europium-152 (Reference 7).

Operations at the building ceased in 1969 and decommissioning and decontamination of the facility began in 1978 when the reactor's core and sodium-potassium (NaK) systems were removed and the reactor cell pit was sealed (Reference 2). Building 59 is currently covered by asphalt (Reference 1). Although the pit was sealed, parts of the former SNAP facility became contaminated by neutrons. HEPA filters were installed to collect all radioactive particles generated during the remediation processes (Reference 2).

In 1983, it was discovered that ground water contaminated with cobalt-60 had seeped into Building 59. It was suspected that the source of contamination was the cobalt-60 from the concrete structure and steel inside Building 59 and contaminated sand in the basement of Building 59. A water management control program was implemented to maintain a positive hydraulic head outside the building to prevent any outward migration of contaminants. The leak to the basement was sealed (Reference 2).

Building 133, Sodium Burn Facility

Building 133, Sodium Burn Facility was built in 1978 and is approximately 625 square feet (Reference 4). The building is located in the northeast section of Area IV and was designed for reacting waste materials containing metallic sodium and wastes containing impurities such as NaK alloys and hydrides of alkali metals. These wastes are treated by oxidation of the sodium to produce sodium oxide. The sodium oxide fumes are absorbed by a liquid Venturi scrubber to produce sodium hydroxide, which has a pH between 12 and 13. The sodium hydroxide is taken off site for use. Drainage from the scrubber travels to a double-lined, vaulted UST, with a capacity of approximately 1,000 to 1,500 gallons. This UST replaces a former UST of the same capacity that was removed in 1987. The area on which Building 133 is located was originally a drum storage yard and was issued a Resource Conservation and Recovery Act (RCRA) permit by the California Department of Health Services (DHS) to treat and store sodium wastes (Reference 2).

The Sodium Burn Facility is considered a regulated hazardous waste management unit; therefore, the unit is still considered to be in operation. The facility's status has been inactive since 1987; however, the Sodium Burn Facility is still used when wastes need to be treated.

There have been seven reported spills at Building 133 since 1984; the maximum spill amount reported is 2,735 gallons of caustic solution. All spills were neutralized to a pH of 7. The high pH soils were removed when the original UST was excavated; however Rockwell states the pH of the soil at the Building 133 area is still high. Soil samples taken indicated a pH of 10 to 11 at the site, probably due to the sodium hydroxide leaking from the original UST (Reference 2).

Building 886

Building 886 is located in the northwestern portion of Area IV and covers an area of 43,560 square feet. There has never been a structure at the Building 886 site (Reference 7). The area is bordered by dirt roads on the south and east and large rock formations on the north and west. Building 886 was used extensively in the 1960s and 1970s for the disposal of sodium and NaK by exothermic reaction with water and other combustible materials used for reactor programs (i.e., terphenyl coolant). Some large components that were used in the reactor program were buried 15 feet west of Building 886 and were later excavated (Reference 2). The Sodium Disposal Facility consists of the concrete pool area, the upper and lower disposal ponds, and the west burial area.

The pool area is a small concrete vault open to the air and is approximately 8 to 10 feet deep and 6 to 10 feet in area. The pool area was used for initial staging of radioactive wastes and contaminated equipment. A 2-by-15-foot steel pad and a 15-by-6-foot blast shield made of 3/4-inch-thick steel were located adjacent to the pool area (Reference 2). The blast shield was installed to protect workers while removing sodium and NaK from equipment with steam lances. The steel pad protected the concrete from injury during the violent reactions of the sodium and NaK. Firearms were sometimes used to open containers to the atmosphere. A chain-link fence with a padlocked gate surrounds most of this facility. There is no secondary containment except the concrete base under the pool area (Reference 2).

Pieces of metal valving and piping that contained liquid sodium metal were reacted and treated to remove the sodium metal. Hydroxides and wastewaters were produced during these reactions. The leftover components were shipped off site. The vault has been scrabbled (top surface of concrete removed) (Reference 7).

In 1976, the Building 886 area became inactive. However, known and unknown items were left at the gate that encloses the Building 886 area and were eventually placed inside the area (Reference 2). Sodium components consisting of piping and tanks were treated and disposed of off site. The pool was drained and the walls were scrabbled (Reference 7).

Many flammable chemicals including solvents, acids, and radioactive wastes were burned or allowed to react with water in open pits. Radioactive-contaminated equipment was buried in trenches and scattered on the surface. Over time, the area was used for anything that was safe for burning but seemed undesirable for the regular trash. Terphenyl coolant was one of the compounds that was disposed of in this manner (Reference 2).

Once contamination was detected at Building 886, asphalt berms were constructed at the Building 886 area to control storm water run-on and runoff. Soil berms within the facility were originally 6 inches, then reconstructed to 24 inches. Total remediation of the area is planned for 1991 to 1992. The diversion ditches located on the west side of the facility were improved to prevent off-site migration. During the rainy season, and in compliance with Proposition 65, samples of rainwater runoff from the Sodium Disposal Area were taken and analyzed for radioactive and chemical contaminants. Results indicated no contamination was detected (Reference 2).

Zirconium hydride sacrificial slugs contaminated with 93 percent, uranium-235 from the SNAP reactor were found in test trench BPL-3. No soil samples were taken from test trench BPL-3 to determine the level of contamination.

Six Other Sources of Contamination

The ESADA facility was used between 1960 and 1968 for sodium testing. Fifty to one hundred drums containing alcohols, sodium oxide solids, and sodium hydroxide produced during sodium testing, were stored in this area. Soil samples taken in 1988 did not exceed federal levels.

The New Conservation Yard is another area of concern. This area opened in 1978 and is currently active. Nonhazardous equipment has been stored in this area since 1978, and the equipment is stored there until it is salvaged. Petroleum oil and asbestos gaskets are also stored in this area.

The Southeast Drum Storage Yard was used in the early 1960s to store 50 to 100 contaminant-filled drums. No contamination was detected in soil or water samples taken in 1989.

Building 20, the Rockwell International Hot Laboratory (RIHL), was used for reprocessing irradiated reactor fuel between 1959 and 1987. The fuel consisted of plutonium-239 through-241, americium-241, californium-252, and their fission products, cobalt-60, cesium-137, and strontium-90. Building 20 also contained radioactive-contaminated lead paint, acidic waste, and mercury. Building 20 was disassembled in 1989.

Building 29 Reactive Metal Storage Yard is a RCRA-permitted, bermed, concrete-based container storage area for radioactive, reactive, and mixed wastes. A cesium-137 capsule broke and contaminated the cell; in 1989 the cell was decontaminated. Radioactive wastes are still being stored in this storage area (Reference 2).

The Building 100 trench is 1,875 square feet in area and is located in the west-central portion of Area IV. Building 100 refers to a location not a building (Reference 7). Between 1960 and 1966 the Building 100 trench was used for the burning and disposal of construction materials and possibly hazardous substances. In 1971 this site was paved over, and Buildings 462 and 463 were built at this location. Runoff from the Building 100 area is collected in a concrete-lined ditch. There is no information on the types of waste disposed of at this location. Aerial photos taken between 1961 and 1967 show heavy soil staining, which is possibly due to petroleum hydrocarbons (Reference 2).

2.4 REGULATORY INVOLVEMENT

Area IV possesses a National Pollutant Discharge Elimination System (NPDES) permit that regulates two discharge points at the southern boundary of SSFL (Reference 2). These discharge points, which service the entire SSFL facility, are located at the end of the buffer zone on the south side of SSFL, 1/2 mile south of Area IV. Area IV discharges storm water and industrial wastewaters to these discharge points (Reference 8). The waste stream is permitted to contain the following NPDES levels and concentrations:

Analyte	MCL
Arsenic	0.05 milligrams per liter (mg/L)
Biochemical oxygen demand	30 mg/L
Boron	1.0 mg/L
Chloride	150 mg/L
Fluoride	1.0 mg/L
Oil and grease	15 mg/L
pH	6.0 to 9.0 pH units
Residual chlorine	0.1 mg/L
Settleable solids	0.3 mg/L
Sulfate	300 mg/L
Surfactants	0.5 mg/L
Temperature	100 degrees Fahrenheit (°F)
Total dissolved solids	950 mg/L
Total suspended solids	not stated
Turbidity	5.0 nephelometric turbidity units (NTU)

There are five designated points off Area IV that will become future NPDES discharge points (Reference 8).

The Compliance Monitoring and Enforcement Database did not reflect any violations when accessed using the EPA ID number (Reference 9). There have been a few minor exceedences of the MCLs in the summer months due to high pH and algae levels (Reference 8).

Air emissions at Area IV are monitored by the Ventura County Air Resources Quality Control Board. Area IV possesses a permit, and according to Rockwell there have been no exceedences (Reference 10).

EPA and DHS perform a comprehensive environmental investigation of Area IV yearly. The most current investigation was performed in October and November 1991. Area IV is presently undergoing a RCRA Facility Assessment (RFA) by EPA and DHS (Reference 4).

The Los Angeles Regional Water Quality Control Board (RWQCB) has issued a cleanup and abatement order for Building 886. This order is in compliance with the California Toxics Pits Cleanup Act and states that the building must be closed by December 31, 1992 (Reference 1).

3.0 INVESTIGATIVE EFFORTS

The following sections describe sampling events and results.

3.1 PREVIOUS SAMPLING

Numerous investigations have occurred at Area IV. From 1988 to 1989, soil sampling was performed by Rockwell at the Old Conservation Yard, RMDF, and Building 133. In 1990, soils, surface water, and ground water at Building 886's lower pond were sampled by Ground Water Resources, Inc. (GWR). Also in 1990, a radiation study of soils and ground water in the vicinity of the Old Conservation Yard, Building 59, and Building 886 was performed by GWR. From 1990 to 1991, ground-water sampling was performed throughout Area IV by GWR. In 1991, soil sampling was performed in the vicinity of Building 5 by GWR.

3.2 SAMPLING

The following sections describe the sampling performed at Area IV.

3.2.1 Purpose and Description of Sampling Event

The 1988 to 1989 soil sampling event was performed by Rockwell at the Old Conservation Yard, RMDF, and Building 133 to assess the degree of soil contamination by volatile organic compounds (Reference 11).

The 1990 soil sampling, surface-water sampling, and ground-water sampling events were performed by GWR at the lower pond of Building 886 to determine the extent of soil contamination from volatile organic compounds, non-volatile organic compounds, and metals; and the extent of ground-water and surface-water contamination from volatile organic compounds (Reference 12).

The 1990 soils and ground-water radiation event was performed by GWR in the vicinity of the Old Conservation Yard, Building 59, and Building 886 to assess the degree of radioactivity from cesium-137, uranium-234, uranium-235, uranium-238, radium-226, radium-228, polonium-210, thorium-228, thorium-230, thorium-232, and lead-210 (Reference 13).

The 1990 to 1991 ground-water sampling event was performed by GWR at Area IV to determine the extent of ground-water contamination from cis-1,2-dichloroethylene (cis-1,2-DCE), trichloroethylene (TCE), and tritium (Reference 14).

The 1991 soil sampling event was performed by GWR at Building 05 to assess the extent of soil contamination from polynuclear aromatics (PNA) and metals (Reference 15).

3.2.2 Discussion of Sample Results

Old Conservation Yard

In the 1988 to 1989 soil sampling event, samples OLD CONS-1 though OLD CONS-6 were taken at depths of 0.0 to 3.5 feet bgs. No background samples were taken. The following contaminants were detected: fluoranthene, chrysene, phenanthrene, pyrene, total xylenes, 2-butanone, toluene, methylene chloride, acetone, and elevated levels of hydrocarbons (Reference 11). Methylene chloride and acetone are considered common laboratory contaminants and are not evaluated. Table 1 presents the concentrations of these contaminants.

In the 1990 soil and ground-water radiation sampling event, ground water was sampled at well RD-14 and the results were less than three times background. RD-14 and all background wells draw from the Chatsworth Formation aquifer. Data from the 1990 ground-water radiation sampling event is presented in Table 2, while background data for wells WS-13D, OS-16, OS-16D, and OS-

21 is presented in Table 3. No radionuclide soil sampling was done in the vicinity of the Old Conservation Yard (Reference 13).

In the 1990 to 1991 ground-water sampling event, ground water was sampled at well WS-SP. Well WS-SP, located adjacent to the Old Conservation Yard, is 203 feet deep and draws from the Chatsworth Formation aquifer. Background samples taken in the Chatsworth Formation aquifer were all non-detected. TCE was detected in a sample from well WS-SP. Tables 4 and 5 present ground-water sampling data and ground-water background data, respectively. No samples were taken at the Old Conservation Yard from the shallow zone aquifer (Reference 14).

Radioactive Materials Disposal Facility

In the 1988 to 1989 soil sampling event, samples RMDF-1 through RMDF-6 were taken at a range of 0.0 to 0.5 feet bgs. No background samples were taken. The following contaminants were detected: methylene chloride, toluene, total xylenes, 2-butanone, ethylbenzene, bis (2-ethylhexyl) phthalate, butyl benzyl phthalate, di-n-butyl phthalate, and di-n-octyl phthalates. Methylene chloride and phthalates are common laboratory contaminants and were not evaluated (Reference 11). Table 1 presents the sample results.

In the 1990 to 1991 ground-water sampling event, ground water was sampled at wells RD-27 and RD-30. Wells RD-27 and RD-30 located in the vicinity of the RMDF, are 150 and 75 feet deep, respectively, and draw from the Chatsworth Formation aquifer. Background samples taken in the Chatsworth Formation aquifer area were all nondetected. Both TCE and cis-1,2-DCE were undetected in a sample from well RD-27. TCE was detected in a sample from well RD-30. Well RD-27 is also in the vicinity of the RMDF and revealed tritium activity at 90.2 + 197 Pci/L which is more than three times background -39.9 picocuries pCi/L. The Chatsworth Formation aquifer radiation sampling for the RMDF is shown in Table 4 and on Figure 3. The background samples are in Table 5. There were no shallow zone aquifer samples taken at the RMDF (Reference 14).

Building 5, Coal Gasification Building

In the 1990 to 1991 ground-water sampling event, ground water was sampled at well RD-17. Well RD-17, located in the vicinity of Building 5, is 125 feet deep and draws from the Chatsworth Formation aquifer. Background samples taken in the Chatsworth Formation aquifer area were all nondetected. TCE was detected in a sample from well RD-17. Table 4 provides the sampling data for well RD-17. Table 5 provides the background ground-water data. No shallow zone aquifer sampling was performed in the vicinity of Building 05 (Reference 14).

In the 1991 soil sampling event, soil samples PDU-1, PDU-2, and PDU-3 were taken at Building 5 at depths of 1.8, 4.8, and 1.5 feet bgs, respectively. The background sample, BG-1, was taken between 0.0 and 1.0 foot bgs. All samples were either undetected or were detected at levels less than three times background. Table 6 presents the inorganics data. Table 7 provides a list of results for PNA and cyanide in soil (Reference 15).

Building 56 Landfill

In the 1990 to 1991 ground water sampling event, ground water was sampled at wells RD-7 and RD-20. Wells RD-7 and RD-20, located in the vicinity of Building 56 Landfill, are 300 and 127 feet deep, respectively, and draw from the Chatsworth Formation aquifer. Background samples taken in the Chatsworth Formation aquifer were all nondetected. TCE and cis-1,2-DCE were detected in a sample from well RD-7. TCE was also detected in a sample from well RD-20. Well RD-28 is 150 feet deep and draws from the Chatsworth Formation aquifer. Samples taken from well RD-28 detected tritium at 567 + 232 pCi/L which is well above three times background -39.9 pCi/L. Table 4 and Figure 3 provide sampling data, and Table 3 presents background data. The shallow zone aquifer was not sampled in this area (Reference 14).

Building 59, Former Space Nuclear Auxiliary Systems Reactor Facility

In the 1990 soil and ground-water radiation sampling event, ground water was sampled at well RS-28 which draws from the shallow zone aquifer. The background wells OS-16, OS-16D, and OS-21 all draw from the Chatsworth Formation aquifer area. There are no background wells in the shallow zone aquifer. Table 2 displays the sampling results and Table 3 displays the background results. No soil samples were taken in the vicinity of Building 59 (Reference 13).

In the 1990 to 1991 ground-water sampling event, ground water was sampled at wells RD-25, RD-29, and RS-27. Wells RD-25 and RD-29, located near Building 59, are 175 and 100 feet deep, respectively, and draw from the Chatsworth Formation aquifer. Well RS-27, located near Building 59, is 9 feet deep and draws from the shallow zone aquifer area. Background samples taken in the Chatsworth Formation aquifer were all nondetected. There are no background wells in the shallow zone aquifer. Cis-1,2-DCE was detected in a sample from well RD-25. TCE was detected in a sample from well RD-29. Both TCE and cis-1,2-DCE were undetected in a sample from well RS-27 (Reference 14).

Building 133

In the 1988 to 1989 soil sampling event, samples B-133-1 through B-133-6 were taken at depths of 0.0 to 9.0 feet bgs. No background samples were taken. The following contaminants were detected: 2-butanone, acetone, di-n-butyl phthalate, total xylenes and elevated levels of hydrocarbons. Acetone and phthalates are common laboratory contaminants and are not evaluated (Reference 11). Table 1 presents the sampling results.

In the 1990 to 1991 ground water sampling event, ground water was sampled at wells RD-17, RD-19, and RD-30. Wells RD-17, RD-19, and RD-30, located in the vicinity of Building 133, are 125, 135, and 75 feet deep, respectively, and draw from the Chatsworth Formation aquifer. Background samples taken in the Chatsworth Formation aquifer were all nondetected. TCE was detected in samples from wells RD-17, RD-19, and RD-30. In addition, cis-1,2-DCE was detected in a sample from well RD-30. samples taken from well RD-17 detected tritium at 108 + 199 pCi/L which is above three times background. Average background tritium levels were -39.9, as shown on Figure 3 (Reference 14). Refer to Tables 4 and 5 for sample and background results.

Building 886

The 1990 sampling event performed at Building 886's lower pond detected bis (2-ethylhexyl) phthalate in surface water. No background samples were taken for surface water. Bis (2-ethylhexyl) phthalate is considered a common laboratory contaminant and is not evaluated. Refer to Table 8 for surface-water data.

The 1990 sampling event performed on soils at Building 886's lower pond detected numerous volatile organic and metal contaminants. No background soil samples were taken. The following volatile organic compounds were detected in soils at Building 886's lower pond: carbon tetrachloride, 1,1-dichloroethane, 1,1-dichloroethylene, trans-1,2-DCE, ethyl benzene, freon-113, 1,1,1-trichloroethane, TCE, tetrachloroethylene, toluene, and total xylenes. The analytical results indicate greater contamination from volatile organics at deeper depths. Figure 4 shows volatile organic compounds detected in soils at Building 886's lower pond. The following metals were also detected in the soils at Building 886's lower pond: arsenic, barium, cadmium, chromium, lead, mercury, and selenium. Table 9 presents results for metal analysis of soil samples from Building 886's lower pond.

The 1990 sampling event performed on ground water at Building 886's lower pond detected numerous volatile organic contaminants. The following contaminants were detected in samples from well RS-18, which draws from the shallow zone aquifer: chloroform, 1,1-dichloroethane, 1,1-dichloroethylene, cis-1,2-DCE, trans-1,2-dichloroethylene (trans-1,2-DCE), 1,1,1-trichloroethane,

TCE, and toluene. Due to poor correlation of sample and duplicate sample results for toluene, toluene is not evaluated. There was no background sampling of the shallow zone aquifer. The following contaminants were detected in samples from wells RD-21, RD-22, and RD-23, which draw from the Chatsworth Formation: benzene, carbon tetrachloride, chloroform, cis-1,2-DCE, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethylene, trans-1,2-DCE, 1,1,1-trichloroethane, TCE, and toluene. Samples taken from background wells OS-2 and OS-5, which draw from the Chatsworth Formation aquifer, detected chloroform, chloromethane, 1,2-dichloroethane, and TCE. Analytical results for wells RD-21, RD-22, and RD-23 which also draw from the Chatsworth Formation aquifer were greater than three times background levels for 1,2-dichloroethane and TCE, but less than three times background for chloroform (Reference 12). Tables 10 and 11 present the sampling and background data.

In the 1990 soils and ground-water sampling for radionuclides, soil sample NE-1 was collected from surface soils at Building 886; results for soil sample NE-1 were below background levels. Radiological data is shown in Tables 2 and 12. Ground-water radionuclide sampling was not performed at Building 886 (Reference 13).

In the 1990 to 1991 groundwater sampling event, ground water was sampled at wells RD-21, RD-22, RD-23, and RS-18. Wells RD-21, RD-22, and RD-23, located in the vicinity of Building 886, are 175, 127, and 440 feet deep respectively, and draw from the Chatsworth Formation aquifer. Well RS-18, also located near Building 886, is 6 feet deep and draws from the shallow zone aquifer. The samples taken from well RD-21 detected TCE at 900 ug/L and tritium at 182 + 202 pCi/L; the sample from well RD-22 detected tritium at 116 + 198 pCi/L; and the sample from well RD-23 detected TCE at 68 ug/L, cis-1,2-DCE at 6 ug/L, and tritium at 88.3 + 206 pCi/L. Tritium is more than three times the mean background level, which is -39.9 pCi/L (Reference 14). Background samples taken in the Chatsworth Formation aquifer were all nondetected. There was no background sampling of the shallow zone aquifer. TCE was detected in samples from wells RD-21, RD-23, and RS-18. In addition, cis-1,2-DCE was detected in a sample from well RD-23. Table 4 shows sampling data for TCE and cis-1,2-DCE; Table 5 shows background sampling data (Reference 14).

4.0 HAZARD RANKING SYSTEM FACTORS

The following sections describe the sources of contamination and migration or exposure pathways.

4.1 SOURCES OF CONTAMINATION

Old Conservation Yard

The Old Conservation Yard has an area of contaminated soil approximately 120,000 square feet. Soil samples detected elevated levels of fluoranthene, chrysene, phenanthrene, pyrene, total xylenes, 2-butanone, and toluene. Ground-water samples detected elevated levels of TCE.

Radioactive Materials Disposal Facility

The RMDF is a surface impoundment approximately 3,924 square feet. The area being evaluated at the RMDF consists of the RMDF leachfield and the RMDF pond. Soil samples detected elevated levels of toluene, total xylenes, 2-butanone, and ethylbenzene. Ground-water samples detected elevated levels of TCE and tritium.

Building 5 Coal Gasification Building

Building 5 has an area of contaminated soil that is approximately 16,000 square feet in size. Soil samples did not detect any chemicals of concern above background levels. However, ground-water samples detected TCE at elevated levels.

Building 56 Landfill

Building 56 is a surface impoundment and is approximately 10,890 square feet in size. No information was available on soil data. However, ground-water samples detected elevated levels of TCE, cis-1,2-DCE, and tritium.

Building 59, Former Space Nuclear Auxiliary Systems Reactor Facility

Building 59 has an area of contaminated soil of approximately 10,000 square feet. Soil samples did not detect any chemicals of concern above background levels. However, ground-water samples detected elevated levels of TCE and cis-1,2-DCE.

Building 133

Building 133 has an area of contaminated soil approximately 625 square feet in size. Soil samples detected elevated levels of 2-butanone and total xylenes. Ground-water samples detected elevated levels of TCE, cis-1,2-DCE, and tritium.

Building 886

For the proposes of scoring Building 886 has been considered a surface impoundment because the lower pond is the major area of concern. The lower pond has an approximate area of 8,250 square feet. Soil samples detected PCB 1254, freon 113, tetrachloroethene, 1,1,1-trichloroethane, TCE, carbon tetrachloride, 1,1-dichloroethane, 1,1-dichloroethylene, trans-1,2-DCE, ethyl benzene, toluene, total xylenes, arsenic, barium, cadmium, chromium, lead, selenium, and mercury at elevated levels. Ground-water samples detected 1,1-dichloroethane, 1,1-dichloroethene, trans-1,2-dichloroethylene, 1,2-dichloroethane, 1,1,1-trichloroethane, TCE, carbon tetrachloride, cis-1,2-DCE, toluene, benzene, and tritium at elevated levels.

4.2 GROUND-WATER PATHWAY

The following sections describe components of the ground-water pathway.

4.2.1 Hydrogeologic Setting

Two ground-water systems are present at Area IV; a shallow ground-water system exists in the surficial alluvium and the underlying zones of weathered sandstones and siltstones, and a deeper ground-water system exists in the fractured Chatsworth Formation. Surface runoff may be stored and transferred from the shallow ground-water system to the underlying Chatsworth Formation aquifer (Reference 2).

The shallow zone aquifer is made up of unconsolidated sand, silt, and clay eroded from surrounding formations. The saturated portion of the shallow zone aquifer can be as thick as 20 feet at SSFL. Depth to ground water in the shallow zone aquifer ranges from 2 to 35 feet bgs depending on season and location. Ground water moves laterally and downward in the aquifer (Reference 2).

The Chatsworth Formation aquifer is a highly fractured and jointed aquifer made up of bedded sandstone with interbeds of siltstones and claystone in the vicinity of Area IV. Most fractures are believed to be vertical or near vertical. This formation is at least 6,000 feet thick at any randomly selected location (Reference 2). The shallow zone aquifer and the Chatsworth Formation aquifer are interconnected (Reference 4).

Area IV pumps large quantities of ground water from the Chatsworth Formation aquifer for industrial purposes. This large withdraw of ground water from the Chatsworth Formation aquifer

has a great impact on ground-water levels and movement at Area IV. Vertical ground-water movement also occurs due to the fractured nature of the Chatsworth Formation (Reference 2).

There are few drinking water wells located near the site. The shallow zone aquifer contains unpotable water; no drinking water wells draw from the shallow zone aquifer. All drinking water wells near the site draw from the deeper Chatsworth Formation aquifer (Reference 2).

4.2.2 Ground-Water Targets

There are seven drinking water wells and 12 irrigation wells within a 4 mile radius of the Area IV that draw from the Chatsworth Formation aquifer. Since all drinking water wells draw from the Chatsworth Formation aquifer, the Chatsworth Formation aquifer is the aquifer of concern. The nearest drinking water well is located 0.38 miles from Building 886. All the irrigation wells have a drinking water spigot attached to them; thus, it can be assumed that the irrigation wells are occasionally used for drinking water purposes. Because the area directly adjacent to SSFL is unpopulated, the number of water wells in the area is very small (Reference 16).

The communities surrounding the SSFL receive their water from the Simi Valley Water Company and the Southern California Water Company (Reference 18). The water is purchased from the Metropolitan Water District and other water companies and is supplied to the district by the Sacramento Delta project composed of the American River and Feather River Districts (Reference 7).

A 100-acre commercial avocado orchard for which ground water is used for irrigation, is located 3 miles from Area IV (Reference 5). There is no well-head protection area in the vicinity of Area IV (Reference 17).

4.2.3 Ground-Water Pathway Conclusions

Ground-water sampling has indicated levels of TCE, cis-1,2-DCE, tritium, 1,1-dichloroethane, 1,1-DCE, trans-1,2-DCE, 1,2-dichloroethane, 1,1,1-trichloroethane, carbon tetrachloride, toluene, and benzene at above background levels at Area IV. Since there are 19 wells within a 4-mile radius of the site, these contaminants pose a drinking water threat to the approximately 57 people that drink the ground water.

4.3 SURFACE-WATER PATHWAY

The following sections describe the components of the surface-water pathway.

4.3.1 Hydrologic Setting

Area IV is located on a relatively level area of the Simi Hills that compose the transverse ranges of California and consist mainly of rugged terrain with a relief of approximately 600 feet. Bell Creek, which begins approximately 2 miles south of Building 886, is located outside the surface-water target distance limit. Runoff from Area IV drains toward Meir and Runkle Creeks (Reference 2). Meir Creek begins 0.42 miles north of the RMDF leachfield and contains a variable amount of water depending on the season. Meir Creek flows approximately 3.5 miles before connecting to Arroyo Simi. Arroyo Simi flows 25 miles from Meir Creek into the Pacific Ocean near Point Mugu. Arroyo Simi is an unimproved channel containing a rock slide protection area with bank stabilizers and a few isolated concrete channels (Reference 20). Meir Creek, Runkle Creek, and Arroyo Simi are all intermittent waterways (Reference 19).

Surface-water overland flow does not occur at Area IV except in times of rainfall. Area IV is not in a flood plain (Reference 19). The 2-year, 24-hour rainfall is 3.13 inches based on data from 1960 to 1990 (Reference 19).

4.3.2 Surface-Water Targets

There are no known drinking water intakes in the surface-water target distance limit. Meir Creek is not used for commercial livestock, commercial agriculture, or recreation. The riparian habitat at Meir Creek qualifies as a wetland (Reference 21). The riparian area stretches 50 to 75 feet from the center of the creek on each side (Reference 6). Even though Meir Creek is intermittent, it does contain water at least 7 days a year. Because of the lack of water, there is limited wildlife. The wetlands are approximatly 25 miles in length (Reference 20).

The Least Bell's vireo (*vireo bellii pusillus*), a federal endangered species, may be present in the vicinity of SSFL. The southwestern pond turtle (*clemmys marmorata pallida*), the conejo buckwheat (*erigonum crocatum*), Braunton's milk-vetch (*astragalus brauntonii*), and the Santa Susana tarweed (*hemizonia minthornii*), all of which are federal candidate endangered species, may also be found in the vicinity of SSFL (Reference 22).

The federally listed southern bald eagle, prairie falcon, and American peregrine falcon are endangered migratory species. These birds are not known to use any of the land around SSFL (Reference 23), but, according to previous reports, have been sited in the area.

4.3.3 Surface-Water Pathway Conclusions

The only surface-water sampling performed was at Building 886's lower pond, a surface impoundment. Elevated levels of bis (2-ethylhexyl) phthalate were detected; however, phthalates are common laboratory contaminants and are not evaluated. There has been no surface-water sampling of Meir or Runkle Creeks or of Arroyo Simi to determine if a release of contaminants to surface water has occurred. There is potential for release to surface water due to the lack of source containment at Area IV and the gravitational flow of any runoff into Meir Creek, where endangered species reside in the wetlands.

4.4 SOIL EXPOSURE AND AIR PATHWAY

The following sections describe the components of soil exposure and the air pathway.

4.4.1 Physical Conditions

With two exceptions, all the sources at Area IV are either roofed or the area is completely paved with asphalt. Building 56 is exposed to the atmosphere. Building 886 has exposed contaminated soil that is being remediated in accordance with its closure plan. Area IV has a light vegetative cover, although a Rockwell employee states otherwise (Reference 1).

Air emissions at Area IV are regulated by the Ventura County Air Quality Control Board. Area IV possesses a permit for air emissions and remains within the permit limitations (Reference10).

No humans live within 200 feet of any source, however 120 people work throughout the 90-acre Area IV site. A chain-link fence encompasses Area IV on three-fourths of its perimeter. The remaining one-fourth of Area IV's perimeter is bordered by a sheer cliff (Reference 5). Cattle from the Brandise Bardin Institute have been seen on Area IV property, however, indicating accessibility of the site (Reference 2).

4.4.2 Soil and Air Targets

No residents exist within 200 feet of any source, no commercial agriculture, silviculture, livestock production, or grazing on Area IV property exists and no sensitive environments are located within the target distance limit.

The following table provides population data for target distance limits surrounding Area IV.

Distance (miles)	Total Population within distance ring
0 (On the source)	120 (Workers at Area IV)
> 0 to 0.25	340 (Workers at SSFL)
> 0.25 to .5	340 (Workers at SSFL)
> 0.5 to 1	585 (Brandise Bardin Institute)
> 1 to 2	69,214 (Population data)
> 2 to 3	134,127 (Population data)
> 3 to 4	220,916 (Population data)

4.4.3 Soil Exposure and Air Pathway Conclusions

All present emissions to air at Area IV are within regulatory limits as imposed by the Ventura County Air Quality Control Board (Reference 10).

The soil samples showed elevated concentrations of PCB 1254, freon 113, carbon tetrachloride, 1,1-dichloroethane, 1,1-dichloroethylene, trans-1,2-DCE, ethyl benzene, tetrachloroethylene, 1,1,1-trichloroethane, TCE, 2-butanone, toluene, total xylenes, ethylbenzene, fluoranthene, chrysene, pyrene, arsenic, cadmium, chromium, barium, selenium, lead, and mercury. Either no background soil samples were taken or these chemicals of concern were above background concentrations. These elevated levels of contaminants pose a threat to workers, nearby residents, and endangered and threatened species.

5.0 EMERGENCY RESPONSE CONSIDERATIONS

The National Contingency Plan [40 CFR 300.415 (b) (2)] authorizes the EPA to consider emergency response actions at those sites that pose an imminent threat to human health or the environment. Based on the available information, a referral to EPA's Region 9 Emergency Response Section does not appear to be necessary (Reference 4).

- The SSFL has its own fire department.
- There are no areas of imminent or substantial endangerment at SSFL.
- There are no measures which would necessitate a removal emergency action.

6.0 CURRENT CONDITION OF THE SITE

Presently EPA and DHS are performing a RCRA facility assessment (RFA) at SSFL. The RFA will include a file search to gather all pertinent information, a visual site inspection to

determine what potential problems are present, and a sampling program to gather analytical data on releases from SWMUs or other areas of concern.

Building 886 is scheduled for closure in 1992 (Reference 2).

7.0 SUMMARY

Energy Technology Engineering Center (ETEC), referred to as Area IV in this document, is located in Simi Hills, California, and is situated on 290 acres of the Santa Susana Field Laboratory (SSFL). Area IV is operated by Rockwell International under contract with the Department of Energy. Operations consist of storage and disposal of sodium, radionuclides, and other hazardous compounds. The majority of activity at the facility has ceased, but hazardous waste contamination remains. Sources at Area IV include the following.

The Old Conservation Yard, unlined and uncontained, was operational between the 1960s and 1970s as a drum storage yard for hundreds of drums whose contents are unknown. Currently the Old Conservation Yard in inactive and is not undergoing any cleanup activities.

The Radioactive Materials Disposal Facility began operations in 1959 and activities involved handling, treatment, and storage of high-activity and low-level radioactive wastes and materials. A tentative closure date is set for 1995 or later.

Building 5, the Coal Gasification Facility, was used for molten salt research between 1958 and 1963, and was used for the gasification of coal from 1977 through 1981. The Coal Gasification Facility is no longer in operation and is scheduled for closure in 1993.

Building 56 Landfill was used to store drums from the early 1960s to 1981. In 1969, soil was brought to the landfill from the area near Building 59, and from the Sodium Component Test Installation. No documentation of materials disposed of at the landfill is available. The landfill is not covered in any way.

Building 59, the Former Space Nuclear Auxiliary Systems Reactor Facility, was built in 1962. Operations at the facility ceased in 1969 and decommissioning and decontamination began in 1978.

Building 133, the Sodium Burn Facility, was built in 1978 and was designed for reacting waste materials containing metallic sodium as well as wastes containing impurities such as sodium-potassium alloys and hydrides of alkali metals. The facility is still used when wastes need to be treated.

Building 886 was used extensively in the 1960s and 1970s as a sodium and sodium-potassium (NaK) disposal area. These compounds were disposed of by an exothermic reaction with water and combustible materials used for reactor programs. In 1976, Building 886 became inactive. Known and unknown materials were left at the gate to the Building 886 area and eventually placed inside the Building 886 area.

Area IV possess an National Pollutant Discharge Emission System (NPDES) permit, a Part B permit, and an air emissions permit from the Ventura County Air Quality Control Board. Area IV has remained within the permits' regulatory levels set for California. Area IV is presently undergoing a Resource Conservation Recovery Act (RCRA) Facility Assessment by the U.S. Environmental Protection Agency (EPA) and the Department of Health Services (DHS). The Los Angeles Regional Water Quality Control Board has issued a cleanup and abatement order for Building 886 that is in compliance with the California Toxics Pits Cleanup Act, which states that Building 886 must be closed by December 31, 1992 (Reference 1).

The pertinent Hazard Ranking System (HRS) factors for the site are as follows:

- Fifty seven humans who drink water from drinking water wells may be subject to actual contamination from ground water containing volatile organics and tritium.
- The 100-acre avocado orchard, at which ground water is used for irrigation purposes, may be subject to actual contamination from ground water containing volatile organics and tritium.
- The Least bell's vireo, southwestern pond turtle, conejo buckwheat, Braunton's milk-vetch, and the Santa Susana tarweed, may be subject to potential contamination from surface water containing volatile organics, non-volatile organics, and metals.
- Wetlands may be subject to potential contamination from surface water containing volatile organics, non-volatile organics, and metals.
- The 120 workers at Area IV may be subject to actual contamination from soil and air containing volatile organics, non-volatile organics, and metals.
- The 680 workers at other areas of the SSFL may be subject to potential contamination from soil and air containing volatile organics, non volatile organics, and metals.
- Since a fence does not exist around the entire Area IV, wandering livestock may be subject to actual contamination from soil and air containing volatile organics, non volatile organics, and metals.
- A population of 585 humans either live or frequent the area within mile of Area IV and may be subject to potential contamination from soil and air containing volatile organics, non volatile organics, and metals.

- A population of 220,916 humans reside within 4 miles of Area IV and may be subject to potential contamination from air containing volatile organics, non volatile organics and metals.

All of the pertinent HRS factors mentioned have contaminant concentrations above background.

REMEDIAL SITE ASSESSMENT DECISION - EPA REGION 9

Site Name: Energy Technology Engineering Center EPA ID#: CA3890090001 & CAD006299732

Alias Site Names: N/A

City: Simi Hills County or Parish: Ventura State: CA

Refer to Report Dated: _____ Report type: Preliminary Assessment

Report developed by: PRC Environmental Management, Inc.

DECISION:

| | 1. Further Remedial Site Assessment under CERCLA (Superfund) is not required because:

| | 1a. Site does not qualify for further remedial site assessment under CERCLA (Site Evaluation Accomplished - SEA)

| | 1b. Site may qualify for further action, but is deferred to: | | RCRA | | NRC

| | 2. Further Assessment Needed Under CERCLA: 2a. (optional) Priority: | | Higher |X| Lower

2b. Activity Type: | | PA | | SI | | ESI | | HRS evaluation

| | Other: _____

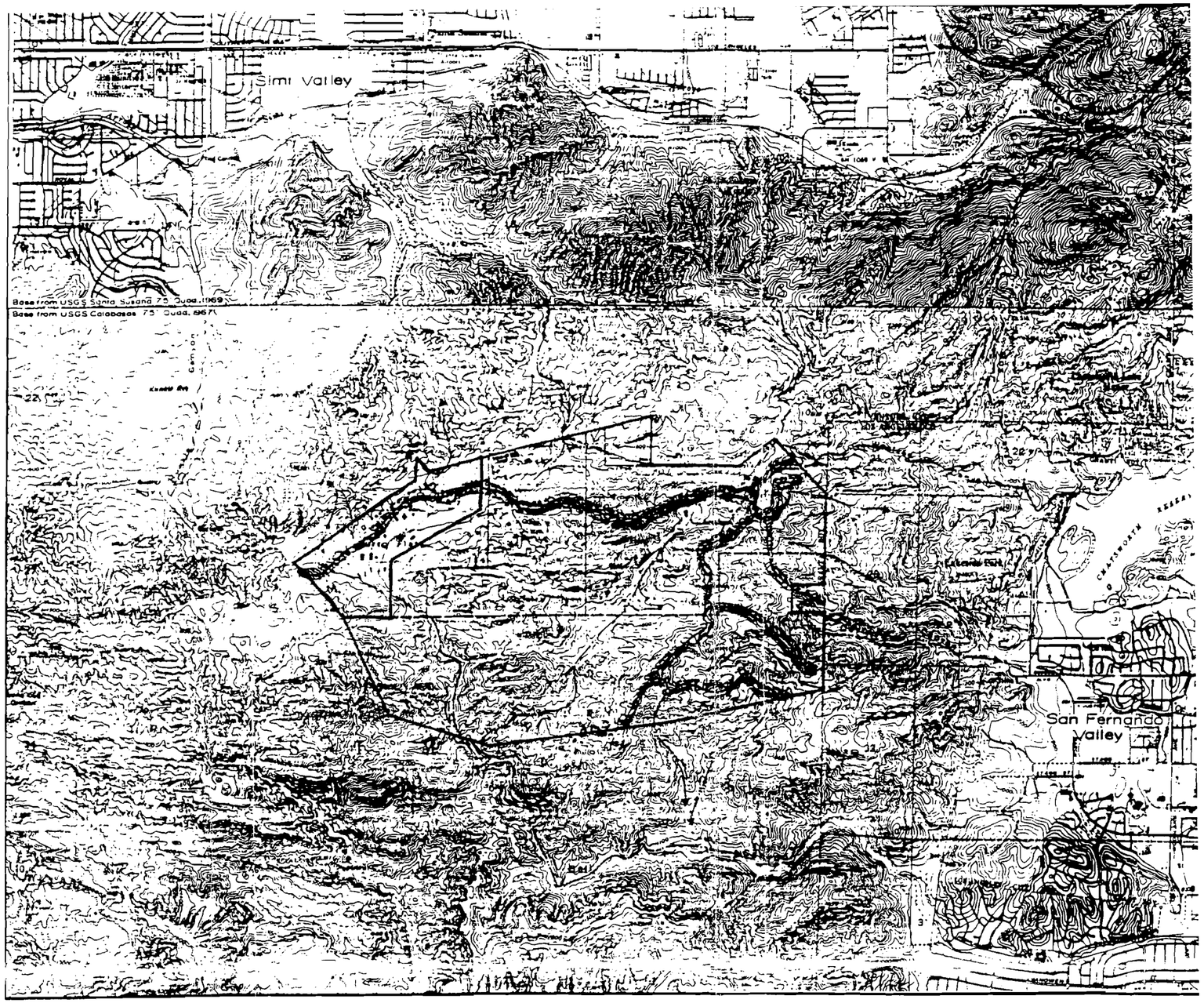
DISCUSSION/RATIONALE:

The content of the report fulfills both the PA and SI requirements. The site is part of the Rockwell-Rocketdyne site which is currently being monitored by RCKT and the State of California.

Report Reviewed and Approved by: _____ Signature: Carolyn J. Douglas Date: 3/29/94

Site Decision Made by: _____ Signature: Carolyn J. Douglas Date: 3/29/94

EPA Form # 9100-3



1990 Annual Groundwater Monitoring Summary

ROCKWELL INTERNATIONAL CORPORATION
ROCKETDYNE DIVISION
SANTA SUSANA FIELD LABORATORY

FIGURE 1

FACILITY LOCATION MAP

GROUNDWATER RESOURCES CONSULTANTS, INC
CONSULTANTS IN HYDROGEOLOGY
TUCSON, ARIZONA 3640M-128

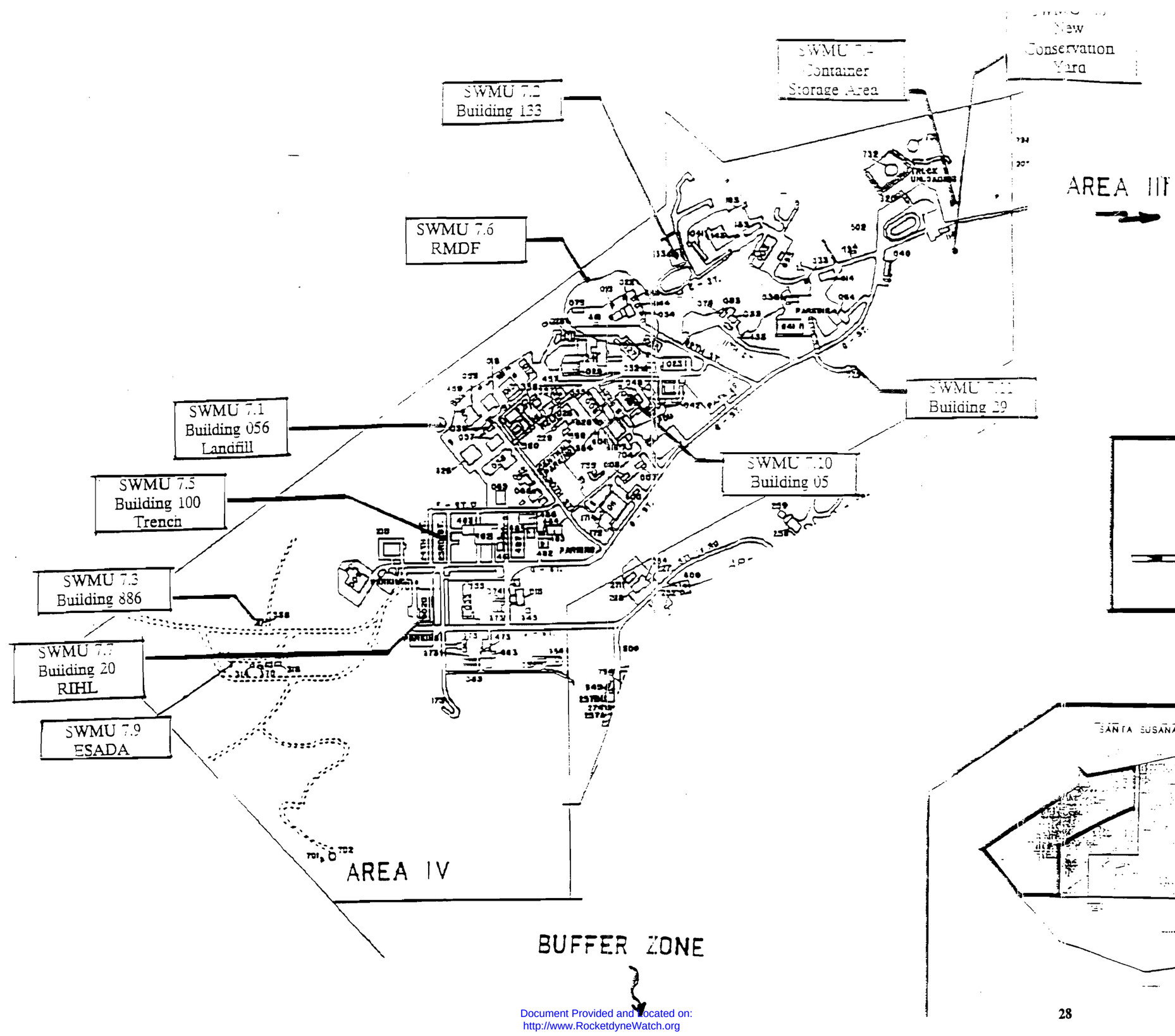
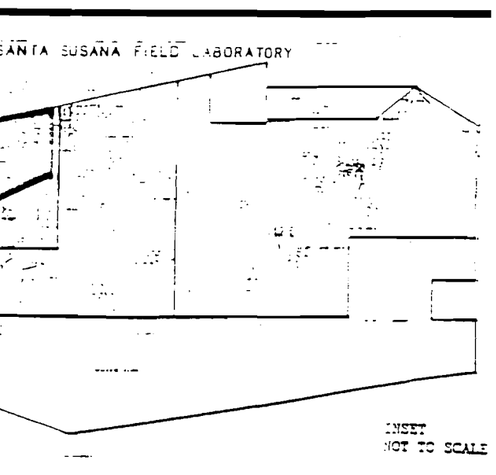
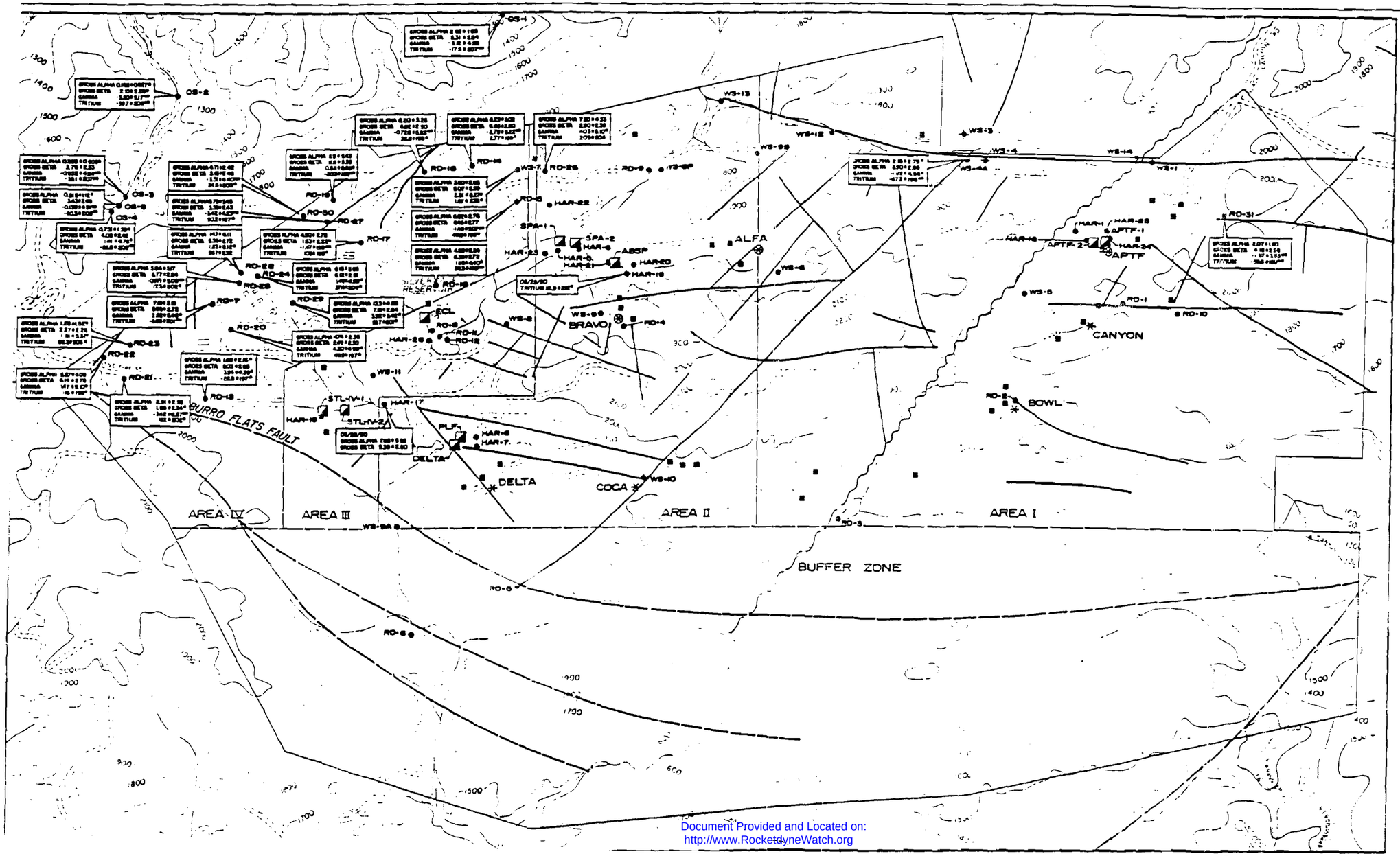


FIGURE 2
Area IV SWMUs





EXPLANATION

- RD-1 Chatsworth Formation Well
- WS-1 Abandoned Well
- Former or Inactive Test Stand
- Active Test Stand
- Former RCRA Impoundment
- Historical TCE Use or Storage Area

RADIOACTIVITY Concentration in Picocuries per Liter (

Gamma Radiation measured as Cesium

RD-31

- Indicates a result less than the overall laboratory e
- Negative sign indicates a result less than the mean background count

NOTES:

- Samples collected in December 1990, except where indicate
- Maximum Contaminant Levels (Code of Federal Regulatio Section 141) for radioactive contaminants are:
  - Gross Alpha Radioactivity : 15 pCi/L
  - Gross Beta Radioactivity : 50 pCi/L
  - Tritium : 20000 pCi/L
- Samples analyzed performed by IT Analytical Services, form United States Testing Company

FEET

0 500 1000

FIGURE 3

1990 Annual Groundwater Monitoring Summary

ROCKWELL INTERNATIONAL CORPORATION
ROCKETDYNE DIVISION
SANTA SUSANA FIELD LABORATORY

RESULTS OF
RADIOLOGICAL ANALYSES
CHATSWORTH FORMATION
GROUNDWATER SYSTEM
DECEMBER 1990

GROUNDWATER RESOURCES CONSULTANTS,
CONSULTANTS IN HYDROGEOLOGY
TUCSON, ARIZONA

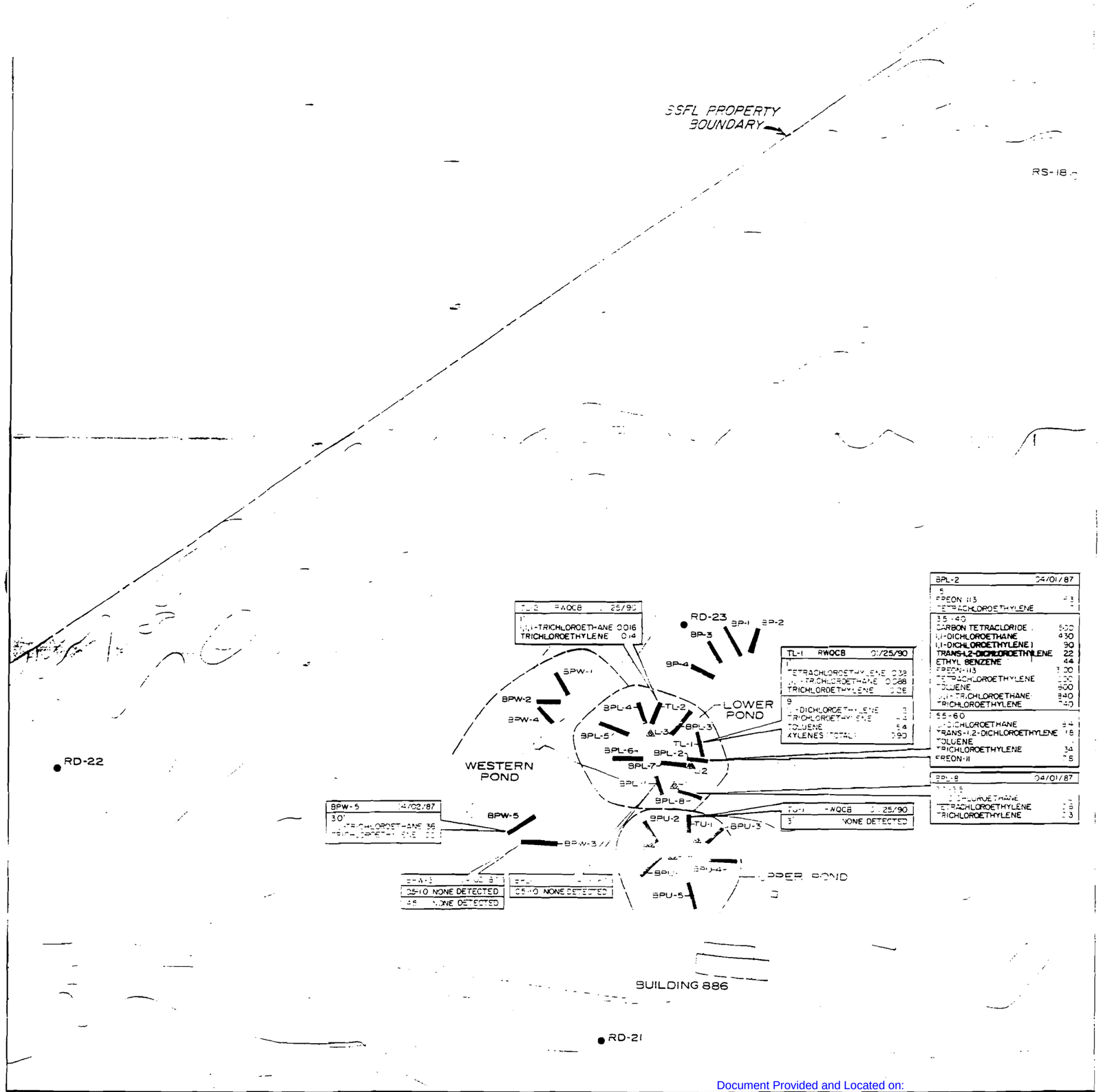


FIGURE 4

ROCKWELL INTERNATIONAL CORPORATION
SSFL AREA III

VOLATILE ORGANIC COMPOUNDS DETECTED IN SOILS IN THE VICINITY OF BUILDING 886 FORMER SODIUM DISPOSAL FACILITY

GROUNDWATER RESOURCES CONSULTANTS, INC.
CONSULTANTS IN HYDROGEOLOGY
TUCSON, ARIZONA 8640M-95

TABLE 1
SOIL SAMPLES

SAMPLE IDENTIFIER	SAMPLED[1] DEPTH INTERVAL (feet)	DATE SAMPLED	ORGANIC COMPOUND	CONCENTRATION OF CONTAMINANTS DETECTED (mg/kg)
OLD CONSERVATION YARD (continued)				
OLDCONS 3	3.0 - 3.5	08/25/88	Methylene Chloride	0.006
			Acetone	0.014
			Total Xylenes	0.006
			Hydrocarbons (C_{22}+)	4,000
OLDCONS 4	0.0 - 0.5	08/25/88	2-Butanone	0.011
			Hydrocarbons (C_9-C_{22})	2
OLDCONS 5	0.0 - 0.5	08/25/88	Toluene	0.014
			Total Xylenes	0.01
			Hydrocarbons (C_9-C_{22})	0.3
OLDCONS 6	0.0 - 0.5	08/25/88	Hydrocarbons (C_{22}+)	5
NEW CONSERVATION YARD				
NEWCONS-1	1.5 - 2.0	08/24/88	Cyclic Hydrocarbon C_{16}	0.2
NEWCONS-3	1.0 - 1.5	08/24/88	Branched Alkane C_{22}	0.7
			Toluene	0.11
B-133 RCRA PERMITTED SODIUM TREATMENT FACILITY				
B-133-1	@ 2.0	08/25/88	2-Butanone	0.011
			Hydrocarbons (C_9-C_{22})	0.8
B-133-2	1.2 - 1.7	08/25/88	Acetone	0.013
			2-Butanone	0.099
			Hydrocarbons (C_9-C_{22})	0.9
B-133-3	0.3 - 0.8	08/25/88	Acetone	0.018
			Hydrocarbons (C_9-C_{22})	0.7
B-133-4	2.5 - 3.0	08/25/88	Hydrocarbons (C_9-C_{22})	0.2
B-133-5	@ 9.0	08/25/88	Total Xylenes	0.011
			Hydrocarbons (C_9-C_{22})	0.7
B-133-6[2]	@ SURFACE	08/25/88	Di-n-Butyl Phthalate	0.04
			Hydrocarbons (C_9-C_{22})	0.30

TABLE 1 (CONTINUED)
SOIL SAMPLES

SAMPLE IDENTIFIER	SAMPLED[1] DEPTH INTERVAL (feet)	DATE SAMPLED	ORGANIC COMPOUND	CONCENTRATION OF CONTAMINANTS DETECTED (mg/kg)
RMDF LEACHFIELD AREA				
RMDF-1	0.0 - 0.5	08/25/88	Methylene Chloride	0.007
			Toluene	0.034
			Total Xylenes	0.018
RMDF-2	0.0 - 0.5	08/25/88	Toluene	0.025
			Total Xylenes	0.016
			2-Butanone	0.013
RMDF-3	0.0 - 0.5	08/25/88	Ethylbenzene	0.005
			Toluene	0.051
			Total Xylenes	0.026
RMDF-4	0.0 - 0.5	08/25/88	Ethylbenzene	0.008
			Toluene	0.028
			Total Xylenes	0.039
RMDF-5	0.0 - 0.5	08/25/88	Ethylbenzene	0.005
			Toluene	0.030
			Total Xylenes	0.022
			Bis(2-ethylhexyl) phthalate	0.270
			Butyl Benzyl Phthalate	0.130
			Di-n-Butyl Phthalate	0.060
			Di-n-Octyl Phthalate	0.060
RMDF-6	0.0 - 0.5	08/25/88	Ethylbenzene	0.005
			Toluene	0.031
			Total Xylenes	0.026
			Di-n-Butyl Phthalate	0.040
OLD CONSERVATION YARD				
OLDCONS 1	0.0 - 0.5	08/25/88	Chrysene	0.5
			Fluoranthene	2.1
			Phenanthrene	1.6
			Pyrene	1.0
			Hydrocarbons (C_9-C_{22})	64
OLDCONS 2	0.5 - 1.0	08/25/88	Toluene	0.007
			Total Xylenes	0.013
			Hydrocarbons (C_9-C_{22})	4

TABLE 1 (CONTINUED)
SOIL SAMPLES

SAMPLE IDENTIFIER	SAMPLED[1] DEPTH INTERVAL (feet)	DATE SAMPLED	ORGANIC COMPOUND	CONCENTRATION OF CONTAMINANTS DETECTED (mg/kg)
ESADA CHEMICAL STORAGE YARD				
ESADA-2	1.0 - 1.5	08/23/88	Branched Hydrocarbon C_6	0.9
TRENCH IN THE B-100 AREA				
B-100-2	@ 3.5	08/25/88	Branched Alkane C_{26}	0.2
			Branched Alkane C_{27}	0.5
			Branched Alkane C_{29}	0.4
B-100-3	@ 3.0	08/25/88	Branched Hydrocarbon C_{26}	0.7
			Branched Cyclic Hydrocarbon C_2	0.6
			Branched Cyclic Hydrocarbon C_2	1
			Branched Cyclic Hydrocarbon C_2	0.7
			Branched Cyclic Hydrocarbon C_2	1
			Hydrocarbons C_{22}-C_{30}	300
B-100-4	@ 4.0	08/25/88	Branched Aromatic C_{22}	3
			Branched Hydrocarbon C_{27}	1
			Branched Hydrocarbon C_{27}	1
			Branched Hydrocarbon C_{28}	1
			Branched Hydrocarbon C_{28}	1
			Hydrocarbons C_{19}-C_{30}	400

NOTE:

1 Sampled depth intervals are in feet below land surface.

2 Tank excavation soil pile.

TABLE 2
GROUNDWATER RADIOLOGICAL DATA

WELL IDENTIFIER	DATE SAMPLED	RADIOLOGICAL PARAMETER	CONCENTRATION (picocuries per liter)	SAMPLE FILTRATION
RD-6		Thorium-232	0.00185[1] ± 0.00371	UF
			0.00[1] ± 0.00588	F
		Lead-210	0.136[1] ± 0.348	UF
			0.311[1] ± 0.351	F
RD-14	10/18/89	Gross Alpha Radioactivity	4.83 ± 2.48	F
		Gross Beta Radioactivity	1.97 ± 1.65	F
		Cesium-137 (Gamma Scan)	4.41[1] ± 4.80	F
	10/31/89	Gross Alpha Radioactivity	6.33 ± 3.05	UF
			5.27 ± 2.62	F
		Gross Beta Radioactivity	5.15 ± 2.63	UF
			5.01 ± 2.62	F
		Cesium-137 (Gamma Scan)	-3.42[1] [2] ± 4.58	UF
			-3.10[1] [2] ± 5.29	F
		Uranium-234	2.99 ± 0.539	UF
			2.63 ± 0.453	F
		Uranium-235	0.0662[1] ± 0.0881	UF
			0.131 ± 0.0889	F
		Uranium-238	2.68 ± 0.495	UF
			2.57 ± 0.441	F
		Radium-226	0.469 ± 0.137	UF
			0.585 ± 0.160	F
		Radium-228	0.747 ± 0.391	UF
			0.901 ± 0.492	F

[1] Indicates a result less than the overall laboratory error
[2] Negative sign indicates sample count less than instrument background count

TABLE 2 (CONTINUED)
GROUNDWATER RADIOLOGICAL DATA

WELL IDENTIFIER	DATE SAMPLED	RADIOLOGICAL PARAMETER	CONCENTRATION (picocuries per liter)	SAMPLE FILTRATION
RS-28	11/01/89	Uranium-234	4.59 ± 0.181	F
		Uranium-235	0.153 ± 0.0139	F
		Uranium-238	4.24 ± 0.147	F
		Radium-226	0.105 ± 0.0854	UF
			0.0296[1] ± 0.0596	F
		Radium-228	0.726 ± 0.669	UF
			0.686 ± 0.540	F
		Polonium-210	0.140 ± 0.0419	UF
			0.0320 ± 0.0187	F
		Thorium-228	0.586 ± 0.0930	UF
			0.0222[1] ± 0.0283	F
		Thorium-230	0.147 ± 0.0377	UF
			0.00580[1] ± 0.0102	F
		Thorium-232	0.662 ± 0.0961	UF
			0.00193[1] ± 0.00387	F
		Lead-210	1.38 ± 0.429	UF
			0.199[1] ± 0.310	F
RD-6	10/18/89	Gross Alpha Radioactivity	2.10 ± 1.98	F
		Gross Beta Radioactivity	5.16 ± 1.99	F
		Cesium-137 (Gamma Scan)	-4.36[1] [2] ± 4.83	F

[1] Indicates a result less than the overall laboratory error
[2] Negative sign indicates sample count less than instrument background count
(*) = Sample duplicate

TABLE 2 (CONTINUED)
GROUNDWATER RADIOLOGICAL DATA

WELL IDENTIFIER	DATE SAMPLED	RADIOLOGICAL PARAMETER	CONCENTRATION (picocuries per gram)	SAMPLE HANDLING
RS-5	10/31/89	Radium-226	0.359 ± 0.124	UF
			0.00350[1/ 2/] ± 0.0459	F
		Radium-228	2.19 ± 0.657	UF
			1.16 ± 0.487	F
		Polonium-210	0.719 ± 0.134	UF
			0.0526 ± 0.0241	F
		Thorium-228	1.20 ± 0.463	UF
			0.0345[1/] ± 0.0346	F
		Thorium-230	0.917 ± 0.309	UF
			0.00827[1/] ± 0.0117	F
		Thorium-232	1.68 ± 0.440	UF
			0.0393 ± 0.0202	F
		Lead-210	3.87 ± 0.682	UF
			0.319[1/] ± 0.396	F
RS-28	10/19/89	Gross Alpha Radioactivity	7.07 ± 3.03	F
		Gross Beta Radioactivity	3.53 ± 1.79	F
		Cesium-137 (Gamma Scan)	2.48[1/] ± 4.22	F
	11/01/89	Gross Alpha Radioactivity	7.38 ± 3.45	UF
			4.62 ± 2.59	F
		Gross Beta Radioactivity	7.03 ± 2.84	UF
			4.76 ± 2.59	F
		Cesium-137 (Gamma Scan)	-1.27[1/ 2/] ± 4.39	UF
			1.77 ± 3.90	F

[1] Indicates a result less than the overall laboratory error
[2] Negative sign indicates sample count less than instrument background count
(*) = Sample duplicate
UF = Sample unfiltered prior to analyses
F = Sample filtered prior to analyses

TABLE 3
GROUNDWATER RADIOLOGICAL BACKGROUND DATA

WELL IDENTIFIER	DATE SAMPLED	RADIOLOGICAL PARAMETER	CONCENTRATION (picocuries per liter)	SAMPLE FILTRATION
WS-13 D*	11/01/89	Cesium-137 (Gamma Scan)	1.57[1/] ± 4.11	UF
			2.59[1/] ± 5.42	F
		Uranium-234	2.01 ± 0.226	F
		Uranium-235	0.0697 ± 0.0243	F
		Uranium-238	1.31 ± 0.159	F
		Radium-226	0.487 ± 0.143	UF
			0.484 ± 0.152	F
		Radium-228	0.879 ± 0.479	UF
			0.859 ± 0.531	F
		Polonium-210	0.0533 ± 0.0250	UF
			0.0103[1/] ± 0.0135	F
		Thorium-228	0.0390 ± 0.0319	UF
			0.0906 ± 0.0387	F
		Thorium-230	0.00562[1/] ± 0.00840	UF
			0.0163 ± 0.0110	F
		Thorium-232	0.0262 ± 0.0152	UF
			0.0507 ± 0.0204	F
		Lead-210	0.718 ± 0.390	UF
			0.407 ± 0.364	F
OS-16	10/19/89	Gross Alpha Radioactivity	5.54 ± 2.72	F
		Gross Beta Radioactivity	5.04 ± 1.99	F

[1] Indicates a result less than the overall laboratory error
[2] Negative sign indicates sample count less than instrument background count
(*) = Sample duplicate
UF = Sample unfiltered prior to analyses
F = Sample filtered prior to analyses

TABLE 3 (CONTINUED)
GROUNDWATER RADIOLOGICAL BACKGROUND DATA

WELL IDENTIFIER	DATE SAMPLED	RADIOLOGICAL PARAMETER	CONCENTRATION (picocuries per liter)	SAMPLE FILTRATION
OS-16	11/01/89	Gross Alpha Radioactivity	2.57 ± 2.20	UF
			4.39 ± 2.73	F
		Gross Beta Radioactivity	6.75 ± 2.92	UF
			6.73 ± 2.59	F
		Cesium-137 (Gamma Scan)	-3.32[1/ 2/] ± 5.87	UF
			-1.12[1/ 2/] ± 4.77	F
		Uranium-234	2.42 ± 0.275	F
		Uranium-235	0.0840 ± 0.0292	F
		Uranium-238	2.03 ± 0.237	F
		Radium-226	1.07 ± 0.239	UF
			0.968 ± 0.227	F
		Radium-228	1.94 ± 0.767	UF
			1.50 ± 0.723	F
		Polonium-210	0.0357 ± 0.0209	UF
			0.0265 ± 0.0216	F
		Thorium-228	0.109 ± 0.0410	UF
			0.0319[1/] ± 0.0352	F
		Thorium-230	0.00534[1/] ± 0.00618	UF
			0.00942[1/] ± 0.00947	F
		Thorium-232	0.0889 ± 0.0265	UF
			0.00[1/] ± 0.00707	F
		Lead-210	0.574 ± 0.367	UF
			0.501 ± 0.336	F

1 Indicates a result less than the overall laboratory error
2 Negative sign indicates sample count less than instrument background count
(*) = Sample duplicate
UF = Sample unfiltered prior to analyses
F = Sample filtered prior to analyses

TABLE 3 (CONTINUED)
GROUNDWATER RADIOLOGICAL BACKGROUND DATA

WELL IDENTIFIER	DATE SAMPLED	RADIOLOGICAL PARAMETER	CONCENTRATION (picocuries per liter)	SAMPLE FILTRATION
OS-16 D*	10/19/89	Gross Alpha Radioactivity	5.11 ± 2.59	F
		Gross Beta Radioactivity	4.27 ± 1.92	F
	11/01/89	Gross Alpha Radioactivity	4.05 ± 2.65	UF
			5.06 ± 2.95	F
		Gross Beta Radioactivity	4.29 ± 2.59	UF
			6.99 ± 2.72	F
		Cesium-137 (Gamma Scan)	3.07[1/] ± 4.38	UF
			0.386[1/] ± 4.63	F
		Uranium-234	2.48 ± 0.277	F
		Uranium-235	0.0541 ± 0.0227	F
		Uranium-238	1.99 ± 0.250	F
		Radium-226	0.993 ± 0.223	UF
			1.09 ± 0.230	F
		Radium-228	1.84 ± 0.644	UF
			1.62 ± 0.587	F
		Polonium-210	0.0960 ± 0.0313	UF
			0.0117 ± 0.0116	F
		Thorium-228	0.0456 ± 0.0274	UF
			0.0250[1/] ± 0.0297	F
		Thorium-230	0.00175[1/] ± 0.00350	UF
			0.00369[1/] ± 0.00739	F

[1] Indicates a result less than the overall laboratory error
[2] Negative sign indicates sample count less than instrument background count
(*) = Sample duplicate
UF - Sample unfiltered prior to analyses

TABLE 3 (CONTINUED)
GROUNDWATER RADIOLOGICAL BACKGROUND DATA

WELL IDENTIFIER	DATE SAMPLED	RADIOLOGICAL PARAMETER	CONCENTRATION (picocuries per liter)	SAMPLE FILTRATION
OS-16 D*	11/01/89	Thorium-232	0.00[1/] ± 0.00525	UF
			0.00[1/] ± 0.00554	F
		Lead-210	0.611 ± 0.368	UF
			0.331[1/] ± 0.353	F
OS-21	10/19/89	Gross Alpha Radioactivity	1.08[1/] ± 1.56	F
		Gross Beta Radioactivity	2.91 ± 1.78	F
	11/01/89	Gross Alpha Radioactivity	2.82 ± 2.18	UF
			1.42[1/] ± 1.90	F
		Gross Beta Radioactivity	6.83 ± 2.83	UF
			3.56 ± 2.52	F
		Cesium-137 (Gamma Scan)	1.84[1/] ± 3.97	UF
			1.65[1/] ± 4.55	F
		Uranium-234	1.54 ± 0.185	F
		Uranium-235	0.0306 ± 0.0163	F
		Uranium-238	1.06 ± 0.137	F
		Radium-226	0.778 ± 0.196	UF
			0.756 ± 0.189	F
		Radium-228	1.46 ± 0.597	UF
			1.95 ± 0.704	F
		Polonium-210	0.0332 ± 0.0186	UF
			0.00463[1/] ± 0.00656	F

[1] Indicates a result less than the overall laboratory error
[2] Negative sign indicates sample count less than instrument background count
(*) = Sample duplicate
UF = Sample unfiltered prior to analyses
F = Sample filtered prior to analyses

TABLE 3 (CONTINUED)
GROUNDWATER RADIOLOGICAL BACKGROUND DATA

WELL IDENTIFIER	DATE SAMPLED	RADIOLOGICAL PARAMETER	CONCENTRATION (picocuries per liter)	SAMPLE FILTRATION
OS-21	11/01/89	Thorium-228	0.00[1/] ± 0.0355	UF
			0.149 ± 0.0468	F
		Thorium-230	0.00359[1/] ± 0.00509	UF
			0.0795 ± 0.0265	F
		Thorium-232	0.00[1/] ± 0.00539	UF
			0.0659 ± 0.0247	F
		Lead-210	0.376 ± 0.361	UF
			0.0370[1/] ± 0.354	F

[1] Indicates a result less than the overall laboratory error
[2] Negative sign indicates sample count less than instrument background count
(*) = Sample duplicate
UF = Sample unfiltered prior to analyses
F = Sample filtered prior to analyses

TABLE 4
GROUNDWATER DATA

SUMMARY OF 1990 WATER QUALITY RESULTS
FOR TCE AND CIS-1,2-DCE

WELL IDENTIFIER	DATE SAMPLED	TCE (µg/l)	CIS-1,2-DCE (µg/l)
Shallow Zone Wells			
SH-4	03/29/90	110	74
	06/27/90	170	150
	09/16/90	53	23
(DUP)	09/16/90	51	23
	12/03/90	310	70
SH-7	03/29/90	300	3
SH-11	03/29/90	1	-1
	06/26/90	-1	-1
	09/12/90	-1	-1
	12/03/90	-1	-1
RS-7	06/30/90	1.9	1.6
	12/03/90	2.9	2.4
RS-8	03/29/90	-0.2	-0.2
	06/28/90	-0.20	-0.20
	09/14/90	0.20	4.5
	12/04/90	-0.20	2.5
RS-9	12/11/90	7.9	0.47
RS-11	12/06/90	-0.2	-0.2
RS-13	03/29/90	-0.2	-0.2
RS-15	12/10/90	750	-10
RS-17	12/10/90	3.5	-0.2
RS-18	03/27/90	170	2
(DUP)	03/27/90	170	2
RS-20	12/14/90	1400	-40

µg/l = Micrograms per liter
(-) = Less than; numerical value is the analytic detection limit for the compound

TABLE 4 (CONTINUED)
GROUNDWATER DATA

SUMMARY OF 1990 WATER QUALITY RESULTS
FOR TCE AND CIS-1,2-DCE

WELL IDENTIFIER	DATE SAMPLED	TCE (µg/l)	CIS-1,2-DCE (µg/l)
Chatsworth Formation Wells - (cont'd)			
RD-3	03/28/90	-0.2	-0.2
	06/30/90	-0.2	-0.2
(DUP)	06/30/90	-0.2	-0.2
	09/13/90	-0.2	-0.2
	12/07/90	-0.2	-0.2
RD-4	03/30/90	81	6.2
	06/29/90	75	11
	09/16/90	73	27
	12/07/90	94	28
RD-5	03/28/90	-0.2	-0.2
	06/30/90	-0.2	-0.2
	09/13/90	-0.2	-0.2
	12/08/90	-0.2	-0.2
RD-6	03/28/90	-0.2	-0.2
	06/30/90	-0.2	-0.2
	09/13/90	-0.2	-0.2
	12/08/90	-0.2	-0.2
RD-7	03/29/90	120	-0.40
	06/27/90	26	0.82
	09/13/90	24	-0.80
	12/05/90	32	1.3
RD-8	03/30/90	-0.40	-0.40
	06/30/90	-0.20	-0.20
	09/16/90	-0.20	-0.20
	12/08/90	-0.20	-0.20

µg/l = Micrograms per liter
(-) = Less than; numerical value is the analytic detection limit for the compound

TABLE 4 (CONTINUED)
GROUNDWATER DATA
SUMMARY OF 1990 WATER QUALITY RESULTS
FOR TCE AND CIS-1,2-DCE

WELL IDENTIFIER	DATE SAMPLED	TCE (µg/l)	CIS-1,2-DCE (µg/l)
Chatsworth Formation Wells - (cont'd)			
RD-10	04/05/90	0.98	-0.20
	06/30/90	0.70	0.20
(DUP)	06/30/90	0.70	0.30
	09/12/90	1.0	0.35
	12/07/90	1.1	0.32
RD-11	12/08/90	-1	-1
RD-12	07/01/90	-0.20	0.50
	09/15/90	-1	2
	12/08/90	-0.20	2.0
RD-13	06/30/90	-0.2	-0.2
	12/06/90	-0.2	-0.2
RD-14	06/30/90	2.4	-0.2
	12/07/90	13	-0.4
RD-15	07/01/90	0.30	-0.2
	12/07/90	0.35	-0.2
RD-16	07/01/90	-0.2	-0.2
	12/07/90	-0.2	-0.2
RD-17	06/30/90	1.2	-0.2
	12/04/90	0.79	-0.2
RD-18	07/01/90	-0.2	-0.2
	12/08/90	-0.2	-0.2
RD-19	07/01/90	-0.2	-0.2
	12/08/90	-1	-1
(DUP)	12/08/90	-1	-1

µg/l = Micrograms per liter
(-) = Less than; numerical value is the analytic detection limit for the compound

TABLE 4 (CONTINUED)
GROUNDWATER DATA
SUMMARY OF 1990 WATER QUALITY RESULTS
FOR TCE AND CIS-1,2-DCE

WELL IDENTIFIER	DATE SAMPLED	TCE (µg/l)	CIS-1,2-DCE (µg/l)
Chatsworth Formation Wells - (cont'd)			
RD-20	07/01/90	-0.2	-0.2
	12/07/90	0.21	-0.2
RD-21	03/29/90	1900	21
	06/29/90	1100	-8
	09/14/90	1400	-5
	12/03/90	900	-5
RD-22	03/27/90	-1	-1
	07/01/90	-1	-1
	09/15/90	-1	-1
(DUP)	09/15/90	-1	-1
	12/04/90	-1	-1
(DUP)	12/04/90	-1	-1
RD-23	04/06/90	38	12
	06/29/90	90	3
	09/15/90	30	5
	12/05/90	68	6
RD-24	06/30/90	-0.2	-0.2
	12/05/90	-0.2	-0.2
RD-25	07/01/90	-0.2	0.40
	12/05/90	-0.2	0.37
RD-26	03/29/90	16	1
	06/27/90	23	-0.40
	09/13/90	14	-0.80
	12/04/90	12	1.0
	12/06/90*	16	0.39

(*) = Bailer sample

µg/l = Micrograms per liter

TABLE 4 (CONTINUED)
GROUNDWATER DATA
SUMMARY OF 1990 WATER QUALITY RESULTS
FOR TCE AND CIS-1,2-DCE

WELL IDENTIFIER	DATE SAMPLED	TCE (µg/l)	CIS-1,2-DCE (µg/l)
Chatsworth Formation Wells - (cont'd)			
RD-27	03/29/90	-0.20	-0.20
	07/01/90	-0.20	-0.20
	09/13/90	-0.20	-0.20
	12/04/90	-0.20	-0.20
RD-28	03/27/90	-0.20	-0.20
	07/01/90	-0.20	-0.20
	09/15/90	-0.20	-0.20
	12/05/90	-0.20	-0.20
RD-29	06/30/90	1.6	-0.2
	09/15/90	2.0	-0.2
	12/06/90	2.5	-0.2
(DUP)	12/06/90	2.9	-0.2
RD-30	03/27/90	36	19
	03/27/90	35	18
	06/29/90	15	6.4
	09/15/90	27	13
	12/06/90	32	14
RD-31	03/29/90	11	-0.20
	06/30/90	7.9	-0.20
(DUP)	06/30/90	7.6	-0.20
	09/15/90	6.6	-0.20
	12/05/90	8	-1
(DUP)	12/05/90	9	-1
HAR-1	12/07/90	120	-4.0
HAR-5	12/05/90	-0.2	-0.2

µg/l = Micrograms per liter
(-) = Less than; numerical value is the analytic detection limit for the compound

TABLE 4 (CONTINUED)
GROUNDWATER DATA
SUMMARY OF 1990 WATER QUALITY RESULTS
FOR TCE AND CIS-1,2-DCE

WELL IDENTIFIER	DATE SAMPLED	TCE (µg/l)	CIS-1,2-DCE (µg/l)
Chatsworth Formation Wells - (cont'd)			
WS-8	06/27/90	-0.20	0.37
	12/08/90	-0.20	0.30
WS-9	03/30/90	300	2.6
	06/30/90	380	6
	09/15/90	54	-4.0
	11/28/90	150	4.7
WS-9A	03/30/90	400	130
	06/30/90	100	86
	09/16/90	100	110
	11/28/90	150	130
(DUP)	11/28/90	140	130
WS-9B	06/29/90	-0.20	-0.20
(DUP)	06/29/90	-0.20	-0.20
	12/12/90	-0.20	-0.20
WS-11	12/07/90	0.63	3.3
WS-12	06/29/90	5.7	1.5
(DUP)	06/29/90	5.4	1.4
WS-13	03/28/90	-0.2	-0.2
	06/26/90	-0.20	-0.20
	09/16/90	-0.20	-0.20
(DUP)	09/16/90	-0.20	-0.20
	12/13/90	-0.20	-0.20
WS-14	06/28/90	-0.20	-0.20
	12/05/90	-0.20	-0.20
WS-SP	12/10/90	700	-20

TABLE 5
GROUNDWATER BACKGROUND DATA
SUMMARY OF 1990 WATER QUALITY RESULTS FOR TCE AND CIS-1,2-DCE

WELL IDENTIFIER	DATE SAMPLED	TCE (µg/l)	CIS-1,2-DCE (µg/l)
Off-Site Wells			
OS-1	03/27/90	-1	-1
	06/28/90	-0.20	-0.20
	09/14/90	-1	-1
	12/11/90	-1	-1
OS-2	03/27/90	-1	-1
	06/28/90	-0.20	-0.20
	09/14/90	-1	-1
	12/11/90	-1	-1
OS-3	12/11/90	-1	-1
OS-4	12/11/90	-1	-1
OS-5	03/27/90	-1	-1
	06/28/90	-0.20	-0.20
	09/14/90	-1	-1
	12/11/90	-1	-1
OS-8	03/27/90	-1	-1
	09/14/90	-1	-1
	12/11/90	-1	-1
(DUP)	12/11/90	-1	-1
OS-10	06/28/90	-0.20	-0.20
	12/11/90	-1	-1
OS-15	06/28/90	-0.20	-0.20
	12/10/90	-1	-1
OS-16	03/27/90	-1	-1
	09/14/90	-1	-1
	12/10/90	-1	-1

µg/l = Micrograms per liter
(-) = Less than; numerical value is the analytic detection limit for the compound

TABLE 5 (CONTINUED)
GROUNDWATER BACKGROUND DATA
SUMMARY OF 1990 WATER QUALITY RESULTS
FOR TCE AND CIS-1,2-DCE

WELL IDENTIFIER	DATE SAMPLED	TCE (µg/l)	CIS-1,2-DCE (µg/l)
Off-Site Wells - (cont'd)			
OS-17	03/29/90	-1	-1
	06/30/90	-0.20	-0.20
	09/15/90	-1	-1
	12/13/90	-1	-1
OS-21	03/28/90	1	1
	05/01/90	-1	-1
	06/30/90	-0.20	-0.20
	09/12/90	-1	-1
	12/13/90	-1	-1

µg/l = Micrograms per liter
(-) = Less than; numerical value is the analytic detection limit for the compound

TABLE 6
BUILDING 5 SOIL DATA

	SAMPLE IDENTIFIER CONCENTRATION (milligrams per kilogram)				STLC[1] (milligrams per liter)	TTLC[2] (milligrams per kilogram)
	PDU-1-1'	PDU-2-1'	PDU-3-1'	BG-1'		
SILVER	<1.0	<1.0	<1.0	<1.0	5	500
ARSENIC	2.6	3.3	3.3	3.9	5	500
BARIUM	73.2	94.9	98.6	109	100	10,000
BERYLLIUM	0.6	1.2	0.7	0.8	0.75	75
CADMIUM	1.4	2.1	1.7	2.0	1.0	100
COBALT	7.0	9.7	5.9	8.3	8.0	8,000
CHROMIUM	14.7	25.0	19.1	21.4	560	2,500
COPPER	6.9	15.7	12.7	15.8	25	2,500
MERCURY	<0.25	<0.25	<0.25	<0.25	0.2	20
MOLYBDENUM	<1.0	<1.0	<1.0	<1.0	350	3,500
NICKEL	8.7	14.4	12.6	14.0	20	2,000
LEAD	4.9	9.5	6.7	12.0	5.0	1,000
ANTIMONY	<3.0	<3.0	<3.0	<3.0	15	500
SELENIUM	<1.0	<1.0	<1.0	<1.0	1.0	100
THALLIUM	<1.0	<1.0	<1.0	<1.0	7.0	700
VANADIUM	27.5	37.5	27.6	33.9	24	2,400
ZINC	44.5	58.2	60.1	97.7	350	5,000
pH (in pH units)	8.5	8.6	8.7	7.5	12.5[3]	

[1] STLC = Soluble Threshold Limit Concentration, Chapter 66699 of CCR Title 22
[2] TTLC = Total Threshold Limit Concentration, Chapter 66699 of CCR Title 22
[3] Chapter 66708 of CCR Title 22

Analyses performed by Analytical Technologies, Inc., San Diego, California

GROUNDWATER RESOURCES CONSULTANTS, INC.

TABLE 7
BUILDING 5 PNA AND CYANIDE DATA

COMPOUND	SAMPLE IDENTIFIER CONCENTRATION (milligrams per kilogram)		
	PDU-1-1'	PDU-2-1'	PDU-3-1'
NAPTHALENE	<0.083	<0.083	<0.083
ACENAPHTHYLENE	<0.17	<0.17	<0.17
ACENAPHTHENE	<0.17	<0.17	<0.17
FLUORENE	<0.017	<0.017	<0.017
PHENANTHRENE	<0.0083	<0.0083	<0.0083
ANTHRACENE	<0.0083	<0.0083	<0.0083
FLUORANTHENE	<0.017	<0.017	<0.017
PYRENE	<0.017	<0.017	<0.017
BENZO(a)ANTHRACENE	<0.017	<0.017	<0.017
CHRYSENE	<0.017	<0.017	<0.017
BENZO(b)FLUORANTHENE	<0.017	<0.017	<0.017
BENZO(k)FLUORANTHENE	<0.017	<0.017	<0.017
BENZO(a)PYRENE	<0.017	<0.017	<0.017
DIBENZO(a,h)ANTHRACENE	<0.034	<0.034	<0.034
BENZO(g,h,i)PERYLENE	<0.017	<0.017	<0.017
INDENO(1,2,3-cd)PYRENE	<0.017	<0.017	<0.017
CYANIDE	-0.1	-0.1	-0.1

Cyanide analyzed by EPA Method 9012
Polynuclear aromatic hydrocarbons analyzed by EPA Method 8310
All analyses performed by Analytical Technologies, Inc., San Diego, California

TABLE 8
BUILDING 886 SURFACE WATER DATA

ORGANIC COMPOUND (micrograms per liter)	DATE SAMPLED 01-13-90	01-17-90	02-17-90
Acenaphthene	-10	-10	-10
Acenaphthylene	-10	-10	-10
Anthracene	-10	-10	-10
Benzidine	-40	-40	-40
Benzo(a)anthracene	-10	-10	-10
Benzo(a)pyrene	-10	-10	-10
3,4-Benzofluoranthene	-10	-10	-10
Benzo(ghi)perylene	-10	-10	-10
Benzo(k)fluoranthene	-10	-10	-10
Bis(2-chloroethyoxy) methane	-10	-10	-10
Bis(2-chloroethyl) ether	-10	-10	-10
Bis(2-chloroisopropyl) ether	-10	-10	-10
Bis(2-ethylhexyl) phthalate	66	*170	*70
4-Bromophenyl phenyl ether	-10	-10	-10
Butyl benzyl phthalate	-10	-10	-10
2-Chloronaphthalene	-10	-10	-10
4-Chlorophenyl phenyl ether	-10	-10	-10
Chrysene	-10	-10	-10
Dibenzo(a,h)anthracene	-10	-10	-10
1,2-Dichlorobenzene	-10	-10	-10
1,3-Dichlorobenzene	-10	-10	-10
1,4-Dichlorobenzene	-10	-10	-10
3,3'-Dichlorobenzidine	-10	-10	-10
Diethyl phthalate	-10	-10	-10
Dimethyl phthalate	-25	-25	-25
Di-n-butyl phthalate	-50	-50	-50
2,4-Dinitrotoluene	-10	-10	-10
2,6-Dinitrotoluene	-10	-10	-10
Di-n-octyl phthalate	-10	-10	-10
1,2-Diphenylhydrazine	-10	-10	-10
Fluoranthene	-10	-10	-10
Fluorene	-10	-10	-10
Hexachlorobenzene	-10	-10	-10
Hexachlorobutadiene	-10	-10	-10
Hexachlorocyclopentadiene	-10	-10	-10
Hexachloroethane	-10	-10	-10
Indeno(1,2,3-cd) pyrene	-10	-10	-10
Isophorone	-10	-10	-10
Naphthalene	-10	-10	-10
Nitrobenzene	-10	-10	-10
N-Nitrosodimethylamine	-80	-80	-80
N-Nitrosodi-n-propylamine	-40	-40	-40
N-Nitrosodiphenylamine	-10	-10	-10
Phenanthrene	-10	-10	-10
Pyrene	-10	-10	-10
1,2,4-Trichlorobenzene	-10	-10	-10
Method	625	625	625
Laboratory	B&C	B&C	B&C

B&C = BC Analytical
(-) = Less than; numerical value is the Limit of Detection for that compound
(*) = Compound appeared in laboratory blank

TABLE 8 (CONTINUED)
BUILDING 886 SURFACE WATER DATA

ORGANIC COMPOUND (micrograms per liter)	DATE SAMPLED 01-13-90	DATE SAMPLED 02-17-90
Acenaphthene	-10	-10
Acenaphthylene	-10	-10
Anthracene	-10	-10
Benzidine	-40	-40
Benzo(a)anthracene	-10	-10
Benzo(a)pyrene	-10	-10
3,4-Benzofluoranthene	-10	-10
Benzo(ghi)perylene	-10	-10
Benzo(k)fluoranthene	-10	-10
Bis(2-chloroethyoxy) methane	-10	-10
Bis(2-chloroethyl) ether	-10	-10
Bis(2-chloroisopropyl) ether	-10	-10
Bis(2-ethylhexyl) phthalate	109	*97
4-Bromophenyl phenyl ether	-10	-10
Butyl benzyl phthalate	-10	-10
2-Chloronaphthalene	-10	-10
4-Chlorophenyl phenyl ether	-10	-10
Chrysene	-10	-10
Dibenzo(a,h)anthracene	-10	-10
1,2-Dichlorobenzene	-10	-10
1,3-Dichlorobenzene	-10	-10
1,4-Dichlorobenzene	-10	-10
3,3'-Dichlorobenzidine	-10	-10
Diethyl phthalate	-10	-10
Dimethyl phthalate	-25	-25
Di-n-butyl phthalate	-50	-50
2,4-Dinitrotoluene	-10	-10
2,6-Dinitrotoluene	-10	-10
Di-n-octyl phthalate	-10	-10
1,2-Diphenylhydrazine	-10	-10
Fluoranthene	-10	-10
Fluorene	-10	-10
Hexachlorobenzene	-10	-10
Hexachlorobutadiene	-10	-10
Hexachlorocyclopentadiene	-10	-10
Hexachloroethane	-10	-10
Indeno(1,2,3-cd) pyrene	-10	-10
Isophorone	-10	-10
Naphthalene	-10	-10
Nitrobenzene	-10	-10
N-Nitrosodimethylamine	-80	-80
N-Nitrosodi-n-propylamine	-40	-40
N-Nitrosodiphenylamine	-10	-10
Phenanthrene	-10	-10
Pyrene	-10	-10
1,2,4-Trichlorobenzene	-10	-10
Method	625	625
Laboratory	B&C	B&C

B&C = BC Analytical
(-) = Less than; numerical value is the Limit of Detection for that compound
(*) = Compound appeared in laboratory blank

TABLE 9
BUILDING 886 SOIL DATA
RESULTS OF ANALYSES FOR NON-VOLATILE ORGANICS
IN SOIL SAMPLES COLLECTED FROM THE VICINITY OF THE SODIUM DISPOSAL FACILITY

SAMPLE IDENTIFIER:		BPL-1	BPL-2	BPL-2	BPL-2	BPL-8	BPW-3	BPW-3
SAMPLE DEPTH:		0.5'-1.0'	1.5'	3.5'-4.0'	5.5'-6.0'	3.0'-3.5'	0.5'-1.0'	4.5'
DATE SAMPLED:		04/01/87	04/01/87	04/01/87	04/01/87	04/01/87	04/02/87	04/02/87
ANALYSIS	METHOD							
pH	SW846-9040	9.8	7.1	9.5	10.4	9.5	10.1	9.7
Oil and Grease mg/kg	EPA 503B, (modified)	492	89	3600	144	34	2600	105
Diesel fuel mg/kg	SW846-3350 (modified)	-10	-10	375	160	20	202	50
Petroleum Hydrocarbons mg/kg	EPA 418.1, (modified)	---	---	---	---	---	---	---
Fuel Hydrocarbons mg/kg	EPA 8025 (modified CDOHS)	---	---	---	---	---	---	---
Polychlorinated biphenyls, mg/kg	SW840-8080 + 3550	2.4 PCB 1254	1.0 PCB 1254	2.6 PCB 1254	1.1 PCB 1254	-0.1	2.0 PCB 1254	12 PCB 1254
Terphenyls, mg/kg	SW846-3550 (modified)	-10	-10	880	48	-10	-10	-10
Biphenyl, mg/kg	SW846-3550 (modified)	-10	-10	102	35	-10	-10	-10
Polychlorinated terphenyls, mg/kg	SW846-8080 + 3550 (modified)	-0.1	-0.1	1.4 AROCHLOR 4465	-0.1	-0.1	-0.1	-0.1
Laboratory		SSFL	SSFL	SSFL	SSFL	SSFL	SSFL	SSFL

TABLE 9 (CONTINUED)
BUILDING 886 SOIL DATA

RESULTS OF ANALYSES FOR METALS
IN SOIL SAMPLES COLLECTED FROM SODIUM DISPOSAL FACILITY VICINITY

SAMPLE IDENTIFIER:	U-1		U-1		U-2		U-2	
SAMPLE DEPTH:	0.0' - 0.5'		2.0' - 2.5'		0.0' - 0.5'		1.6' - 2.5'	
DATE SAMPLED:	07/17/89		07/17/89		07/17/89		07/17/89	
CONSTITUENT	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Antimony	---	---	---	---	---	---	---	---
Arsenic	---	0.003	---	0.002	---	0.002	---	-0.002
Barium	1.30	0.93	0.30	0.99	0.15	1.11	0.30	0.68
Beryllium	---	---	---	---	---	---	---	---
Cadmium	0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Chromium (total)	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Cobalt	---	---	---	---	---	---	---	---
Copper	---	---	---	---	---	---	---	---
Lead	0.053	0.015	0.024	0.004	0.027	0.010	0.016	0.003
Mercury	---	0.0003	---	-0.0002	---	-0.0002	---	-0.0002
Molybdenum	---	---	---	---	---	---	---	---
Nickel	---	---	---	---	---	---	---	---
Selenium	---	-0.002	---	-0.002	---	---	---	---
Silver	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Thallium	---	---	---	---	---	---	---	---
Vanadium	---	---	---	---	---	---	---	---
Zinc	---	---	---	---	---	---	---	---
Method	TCLP	EPTOX	TCLP	EPTOX	TCLP	EPTOX	TCLP	EPTOX
Laboratory	TMA	TMA	TMA	TMA	TMA	TMA	TMA	TMA

ATI = Analytical Technologies, Inc.
TMA = Thermoanalytical, Inc.
SSFL = SSFL Analytical Laboratory
(-) = Less than; numerical value is the Limit of Detection for that compound
(---) = Analysis not performed

TABLE 9 (CONTINUED)
BUILDING 886 SOIL DATA

RESULTS OF ANALYSES FOR METALS
IN SOIL SAMPLES COLLECTED FROM SODIUM DISPOSAL FACILITY VICINITY

SAMPLE IDENTIFIER:	U-3		U-3		L-1		L-1	
SAMPLE DEPTH:	0.0' - 0.5'		0.6' - 1.1'		0.0' - 0.5'		2.0' - 2.5'	
DATE SAMPLED:	07/17/87		07/17/89		07/17/89		07/17/89	
CONSTITUENT	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Antimony	---	---	---	---	---	---	---	---
Arsenic	---	0.003	---	-0.002	---	-0.002	---	0.015
Barium	0.45	1.54	1.45	1.26	0.65	1.61	2.10	0.60
Beryllium	---	---	---	---	---	---	---	---
Cadmium	-0.01	-0.01	-0.01	-0.01	-0.01	0.03	-0.01	-0.01
Chromium (total)	-0.02	-0.02	-0.02	-0.02	-0.02	0.03	-0.02	0.07
Cobalt	---	---	---	---	---	---	---	---
Copper	---	---	---	---	---	---	---	---
Lead	0.033	0.021	0.166	0.035	0.020	0.011	0.026	0.012
Mercury	---	-0.0002	---	-0.0002	---	0.0004	---	0.0004
Molybdenum	---	---	---	---	---	---	---	---
Nickel	---	---	---	---	---	---	---	---
Selenium	---	-0.002	---	-0.002	---	-0.002	---	0.003
Silver	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Thallium	---	---	---	---	---	---	---	---
Vanadium	---	---	---	---	---	---	---	---
Zinc	---	---	---	---	---	---	---	---
Method	TCLP	EPTOX	TCLP	EPTOX	TCLP	EPTOX	TCLP	EPTOX
Laboratory	TMA	TMA	TMA	TMA	TMA	TMA	TMA	TMA

ATI = Analytical Technologies, Inc.
TMA = Thermoanalytical, Inc.
SSFL = SSFL Analytical Laboratory
(-) = Less than; numerical value is the Limit of Detection for that compound
(---) = Analysis not performed

TABLE 10
BUILDING 886 GROUNDWATER DATA

RESULTS OF ANALYSES FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS
IN GROUNDWATER SAMPLES COLLECTED FROM SHALLOW ZONE WELL RS-18
(N.W., AREA IV, NEAR N.W. BOUNDARY OF SITE, N. OF BUILDING 886)

ORGANIC COMPOUND (micrograms per liter)	DATE SAMPLED						
	12-04-87	03-03-89	03-03-89*	06-04-89	06-04-89**	03-27-90	03-27-90*
Acrolein	---	---	---	---	---	---	---
Acrylonitrile	---	---	---	---	---	---	---
Benzene	-5	-5	-5	-5	-4	-1	-1
Bromodichloromethane	-5	-5	-5	-5	-2	-1	-1
Bromoform	-25	-25	-25	-25	-5	-5	-5
Bromomethane	-50	-50	-50	-50	-10	-10	-10
Carbon Tetrachloride	-5	-5	-5	-5	-3	-1	-1
Chlorobenzene	-5	-5	-5	-5	-6	-1	-1
Chloroethane	-5	-5	-5	-5	-10	-1	-1
2-Chloroethylvinyl Ether	-50	-50	-50	-50	-10	---	---
Chloroform	7	-5	-5	-5	2.8	1	1
Chloromethane	-50	-50	-50	-50	-10	-10	-10
Dibromochloromethane	-5	-5	-5	-5	-3	-1	-1
1,1-Dichloroethane	24	-5	-5	22	14	5	5
1,2-Dichloroethane	-5	-5	-5	-5	-3	-1	-1
1,1-Dichloroethylene	33	-5	-5	26	21	10	9
Cis-1,2-Dichloroethylene	---	---	---	---	---	2	2
Trans-1,2-Dichloroethylene	10	-5	-5	10	9.1	-1	-1
1,2-Dichloropropane	-5	-5	-5	-5	-6	-1	-1
1,3-Dichloropropylene	-5	-5	-5	-5	-5	-1	-1
Ethylbenzene	-5	-5	-5	-5	-7	-1	-1
Methylene Chloride	-25	-25	-25	-25	-3	-5	-5
1,1,2,2-Tetrachloroethane	-5	-5	-5	-5	-7	-1	-1
Tetrachloroethylene	-5	-5	-5	-5	-4	-1	-1
1,1,1-Trichloroethane	20	-5	-5	9	8.4	3	3
1,1,2-Trichloroethane	-5	-5	-5	-5	-5	-1	-1
Trichloroethylene	660	208	203	390	275	170	170
Toluene	-5	-5	-5	21	-6	-1	-1
Vinyl Chloride	-5	-5	-5	-5	-1	-1	-1
Method	8240	8240	8240	8240	8240	8240	8240
Laboratory	ATI	ATI	ATI	ATI	SSFL	ATI	ATI

ATI = Analytical Technologies, Inc.
SSFL = Santa Susana Field Laboratory Analytical Chemistry Unit
(-) = Less than; numerical value represents the Limit of Detection for that compound
(---) = Analysis not reported
(*) = Sample duplicate
(**) = Sample split

TABLE 10 (CONTINUED)
BUILDING 886 GROUNDWATER DATA

RESULTS OF ANALYSES FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS
IN GROUNDWATER SAMPLES COLLECTED FROM CHATSWORTH FORMATION WELL RD-21
(N.W., AREA IV, S. OF BUILDING 886)

ORGANIC COMPOUND (micrograms per liter)	DATE SAMPLED					
	09-12-89	10-20-89	10-20-89*	10-20-89**	12-11-89	03-29-90
Acrolein	---	---	---	---	---	---
Acrylonitrile	---	---	---	---	---	---
Benzene	-3	-4	-4	-3	-8	-10
Bromodichloromethane	-3	-4	-4	-3	-8	-10
Bromoform	-15	-20	-20	-15	-40	-50
Bromomethane	-30	-40	-40	-30	-80	-100
Carbon Tetrachloride	4	7	5	5	-8	-10
Chlorobenzene	-3	-4	-4	-3	-8	-10
Chloroethane	-3	-4	-4	-3	-8	-10
2-Chloroethylvinyl Ether	-30	-40	-40	-30	-80	---
Chloroform	8	7	6	6	-8	-10
Chloromethane	-30	-40	-40	-30	-80	-100
Dibromochloromethane	-3	-4	-4	-3	-8	-10
1,1-Dichloroethane	-3	-4	-4	-3	-8	-10
1,2-Dichloroethane	-3	-4	-4	-3	-8	-10
1,1-Dichloroethylene	-3	-4	-4	-3	-8	-10
Cis-1,2-Dichloroethylene	---	---	---	---	---	21
Trans-1,2-Dichloroethylene	-3	-4	-4	-3	-8	-10
1,2-Dichloropropane	-3	-4	-4	-3	-8	-10
1,3-Dichloropropylene	-3	-4	-4	-3	-8	-10
Ethylbenzene	-3	-4	-4	-3	-8	-10
Methylene Chloride	-15	-20	-20	-15	-40	-50
1,1,2,2-Tetrachloroethane	-3	-4	-4	-3	-8	-10
Tetrachloroethylene	-3	-4	-4	-3	-8	-10
1,1,1-Trichloroethane	-3	-4	-4	-3	-8	18
1,1,2-Trichloroethane	-3	-4	-4	-3	-8	-10
Trichloroethylene	450	1200	940	750	1800	1900
Toluene	6	-4	-4	-3	-8	-10
Vinyl Chloride	-3	-4	-4	-3	-8	-10
Method	8240	8240	8240	8240	8240	8240
Laboratory	ATI	ATI	ATI	ATI	ATI	ATI

ATI = Analytical Technologies, Inc.
(-) = Less than; numerical value represents the Limit of Detection for that compound
(---) = Analysis not reported
(*) = Duplicate
(**) = Bailer sample

TABLE 10 (CONTINUED)
BUILDING 886 GROUNDWATER

A

RESULTS OF ANALYSES FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS
IN GROUNDWATER SAMPLES COLLECTED FROM CHATSWORTH FORMATION WELL RD-22
(N.W., AREA IV, W. OF BUILDING 886, NEAR N.W. BOUNDARY OF SITE)

ORGANIC COMPOUND (micrograms per liter)	DATE SAMPLED 09-13-89	10-19-89	12-10-89	03-27-90	03-27-90**
Acrolein	---	---	---	---	---
Acrylonitrile	---	---	---	---	---
Benzene	-1	-1	-1	-1	-1
Bromodichloromethane	-1	-1	-1	-1	-1
Bromoform	-5	-5	-5	-5	-5
Bromomethane	-10	-10	-10	-10	-10
Carbon Tetrachloride	-1	-1	-1	-1	-1
Chlorobenzene	-1	-1	-1	-1	-1
Chloroethane	-1	-1	-1	-1	-1
2-Chloroethylvinyl Ether	-10	-10	-10	---	---
Chloroform	-1	-1	-1	-1	-1
Chloromethane	-10	-10	-10	-10	-10
Dibromochloromethane	-1	-1	-1	-1	-1
1,1-Dichloroethane	-1	-1	-1	-1	-1
1,2-Dichloroethane	-1	-1	-1	-1	-1
1,1-Dichloroethylene	-1	-1	-1	-1	-1
Cis-1,2-Dichloroethylene	---	---	---	-1	-1
Trans-1,2-Dichloroethylene	-1	-1	-1	-1	-1
1,2-Dichloropropane	-1	-1	-1	-1	-1
1,3-Dichloropropylene	-1	-1	-1	-1	-1
Ethylbenzene	-1	-1	-1	-1	-1
Methylene Chloride	-5	-5	-5	-5	-5
1,1,2,2-Tetrachloroethane	-1	-1	-1	-1	-1
Tetrachloroethylene	-1	-1	-1	-1	-1
1,1,1-Trichloroethane	-1	-1	-1	-1	-1
1,1,2-Trichloroethane	-1	-1	-1	-1	-1
Trichloroethylene	-1	-1	-1	-1	-1
Toluene	2	7*	-1	-1	-1
Vinyl Chloride	-1	-1	-1	-1	-1
Method	8240	8240	8240	8240	8240
Laboratory	ATI	ATI	ATI	ATI	ATI

ATI = Analytical Technologies, Inc.
(-) = Less than; numerical value represents the Limit of Detection for that compound
(---) = Analysis not reported
(*) = Compound detected in field blank
(**) = Sample duplicate

TABLE 10 (CONTINUED)
BUILDING 886 GROUNDWATER DATA

RESULTS OF ANALYSES FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS
IN GROUNDWATER SAMPLES COLLECTED FROM CHATSWORTH FORMATION WELL RD-23
(N.W., AREA IV, N. OF BUILDING 886)

ORGANIC COMPOUND (micrograms per liter)	DATE SAMPLED 09-13-89	10-20-89	12-11-89	04-06-90
Acrolein	---	---	---	---
Acrylonitrile	---	---	---	---
Benzene	2	1	-1	-1
Bromodichloromethane	-1	-1	-1	-1
Bromoform	-5	-5	-5	-5
Bromomethane	-10	-10	-10	-10
Carbon Tetrachloride	-1	-1	-1	-1
Chlorobenzene	-1	-1	-1	-1
Chloroethane	-1	-1	-1	-1
2-Chloroethylvinyl Ether	-10	-10	-10	---
Chloroform	-1	-1	-1	-1
Chloromethane	-10	-10	-10	-10
Dibromochloromethane	-1	-1	-1	-1
1,1-Dichloroethane	2	1	-1	-1
1,2-Dichloroethane	-1	5	-1	3
1,1-Dichloroethylene	-1	2	-1	-1
Cis-1,2-Dichloroethylene	---	---	---	2
Trans-1,2-Dichloroethylene	15	8	4	-1
1,2-Dichloropropane	-1	-1	-1	-1
1,3-Dichloropropylene	-1	-1	-1	-1
Ethylbenzene	-1	-1	-1	-1
Methylene Chloride	-5	-5	-5	-5
1,1,2,2-Tetrachloroethane	-1	-1	-1	-1
Tetrachloroethylene	-1	-1	-1	-1
1,1,1-Trichloroethane	-1	-1	-1	-1
1,1,2-Trichloroethane	-1	-1	-1	-1
Trichloroethylene	180	200	80	38
Toluene	2	-1	-1	-1
Vinyl Chloride	-1	-1	-1	-1
Method	8240	8240	8240	8240
Laboratory	ATI	ATI	ATI	ATI

ATI = Analytical Technologies, Inc.
(-) = Less than; numerical value represents the Limit of Detection for that compound
(---) = Analysis not reported

TABLE 11
BUILDING 886 GROUNDWATER BACKGROUND DATA

RESULTS OF ANALYSES FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS
IN GROUNDWATER SAMPLES COLLECTED FROM OFFSITE WELL OS-2
(N.W. OF SITE)

ORGANIC COMPOUND (micrograms per liter)	DATE SAMPLED 06-07-85	10-02-85	12-16-85	04-10-86	07-02-86	10-16-86	12-04-86
Acrolein	-10	-10	---	---	---	---	---
Acrylonitrile	-10	-10	---	---	---	---	---
Benzene	-1	-1	-1	-1	-1	-1	---
Bromodichloromethane	-1	-1	-1	-1	-1	-1	-0.71
Bromoform	-1	-1	-1	-1	-1	-1	-0.69
Bromomethane	-1	-1	-1	-1	-1	-1	-0.71
Carbon Tetrachloride	-1	-1	-1	-1	-1	-1	-0.55
Chlorobenzene	-1	-1	-1	-1	-1	-1	-0.66
Chloroethane	-1	-1	-1	-1	-2	-1	-0.52
2-Chloroethylvinyl Ether	-1	-1	-1	-1	-1	-1	-1.0
Chloroform	-1	-1	-1	-1	-1	10	-0.49
Chloromethane	-1	-1	-1	-1	-1	-1	-0.57
Dibromochloromethane	-1	-1	-1	-1	-1	-1	-0.62
1,1-Dichloroethane	-1	-1	-1	-1	-1	-1	-0.44
1,2-Dichloroethane	-1	-1	-1	-1	-1	-1	0.39
1,1-Dichloroethylene	-1	-1	-1	-1	-1	-1	-0.28
Trans-1,2-Dichloroethylene	-1	-1	-1	-1	-1	-1	-0.42
1,2-Dichloropropane	-1	-1	-1	-1	-3	-1	-0.52
1,3-Dichloropropylene	-1	-1	-1	-1	-1	-1	-0.52
Ethylbenzene	-1	-1	-2	-2	-2	-2	---
Methylene Chloride	-1	-1	-2	-2	-1	-2	-1.4
1,1,2,2-Tetrachloroethane	-1	-1	-1	-1	-1	-1	-0.54
Tetrachloroethylene	-1	-1	-1	-1	-1	-1	-0.54
1,1,1-Trichloroethane	-1	-1	-1	-1	-1	-1	-0.45
1,1,2-Trichloroethane	-1	-1	-1	-1	-1	*1	-0.62
Trichloroethylene	-1	-1	-1	-1	-1	-1	-0.34
Toluene	-1	-1	-1	-1	-1	-1	---
Vinyl Chloride	-1	-1	-1	-1	-1	-1	-0.47
Method	624	624	624	624	624	624	601
Laboratory	B&C	B&C	McKesson	McKesson	McKesson	McKesson	CEC

B&C = Brown & Caldwell Laboratories
CEC = Clayton Environmental Consultants, Inc.
McKesson = McKesson Environmental Services
(-) = Less than; numerical value represents the Limit of Detection for that compound
(---) = Analysis not reported

TABLE 11 (CONTINUED)
BUILDING 886 GROUNDWATER BACKGROUND DATA

RESULTS OF ANALYSES FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS
IN GROUNDWATER SAMPLES COLLECTED FROM OFFSITE WELL OS-2
(N.W. OF SITE)

ORGANIC COMPOUND (micrograms per liter)	DATE SAMPLED 03-09-87	06-08-87	09-15-87	12-03-87	03-04-88	06-03-88	09-23-88
Acrolein	---	---	---	---	---	---	---
Acrylonitrile	---	---	---	---	---	---	---
Benzene	-1	-1	-1	-1	-1	-1	-1
Bromodichloromethane	-1	-1	-1	-1	-1	-1	-1
Bromoform	-1	-1	-5	-5	-5	-5	-5
Bromomethane	-1	-1	-10	-10	-10	-10	-10
Carbon Tetrachloride	-1	-1	-1	-1	-1	-1	-1
Chlorobenzene	-1	-1	-1	-1	-1	-1	-1
Chloroethane	-1	---	-1	-1	-1	-1	-1
2-Chloroethylvinyl Ether	-1	-1	-10	-10	-10	-10	-10
Chloroform	-1	-1	-1	-1	-1	-1	-1
Chloromethane	-1	-1	-10	-10	-10	-10	-10
Dibromochloromethane	-1	-1	-1	-1	-1	-1	-1
1,1-Dichloroethane	-1	-1	-1	-1	-1	-1	-1
1,2-Dichloroethane	-1	-1	-1	-1	-1	-1	-1
1,1-Dichloroethylene	-1	-1	-1	-1	-1	-1	-1
Trans-1,2-Dichloroethylene	-1	-1	-1	-1	-1	-1	-1
1,2-Dichloropropane	-3	-3	-1	-1	-1	-1	-1
1,3-Dichloropropylene	-1	-1	-1	-1	-1	-1	-1
Ethylbenzene	-2	-2	-1	-1	-1	-1	-1
Methylene Chloride	-8	-6	-5	-5	-5	-5	-5
1,1,2,2-Tetrachloroethane	-1	-6	-1	-1	-1	-1	-1
Tetrachloroethylene	-1	-1	-1	-1	-1	-1	-1
1,1,1-Trichloroethane	-1	-1	-1	-1	-1	-1	-1
1,1,2-Trichloroethane	-1	-1	-1	-1	-1	-1	-1
Trichloroethylene	-1	-1	-1	1	-1	-1	-1
Toluene	-1	-3	-1	-1	-1	-1	-1
Vinyl Chloride	-1	-1	-1	-1	-1	-1	-1
Method	624	624	8240	8240	8240	8240	8240
Laboratory	CEC	CEC	ATI	ATI	ATI	ATI	ATI

ATI = Analytical Technologies, Inc.
CEC = Clayton Environmental Consultants, Inc.
(-) = Less than; numerical value represents the Limit of Detection for that compound
(---) = Analysis not reported

TABLE 11 (CONTINUED)
BUILDING 886 GROUNDWATER BACKGROUND DATA

RESULTS OF ANALYSES FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS
IN GROUNDWATER SAMPLES COLLECTED FROM OFFSITE WELL OS-2
(N.W. OF SITE)

ORGANIC COMPOUND (micrograms per liter)	DATE SAMPLED					
	12-06-88	03-06-89	06-05-89	09-13-89	12-08-89	03-27-90
Acrolein	---	---	---	---	---	---
Acrylonitrile	---	---	---	---	---	---
Benzene	-1	-1	-4	-1	-1	-1
Bromodichloromethane	-1	-1	-2	-1	-1	-1
Bromoform	-5	-5	-5	-5	-5	-5
Bromomethane	-10	-10	-10	-10	-10	-10
Carbon Tetrachloride	-1	-1	-3	-1	-1	-1
Chlorobenzene	-1	-1	-6	-1	-1	-1
Chloroethane	-1	-1	-10	-1	-1	-1
2-Chloroethylvinyl Ether	-10	-10	-10	-10	-10	---
Chloroform	-1	-1	-2	-1	-1	-1
Chloromethane	-10	-10	-10	-10	-10	-10
Dibromochloromethane	-1	-1	-3	-1	-1	-1
1,1-Dichloroethane	-1	-1	-5	-1	-1	-1
1,2-Dichloroethane	-1	-1	-3	-1	-1	-1
1,1-Dichloroethylene	-1	-1	-3	-1	-1	-1
Cis-1,2-Dichloroethylene	---	---	---	---	---	-1
Trans-1,2-Dichloroethylene	-1	-1	-2	-1	-1	-1
1,2-Dichloropropane	-1	-1	-6	-1	-1	-1
1,3-Dichloropropylene	-1	-1	-5	-1	-1	-1
Ethylbenzene	-1	-1	-7	-1	-1	-1
Methylene Chloride	-5	-5	-3	-5	-5	-1
1,1,2,2-Tetrachloroethane	-1	-1	-7	-1	-1	-1
Tetrachloroethylene	-1	-1	-4	-1	-1	-1
1,1,1-Trichloroethane	-1	-1	-4	-1	-1	-1
1,1,2-Trichloroethane	-1	-1	-5	-1	-1	-1
Trichloroethylene	-1	-1	-2	-1	-1	-1
Toluene	-1	-1	-6	-1	-1	-1
Vinyl Chloride	-1	-1	-1	-1	-1	-1
Method	8240	8240	8240	8240	8240	8240
Laboratory	ATI	ATI	SSFL	ATI	ATI	ATI

ATI = Analytical Technologies, Inc.
SSFL = Santa Susana Field Laboratory Analytical Chemistry Unit
(-) = Less than; numerical value represents the Limit of Detection for that compound
(---) = Analysis not reported

TABLE 11 (CONTINUED)
BUILDING 886 GROUNDWATER BACKGROUND DATA

RESULTS OF ANALYSES FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS
IN GROUNDWATER SAMPLES COLLECTED FROM OFFSITE WELL OS-3
(N.W. OF SITE)

ORGANIC COMPOUND (micrograms per liter)	DATE SAMPLED 06-07-85	10-02-85	12-16-85	04-10-86	07-02-86	10-16-86	12-04-86
Acrolein	-10	-10	---	---	---	---	---
Acrylonitrile	-10	-10	---	---	---	---	---
Benzene	-1	-1	-1	-1	-1	-1	---
Bromodichloromethane	-1	-1	-1	-1	-1	-1	-0.71
Bromoform	-1	-1	-1	-1	-1	-1	-0.69
Bromomethane	-1	-1	-1	-1	-1	-1	-0.71
Carbon Tetrachloride	-1	-1	-1	-1	-1	-1	-0.55
Chlorobenzene	-1	-1	-1	-1	-1	-1	-0.66
Chloroethane	-1	-1	-1	-1	-2	-1	-0.52
2-Chloroethylvinyl Ether	-1	-1	-1	-1	-1	-1	-1.0
Chloroform	-1	-1	-1	-1	-1	-1	-0.49
Chloromethane	-1	-1	-1	-1	-1	-1	-0.57
Dibromochloromethane	-1	-1	-1	-1	-1	-1	-0.62
1,1-Dichloroethane	-1	-1	-1	-1	-1	-1	-0.44
1,2-Dichloroethane	-1	-1	-1	-1	-1	-1	-0.31
1,1-Dichloroethylene	-1	-1	-1	-1	-1	-1	-0.28
Trans-1,2-Dichloroethylene	-1	-1	-1	-1	-1	-1	-0.42
1,2-Dichloropropane	-1	-1	-1	-1	-3	-1	-0.52
1,3-Dichloropropylene	-1	-1	-1	-1	-1	-1	-0.52
Ethylbenzene	-1	-1	-2	-2	-2	-2	---
Methylene Chloride	-1	-1	-2	-2	-1	-2	-1.4
1,1,2,2-Tetrachloroethane	-1	-1	-1	-1	-1	-1	-0.54
Tetrachloroethylene	-1	-1	-1	-1	-1	-1	-0.54
1,1,1-Trichloroethane	-1	-1	-1	-1	-1	-1	-0.45
1,1,2-Trichloroethane	-1	-1	-1	-1	-1	-1	-0.62
Trichloroethylene	-1	-1	-1	-1	-1	-1	-0.34
Toluene	-1	-1	-1	-1	-1	-1	---
Vinyl Chloride	-1	-1	-1	-1	-1	-1	-0.47
Method	624	624	624	624	624	624	601
Laboratory	B&C	B&C	McKesson	McKesson	McKesson	McKesson	McKesson

B&C = Brown & Caldwell Laboratories
McKesson = McKesson Environmental Services
(-) = Less than; numerical value represents the Limit of Detection for that compound
(---) = Analysis not reported

TABLE 11 (CONTINUED)
BUILDING 886 GROUNDWATER BACKGROUND DATA

RESULTS OF ANALYSES FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER SAMPLES COLLECTED FROM OFFSITE WELL OS-3 (N.W. OF SITE)

ORGANIC COMPOUND (micrograms per liter)	DATE SAMPLED 03-09-87	06-08-87	06-05-89	09-13-89
Acrolein	---	---	---	---
Acrylonitrile	---	---	---	---
Benzene	-1	-1	-4	-1
Bromodichloromethane	-1	-1	-2	-1
Bromoform	-1	-1	-5	-5
Bromomethane	-1	-1	-10	-10
Carbon Tetrachloride	-1	-1	-3	-1
Chlorobenzene	-1	-1	-6	-1
Chloroethane	-1	---	-10	-1
2-Chloroethylvinyl Ether	-1	-1	-10	-10
Chloroform	-1	-1	-2	-1
Chloromethane	-1	-1	-10	-10
Dibromochloromethane	-1	-1	-3	-1
1,1-Dichloroethane	-1	-1	-5	-1
1,2-Dichloroethane	-1	-1	-3	-1
1,1-Dichloroethylene	-1	-1	-3	-1
Trans-1,2-Dichloroethylene	-1	-1	-2	-1
1,2-Dichloropropane	-3	-3	-6	-1
1,3-Dichloropropylene	-1	-1	-5	-1
Ethylbenzene	-2	-2	-7	-1
Methylene Chloride	-8	-6	-3	-5
1,1,2,2-Tetrachloroethane	-1	-6	-7	-1
Tetrachloroethylene	-1	-1	-4	-1
1,1,1-Trichloroethane	-1	-1	-4	-1
1,1,2-Trichloroethane	-1	-1	-5	-1
Trichloroethylene	-1	-1	-2	-1
Toluene	-1	-3	-6	-1
Vinyl Chloride	-1	-1	-1	-1
Method	624	624	8240	8240
Laboratory	CEC	CEC	SSFL	ATI

ATI = Analytical Technologies, Inc.
CEC = Clayton Environmental Consultants, Inc.
SSFL = Santa Susana Field Laboratory Analytical Chemistry Unit
(-) = Less than; numerical value represents the Limit of Detection for that compound
(---) = Analysis not reported

TABLE 11 (CONTINUED)
BUILDING 886 GROUNDWATER BACKGROUND DATA

RESULTS OF ANALYSES FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS
IN GROUNDWATER SAMPLES COLLECTED FROM OFFSITE WELL OS-4
(N.W. OF SITE)

ORGANIC COMPOUND (micrograms per liter)	DATE SAMPLED 06-07-85	10-02-85	12-16-85	12-16-85	04-10-86	07-02-86	10-16-86
Acrolein	-10	-10	-10	---	---	---	---
Acrylonitrile	-10	-10	-10	---	---	---	---
Benzene	-1	-1	-1	-1	-1	-1	-1
Bromodichloromethane	-1	-1	-1	-1	-1	-1	-1
Bromoform	-1	-1	-1	-1	-1	-1	-1
Bromomethane	-1	-1	-1	-1	-1	-1	-1
Carbon Tetrachloride	-1	-1	-1	-1	-1	-1	-1
Chlorobenzene	-1	-1	-1	-1	-1	-1	-1
Chloroethane	-1	-1	-1	-1	-1	-2	-1
2-Chloroethylvinyl Ether	-1	-1	-1	-1	-1	-1	-1
Chloroform	-1	-1	-1	-1	-1	-1	-1
Chloromethane	-1	-1	-1	-1	-1	-1	-1
Dibromochloromethane	-1	-1	-1	-1	-1	-1	-1
1,1-Dichloroethane	-1	-1	-1	-1	-1	-1	-1
1,2-Dichloroethane	-1	-1	-1	-1	-1	-1	-1
1,1-Dichloroethylene	-1	-1	-1	-1	-1	-1	-1
Trans-1,2-Dichloroethylene	-1	-1	-1	-1	-1	-1	-1
1,2-Dichloropropane	-1	-1	-1	-1	-1	-3	-1
1,3-Dichloropropylene	-1	-1	-1	-1	-1	-1	-1
Ethylbenzene	-1	-1	-1	-2	-2	-2	-2
Methylene Chloride	-1	-1	-1	-2	-2	-1	-2
1,1,2,2-Tetrachloroethane	-1	-1	-1	-1	-1	-1	-1
Tetrachloroethylene	-1	-1	-1	-1	-1	-1	-1
1,1,1-Trichloroethane	-1	-1	-1	-1	-1	-1	-1
1,1,2-Trichloroethane	-1	-1	-1	-1	-1	-1	-1
Trichloroethylene	-1	-1	-1	-1	-1	-1	-1
Toluene	-1	-1	-1	-1	-1	-1	-1
Vinyl Chloride	-1	-1	-1	-1	-1	-1	-1
Method	624	624	624	624	624	624	624
Laboratory	B&C	B&C	B&C	McKesson	McKesson	McKesson	McKesson

B&C = Brown & Caldwell Laboratories
McKesson = McKesson Environmental Services
(-) = Less than; numerical value represents the Limit of Detection for that compound
(---) = Analysis not reported

TABLE 11 (CONTINUED)
BUILDING 886 GROUNDWATER BACKGROUND DATA

RESULTS OF ANALYSES FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS
IN GROUNDWATER SAMPLES COLLECTED FROM OFFSITE WELL OS-4
(N.W. OF SITE)

ORGANIC COMPOUND (micrograms per liter)	DATE SAMPLED 12-04-86	03-09-87	06-08-87	06-05-89	09-13-89
Acrolein	---	---	---	---	---
Acrylonitrile	---	---	---	---	---
Benzene	---	-1	-1	-4	-1
Bromodichloromethane	-0.71	-1	-1	-2	-1
Bromoform	-0.69	-1	-1	-5	-5
Bromomethane	-0.71	-1	-1	-10	-10
Carbon Tetrachloride	-0.55	-1	-1	-3	-1
Chlorobenzene	-0.66	-1	-1	-6	-1
Chloroethane	-0.52	-1	---	-10	-1
2-Chloroethylvinyl Ether	-1.0	-1	-1	-10	-10
Chloroform	-0.49	-1	-1	-2	-1
Chloromethane	-0.57	-1	-1	-10	-10
Dibromochloromethane	-0.62	-1	-1	-3	-1
1,1-Dichloroethane	-0.44	-1	-1	-5	-1
1,2-Dichloroethane	-0.31	-1	-1	-3	-1
1,1-Dichloroethylene	-0.28	-1	-1	-3	-1
Trans-1,2-Dichloroethylene	-0.42	-1	-1	-2	-1
1,2-Dichloropropane	-0.52	-3	-3	-6	-1
1,3-Dichloropropylene	-0.52	-1	-1	-5	-1
Ethylbenzene	---	-2	-2	-7	-1
Methylene Chloride	-1.4	-8	-6	-3	-5
1,1,2,2-Tetrachloroethane	-0.54	-1	3	-7	-1
Tetrachloroethylene	-0.54	-1	-1	-4	-1
1,1,1-Trichloroethane	-0.45	-1	-1	-4	-1
1,1,2-Trichloroethane	-0.62	-1	-1	-5	-1
Trichloroethylene	-0.34	-1	-1	-2	-1
Toluene	---	-1	-3	-6	-1
Vinyl Chloride	-0.47	-1	-2	-1	-1
Method	601	624	624	8240	8240
Laboratory	CEC	CEC	CEC	SSFL	ATI

ATI = Analytical Technologies, Inc.
CEC = Clayton Environmental Consultants, Inc.
SSFL = Santa Susana Field Laboratory Analytical Chemistry Unit
(-) = Less than; numerical value represents the Limit of Detection for that compound
(---) = Analysis not reported

TABLE 11 (CONTINUED)
BUILDING 886 GROUNDWATER BACKGROUND DATA

RESULTS OF ANALYSES FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS
IN GROUNDWATER SAMPLES COLLECTED FROM OFFSITE WELL OS-5
(N.W. OF SITE)

ORGANIC COMPOUND (micrograms per liter)	DATE SAMPLED						
	06-07-85	06-07-85	10-02-85	12-16-85	04-10-86	04-10-86	06-27-86
Acrolein	-10	---	-10	---	---	-10	---
Acrylonitrile	-10	---	-10	---	---	-10	---
Benzene	-1	-1	-1	-1	-1	-1	-1
Bromodichloromethane	-1	-1	-1	-1	-1	-1	-1
Bromoform	-1	-1	-1	-1	-1	-1	-1
Bromomethane	-1	-1	-1	-1	-1	-1	-1
Carbon Tetrachloride	-1	-1	-1	-1	-1	-1	-1
Chlorobenzene	-1	-1	-1	-1	-1	-1	-1
Chloroethane	-1	-1	-1	-1	-1	-1	-1
2-Chloroethylvinyl Ether	-1	-1	-1	-1	-1	-1	-1
Chloroform	-1	-1	-1	-1	-1	-1	-1
Chloromethane	-1	-1	-1	-1	19	-1	-1
Dibromochloromethane	-1	-1	-1	-1	-1	-1	-1
1,1-Dichloroethane	-1	-1	-1	-1	-1	-1	-1
1,2-Dichloroethane	-1	-1	-1	-1	-1	-1	-1
1,1-Dichloroethylene	-1	-1	-1	-1	-1	-1	-1
Trans-1,2-Dichloroethylene	-1	-1	-1	-1	-1	-1	-1
1,2-Dichloropropane	-1	-1	-1	-1	-1	-1	-1
1,3-Dichloropropylene	-1	-1	-1	-1	-1	-1	-1
Ethylbenzene	-1	-2	-1	-2	-2	-1	-1
Methylene Chloride	-1	-2	-1	-2	-2	-1	-1
1,1,2,2-Tetrachloroethane	-1	-1	-1	-1	-1	-1	-1
Tetrachloroethylene	-1	-1	-1	-1	-1	-1	-1
1,1,1-Trichloroethane	-1	-1	-1	-1	-1	-1	-1
1,1,2-Trichloroethane	-1	-1	-1	-1	-1	-1	-1
Trichloroethylene	-1	-1	-1	-1	-1	-1	-1
Toluene	-1	-1	-1	-1	-1	-1	-1
Vinyl Chloride	-1	-1	-1	-1	-1	-1	-1
Method	624	624	624	624	624	624	8240
Laboratory	B&C	McKesson	B&C	McKesson	McKesson	B&C	SSFL

B&C = Brown & Caldwell Laboratories
McKesson = McKesson Environmental Services
SSFL = Santa Susana Field Laboratory Analytical Chemistry Unit
(-) = Less than; numerical value represents the Limit of Detection for that compound
(---) = Analysis not reported

TABLE 12
RADIOLOGICAL SOIL DATA

RESULTS OF ANALYSES FOR NATURAL EMITTERS IN SOIL AND ROCK SAMPLES

SAMPLE IDENTIFIER	SAMPLE DESCRIPTION	DATE SAMPLED	RADIOLOGICAL PARAMETER	CONCENTRATION (picocuries per gram)
NE-1	Sandstone	10/17/89	Gross Alpha Radioactivity	6.32 ± 2.82
			Gross Beta Radioactivity	32.2 ± 4.97
			Potassium-40 (Gamma Scan)	26.5 ± 2.92
			Cesium-137 (Gamma Scan)	0.0677 ± 0.0304
			Lead-212 (Gamma Scan)	0.848 ± 0.105
			Lead-214 (Gamma Scan)	0.994 ± 0.137
			Lead-210	1.31 ± 0.692
			Polonium-210	1.35 ± 0.199
			Uranium-234	1.53 ± 0.208
			Uranium-235	0.0662 ± 0.0312
			Uranium-238	1.53 ± 0.206
			Thorium-228	1.42 ± 0.166
			Thorium-230	1.45 ± 0.165
			Thorium-232	1.30 ± 0.151
			Radium-226	0.877 ± 0.127
			Radium-228	0.809 ± 0.175

[1/] Indicates a result less than the overall laboratory error
[2/] Negative sign indicates sample count less than instrument background count

TABLE 12 (CONTINUED)
RADIOLOGICAL SOIL DATA

RESULTS OF ANALYSES FOR NATURAL EMITTERS IN SOIL AND ROCK SAMPLES

SAMPLE IDENTIFIER	SAMPLE DESCRIPTION	DATE SAMPLED	RADIOLOGICAL PARAMETER	CONCENTRATION (picocuries per gram)
NE-8	Sandstone	10/18/89	Gross Alpha Radioactivity	8.60 ± 3.27
			Gross Beta Radioactivity	28.6 ± 4.61
			Potassium-40 (Gamma Scan)	22.4 ± 2.44
			Cesium-137 (Gamma Scan)	0.142 ± 0.0288
			Lead-212 (Gamma Scan)	1.31 ± 0.143
			Lead-214 (Gamma Scan)	0.691 ± 0.0930
			Lead-210	1.48 ± 0.799
			Polonium-210	1.01 ± 0.139
			Uranium-234	0.852 ± 0.126
			Uranium-235	0.0201 ± 0.0166
			Uranium-238	0.830 ± 0.122
			Thorium-228	1.82 ± 0.210
			Thorium-230	1.13 ± 0.141
			Thorium-232	1.62 ± 0.186
			Radium-226	0.659 ± 0.0928
			Radium-228	1.33 ± 0.195

[1/] Indicates a result less than the overall laboratory error
[2/] Negative sign indicates sample count less than instrument background count

TABLE 12 (CONTINUED)
RADIOLOGICAL SOIL DATA

RESULTS OF ANALYSES FOR NATURAL EMITTERS IN SOIL AND ROCK SAMPLES

SAMPLE IDENTIFIER	SAMPLE DESCRIPTION	DATE SAMPLED	RADIOLOGICAL PARAMETER	CONCENTRATION (picocuries per gram)
NE-9	Sandy Silt Soil	10/31/89	Gross Alpha Radioactivity	4.43 ± 2.43
			Gross Beta Radioactivity	24.7 ± 4.18
			Potassium-40 (Gamma Scan)	23.5 ± 2.78
			Cesium-137 (Gamma Scan)	0.0216[1/] ± 0.0376
			Lead-212 (Gamma Scan)	0.973 ± 0.130
			Lead-214 (Gamma Scan)	0.718 ± 0.127
			Lead-210	1.11 ± 0.494
			Polonium-210	1.33 ± 0.175
			Uranium-234	1.33 ± 0.188
			Uranium-235	0.0272 ± 0.0264
			Uranium-238	1.25 ± 0.180
			Thorium-228	2.16 ± 0.244
			Thorium-230	1.52 ± 0.179
			Thorium-232	2.03 ± 0.227
			Radium-226	0.782 ± 0.140
			Radium-228	1.31 ± 0.246

APPENDIX A
REFERENCE LIST

REFERENCE LIST

1. Santa Susana Field Laboratory, 1992, Personal Communication from Steve Laflam to Carolyn Mast of PRC Environmental Management, Inc., (March 11).

2. Science Applications International Corporation, 1991, "Interim Final RCRA Facility Assessment Report for Rockwell International Corporation, Rocketdyne Division, Santa Susana Field Laboratory, Ventura County, California." Prepared for the U.S. Environmental Protection Agency, Region 9, Contract No. 68-W9-0008.

3. Santa Susana Field Laboratory, 1992, Personal Communication from Majelle Jensen to Carolyn Mast of PRC Environmental Management, Inc., (March 27).

4. Santa Susana Field Laboratory, 1992, Personal Communication from Steve Laflam to Carolyn Mast of PRC Environmental Management, Inc., (March 10).

5. Santa Susana Field Laboratory, 1992, Personal Communication from Steve Laflam to Carolyn Mast of PRC Environmental Management, Inc., (March 5).

6. Brandise Bardin Institute, 1992, Personal Communication from Howard Kaplan to Carolyn Mast of PRC Environmental Management, Inc. (March 5).

7. Santa Susana Field Laboratory, 1992, Personal Communication from Steve Laflam to Carolyn Mast of PRC Environmental Management, Inc., (March 20).

8. Santa Susana Field Laboratory, 1992, Personal Communication from Steve Laflam to Carolyn Mast of PRC Environmental Management, Inc., (March 18).

9. Resource Conservation Recovery Act Hotline, 1992, Personal Communication from Timo Allison to Carolyn Mast of PRC Environmental Management, Inc., (March 18).

10. Santa Susana Field Laboratory, 1992, Personal Communication from Jennifer Taggert to Carolyn Mast of PRC Environmental Management, Inc. (June 3).

11. Rockwell International Rocketdyne Division, 1989, "Environmental Monitoring Report, Volume 3 Ground Water Treatment and Monitoring, Santa Susana Field Laboratory Ventura County, California."

12. Ground Water Resources Consultants, Inc., 1990, "Hydrogeologic Assessment Report Lower Pond Building 886 Sodium Disposal Facility, Santa Susana Field Laboratory, Rockwell International Corporation, Rocketdyne Division, Ventura County, California."

13. Ground Water Resources Consultants, Inc., 1990, "Investigation of Naturally Occurring Radionuclides in Rock, Soils, and Ground Water, Santa Susana Field Laboratory, Ventura County, California."

14. Ground Water Resources Consultants, Inc., 1991, "Annual Ground Water Monitoring Report Santa Susana Field Laboratory, 1990, Rockwell International Corporation, rocketdyne Division Ventura County, California."

15. Ground Water Resources Consultants, Inc., 1991, "Evaluation of Shallow Soil Conditions in the Vicinity of the Former Process Development Unit Santa Susana Field Laboratory, Rocketdyne Division, Rockwell International Corporation, Ventura County, California."

16. Ventura County Department of Public Works, Well Permitting Department, 1992, Personal Communication from Ron Jones to Carolyn Mast of PRC Environmental Management, Inc., (May 28).

17. PRC Environmental Management, Inc. 1992, Personal Communication from Sandy Crystal to Carolyn Mast of PRC Environmental Management, Inc., (March 11).

18. Department of Public Works, Ventura County, California, 1992, Personal Communication from Chip Townsend to Carolyn Mast of PRC Environmental Management, Inc., (January 5).

19. Ventura County Flood Control District, 1992, personal Communication from John Weikel to Carolyn Mast of PRC Environmental Management, Inc., (June 9).

20. Ventura County Flood Control District, 1992, Personal Communication from John Weikel to Carolyn Mast of PRC Environmental Management, Inc., (March 25).

21. U.S. Fish and Wildlife Service, 1992, Personal Communication from Cat Brown to carolyn Mast of PRC Environmental Management, Inc. (March 4).

22. U.S. Fish and Wildlife Service, 1992, Personal Communication from Cat Brown to Carolyn Mast of PRC Environmental Management, Inc., (March 24).

23. U.S. Fish and Wildlife Service, 1992, Personal Communication from Cat Brown to Carolyn Mast of PRC Environmental Management, Inc., (March 5).

24. U.S. Environmental Protection Agency, 1991, Health Effects Assessment Summary Tables, Annual Fiscal Year 1991.

25. U.S. Environmental Protection Agency, 1991, Superfund Chemical Data Matrix.

26. Ventura County Census Bureau, 1992, Personal Communication from Jerry Wong to Carolyn Mast of PRC Environmental Management, Inc., (May 27).

27. PRC Environmental Management, Inc., 1992, Personal Communication from Shirley Sale to Carolyn Mast of PRC Environmental Management, Inc., (January 31).

APPENDIX B
CONTACT LOG AND REPORTS

CONTACT LOG AND REPORTS

Facility Name: Energy Technology Engineering Center
Facility ID: CA3890090001

Name	Affiliation	Telephone	Date	Regarding
Steve Laflam	SSFL Environmental Protection	818/773-5301	1-4-92	Drinking Water Wells
Cat Brown	U.S. Fish and Wildlife Biologist	805/644-1766	3-4-92	Endangered Species
Cat Brown	U.S. Fish and Wildlife Biologist	805/644-1766	3-5-92	Endangered Species
Howard Kaplan	Brandise Bardin Institute	805/582-4450	3-5-92	The Institute Proximity of Targets
Steve Laflam	SSFL Environmental Protection	818/773-5301	3-5-92	Surrounding Areas Workers
Steve Laflam	SSFL Environmental Protection	818/773-5301	3-10-92	Nearby Roads Activities at Area IV Emergency Response Soil Samples and Aquifers Areas of Buildings
Sandy Crystal	PRC	703/883-8885	3-10-92	Well-head Protection Areas
Steve Laflam	SSFL	818/773-5301	3-11-92	Regulatory Action Building Coverage
Timo Allison	PRC RCRA Hotline	800/424-9346	3-18-92	NPDES Violations
Steve Laflam	SSFL Environmental Protection	818/773-5301	3-18-92	Discharges
Steve Laflam	SSFL Environmental Protection	818/773-5301	3-20-92	Processes Areas Upgradient Aquifers and Operators Building 886, Building 059, Building 100 and RMDF, Water Distribution
John Weikel	Flood Control District Surface Water Hydrologist	805/654-2015	3-25-92	Surface Water
Majelle Jensen	SSFL Manager of Water and Waste	818/773-5308	3-27-92	ETEC vs. Non-ETEC Areas
Jerry Wong	Ventura Co. Census Bureau Census Director	818/904-6339	5-27-92	Persons Per Household

CONTACT LOG AND REPORTS

Facility Name: Energy Technology Engineering Center
Facility ID: CA3890090001

Name	Affiliation	Telephone	Date	Regarding
Ron Jones	Ventura Co. Dept. of Public Works, Water Well Permitter	805/654-2907	5-28-92	Drinking Water Wells
Jennifer Taggert	SSFL Air Specialist	818/773-5326	6-4-92	Air Regulations
John Weikel	Ventura Co. Flood Control District, Surface Water Hydrologist	805/654-2015	6-9-92	Flood Plain and Rainfall

CONTACT REPORT

Reference No.: 1

AGENCY/AFFILIATION: SSFL		
DEPARTMENT: Environmental Protection		
ADDRESS/CITY: 6633 Canoga Avenue, Canoga Park		
COUNTY/STATE/ZIP: Los Angeles, California 91303		
CONTACT(S)	TITLE	PHONE
1. Steve Laflam	Director Environmental Protection	(818) 793-5301
2.		
PRC PERSON MAKING CONTACT: Carolyn Mast		DATE: 3-11-92
SUBJECT: Regulatory Action		
SITE NAME: Area IV		EPA ID#:CA3890090001

Conversation #1:

The major sampling was done by Ground Water Resources. Building 886 is being cleaned up now. The Regional Board issued a cleanup and abatement order. The order was issued according to the Toxics Pit Cleanup Act. It must be cleaned up by December 31, 1992. EPA and DHS were informed of this action and supplied with these reports, but they didn't approve the work plan.

Conversation #2:

All other areas were sampled to identify potential contamination according to DOE inquiry.

SSFL was entered as a CERCLIS site in 1987.

Carolyn L Mast

(Signature)

CONTACT REPORT

Reference No.: 1

AGENCY/AFFILIATION: SSFL		
DEPARTMENT: Environmental Protection		
ADDRESS/CITY: 6633 Canoga Avenue, Canoga Park		
COUNTY/STATE/ZIP: Los Angeles, California 91303		
CONTACT(S)	TITLE	PHONE
1. Steve Laflam	Director of Environmental Protection	(818) 773-5301
2.		
PRC PERSON MAKING CONTACT: Carolyn Mast		DATE: 3-11-92
SUBJECT: Building coverage		
SITE NAME: Area IV		EPA ID#: CA3890090001

Conversation #3:

There is vegetative cover throughout Area IV except at building 886 because the area is being closed. Site personnel are following all correct closure procedures to contain dust, etc. The RMDF and the building 056 landfill are not covered or contained in any way. Building 059 is covered by asphalt and the rest of the buildings are enclosed structures. The RMDF leachfield is located below surface. No action to cover or close the leachfield has been initiated, and there is no runon-runoff system. All soil samples were taken between 1 to 2 feet in depth.

Carolyn L Mast

(Signature)

CONTACT REPORT

Reference No.: 3

AGENCY/AFFILIATION: SSFL		
DEPARTMENT: Environmental Protection		
ADDRESS/CITY: 6633 Canoga Avenue, Canoga Park		
COUNTY/STATE/ZIP: Los Angeles, California, 91303		
CONTACT(S)	TITLE	PHONE
1. Majelle Jensen	Mgr. of Water & Waste	(818) 773-5308
2.		
PRC PERSON MAKING CONTACT: Carolyn Mast		DATE: 3-27-92
SUBJECT: ETEC vs Non-ETEC Areas		
SITE NAME: Area IV		EPA ID#: CA3890090001

Conversation #1:

Building 20 and 05 are not part of ETEC. It is known which facility ESADA is a part of. Some of the leachfields belong to ETEC and some belong to Rockwell. Building 056 is governed by ETEC and the cleanup activity at Building 059 is governed by ETEC even though both these buildings are part of Rockwell.

Conversation #2:

ETEC comprises most of Area IV. All of Area IV has the same EPA ID# CA3890090001, except Building 133, which has an EPA ID# CAD00629972. It is believed that Building 133 has a federal EPA ID# because it is a hazardous materials treatment facility.

Carolyn L Mast
(Signature)

CONTACT REPORT

Reference No.: 4

AGENCY/AFFILIATION: SSFL		
DEPARTMENT: Environmental Protection		
ADDRESS/CITY: 6633 Canoga Avenue, Canoga Park		
COUNTY/STATE/ZIP: Los Angeles, California 91303		
CONTACT(S)	TITLE	PHONE
1. Steve Laflam	Director Environmental Protection	(818) 773-5301
2.		
PRC PERSON MAKING CONTACT: Carolyn Mast		DATE: 3-10-92
SUBJECT: Nearby Roads		
SITE NAME: Area IV		EPA ID#: CA3890090001

Conversation #1:

Highway 101 runs east/west and is located approximately 6 to 7 miles south of SSFL. Freeway 23 (Moorpark Freeway) runs north/south 6 miles west of SSFL Freeway 118 (Simi Valley Freeway) runs east/west, 4 miles north of SSFL Topenga Canyon Boulevard runs north/south,
8 miles east of SSFL Brandise Bardin Institute borders SSFL on the north and northwest.

Conversation #2:

Ahmmonson and Jordan Ranch (referred to as Sage Ranch) borders SSFL on the west. There has been an interest in making this ranch a golf course/recreation area but has remained undeveloped. Sage Ranch is 3-1/2 miles northeast of SSFL.

Carolyn L Mast

(Signature)

CONTACT REPORT

Reference No.: 4

AGENCY/AFFILIATION: SSFL		
DEPARTMENT: Environmental Protection		
ADDRESS/CITY: 6633 Canoga Avenue, Canoga Park		
COUNTY/STATE/ZIP: Los Angeles, California 91303		
CONTACT(S)	TITLE	PHONE
1. Steve Laflam	Director of Environmental Protection	(818) 773-5301
2.		
PRC PERSON MAKING CONTACT: Carolyn Mast		DATE: 3-10-92
SUBJECT: Activities at Area IV		
SITE NAME: ETEC		EPA ID#: CA3890090001

Conversation #3:

The only ongoing project on Area IV is the Sodium Component Test Installation (SCTI). This installation consists of a large sodium heater which generates electricity for Southern California Edison. This installation resides on one acre of land out of the 90 acres optioned to DOE.

Area IV (Active) consists of a DOE site office, an engineering office, small scale laboratories, and the SCTI.

Area IV (Inactive) all other test facilities besides SCTI are going through decontamination, decommissioning, and demolition.

Carolyn L Mast
(Signature)

CONTACT REPORT

Reference No.: 4

AGENCY/AFFILIATION: SSFL		
DEPARTMENT: Environmental Protection		
ADDRESS/CITY: 6633 Canoga Avenue, Canoga Park		
COUNTY/STATE/ZIP: Los Angeles, California 91303		
CONTACT(S)	TITLE	PHONE
1. Steve Laflam	Director Environmental Protection	(818) 773-5301
2.		
PRC PERSON MAKING CONTACT: Carolyn Mast		DATE: 3-10-92
SUBJECT: Activities at ETEC		
SITE NAME: Area IV		EPA ID#:CA3890090001

Conversation #4:

In 1954 DOE programs began on the site which is now known as ETEC. These DOE programs were mainly for nuclear reactor testing. The reason DOE initially opened was to form an energy program for what was known then as the Atomic Energy Commission (now DOE) to conduct energy-related research.

Conversation #5:

The nearest residence is in Bell Canyon, 1.2 miles south of Area IV.

Carolyn L Mast
(Signature)

CONTACT REPORT

Reference No.: 4

AGENCY/AFFILIATION: SSFL		
DEPARTMENT: Environmental Protection		
ADDRESS/CITY: 6633 Canoga Avenue, Canoga Park		
COUNTY/STATE/ZIP: Los Angeles, California 93003		
CONTACT(S)	TITLE	PHONE
1. Steve Laflam	Director Environmental Protection	(818) 773-5301
2.		
PRC PERSON MAKING CONTACT: Carolyn Mast		DATE: 3-10-92
SUBJECT: Emergency response		
SITE NAME: Area IV		EPA ID#: CA389009001

Conversation #6:

Burn Pits, building 886, already has a master emergency plan and a cleanup contingency plan. Building 886 also has a site health and safety plan for removal action.

There is no reason for emergency action at SSFL because it has its own fire department; there are no areas of imminent or substantial endangerment. There are also no measures which would necessitate a removal emergency action and building 886 is being closed properly, therefore, no action is needed at building 886.

Carolyn L Mast
(Signature)

CONTACT REPORT

Reference No.: 4

AGENCY/AFFILIATION: SSFL		
DEPARTMENT: Environmental Protection		
ADDRESS/CITY: 6633 Canoga Avenue, Canoga Park		
COUNTY/STATE/ZIP: Los Angeles, California 91303		
CONTACT(S)	TITLE	PHONE
1. Steve Laflam	Director of Environmental Protection	(818) 773-5301
2.		
PRC PERSON MAKING CONTACT: Carolyn Mast		DATE: 3-10-92
SUBJECT: Soil samples, aquifers, and areas of buildings		
SITE NAME: Area IV		EPA ID#: CA389009001

Conversation #7:

The shallow and the Chatsworth aquifer are interconnected. Soil samples were taken from all areas in 1986 through 1987 except the Empire State Atomic Development Authority (ESADA) which were taken in 1989.

Conversation #8:

Building 133 is 25 feet by 25 feet and the RDMF is one acre in size. Building 059 has an approximate 10,000 feet area. No soil has been brought in to covers any of the seven areas in question. Area IV is presently under an RFA process for EPA and DHS.

Carolyn L Mast
(Signature)

CONTACT REPORT

Reference No.: 5

AGENCY/AFFILIATION: SSFL		
DEPARTMENT: Environmental Protection		
ADDRESS/CITY: 6633 Canoga Avenue, Canoga Park		
COUNTY/STATE/ZIP: Los Angeles, California 91303		
CONTACT(S)	TITLE	PHONE
1. Steve Laflam	Director of Environmental Protection	(818) 773-5307
2.		
PRC PERSON MAKING CONTACT: Carolyn Mast		DATE: 3-5-92
SUBJECT: Surrounding areas/workers		
SITE NAME: Area IV		EPA ID#: CA3890090001

Conversation #1:

Mr. Laflam informed me that there is an avocado orchard, approximately 100 acres in size, 3 miles from Area IV. There are approximately 120 workers at Area IV, approximately 300 workers at Area II and a total of 800 workers at the SSFL. He explained the Brandise-Bardin Institute, a educational, cultural institution is located to the north and west of SSFL. He said there is a chain fence on 3/4 of SSFL but 1/4 isn't fenced because it's a shear cliff. There is a security guard on duty 24 hours a day. There are no residentas at the SSFL.

Carolyn L Mast

(Signature)

CONTACT REPORT

Reference No.: 6

AGENCY/AFFILIATION: Brandise Bardin Institute		
DEPARTMENT: NA		
ADDRESS/CITY: 1101 Peppertree Lane		
COUNTY/STATE/ZIP: Semi Valley, California 93064		
CONTACT(S)	TITLE	PHONE
1. Howard Kaplan	Director of Development and Finance	(805) 582-4450
2.		
PRC PERSON MAKING CONTACT: Carolyn Mast		DATE: 3-5-92
SUBJECT: The institute and proximity of targets		
SITE NAME: Area IV		EPA ID#: CA389009001

Conversation #1:

Area IV discharges water directly onto the institute's property which flows right into Meir Canyon. The institute is directly north of SSFL. Eight to ten people live at the institute year round, and in the spring and summer there is a much larger population. All ages reside at the institute. The institute consists of 3,000 acres.

The riparian area is between 50 to 75 feet from center of creek. The main buildings of the institute are 2 miles away from the SSFL boundary by car and approximately 1.0 mile away as a crow flies. TCE and tritium are in the ground water. They do not use ground water for drinking at the institute. Two years ago he saw what he thought was a bald eagle at the institute. Sage Ranch borders SSFL to the west.

There are 450 people who live at the institute and 125 who attend day camp. These numbers are approximate and would reach these levels during the spring and summer months.

Carolyn L Mast
(Signature)

CONTACT REPORT

Reference No.: 7

AGENCY/AFFILIATION: SSFL		
DEPARTMENT: Environmental Protection		
ADDRESS/CITY: 6633 Canoga Avenue, Canoga Park		
COUNTY/STATE/ZIP: Los Angeles, California 91303		
CONTACT(S)	TITLE	PHONE
1. Steve Laflam	Director of Environmental Protection	(818) 773-5301
2.		
PRC PERSON MAKING CONTACT: Carolyn Mast		DATE: 3-20-92
SUBJECT: Processes and Areas Upgradient		
SITE NAME: Area IV		EPA ID#: CA3890090001

Conversation #1:

Fuel decladding refers to a process where spent nuclear material is removed from cladding (stainless steel tube) and sent off site for reprocessing at a DOE facility.

Coal gasification refers to research performed during the 1970s to develop alternative fuel supplies from coal.

There is no documentation of anything being disposed of at the landfill.

Areas I, II, and III are all upgradient from Area IV. These three areas add up to 2,378 acres approximately. Area I generally is the highest point dropping northwest toward Area IV and south toward the buffer zone. The slope is generally southwest.

Carolyn L Mast

(Signature)

CONTACT REPORT

Reference No.: 7

AGENCY/AFFILIATION: SSFL		
DEPARTMENT: Environmental Protection		
ADDRESS/CITY: 6633 Canoga Avenue, Canoga Park		
COUNTY/STATE/ZIP: Los Angeles, California 91303		
CONTACT(S)	TITLE	PHONE
1. Steve Laflam	Director of Environmental Protection	(818) 773-5301
2.		
PRC PERSON MAKING CONTACT: Carolyn Mast		DATE: 3-20-92
SUBJECT: Aquifers and operators of ETEC		
SITE NAME: Area IV		EPA ID#: CA3890090001

Conversation #2:

Steve clarified that the shallow zone aquifer is from 2 to 35 feet and the Chatswath Formation is between 2 to 1,700 feet. There are times when the ground water is at zero feet, but that is due to rainfall only.

The ETEC area has been operated by the DOE and it's predecessor agencies since 1954. In 1966, it became known at ETEC.

Carolyn L Mast

(Signature)

CONTACT REPORT

Reference No.: 7

AGENCY/AFFILIATION: SSFL		
DEPARTMENT: Environmental Protection		
ADDRESS/CITY: 6633 Canoga Avenue, Canoga Park		
COUNTY/STATE/ZIP: Los Angeles, California 91303		
CONTACT(S)	TITLE	PHONE
1. Steve Laflam	Director of Environmental Protection	(818) 773-5301
2.		
PRC PERSON MAKING CONTACT: Carolyn Mast		DATE: 3-20-92
SUBJECT: Building 886		
SITE NAME: Area IV		EPA ID#: CA3890090001

Conversation #3:

Building 886 is not really a building; it is actually a blast wall. Pieces of metal valving and piping containing liquid sodium metal were reacted and treated to remove the sodium. Hydroxides and waste water was generated from these processes. The left over components were hauled away. This sodium removal was the only process performed at Building 886. The small concrete vault is open to the surface and is approximately 8 to 10 feet deep and 6 feet by 10 feet in area. The same sodium reaction takes place in the concrete vault. This concrete vault was scrabbled clean. Scrabbled: removed top surface of concrete. The components were buried 15 feet west of the shield.

Carolyn L Mast

(Signature)

CONTACT REPORT

Reference No.: 7

AGENCY/AFFILIATION: SSFL		
DEPARTMENT: Environmental Protection		
ADDRESS/CITY: 6633 Canoga Avenue, Canoga Park		
COUNTY/STATE/ZIP: Los Angeles, California 91303		
CONTACT(S)	TITLE	PHONE
1. Steve Laflam	Director of Environmental Protection	(818) 773-5301
2.		
PRC PERSON MAKING CONTACT: Carolyn Mast		DATE: 3-20-92
SUBJECT: Building 059		
SITE NAME: Area IV		EPA ID#: CA3890090001

Conversation #4:

The SNAP reactor located at Building 059 is secured in a stainless steel vacuum vessel which is inside a concrete vault. This structure is below grade level. This structure is surrounded by 100 feet of earth on all sides. The vacuum vessel simulates space conditions. The concrete is made of high density concrete which is intended to shield instrumentation lines and controls from the reactor. This concrete varies between 2 and 4 feet thick. DOE is performing a remediation of the activation products. All regulatory agencies are involved. The reactor operated on zirconium hydride fuel which activates 60Co and 152Eu. As the reactor operated, it activated neutrons which bombarded other materials producing primary activation products 60C0, 55Fe, and 152Eu.

Carolyn L Mast
(Signature)

CONTACT REPORT

Reference No.: 7

AGENCY/AFFILIATION: SSFL		
DEPARTMENT: Environmental Protection		
ADDRESS/CITY: 6633 Canoga Avenue, Canoga Park		
COUNTY/STATE/ZIP: Los Angeles, California 91303		
CONTACT(S)	TITLE	PHONE
1. Steve Laflam	Director of Environmental Protection	(818) 773-5301
2.		
PRC PERSON MAKING CONTACT: Carolyn Mast		DATE: 3-20-92
SUBJECT: Building 100 and the RMDF		
SITE NAME: Area IV		EPA ID#: CA3890090001

Conversation #5:

Building 100 is not really a building. This area was called Building 100 because the closest landmark, approximately 500 feet, to the trench was Building 100. The trench is currently underneath a road and paved over with asphalt.

The RMDF drainage pond has a capacity of 67,500 gallons.

Carolyn L Mast
(Signature)

CONTACT REPORT

Reference No.: 7

AGENCY/AFFILIATION: SSFL		
DEPARTMENT: Environmental Protection		
ADDRESS/CITY: 6633 Canoga Avenue, Canoga Park		
COUNTY/STATE/ZIP: Los Angeles, California 91303		
CONTACT(S)	TITLE	PHONE
1. Steve Laflam	Director of Environmental Protection	(818) 773-5301
2.		
PRC PERSON MAKING CONTACT: Carolyn Mast		DATE: 3-20-92
SUBJECT: Water distribution and ETEC vs. Area IV		
SITE NAME: ETEC		EPA ID#: CA3890090001

Conversation #6:

Steve suggested that reference to area IV should be "ETEC and surrounding DOE operations." Area IV consists of 290 acres and is where DOE programs were conducted. ETEC is located on 90 of 290 acres and this 90 acres is leased to DOE.

The water which is supplied to the nearby communities is purchased from the Metropolitan Water District and other water companies. This water comes from the Sacramento Delta project consisting of the American River and the Feather River Districts. There has been no documented observed release to Meir Canyon.

Carolyn L Mast
(Signature)

CONTACT REPORT

Reference No.: 8

AGENCY/AFFILIATION: SSFL		
DEPARTMENT: Environmental Protection		
ADDRESS/CITY: 6633 Canoga Avenue, Canoga Park		
COUNTY/STATE/ZIP: Los Angeles, California 91303		
CONTACT(S)	TITLE	PHONE
1. Steve Laflam	Director of Environmental Protection	(818) 773-5301
2.		
PRC PERSON MAKING CONTACT: Carolyn Mast		DATE: 3-18-92
SUBJECT: Discharges		
SITE NAME: Area IV		EPA ID#: CA3890090001

Conversation #1:

There is one NPDES permit for the SSFL. The discharge point is at the end of the buffer zone on the south side of the SSFL. There are five points off area IV that will be future NPDES discharge points. These five points will receive only storm water. One point is below Building 100, two points are located below Building 886, one is located at the Sodium Reactor Experiment (SRE) pond, and the last one is located at the RMDF. All five of these future discharge points are located on the property line.

There have been no violations of the discharge permit. Storm water and industrial waste water are released. There have been a few minor exceedances in the summer with high pH and algae levels.

Carolyn L Mast

(Signature)

CONTACT REPORT

Reference No.: 9

AGENCY/AFFILIATION: RCRA Hotline		
DEPARTMENT: PRC - San Francisco		
ADDRESS/CITY: 120 Howard Street, San Francisco		
COUNTY/STATE/ZIP: San Francisco, California 94105		
CONTACT(S)	TITLE	PHONE
1. Timo Allison	RCRA Hotline	(800) 424-9346
2.		
PRC PERSON MAKING CONTACT: Carolyn Mast		DATE: 3-18-92
SUBJECT: NPDES Violations		
SITE NAME: Area IV		EPA ID#: CA3890090001

Conversation #1:

The Compliance, Monitoring, and Enforcement database should reflect any NPDES violations if there are any. Mr. Allison checked the database under ETEC, Rockwell, and NASA's EPA ID numbers and under there respective names and no information was retrieved.

Carolyn L Mast
(Signature)

CONTACT REPORT

Reference No.: 10

AGENCY/AFFILIATION: SSFL		
DEPARTMENT: Air		
ADDRESS/CITY: 6633 Canoga Avenue, Canoga Park		
COUNTY/STATE/ZIP: Los Angeles, California, 91303		
CONTACT(S)	TITLE	PHONE
1. Jennifer Taggert	Air Specialist	(818) 773-5326
2.		
PRC PERSON MAKING CONTACT: Carolyn Mast		DATE: 6-4-92
SUBJECT: Air Regulations		
SITE NAME: Area IV		EPA ID#: CA3890090001

Conversation #1:

Air emissions at the SSFL are monitored by the Ventura County Air Resources Control Board. The SSFL is permitted and there have been no exceedences.

Carolyn L Mast
(Signature)

CONTACT REPORT

Reference No.: 16

AGENCY/AFFILIATION: Water Well Permitter		
DEPARTMENT: Ventura County Department of Pubic Works		
ADDRESS/CITY: 800 S. Victoria Avenue		
COUNTY/STATE/ZIP: Ventura County, California 93009		
CONTACT(S)	TITLE	PHONE
1. Ron Jones	Database Manager	(805) 654-2907
2.		
PRC PERSON MAKING CONTACT: Carolyn Mast		DATE: 5-28-92
SUBJECT: Drinking Water Wells		
SITE NAME: Area IV		EPA ID#: CA3890090001

Conversation #1:

There are seven drinking water wells and 12 irrigation wells within a four mile radius of SSFL. There are drinking water spigots on all of the irrigation wells therefore it is safe to assume these irrigation wells are used at least once a year for drinking water purposes.

Carolyn L Mast
(Signature)

CONTACT REPORT

Reference No.: 17

AGENCY/AFFILIATION:		
DEPARTMENT: PRC Environmental Management, Inc.		
ADDRESS/CITY: 1505 Planning Research Drive, McLean		
COUNTY/STATE/ZIP: McLean, VA 22102		
CONTACT(S)	TITLE	PHONE
1. Sandy Crystal	HRS Reference	(703) 883-8885
2.		
PRC PERSON MAKING CONTACT: Carolyn Mast		DATE: 3-10-92
SUBJECT: Well-head Protection Areas		
SITE NAME: Area IV		EPA ID#: CA3890090001

Conversation #1:

There are no well-head protection areas in the vicinity of SSFL.

Carolyn L Mast
(Signature)

CONTACT REPORT

Reference No.: 18

AGENCY/AFFILIATION: Department of Public Works (Ventura County)		
DEPARTMENT: Water Resources and Sanitation Department		
ADDRESS/CITY: 7150 Walnut Canyon Road, Moore Park		
COUNTY/STATE/ZIP: Ventura County, California 93064		
CONTACT(S)	TITLE	PHONE
1. Chip Townsend	Assistant Supervisor	(805) 583-0393
2.		
PRC PERSON MAKING CONTACT: Carolyn Mast		DATE: 1-5-92
SUBJECT: Drinking water wells		
SITE NAME: Area IV		EPA ID#: CA389009001

Conversation #1:

Mr. Townsend explained that all areas within a 4-mile radius receive their water from the Simi Valley Water Company and the Southern California Water Company.

Carolyn L Mast
(Signature)

CONTACT REPORT

Reference No.: 19

AGENCY/AFFILIATION: Ventura County		
DEPARTMENT: Flood Control District		
ADDRESS/CITY: 800 S. Victoria Avenue, Ventura		
COUNTY/STATE/ZIP: Ventura, California 93309		
CONTACT(S)	TITLE	PHONE
1. John Weikel	Surface Water Hydrologist	(805) 654-2015
2.		
PRC PERSON MAKING CONTACT: Carolyn Mast		DATE: 6-9-92
SUBJECT: Flood Plain and Rainfall		
SITE NAME: Area IV		EPA ID#: CA3890090001

Conversation #1:

The SSFL does not reside in a flood plain.

Conversation #2:

The two year 24 hour rainfall based on 1960-1990 data is 3.13 inches.

Carolyn L Mast
(Signature)

CONTACT REPORT

Reference No.: 20

AGENCY/AFFILIATION: Ventura County		
DEPARTMENT: Flood Control District		
ADDRESS/CITY: 800 S. Victoria Avenue, Ventura		
COUNTY/STATE/ZIP: Ventura, California 93309		
CONTACT(S)	TITLE	PHONE
1. John Weikel	Surface Water Hydrologist	(805) 654-2015
2.		
PRC PERSON MAKING CONTACT: Carolyn Mast		DATE: 3-25-92
SUBJECT: Surface Water		
SITE NAME: Area IV		EPA ID#: CA3890090001

Conversation #1:

Meir Creek flows into the Arroyo Simi. It is 3-1/2 miles from the origin of Meir Creek to the Arroyo Simi. Arroyo Simi is 25 miles from Meir Creek to the Pacific Ocean. The Arroyo Simi flows into the Pacific Ocean near Point Mugu. The Arroyo Simi is an unimproved channel with rock slope protection and bank stabilizers. There are a few isolated concrete areas.

The upper portions of Meir Creek are dry 99 percent of the time. Mr. Weikel stated that at least seven days out of the year Meir Creek contains water but there would be limited wildlife because of the lack of water. It should be assumed that some aquatic food chain organisms do reside along Meir Creek and the Arroyo Simi. These waterways do not support fish and are not used for drinking water purposes. Up to 15 miles downstream, these water bodies are not used for recreation, irrigation, watering of commercial livestock or as an ingredient in commercial food preparation.

Both Meir Creek and Arroyo Simi are intermittent waterways.

Carolyn L Mast

(Signature)

CONTACT REPORT

Reference No.: 21

AGENCY/AFFILIATION: U.S. Fish and Wildlife Service		
DEPARTMENT:		
ADDRESS/CITY: 2140 Eastman Avenue, Suite 100		
COUNTY/STATE/ZIP: Ventura, California 93003		
CONTACT(S)	TITLE	PHONE
1. Cat Brown	Biologist	(805) 644-1766
2.		
PRC PERSON MAKING CONTACT: Carolyn Mast		DATE: 3-4-92
SUBJECT: Endangered Species		
SITE NAME: Area IV		EPA ID#: CA389009001

Conversation #1:

Cat Brown stated that the least Bell's Vireo is a federally registered endangered species residing in Meir Canyon. She also provided the formal definition of a wetland as considered by the government. Wetlands: any intermittent waterway. Therefore, Bell Creek, Meir Creek, and Runkle Creek qualify as wetlands.

Carolyn L Mast

(Signature)

CONTACT REPORT

Reference No.: 23

AGENCY/AFFILIATION: U.S. Department of Fish and Wildlife Service		
DEPARTMENT:		
ADDRESS/CITY: 2140 Eastman Avenue, Suite 100		
COUNTY/STATE/ZIP: Ventura, California 93003		
CONTACT(S)	TITLE	PHONE
1. Cat Brown	Biologist	(805) 644-1766
2.		
PRC PERSON MAKING CONTACT: Carolyn Mast		DATE: 3-5-92
SUBJECT: Endangered species		
SITE NAME: Area IV		EPA ID#: CA389009001

Conversation #1:

Cat Brown informed me that the southern bald eagle, the prairie falcon, and the least bell's vireo are federally listed endangered species and that the American peregrine falcon is listed in California. They are all migratory bird, but only the least Bell's Vireo is known to use the land in the vicinity of the SSFL as habitat.

Carolyn L Mast

(Signature)

CONTACT REPORT

Reference No.: 26

AGENCY/AFFILIATION:		
DEPARTMENT: Ventura County Census Bureau		
ADDRESS/CITY: 15350 Sherman Way, Suite 310		
COUNTY/STATE/ZIP: Van Nyss, California, 91406		
CONTACT(S)	TITLE	PHONE
1. Jerry Wong	Census Director	(818) 904-6339
2.		
PRC PERSON MAKING CONTACT: Carolyn Mast		DATE: 5-27-92
SUBJECT: Persons Per Household		
SITE NAME: Area IV		EPA ID#: CA3890090001

Conversation #1:

In Ventura County the average number of persons per household is 3.02.

Carolyn L Mast
(Signature)

TRANSMITTAL LIST

Facility Name: Energy Technology Engineering Center
Facility ID: CA3890090001

Name	Title	Address	Telephone
John Weikel	Surface Water Hydrologist	Ventura County, Flood Control District , 800 S. Victoria Avenue, Ventura, CA 93309	805-654-2015
Howard Kaplan	Dir. of Development and Finance	Brandise Bardin Institute, 1101 Peppertree Lane, Simi Valley, CA 93064	805-582-4450
Majelle Jensen	Manager of Water and Waste	Santa Susana Field Laboratory, Environmental Protection, 6633 Canoga Avenue, Canoga Park, CA 91303	818-773-5308
Steve Laflam	Dir. of Environmental Protection	Santa Susana Field Laboratory, Environmental Protection, 6633 Canoga Avenue, Canoga Park, CA 91303	818-793-5301
Rorie Skei		Santa Monica Mountain Conservancy, 3700 Solstice Canyon Road, Malibu, CA 90265	