

FINAL REPORT
VOLUME I



QUALITY CONTROL
SUMMARY REPORT
FOR SWMUs 229 AND 230

HOLLOMAN AFB
ALAMOGORDO,
NEW MEXICO

June 1994

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1.1 SCOPE

RCRA Facility Investigation (RFI) field activities were performed at Holloman Air Force Base in Alamogordo, New Mexico, by Woodward-Clyde (W-C) as contracted by the U.S. Army Corps of Engineers (USACE). The RFI was authorized as part of the W-C Indefinite Delivery Contract No. DACW45-93-D-0005, Delivery Order 000D with the USACE.

This Quality Control Summary Report (QCSR) includes a description of the project as well as the field and laboratory quality control activities. The analytical data are summarized and review of the data quality and usability is provided.

To assess the reliability of the data, certain quality assurance/quality control (QA/QC) procedures were implemented as identified in the Holloman AFB RFI QAPP (W-C 1993). These procedures included the documentation of field and laboratory procedures and the collection and analysis of QA/QC samples. The documentation provided a historical record of activities conducted during the field investigation and provide a mechanism for tracking samples from collection through laboratory analysis. The QC samples included field duplicates, rinsates, matrix spike/matrix spike duplicate (MS/MSD), and trip blank samples. All analyses were performed by W-C's subcontract laboratory, NDRC Laboratories of Richardson, Texas. Quality Assurance (QA) samples, which consisted of split/duplicates, rinsate, and trip blank samples, were analyzed by the USACE Missouri River Division Laboratory (MRDL). The QA sample results were used to access precision and accuracy of the data collected from each Solid Waste Management Unit (SWMU). However, QA sample results are not currently available to W-C and, therefore, are not discussed in this report.

1.2 FIELD INVESTIGATION OBJECTIVES

The purpose of this RFI was to provide a preliminary determination of the presence or absence of fuel-related contamination, the nature and extent of fuel constituents, and completion of a baseline risk assessment at these SWMUs. Data collected during these investigations will also be used in support of a Corrective Measures Study (CMS). The primary goals of the RFI include:

- Verify if the SWMUs are sources of fuel-related contamination
- Determine concentrations and the approximate vertical and horizontal extent of fuel-related contaminants present in soil above groundwater
- Determine the presence and approximate thickness of free product or light NAPL (nonaqueous-phase liquid) on the groundwater table
- Determine the concentrations and approximate lateral extent of fuel-related contamination in groundwater
- Evaluate the hydrogeologic regime at each SWMU
- To provide data for baseline risk assessment to determine the potential risk to human health or the environment
- Identify the need for further investigation or corrective measures at each SWMU based on the results of the analytical sampling program and/or data gaps identified by the risk assessment

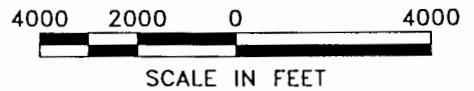
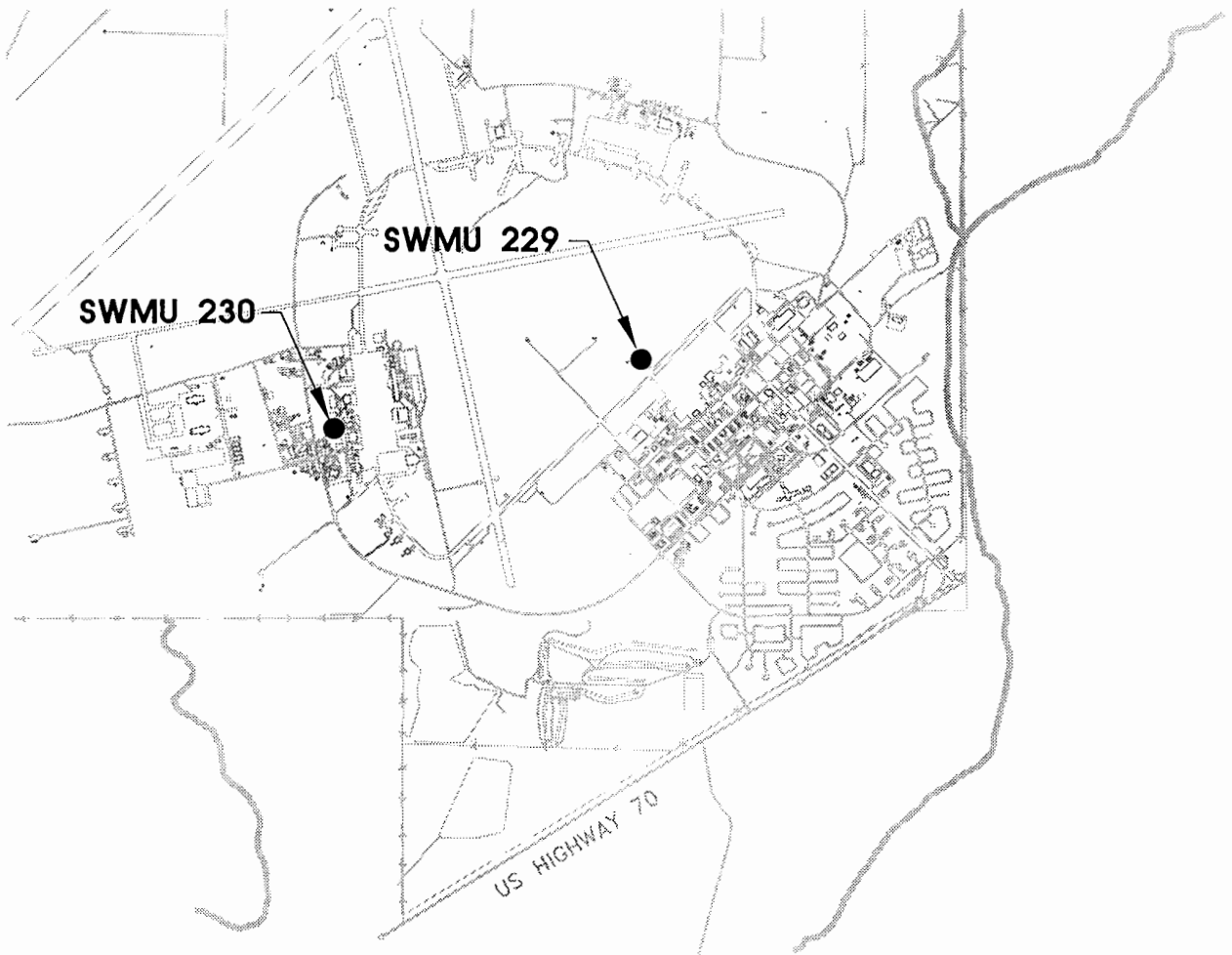
The rationale for sampling locations, number of samples and analytical parameters was presented in the Holloman AFB RFI Field Sampling Plan (FSP) (W-C 1993). The FSP was a compilation of the procedures and protocols for conducting the field investigation at Holloman AFB.

If contamination was suspected in samples collected at the planned maximum depths of a soil boring, additional sampling was conducted below this depth in either the same boring or in a boring drilled adjacent (approximately 2 to 5 feet away) to the original boring. Additional samples collected were analyzed for the same parameters as those taken above.

1.3 Report Integration

This QCSR addresses quality control practices employed for this RFI. Issues covered in the document include a discussion of all data points which may have been influenced or compromised and their impact on the data quality objectives or remedial decisions.

While each is a stand-alone document, the QCSR and RFI reports will be submitted as a single deliverable to meet USACE scope of services requirements. Sections of these documents may be similar in content; however, each document addresses specific topics required to meet appropriate guidance for the respective documents.



DRN BY: CJG	DATE: 10/05/93
CHK'D BY:	DATE:

SWMU LOCATION PLAN
HOLLOMAN AIR FORCE BASE NEW MEXICO

PROJECT NO.
C3M11K

FIG. NO.
1-1

2.0 BACKGROUND

Holloman AFB is located in south-central New Mexico, approximately 5 miles southwest of Alamogordo in Otero County (see Figure 1-1). Las Cruces is the closest large town and is located about 70 miles to the southwest. El Paso, Texas is about 80 miles to the south-southwest and Albuquerque is about 200 miles to the north-northwest. The major highway serving Holloman AFB is U.S. Highway 70 which runs from the northeast to the southwest along the southern Base boundary.

Holloman AFB is the headquarters of the Air Combat Command 49th Fighter Wing whose primary mission is the training of tactical fighter air crews. Holloman AFB, formerly known as the Alamogordo Army Air Field, was initiated in 1942 as a wartime temporary facility. Following a brief period of inactivity after World War II, Holloman AFB was transferred in 1947 to the Air Material Command with the mission of providing facilities, development, and testing of pilotless aircraft, guided missiles, and allied equipment in support of the Air Material Command Research and Development Program (A.T. Kearney 1988, CH2M Hill 1983).

In 1951, Holloman AFB was placed under the guidance of the Air Force Missile Test Center located at Patrick AFB, Florida. In 1952, Holloman AFB was named one of the development centers of the Air Research and Training Development Command and became Holloman Air Development Center. In 1957, the center was designated as the Air Force Missile Development Center under the Air Force Systems Command (AFSC). The 49th Tactical Fighter Wing was assigned to Holloman AFB in 1968. Prior to this addition, the flying mission was oriented principally toward research and development (A.T. Kearney 1988; CH2M Hill 1983).

The 833rd Air Division was activated in 1964, but deactivated in 1969 due to budgetary restrictions. In 1971, Holloman AFB was transferred from AFSC to the Tactical Air Command (TAC) with the 49th Tactical Fighter Wing assuming host responsibilities. In 1977, the 479th Tactical Training Wing was assigned to Holloman AFB. In 1980, the 833rd

Air Division was reactivated and became operational providing command supervision. (A.T. Kearney 1988; CH2M Hill 1983).

In 1991, the 49th Fighter Wing resumed host responsibilities. In 1992, Holloman AFB was transferred from TAC to the current Air Combat Command (ACC). ACC organizations include the 49th Tactical Fighter Wing, 479th Tactical Training Wing, 833rd Air Division, and 4449th Mobile Support Squadron.

Holloman AFB supports some additional units of various Air Force commands, as well as U.S. Army units and the New Mexico University Primate Research Laboratory. Aerospace research continues at Holloman AFB through activities at the Test Track Sled Facilities (Radian 1992).

2.1 SOLID WASTE MANAGEMENT UNITS (SWMU_s) INVESTIGATED

The following sections provide a description of each SWMU investigated during the RFI at Holloman AFB and will address the following information as follows:

- SWMU identification and description
- Field sampling activities performed
- A summary table containing:
 - boring identification
 - sampling depths
 - sample types (e.g., analytical or geophysical test)
 - associated field QA/QC samples
 - sampling data
 - analytical parameters

A W-C geotechnical engineer supervised the drilling operations, logged the borings, and collected the surface and subsurface soil samples. All borings were drilled by Southwest Engineering Incorporated of Las Cruces, New Mexico, with a truck-mounted auger rig using

hollow-stem augers. All subsurface samples were collected with a 3- or 2-inch-nominal-outer-diameter (OD) steel split spoon. All surface and subsurface samples were screened in the field with an organic vapor analyzer (OVA) equipped with a flame ionization detector (FID) for the presence of any volatile organic vapors.

All sampling equipment was decontaminated between sampling events. The rig, augers, and any other downhole equipment were decontaminated between borings in accordance with SOP No. 1 - Equipment Decontamination. This SOP is contained in Appendix A of the Holloman AFB RFI QAPP (W-C 1993). All analytical samples were sent to NDRC in Richardson, Texas. All geotechnical analysis samples were sent to Midwest Laboratories in Omaha, Nebraska.

The activities performed at each SWMU were conducted as outlined in the Field Sampling Plan (FSP), RCRA Facility Investigation, Holloman AFB, Alamogordo, New Mexico (W-C 1993).

All field boring logs and field sample collection sheets are provided in Appendix D of the Holloman AFB RFI Report (W-C 1993).

2.2 SWMU BACKGROUND

2.2.1 SWMU 229 Site Description

The T-38 Test Cell (SWMU 229) is located within the Holloman AFB airfield, northeast of Building 638, and along the northwest edge of Taxiway A, which runs northeast-southeast (see Figure 2.2-1). The nearest major facility is a radar station (Building 642) about 800 feet to the northwest. The test cell area is bordered by an access road about 1,500 feet to the southwest, a runway about 2,500 feet to the north, and Taxiway A to the southeast.

A site plan of the T-38 Test Cell and surrounding area is shown in Figure 2.2-1. The test cell, also identified as Building 639, is used to periodically test jet engines. Next to the test cell is an outdoor pad where T-38 planes are brought for power checks. Both the test cell and power check pad are fitted with sound suppression systems. A 5,000-gallon above-

ground fuel tank, used to supply JP-4 for the engine tests, is located at the east corner of the test cell. Two oil/water separators exist on-site; one connected to the floor drains of Building 639, and one just south of the power check pad. An abandoned water storage tank, used years ago as part of a wet sound suppression system is situated just southwest of Building 638. Building 638 is used for general support and site maintenance. Other site features include an electrical transformer and electrical junction boxes; an air compressor and tank; and a small trailer used to store hazardous materials such as paints, lubricants, and oils.

Much of the area around the test cell is covered by asphalt. Both the test cell and power check pad are situated on a concrete surface. Topography generally slopes to the southwest at slightly less than 1 percent, except for paved areas which are nearly level. Surrounding vegetation is sparse.

Field activities were conducted at the T-38 Test Cell from June 7, 1993 to July 20, 1993. A summary list of the chemical and geotechnical analyses performed, as well as the number of samples and associated QA/QC samples collected at T-38 Test Cell is given in Tables 6-1 and 6-2. The location of these samples are shown on Figure 2.2-1

2.2.2 SWMU 230 Site Description

Building 828 (SWMU 230) is located in the west Base area of Holloman AFB, next to Buildings 821 and 827, and along Bunyap Place about one block east of 49er Avenue and one block north of Black Sheep Way (see Figure 2.3-1) Building 828 is operated as part of the Aerospace Ground Equipment (AGE) maintenance facility, which includes Building 822 across Bunyap Place to the east.

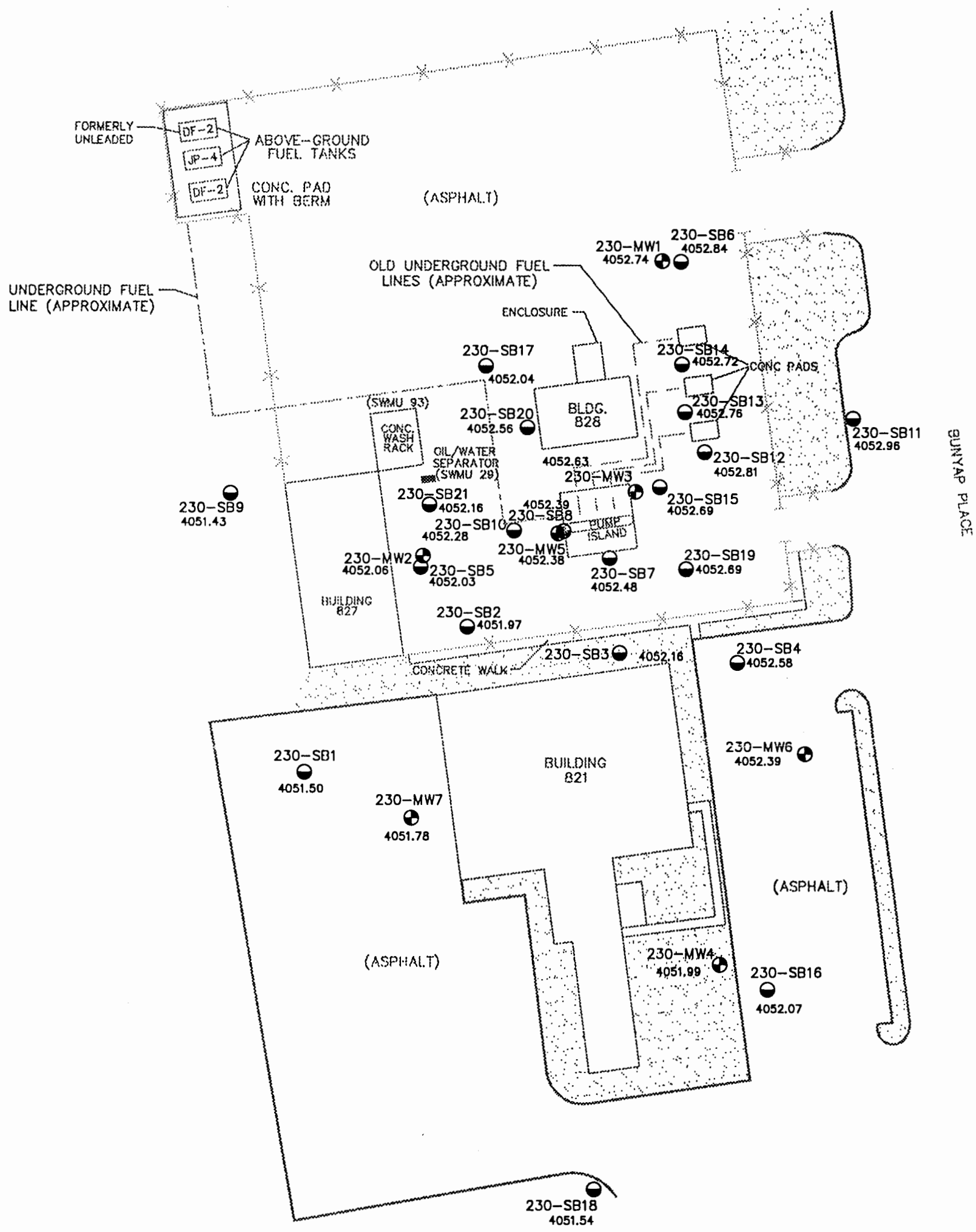
A site plan of Building 828 and the surrounding area is shown in Figure 2.3-1. Both Buildings 827 and 828 are within a fenced compound, used for refueling, maintenance, and storage of aircraft ground support equipment such as ladder lifts, power generators, and other testing equipment for which AGE is responsible. Just south of Building 828 is a fuel pump island and to the east are three concrete pads below which are three abandoned underground storage tanks. At the northwest corner of the compound are three 6,000 above-ground fuel tanks, which have replaced the underground tanks. West of Building 828, outside the

northeast corner of Building 827 is a concrete pad washrack which connects to an oil/water separator directly to the south. Just outside the fence south of the compound is Building 821, which appears to be used mainly for storage.

Most of the area is covered by asphalt pavement. Curbs and sidewalks are concrete. Topography generally slopes to the southwest at less than 1 percent. West of the compound towards 49er Avenue is undeveloped or formerly developed land where vegetation is very sparse.

Field sampling activities were conducted at Building 828 from June 7, 1993 to July 16, 1993. A summary list of the chemical and geotechnical analyses performed, as well as the number of samples and QA/QC samples collected at this SWMU is given in Tables 6.2-1 and 6.2-2. The locations of these samples are shown on Figure 2.3-1.

**TO VIEW THE MAP AND/OR
MAPS WITH THIS DOCUMENT,
PLEASE CALL THE
HAZARDOUS WASTE BUREAU
AT 505-476-6000 TO MAKE AN
APPOINTMENT**



LEGEND

- 4052.63 MONITORING WELL LOCATION
(WITH GROUND SURFACE ELEVATION)
- 4051.50 SOIL BORING LOCATION
(WITH GROUND SURFACE ELEVATION)
- GRAVEL SURFACE

DRN. BY: CJG	DATE: 09/07/93	BUILDING 828 - SWMU 230 SITE LOCATION PLAN HOLLOMAN AIR FORCE BASE NEW MEXICO	PROJECT NO.	FIG. NO.
CHK'D. BY:	REVISION: 0		C3M11K	2-3.1