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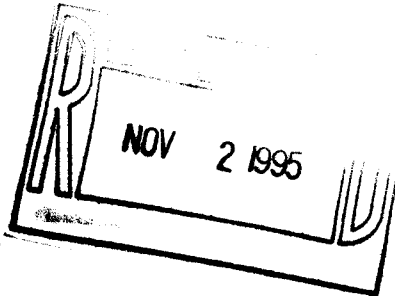


DEPARTMENT OF THE AIR FORCE

HEADQUARTERS 27th FIGHTER WING (ACC)
CANNON AIR FORCE BASE, NEW MEXICO

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Dear Mr. Honker

Enclosed for your files is the final Phase III RCRA Facility Investigation Work Plan for SWMUs 86-90 approved in your letter dated 5 Sep 95. This final Work Plan incorporates all approved responses to Notices of Deficiencies and is complete.

If you have any questions, please contact Mr. Sanford Hutsell at (505) 784-4348.

Sincerely

W.P. ARD, Colonel, USAF
Commander, 27th Support Group

Attachment:
Work Plan

cc:
NMED (B. Hoditschek)
HQ ACC CES/ESVW w/o atch (M. Calvert)

FINAL WORK PLAN

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PHASE III
RCRA FACILITY
INVESTIGATION
APPENDIX I
SWMUs 86-90
(IRP SITE SD-11)

CANNON AIR
FORCE BASE,
NEW MEXICO



Prepared for
U.S. Department of the Army
Corps of Engineers, Omaha District
Omaha, Nebraska

September 1995

C3M11MM

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GLOSSARY OF TERMS

ARAR	Applicable or Relevant and Appropriate Requirement
BRA	Baseline Risk Assessment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CMS	Corrective Measures Study
COC	Chemicals of concern or chain of custody
CRQL	Contract Required Quantitation Limit
DQCR	Daily Quality Control Report
EPA	Environmental Protection Agency
HSWA	Hazardous and Solid Waste Management Act
OWS	Oil water separator
PAH	Polynuclear aromatic hydrocarbons
PCB	Polychlorinated biphenyls
QA/QC	Quality assurance/quality control
QAPP	Quality Assurance Project Plan
QCSR	Quality Control Summary Report
RBC	Risk-based concentration
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SVOC	Semivolatile organic compound
SSHP	Site Specific Health and Safety Plan
SWMU	Solid Waste Management Unit
TAL	Target Analyte List
TCL	Target Compound List
TPH	Total petroleum hydrocarbons
TRPH	Total recoverable petroleum hydrocarbons
USACE	United States Army Corps of Engineers
UTL	Upper tolerance limit
VOC	Volatile organic compound
W-C	Woodward-Clyde

INTRODUCTION

This Work Plan details the work to be done for a Phase III Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) to be completed at Installation Restoration Program (IRP) SWMUs 86-90 (Site SD-11) located on Cannon Air Force Base (Cannon AFB) near Clovis, New Mexico. SWMUs 86-90 (Site SD-11) includes five solid waste management units (SWMUs) 86-90. The vicinity map of Cannon AFB and location of SWMUs 86-90 (Site SD-11) are shown on Figure 1-1. The five SWMUs (see Table 1-1) are part of the Appendix I list of SWMUs at Cannon AFB. A description of the status of the Appendix I SWMUs is provided in Section 1.1. Prior to the work outlined in this Work Plan, the following listed environmental investigative activities had been completed at Cannon AFB:

- IRP Records Search - CH2M Hill - 1983
- Preliminary Review/VSI Report - RCRA Facility Assessment - A.T. Kearney -1987
- RCRA Facility Investigation Work Plan for 27 SWMUs - Lee Wan and Associates, Inc. - 1990
- RI Investigation - Appendix I SWMUs - W-C - 1991-1992 (18 SWMUs called "First Third")
- RFI (Phase I) - Landfills 1 and 2 - W-C - 1992-1993
- RFI (Phase I) - Appendix II SWMUs - through USACE, Albuquerque, NM - 1993
- RFI (Phase I) - Appendix III SWMUs - W-C - 1993

- Work Plan for Phase I RFI, Appendix III SWMUs - Phase I. W-C September 1993.
- Work Plan for Phase I RFI, LF NO. 5, Solid Waste Management Unit 113, IRP LF-5. July 1995.
- RFI Activities, Phase II to Appendix 1 SWMUs, Supplemental RFI Report - January 1995
- RFI (Phase I) - Landfills 3, 4, and 25 - Radian - 1992-1994
- RFI (Phase II) - Appendix II SWMUs (draft) - W-C - 1994-1995
- RFI (Phase II) - Appendix III SWMUs (draft) - W-C - 1994-1995

This Work Plan follows the USACE specified guidance from the United States Environmental Protection Agency (USEPA) entitled "RCRA Facility Investigation (RFI) Guidance, Volumes 1-4, EPA 530/SW-89-031, May 1989. This Work Plan includes the following components:

- Field Sampling Procedures
- Quality Assurance Project Plan (QAPP) Addendum (Appendix A)
- Site Safety and Health Plan (SSHP) Addendum (Appendix B)

The overall intent of the Phase III RFI is to obtain the additional data necessary to sufficiently characterize the presence or absence of contamination to either support recommendations from Phase I and II RFI studies, support recommendations for further studies, or recommend "no further action" if warranted. The data collected during the Phase III RFI will be used to evaluate human health risks. The general objectives of the Phase III RFI to be completed at Cannon AFB are to:

- Characterize the physical setting and vertical and lateral extent of potential contamination associated with the SWMUs

- Complete a screening-level risk evaluation of human health risks associated with chemicals found at the SWMUs
- Develop recommendations for the SWMUs regarding further evaluations or no further action

This Work Plan provides details on the investigation of SWMUs 86-90 (Site SD-11) and how the data collected will be used to support recommendations. Refer to the Work Plan (W-C 1993) for detailed discussions on: Cannon AFB site characteristics, Data Quality Objectives (DQO) process, behavior of contaminant plumes and contaminant migration pathways. The Phase III field effort is a continuation of earlier investigations, so the 1993 Work Plan rationale and data quality requirements remain the same. Figure 1-2 presents the project schedule.

1.1 APPENDIX I SWMUS ACTIVITY UPDATE

The following subsections present an activity update for each of the Appendix I SWMUs listed in Cannon AFB's RCRA Part B Permit. A summary table of the status of the SWMUs is provided in Table 1-2.

1.1.1 SWMU No. 34 (AGE Drainage Ditch)

The AGE Drainage Ditch is a 1,200-foot-long, 12-foot-wide shallow ditch (approximately 1 foot deep at its deepest point). This SWMU originates on the flightline side of AGE Building 186 and runs parallel to Facilities Buildings Nos. 191, 192, and 193, terminating on base at a culvert inlet near Argentina Avenue. A 1991 RI (W-C 1992) included surface and subsurface soil sampling for chemical analyses, and performance of a Baseline Human Health and Environmental Risk Assessment. The 1991 RI report recommended no further action or investigation was required at this time. To complete the RFI/CMS process for this SWMU, Cannon AFB will need to apply for a Class III RCRA Part B Permit modification under 40 CFR 270.42(c).

1.1.2 SWMU No. 74 (Landfill No. 1)

This SWMU is an inactive landfill located in the north-central portion of Cannon AFB, south of the northern perimeter road. Landfill No. 1 is currently located beneath part of the base golf course. A 1992 RFI (W-C 1993) at the previously reported location for Landfill No. 1, northeast of the base hospital, encountered no evidence of landfill material. As a result of the 1992 RFI and with EPA Region VI concurrence, no additional investigation was done at this location for Landfill No. 1.

In 1993, Cannon AFB encountered suspected landfill material during golf course expansion activities. An approximately 10-acre area, located within the western extent of the golf course and south of the northern perimeter road, has been identified for further investigation in Calendar Year 1995 as Landfill No. 1.

1.1.3 SWMU No. 75 (Sanitary Sewage Lift Station Overflow Pit)

This SWMU is an unlined surface impoundment located on the golf course, north of the hospital and residential area. The overflow pit is located adjacent to the Sanitary Sewage Lift Station and provides containment for overflow when the lift station pumps do not operate. Reportedly, the overflow pit is located on a section of the base sanitary sewer system that handles only domestic sewage. Sewage from domestic areas is generally not considered hazardous. The overflow pit was characterized during the IRP Phase II investigation (Radian 1986), resulting in identification of this SWMU as one of the sites requiring no further action. This area was reportedly incorrectly defined as a SWMU under USEPA's definition of a SWMU for the purpose of corrective action, and therefore was not identified as requiring further study or action (Lee Wan & Associates 1990).

1.1.4 SWMU No. 76 (Sludge Weathering Pit)

The Sludge Weathering Pit is located near Building 396 on the north part of the base and was used for weathering sludge from leaded gas tanks in the 1960s and 1970s. In 1980, the pit was filled with soil and left to revegetate. A 1991 RI (W-C 1992) included surface and subsurface soil sampling for chemical analyses and performance of a Baseline Human Health and Environmental Risk Assessment. The 1991 RI report recommended no further action or

investigation was required at this time. To complete the RFI/CMS process for this SWMU, Cannon AFB will need to apply for a Class III RCRA Part B Permit modification under 40 CFR 270.42(c).

1.1.5 SWMU No. 78 (Fire Department Training Area No. 1)

Fire Department Training Area No. 1 is located in an open field in the northeast corner of the base, south of the railroad tracks and northeast of Perimeter Road. This SWMU was used to conduct fire department training exercises from 1959 to 1968. A 1991 RI (W-C 1992) included surface and subsurface soil sampling for chemical analyses and performance of a Baseline Human Health and Environmental Risk Assessment. The 1991 RI report recommended no further action or investigation was required at this time. To complete the RFI/CMS process for this SWMU, Cannon AFB will need to apply for a Class III RCRA Part B Permit modification under 40 CFR 270.42(c).

1.1.6 SWMU No. 81 (Solvent Disposal Site)

The Solvent Disposal Site is located on the northeast part of the base between Landfill No. 2 and Fire Department Training Area No. 1. The site is located in an open field covered with prairie grass. A 1991 RI (W-C 1992) included surface and subsurface soil sampling for chemical analyses and performance of a Baseline Human Health and Environmental Risk Assessment. The 1991 RI report recommended no further action or investigation was required at this time. To complete the RFI/CMS process for this SWMU, Cannon AFB will need to apply for a Class III RCRA Part B Permit modification under 40 CFR 270.42(c).

1.1.7 SWMU No. 82 (Landfill No. 2)

Landfill No. 2 is an unlined, inactive, cut-and-fill landfill occupying approximately 15 acres in the northeast corner of the base. It is located in an open field just beyond the end of the primary southwest-northeast runway, northeast of Perimeter Road. The landfill received wastes from 1946 to 1947 and from 1952 to 1959. Reportedly, the mode of operation at this SWMU was for wastes to be deposited in trenches, burned, and buried. A 1992 RFI (W-C 1993) included an aerial photograph review, geophysical survey, trenching one pit, surface and subsurface soil sampling for chemical analyses, and performance of a Baseline

Human Health and Environmental Risk Assessment. The 1992 RFI report recommended no further action or investigation was required at this time. To complete the RFI/CMS process for this SWMU, Cannon AFB will need to apply for a Class III RCRA Part B Permit modification under 40 CFR 270.42(c).

1.1.8 SWMU No. 85 (Stormwater Collection Point)

This SWMU is a naturally-occurring playa lake located in the southwestern portion of the base that has received stormwater runoff from the flightline area and POL materials from small spills which could accumulate in the lake. The Stormwater Collection Point was characterized during the IRP Phase II (Radian 1986) and remedial investigations (Walk, Haydel & Associates, Inc. 1990). The RI resulted in the finding that no adverse impact to public health or the environment was expected and that no further study or action was required. EPA, by accepting the RI report (Walk, Haydel & Associates 1990) and the RFI Work Plan prepared by Lee Wan & Associates (1990), agreed with this recommendation.

1.1.9 SWMU Nos. 86-90 Oil/Water Separator Removal (Engine Test Cell)

The five SWMUs (Nos. 86, 87, 88, 89, and 90) at the Engine Test Cell location are commonly referred to as IRP No. SD-11. The oil/water separators and an underground storage tank (UST) were removed during July and August 1994. During the removal action, contaminated soil was encountered which was not expected based on the soil boring information collected during the 18 SWMU RI in 1991. Since contaminated soil was encountered, the removal action ceased, and this Phase III RFI was initiated to evaluate the nature and extent of contaminated subsurface soil at these SWMUs.

1.1.10 Discharge Monitoring at Northeast Stormwater Drainage (SWMU No. 95)

This SWMU consists of a 42-inch corrugated metal pipe (CMP) that discharges to an open ditch near northeast Runway 4/22, and extends under a road to an open field. The drainage receives water from several oil/water separators and runoff and stormwater drains in the east-central portion of the base. The Northeast Stormwater Drainage Area is included as part of the Base-wide Stormwater and National Pollution Discharge Elimination System (NPDES) Permit. This permit requires Cannon AFB to determine if sampling is required in accordance

with the EPA guidance document entitled "Stormwater Management for Industrial Activities" (EPA 832/R-92/006).

1.1.11 Additional RFI at SWMU No. 96 (Old Entomology Rinse Area)

A Phase II RFI at the location of the sink rinse pit within the OERA was designed to further characterize the nature and extent of contamination (if any) at this SWMU. The Phase II RFI consisted of drilling and collection of soil samples for chemical analyses from one 100-foot-deep soil boring located at the approximate location of the former OERA rinse sink pit. A description of the investigation and analytical results are presented in the Walk, Haydel & Associates, Inc. 1988 Phase IV - A Site 117 Old Entomology Rinse Area Environmental Assessment.

1.1.12 SWMU No. 98 (Sanitary Sewer Line)

This SWMU consists of a northeast-flowing trunk line laid along Torch Boulevard in the aircraft maintenance area, with a small south-flowing branch along Torch Boulevard near the main base entrance. A secondary southeast-flowing sewer line enters the main trunk line along Torch Boulevard at Argentina Avenue, then enters a transmission line flowing east across the runways to the sewage treatment lagoons. Only the main and south branch trunk lines, and the east-flowing transmission lines, could have received hazardous wastes. Secondary branch lines flowing northeast to join the main trunk line receive only domestic sewage. The sewer lines are constructed of 8-inch-diameter polyvinyl chloride (PVC) pipe in the housing area and 15-inch-diameter clay tile in the main base area. A 1991 RI (W-C 1992) included sewer line cleaning and video camera inspection/surveying, subsurface soil sampling for chemical analyses, and performance of a Baseline Human Health and Environmental Risk Assessment. The 1991 RI report recommended no further action or investigation was required at this time. To complete the RFI/CMS process for this SWMU, Cannon AFB will need to apply for a Class III RCRA Part B Permit modification under 40 CFR 270.42(c).

1.1.13 Annual Groundwater Monitoring at SWMU Nos. 101 and 102 (Wastewater Treatment Lagoons)

Groundwater samples are collected and submitted for laboratory analysis on an annual basis from four groundwater monitoring wells (101-E, 101-F, 101-G, and 101-H) at this SWMU. Cannon AFB submits analytical results to EPA Region VI within 90 calendar days following the sampling. The samples are analyzed for volatile organic compounds (VOCs), pesticides/polychlorinated biphenyls (PCB's), metals, nitrates, sulfates, and total dissolved solids (TDS). The analytical methods are specified in the USACE Work Plan.

1.1.14 SWMU No. 104 (Landfill No. 4)

This SWMU is an inactive landfill located in the east-central portion of the base, north of the Playa Lake (SWMU No. 103). After the Phase I RFI at Landfill No. 4 in 1992, EPA Region VI requested a Phase II RFI be designed to ascertain if a corrective measures program is required. The Phase II RFI for Landfill No. 4, consisting of the installation, sampling, and analysis at one downgradient groundwater monitoring well, was completed and the results of the investigation submitted to EPA Region VI in April 1995.

1.1.15 SWMU No. 105 (Landfill No. 3)

This SWMU is an inactive landfill located in the east-central portion of the base, south of the Playa Lake (SWMU No. 103). After the Phase I RFI in 1992, EPA Region VI requested a Phase II RFI be designed to ascertain if a corrective measures program is required. The Phase II RFI for Landfill No. 3, consisting of the installation, sampling and analysis at one downgradient groundwater monitoring well, was completed and the results of the investigation were submitted to EPA Region VI in April 1995.

1.1.16 SWMU No. 106 (Fire Department Training No. 2)

Fire Department Training Area No. 2 is located in an open, grass-covered field in the southeast corner of the base, bounded on the north by an east-west paved road and west of an old abandoned north-south runway. This SWMU was used from 1968 to 1974 to provide fire extinguishing experience for base personnel. A 1991 RI (W-C 1992) included surface

and subsurface soil sampling for chemical analyses and performance of a Baseline Human Health and Environmental Risk Assessment. The 1991 RI report recommended no further action or investigation was required at this time. To complete the RFI/CMS process for this SWMU, Cannon AFB will need to apply for a Class III RCRA Part B Permit modification under 40 CFR 270.42(c).

1.1.17 SWMU No. 107 (Fire Department Training Area No. 3)

Fire Department Training Area No. 3 was an unlined surface area, partially covered with gravel, located in the southern part of the base. It is immediately adjacent to an abandoned north-south runway. This SWMU was used for fire department training activities from 1968 to 1974. Recently, it has been used for activities associated with an adjacent explosive ordnance training site. A 1991 RI (W-C 1992) included surface and subsurface soil sampling for chemical analyses and performance of a Baseline Human Health and Environmental Risk Assessment. The 1991 RI report recommended no further action or investigation was required at this time. To complete the RFI/CMS process for this SWMU, Cannon AFB will need to apply for a Class III RCRA Part B Permit modification under 40 CFR 270.42(c).

1.1.18 Additional RFI at SWMU Nos. 109, 110, 111, and 112 (Fire Training Area No. 4)

The full nature and extent of contamination at Fire Training Area No. 4 (SWMU No. 109) was not evaluated by the 1991 RI since this SWMU is an active facility. Additional investigation has been planned, but will not be scheduled until a new Fire Training Area has been constructed and is operational. At that time, Fire Training Area No. 4 will be deactivated. The Phase II RFI planned for Fire Training Area No. 4 includes investigation of SWMU Nos. 110 (underground waste oil tank No. 2336), 111 (unlined pit), and 112 (oil/water separator No. 2336), that are co-located with SWMU No. 109. The unlined pit (SWMU No. 111) was replaced by oil/water separator No. 2336 in 1985. Previous investigations of the unlined pit area have resulted in no further action recommendations (Radian 1986; A.T. Kearney 1987; Walk, Haydel & Associates 1990). However, since SWMU No. 111 is co-located within the boundaries of Fire Training Area No. 4, it will be included in the Phase II RFI for Fire Training Area No. 4. The Phase II RFI is planned to include the following intrusive activities to evaluate the potential lateral and vertical extent of petroleum hydrocarbon contamination in underlying soils:

- Mock airplane area Four soil borings to 100-feet below ground surface
- "Tree" area Two soil borings to 75-feet below ground surface
- Vehicle burn area Two soil borings to 75-feet below ground surface
- Outer perimeter area Three soil borings to 100-feet below ground surface

The outer perimeter area soil borings are intended to evaluate the spread of petroleum hydrocarbon contamination from past activities at Fire Training Area No. 4.

1.1.19 SWMU No. 113 (Landfill No. 5)

This SWMU is an inactive landfill located in the southeastern area of the base and occupies about 70 acres. Cell No. 3, which is closed, is RCRA-regulated because this cell received hazardous waste until mid-1981. No additional hazardous wastes were placed in this cell from 1981 until its closure in 1983. Landfill closure consisted of placing an impermeable cap over Cell No. 3, in accordance with NMED and EPA requirements. During the 18-SWMU RI (W-C 1992), groundwater samples were collected and analyzed for Appendix IX constituents (40 CFR 264) from five previously installed groundwater monitoring wells at Landfill No. 5. Evaluation of the chemical data collected during this investigation indicated that the quality of groundwater has not been affected by past activities at Landfill No. 5. Additional groundwater monitoring wells were also installed in 1992 by USACE to meet RCRA release detection monitoring requirements.

Landfill No. 5 is currently being investigated using a phased RFI approach, under NMED lead. The Phase I RFI Work Plans have been finalized, and the Phase I investigation and report are scheduled to be complete in early 1997. A Draft Post-Closure Plan (ES 1994) for Cell 3 requires installation of a new upgradient well and water quality sampling for one year to determine baseline water quality beneath Landfill No. 5. However, groundwater monitoring plans for the landfill will be finalized after completion of the RFI and the first year of post-closure groundwater sampling and analysis.

TABLE 1-1

APPENDIX I SWMUs ADDRESSED IN THIS WORK EFFORT

SWMU Number	Site Description
86	Engine Test Cell
87	Overflow Pit
88	Former Leaching Field
89	Evaporation Pond
90	Oil/Water Separator

TABLE 1-2

CANNON AIR FORCE BASE, CLOVIS, NEW MEXICO
APPENDIX I SWMUs ADDRESSED IN OTHER WORK EFFORTS

SWMU NO.	SWMU DESCRIPTION	STATUS		
		PHASE I	PHASE II	PHASE III
34	AGE Drainage Ditch (IRP No. SD-11)	YES	YES	NFA
74	Landfill No. 1 (IRP No. LF-1) ¹	YES	F.Y. 95	TBD
75	Sanitary Sewage Lift Station Overflow Pit (IRP No. SD-13)	NFA	NFA	NFA
76	Sludge Weathering Pit (IRP No. WP-14)	YES	YES	NFA
78	Fire Training Area No. 1 (IRP No. FT-6)	YES	YES	NFA
81	Solvent Disposal Area (IRP No. DP-16)	YES	YES	NFA
82	Landfill No. 2 (IRP No. LF-2)	YES	YES	NFA
85	Stormwater Collection Point (IRP No. SD-12)	NFA	NFA	NFA
95	NE Stormwater Drainage Area (IRP No. SD-20)	YES	YES	TBD
96	Old Entomology Rinse Area (IRP No. SD-17)	YES	YES	TBD
98	Sanitary Sewer Line	YES	YES	NFA
101	Wastewater Treatment System Lagoons (IRP No. WP-21)	YES	YES	Groundwater Monitoring
102	Wastewater Treatment Effluent Discharge (IRP No. WP-21)	YES	YES	Groundwater Monitoring
104	Landfill No. 4 (IRP No. LF-4)	YES	YES	TBD
105	Landfill No. 3 (IRP No. LF-3)	YES	YES	TBD
106	Fire Training Area No. 2 (IRP No. FT-7)	YES	YES	NFA
107	Fire Training Area No. 3 (IRP No. FT-8)	YES	YES	NFA
109	Fire Training Area No. 4 (IRP No. FT-9) (To be investigated in C.Y. 95 after new one is built) (Investigated with SWMU No. 109)	YES	C.Y. 95	TBD
110	Underground Waste Oil Tank No. 2336 ²	YES	C.Y. 95	TBD
111	Unlined Pit	YES	NFA	NFA
112	Oil/Water Separator No. 2336 ²	YES	C.Y. 95	TBD
113	Landfill No. 5 (IRP No. LF-5) ⁴	YES	State Lead	TBD

Notes:

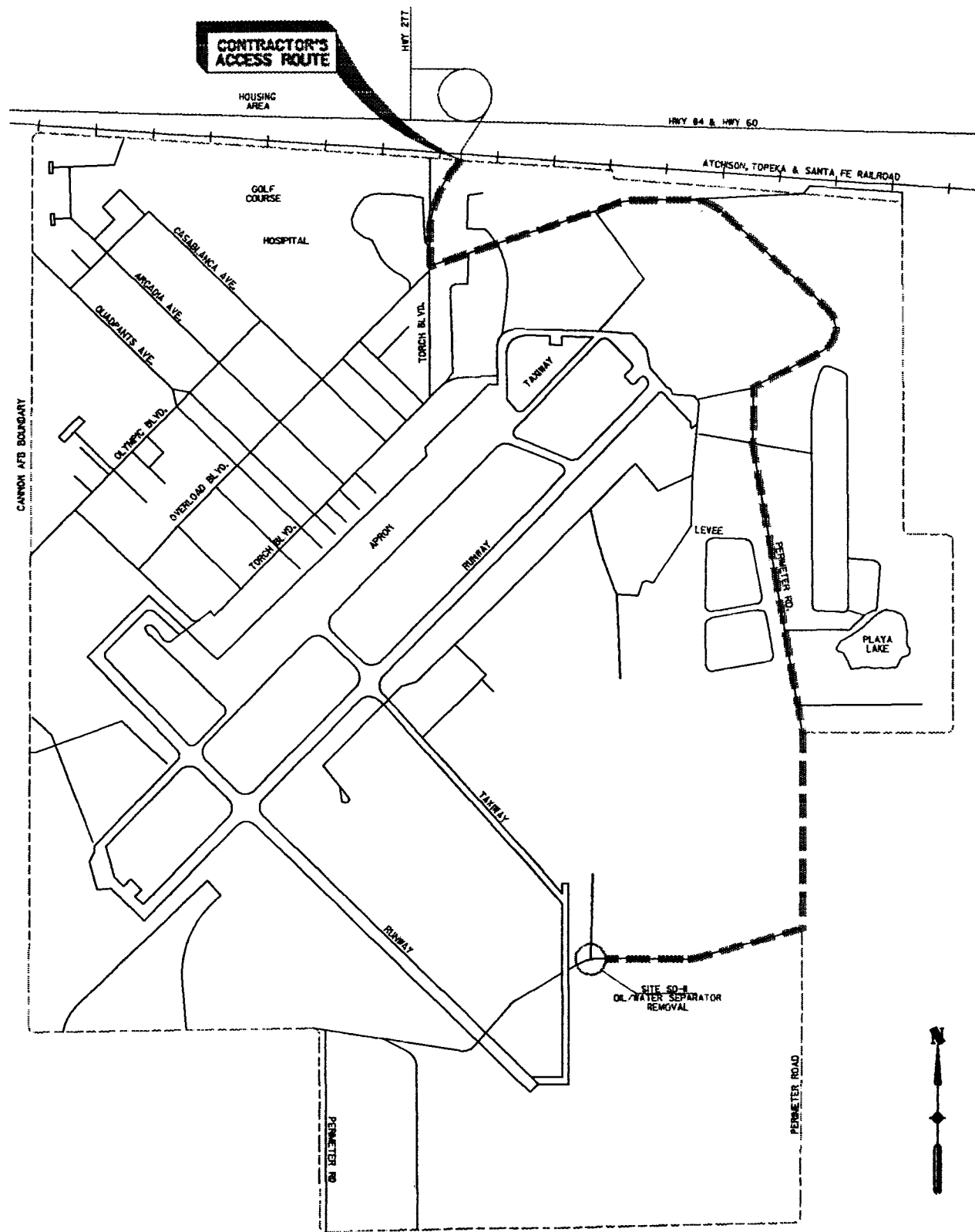
C.Y.95 = Calendar Year 1995

F.Y.95 = Fiscal Year 1995

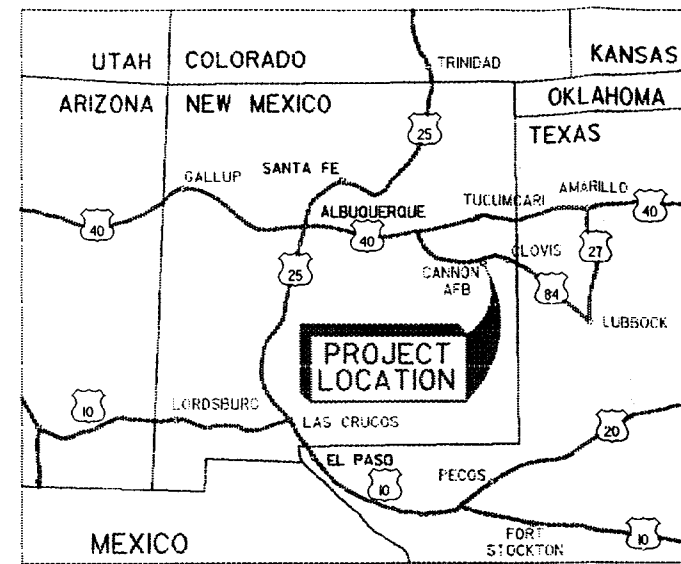
NFA = No Further Action

TBD = To be Determined

¹ Initially No Further Action, recent discovery requires investigation.² Included in Appendix III, being investigated with SD-11.³ Included in Appendix II, being investigated with FT-9.⁴ NMED has primacy, with EPA Region VI review and concurrence.



LOCATION PLAN
NO SCALE



VICINITY MAP
NO SCALE

Woodward-Clyde ENGINEERING & SCIENCES APPLIED TO THE EARTH & ITS ENVIRONMENT	CANNON AFB		NEW MEXICO
	VICINITY MAP		
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS OMAHA, NEBRASKA	SIZE	DWG NO. CNO1P301.DGN	FIG. NO. 1-1
	SCALE: NONE	SHEET OF	