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September 9, 1994

Mr. David Neleigh, Chief (6H-PN)
New Mexico Federal Facilities Section
Hazardous Waste Management Division
U.S. Environmental Protection Agency
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

Re: **RCRA Facility Assessment at Transwestern Pipeline Company, Roswell Compressor Station, New Mexico**

Dear Mr. Neleigh:

Enclosed is the RCRA Facility Assessment (RFA) of Transwestern Pipeline Company's Roswell Compressor Station conducted by the New Mexico Environment Department (NMED) Hazardous and Radioactive Materials Bureau (HRMB).

This RFA is provided to EPA-Region VI in fulfillment of HRMB's FY 94 Grant Workplan commitment to conduct an RFA at a facility prior to development of an initial draft permit. HRMB would appreciate any comments you have on this particular RFA.

Please contact me at (505) 827-4313 if you have any questions.

Sincerely,

for Ronald Kern

Ronald Kern, RCRA Technical Compliance Program Manager
Hazardous and Radioactive Materials Bureau

Enclosure

cc: Barbara Hoditschek, RCRA Permitting Program Manager
File

RCRA FACILITY ASSESSMENT
PR/VSI REPORT

ENRON - TRANSWESTERN PIPELINE COMPANY
ROSWELL COMPRESSOR STATION NO. 9
ROSWELL, NEW MEXICO

Prepared for:

U.S. Environmental Protection Agency
Region VI
1445 Ross Avenue, Suite 1200
Dallas, Texas 87502-2733

Prepared by:

New Mexico Environment Department
Hazardous and Radioactive Materials Bureau
525 Camino De Los Marquez, Suite 4
Santa Fe, New Mexico 87502

Grant Commitment for FY 94
Activity D: Corrective Action

September 1994

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LIST OF ACRONYMS AND ABBREVIATIONS

AOC	Areas of Concern
bgs	Below ground surface
BLM	U.S. Bureau of Land Management
B&C	Brown & Coldwell
B&R	Brown & Root Environmental
CAA	Clean Air Act
CES	Cypress Engineering Services
DBS&A	Daniel B. Stephens & Associates, Inc.
EDAC	Earth Data Analysis Center
EOTT	Enron Oil Trading and Transportation Company
EPA	Environmental Protection Agency
Halliburton	Halliburton NUS Environmental Corporation
HRMB	Hazardous and Radioactive Materials Bureau
HLA	Harding Lawson Associates
MW	Monitor well
MSDS	Material Safety Disposal Sheets
NFA	No further action
NMED	New Mexico Environment Department
NMSHTD	New Mexico State Highway and Transportation Department
PR	Preliminary review
PSH	Phase separated hydrocarbons
OCD	Oil Conservation Division
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RW	Recovery well
SEO	State Engineer Office
SPCC	Spill Prevention, Control and Countermeasure Plan
SVOC	Semi-volatile organic compounds
SWMU	Solid Waste Management Units
TCA	1,1,1-trichloroethane
TCLP	Toxicity Characteristics Leaching Procedure
TDS	Total dissolved solids
TPH	Total petroleum hydrocarbons
TW	Transwestern Pipeline Company
USGS	United States Geological Survey
VOC	Volatile organic compounds
VSI	Visual Site Inspection

EXECUTIVE SUMMARY

The New Mexico Environment Department (**NMED**), Hazardous and Radioactive Materials Bureau (**HRMB**), Technical Compliance and Permitting Sections conducted a Resource Conservation and Recovery Act (**RCRA**) Facility Assessment (**RFA**) at Transwestern Pipeline Company (**TW**)'s Roswell Compressor Station No. 9 near Roswell, New Mexico during the week of August 1, 1994. TW is a subsidiary of the ENRON Operations Corporation.

The following Solid Waste Management Units (**SWMU**) and Areas of Concern (**AOC**) were identified by the NMED during a Preliminary Review (**PR**) and a Visual Site Inspection (**VSI**):

- SWMU 1 - Parts Washer Area
- SWMU 2 - Sand Blasting Area
- SWMU 3 - Caustic Tank and Sump in Wash Rack Area
- SWMU 4 - Junk Bin
- SWMU 5 - Special Waste Dumpster
- SWMU 6 - Waste Lube Oil Tank/Used Oil Tank Area
- SWMU 7 - Engine Room Basement (Pipewell Area)
- SWMU 8 - Panhandle Pig Receiver Area
- SWMU 9 - West Texas Pig Receiver Area
- SWMU 10 - Pig Wash Area/Sump
- SWMU 11 - Mist Extractor or Muffler Area
- SWMU 12 - Pipeline Liquids Tank/Oily Waste Water Tank Area
- SWMU 13 - Fire Training Area
- SWMU 14 - Former Surface Impoundments

- AOC 1 - Pig Launching Area
- AOC 2 - Ambitrol Product Storage Tanks
- AOC 3 - Wash Rack Sumps/Former Leachfield (Evaporative Cooler Discharge)
- AOC 4 - Evaporative Cooler Unit
- AOC 5 - Stock Pond

Based on an evaluation of the findings on the above SWMUs and AOC, a determination was made as to which of these units need further investigation by TW, and the scope of the additional investigation. The recommendations and conclusions drawn from the RFA are described in the following pages.

CHAPTER 1

1.0 INTRODUCTION

1.1 Purpose of The RCRA Facility Assessment

The purpose of the Resource Conservation and Recovery Act (**RCRA**) Facility Assessment (**RFA**) is to identify potential or known releases from Solid Waste Management Units (**SWMU**) or Areas of Concern (**AOC**) and to determine if further investigation is needed. Determinations regarding the likelihood of potential releases is made through a Preliminary Review (**PR**) and a Visual Site Inspection (**VSI**). A PR was conducted prior to and concurrent with the VSI. During the PR, efforts were focused on collecting facility waste management/generation processes information, identifying SWMUs and other potential releases of concern, and gathering unit characteristics including operational history.

The following sources were utilized for review of documents and files pertaining to the subject RCRA facility:

- o Hazardous and Radioactive Materials Bureau (**HRMB**),
- o Oil Conservative Division (**OCD**), and
- o Transwestern Pipeline Company (**TW**).

The VSI was conducted by the following HRMB and U.S. Environmental Protection Agency (**EPA**) personnel:

- o Cornelius Amindyas, HRMB RCRA Permitting Section
- o Teri Davis, HRMB RCRA Technical Compliance Section
- o Marc Sides, EPA

The following personnel participated in the VSI:

- o Bill Olson, State of New Mexico Oil Conservation Division (**OCD**)
- o Larry Campbell, TW
- o George Robinson, ENRON (TW)
- o Bill Kendrick, ENRON (TW)

1.2 Procedures

The RFA was conducted in accordance with the procedures outlined in EPA's RFA guidance document (EPA 1986). The HRMB of the NMED conducted the PR at the HRMB library and at the OCD office in Santa Fe during the week of July 25 and August 1, 1994; and at the TW premises (at the facility) near Roswell New Mexico, during the week of August 1, 1994.

NMED reviewed all available documents relevant to the TW RFA. The main sources of information were: (1) NMED memoranda and administrative record and reports concerning the facility, and (2) general correspondence between NMED and TW concerning the facility. NMED used the information collected during the PR to prepare a list of potential SWMUs at the facility. TW representatives verbally provided NMED with the majority of the requested information during the VSI.

NMED conducted the VSI on August 4, 1994, at the TW facility. When NMED personnel arrived at the facility, they met with TW and an OCD representative to review the facility's history, organization, and operations, and to resolve any questions concerning TW's hazardous waste management practices. NMED delegates explained the purpose of the visit and discussed the RFA process briefly. The participants in the VSI include the personnel listed above in Section 1.1.

In order to understand TW's waste management practices, NMED personnel inspected the entire facility, including the 14 SWMU and 5 AOC locations identified during the PR. The VSI and subsequent follow-up telephone calls provided the information needed evaluate the information in terms of RFA objectives and to make the recommendations presented in this report. Photographs of the identified SWMUs and AOCs taken during the VSI are included in Appendix A.

CHAPTER 2

2.0 FACILITY LOCATION AND DESCRIPTION

The following is a brief synopsis of the TW facility layout, operation, and history of the former surface impoundments which are the subject of this RFA. The information presented in this chapter is taken directly from DBS&A (1994, p.5-11), as presented in TW's closure plan for the Roswell Compressor Station former surface impoundments. Modifications to formatting and minor inclusions have been made.

2.1 Site Location

The Roswell compressor station is located about 9 miles north of the center of the city of Roswell on the east side of U.S. Highway 285. This facility occupies approximately 80 acres of land in Sections 21 and 28, Chaves County, New Mexico (Fig. 1). The property is privately owned by Transwestern Pipeline Company, while the remainder of Sections 21 and 28 are State Trust Land. Site access is via U.S. Highway 285, and the entire property is secured by a chain link fence. The following is a list of pertinent information regarding the facility:

Facility Name: Transwestern Pipeline Company
Compressor Station No. 9

Facility address: Transwestern Pipeline Company
6381 North Main Street
P.O. Box 1717
Roswell, New Mexico 88202-1717

Telephone Number: (505) 625-8022

EPA I.D. Number: NMD986676955

County and State: Chaves County, New Mexico

Property Legal Description: SW¼ of the SW¼ of Section21, T.9S.R.24E.
NW¼ of the NW¼ of Section 28, T.

Latitude of Former Impoundments: 33°30'32" North

Longitude of former Impoundments: 104°31'01" West

Site Elevation Approximately 3610 feet above sea level

The Roswell compressor station is one of numerous similar facilities located along the Transwestern natural gas pipeline that extends from Texas to California. Natural gas is received from the east through two 24-inch pipelines, the West Texas Lateral and the Panhandle Lateral, and leaves to the northwest through two 30-inch pipelines. The primary function of the compressor station is to boost the pressure of the natural gas stream by means of piston compressors powered by natural gas internal combustion engines. The facility also includes the district offices for Transwestern's New Mexico operations, along with other ancillary buildings including a warehouse and a repair shop (Fig. 2). The compressor station has been in operation at this location since August 9, 1960.

2.2 History and Operation of Three Former Surface Impoundments

Little information exists about the operational history of the three former surface impoundments. Much of what is known is based on the recollection of present or former Transwestern employees. The following discussion summarizes the available information regarding the locations, sizes, and periods of operation of the former surface impoundments.

The primary function of the former impoundments was to contain pipeline condensate, a hydrocarbon liquid that accumulates during the periodic cleaning of the natural gas pipelines. Natural gas is composed mostly of alkane compounds, with methane being the most abundant (Eiceman, 1986). In addition, natural gas contains variable concentrations of heavier molecular weight hydrocarbons (C4+), which may condense due to changes in temperature and pressure within the pipelines. Besides the higher molecular weight hydrocarbons derived from the natural gas itself, pipeline condensate may also contain lubrication oil blow-by, derived from upstream reciprocating engine gas compressors located at other compressor stations. The lubrication oil blow-by consists of crankcase lubricating oil that bypasses the compressor piston rings and enters the natural gas pipeline.

Pipeline condensate is periodically removed from the pipeline through "pigging" operations, which make use of a cylindrical piston-like device known as a "pig." The pig cleans the condensate from the interior pipeline wall by scraping and brushing as it is carried through the pipeline by the pressurized gas stream. The pig and the accumulated liquid condensate are removed from the pipeline at the "Panhandle Pig Receiving" area, which is more fully described in Section 4.8 of this report.

Currently, all condensate is collected and stored prior to shipment for off-site disposal. Formerly, the condensate was stored in one or more unlined surface impoundments that gave rise to the current study. The impoundments have been variously referred to as the "disposal pit" or the "burn pits." The latter term refers to the reported practice of periodically burning the hydrocarbon liquids in the impoundment to reduce their volume (Campbell, 1993).

The first reported use of a surface impoundment at this location was in August of 1960, shortly following construction of the compressor station in the same year. However, no

records are currently available showing the exact location or size of this surface impoundment or others that may have been used subsequently until the last remaining surface impoundment was backfilled in 1986. Correspondence between Transwestern Pipeline Company, NMED, and OCD has generally referred to a single impoundment as "the disposal pit" or "the burn pit." However, the General Plan map for the Roswell compressor station showed two more surface impoundments located in the northeast corner of the facility, in the NE¼ of the SW¼ of the SW¼ of Section 21, T. 9S. R. 24E. The locations of the two former burn pits as previously shown on the General Plan were found to be incorrect, as discussed below.

A report prepared by Metric Corporation in 1991 indicated the possibility that three pits had existed in the northeast corner of the facility. This was reportedly based on discussions with a former compressor station supervisor who was able to recall the approximate locations of three former surface impoundments. The three pits are designated in the Metric report as Pit 1 (southernmost), Pit 2 (northeastern), and Pit 3 (northwestern). The employee was said to have pointed out the approximate former locations of the pits to the Metric field staff. For the sake of consistency, these designations will be retained through this report based on the closure plan Transwestern Pipeline Company submitted to the New Mexico Environment department in June, 1994.

The exact location and number of the former surface impoundments is still not known. In order to clarify the number and exact locations of the former impoundments, Daniel B Stephens and Associates (**DBS&A**) obtained historical aerial photographs showing the compressor station. The following sources were contacted during this effort: the Earth Data Analysis Center (**EDAC**, Albuquerque), the U.S. Bureau of Land Management (**BLM**, Albuquerque), the New Mexico State Highway and Transportation Department (**NMSHTD**, Santa Fe), IntraSearch (Denver), and the United States Geological Survey (**USGS**) Earth Science Information Center (Denver). Several aerial photographs showing the compressor station were located, and contact prints were obtained for five different photographs taken on the following dates:

Date Flown	Approximate Scale	Source
07/28/61	1:23,000	EDAC-Albuquerque
10/10/72	1:25,000	NMSHTD-Santa Fe
06/21/73	1:32,000	BLM-Albuquerque
04/19/81	1:26,000	BLM-Albuquerque
08/05/82	1:19,000	NMSHTD-Santa Fe

The 1961 aerial photograph shows a single feature that appears to be a surface impoundment in the extreme northeast corner of the property. This impoundment corresponds to Pit 2 on Figure 2. This appears to be the first surface impoundment constructed at the compressor station.

The 1972 and 1973 photographs reveal two features that appear to be surface impoundments. In order to more clearly see these features, enlargements were made of the 1973 and 1981 BLM photographs to scales of 1:5340 and 1:4330, respectively. Examination of the 1973 photograph shows two surface impoundments Pit 1 and Pit 2, with a third feature that may represent a backfilled impoundment Pit 3 (Fig. 2).

In the 1981 and 1982 photographs, only Pit 1 remains visible. The features labeled as Pit 2 and Pit 3 appear to have been backfilled prior to the April 19, 1981 flight. Pit 1 was reportedly backfilled in June of 1986 (Campbell, 1993). No wastes of any type were received after that date. Based on the aerial photographs, the dimensions and approximate periods of operation of the three former surface impoundments were as follows:

Impoundment	Approximate Dimensions	Date Constructed	Date Backfilled
Pit 1	40' x 70' (rectangular)	After 7/61, before 10/72	6/86
Pit 2	70' diameter (circular)	Before 7/61	Before 4/81
Pit 3	50' diameter (circular)	After 7/61, before 10/72	Before 4/81

It is estimated that the impoundments were at most 10 feet deep. Therefore, the maximum volumes of Pits 1, 2, and 3 during their operational lifetimes were approximately 1,037, 1,425, and 727 cubic yards, respectively.

2.3 Regulatory Status

2.3.1 RCRA Permits

Operations involving wastes generated during the production and transmission of natural gas are generally exempt from regulation under RCRA as a result of the petroleum exclusion. Thus, Transwestern's Compressor Station No. 9, along with other compressor stations in New Mexico, have historically been regulated by the New Mexico OCD.

Chlorinated solvents were first detected in soil gas near the former surface impoundments during a soil vapor survey by Harding Lawson Associates (**HLA**) in 1991. The compound detected most frequently was 1,1,1-trichloroethane (**TCA**). Because chlorinated volatile organic compounds (**VOCs**) are not natural components of natural gas or pipeline condensate, and because spent halogenated solvents are classified as F001 "Listed Wastes" under RCRA, the NMED Hazardous and Radioactive Materials Bureau consequently became involved.

Following a subsequent soil investigation by Metric Corporation completed in December 1991, TW attended a series of meetings with NMED and OCD to discuss the potential corrective action at the former surface impoundments. Because it appeared possible that RCRA-regulated wastes had been inadvertently placed in the impoundments, NMED requested that TW submit a RCRA Part A permit application.

On November 30, 1992, TW submitted the RCRA Part A application to NMED and OCD. During a joint meeting of NMED and OCD with TW on December 10, 1992, NMED requested that the Part A application be resubmitted using the proper EPA forms. This was done on January 5, 1993.

On February 17, 1993, NMED requested that TW submit a RCRA closure plan for the former impoundments in accordance with the New Mexico Hazardous Waste Regulations, Part VI, Section 40 CFR 265.112(a). Although the impoundments had in fact been physically closed since June of 1986, TW prepared a closure plan, which was delivered to NMED on July 1, 1993. NMED rejected this closure plan on March 7, 1994 on the grounds that it was grossly inadequate and requested that a more comprehensive closure plan be submitted at a later date. On April 8, 1994, Transwestern met with NMED to discuss the Notice of Deficiency. During the meeting, NMED requested that an administratively-complete closure plan be delivered by June 1, 1994.

Meanwhile, Transwestern Pipeline Company had begun interim corrective measures to recover free hydrocarbon products from Monitor Well (**MW**) MW-1 (Fig. 5). Three additional wells, MW-1B, MW-2, and Recovery Well (**RW**) RW-1, were subsequently connected to the product recovery system. TW has continued to keep NMED and OCD informed of the results of all subsurface investigations, as well as the performance of the product recovery system.

Transwestern continues to maintain that the hydrocarbon contaminants that originated from past disposal practices at the surface impoundments represent petroleum industry wastes, which are therefore exempt from regulation under RCRA. Furthermore, TW has been emphasizing that the soil and ground water underlying the former impoundments are best addressed in a manner similar to other petroleum hydrocarbon spill sites. However, in accordance with NMED's request, TW and submitted to the Hazardous and Radioactive Materials Bureau, a closure plan to satisfy the requirements of RCRA. "

The subject closure plan still has some deficiencies that will be pointed out accordingly later in related correspondence. It is imperative that if TW fail to successfully demonstrate clean closure of the three former surface impoundments, it will be required to obtain a post-closure care permit and to conduct attendant ground water monitoring in accordance with HWMR-7, Part V, §264, applicable portions of Subpart F.

2.3.2 Oil Conservation Division Plan

The only environmental permit currently in force at TW is a Discharge Plan GW-52 with the OCD. Annual inspections are conducted by OCD to ensure compliance with Discharge Plan.

2.3.3 Air Quality Permit

TW does not have an air quality permit and does not plan to have one since the facility was "grandfathered in" when the current Clean Air Act (**CAA**) came into effect. That was because TW had been operating the subject facility prior to January 1972 when the CAA took effect. The facility will only lose its 'grandfather' status in the future if modifications are made to emission related components of the facility. Currently the NMED Air Quality Control Bureau conducts intermittent inspections of the facility. According to personal communication with NMED Air Quality personnel (August 31, 1994), the facility is not currently subject to any air permits.

CHAPTER 3

3.0 ENVIRONMENTAL SETTING

The information presented in this chapter is taken directly from DBS&A (1994, p.11-17), as presented in TW's closure plan for the Roswell Compressor Station former surface impoundments. Modifications to formatting and minor inclusions have been made.

3.1 Geographic Setting and Climate

The Roswell compressor station is located approximately 6 miles west of the Pecos River within the Pecos Valley drainage basin. The entire area west of the Pecos River is generally referred to as the west Pecos slope (Kelley, 1971), which rises westward from elevations of about 3,300 feet at the Pecos River to over 10,000 feet in the Capitan Mountains some 50 miles to the west. Tributary surface streams drain west to east toward the Pecos River. Local topography is generally of low relief. The mean annual precipitation as measured at the Roswell Municipal Airport for a 23-year period was 9.82 inches. The majority of the precipitation occurs in July and August during frequent summer thunderstorms.

3.2 Regional Hydrogeology

The Roswell compressor station lies within the northernmost portion of the Roswell hydrologic basin. The basin is structurally controlled by eastward-dipping carbonate and evaporite sequences of Permian age which were uplifted during the Tertiary period during the development of the Sacramento and Guadalupe Mountains along the western margin of the basin (Kelley, 1971). Eastward flowing tributaries originating in the western highlands have deposited Quaternary alluvium over the Permian age rocks west of the Pecos River.

Because the average dip of the Permian rocks is greater than the slope of the land surface, progressively younger units are encountered eastward toward the Pecos River. Several prominent northeast trending ridges and hills interrupt the gently sloping plains near the site. These structures are narrow fault zones referred to as the Border Hills, Six-Mile Hill, and the Y-O faulted anticlines.

The stratigraphic units of importance with regard to water resources are, in ascending order, the San Andres Formation (Permian), the Artesia Group (Permian), and the undifferentiated Quaternary valley fill alluvium. Figure 3 shows the generalized stratigraphy in the vicinity of the site. Ground water is produced from both a shallow water-table aquifer (alluvium) and a deeper artesian aquifer that includes the two bedrock units (Welder, 1983). The deep bedrock aquifer is commonly known as the Roswell artesian aquifer. According to the State Engineer Office (**SEO**), approximately 400,000 acre-feet of water are pumped annually from the two

aquifers of the Roswell hydrologic basin (DBS&A, 1992). The two aquifers are separated by a semi-confining layer, but are connected where the carbonate aquifer rises structurally to meet the shallow aquifer. Both aquifers are recharged along surface exposures on the slopes to the west and are believed to discharge to the Pecos River at the eastern margin of the basin.

The following subsections describe each of the hydrostratigraphic units in the Roswell basin in detail:

3.2.1 San Andres Formation

The San Andres Formation consists primarily of a thick sequence of limestones, dolomitic limestones, and dolomites, with increasing quantities of interbedded anhydrite and gypsum to the north (Kelley, 1971). The formation is divided into three members, in ascending order: the Rio Bonito, the Bonney Canyon, and the Fourmile Draw members (Fig. 3) (Kelley, 1971). The average thickness of the formation is about 1,000 feet in the Roswell basin (Bean, 1949).

The Fourmile Draw member is the principal water-bearing unit within the San Andres Formation. High permeability has resulted from an irregular network of collapsed breccias, cavities, caves, and other interconnected open structures which were formed by dissolution of evaporite and carbonate beds. Gypsum beds become much more abundant in the Fourmile Draw member from Roswell northward (Kelley, 1971), and a well-developed karst surface is exposed where the unit is not covered by alluvium. In the northern portion of the basin the water-bearing zones of the San Andres Formation are approximately 400 to 600 feet thick and ground-water flow is primarily to the east-southeast toward the Pecos River.

In general, the lower boundary of the Roswell artesian aquifer, is defined by low permeability zones that commonly occur within the Bonney Canyon member, which lies approximately 450 feet below the surface in the vicinity of the Roswell compressor station (Figure 3). The State Engineer Office records for wells near the site indicate that the upper boundary of the San Andres Formation is approximately 92 feet below ground surface (**bgs**) in this area.

3.2.2 Artesia Group

The Artesia Group includes the following formations, in ascending order: the Grayburg, Queen, Seven Rivers, Yates, and Tansill Formations. In the vicinity of the Roswell compressor station, only the first three formations are present. The Artesia Group consists primarily of dolomite, sandstone, and gypsum units of Permian age. The sedimentary sequence represents a rapid lateral change in depositional environments from the southern massive reef complexes near Carlsbad to the northern clastic and evaporitic sequences representative of back reef and shelf environments (Kelley, 1971).

The Grayburg Formation unconformably overlies the San Andres Formation and ranges in thickness from 140 to 360 feet. The bottom of the Grayburg Formation provides a leaky confining bed that allows artesian ground water to move upward through the Artesia Group into the shallow alluvial aquifer. The thickness of this confining bed varies from 0 to 1,000 feet across the basin.

Drillers logs in the Roswell area indicate that discontinuous permeable units in the upper Artesia Group act as water-bearing zones (Welder, 1983). Fractures and cracks between fragments of collapsed breccia and solution-enlarged bedding planes and joints constitute the principal sources of permeability. These water-bearing zones generally occur in the upper quarter of the confining unit and may yield water to wells that tap both the upper Artesia Group and the shallow alluvium.

In most areas the Artesia Group is covered by a veneer of Quaternary alluvium west of the Pecos River. In the northwest portion of the basin, the bedrock confining unit is thin or absent, and the clay beds within the valley fill act as the confining bed for the lower confined carbonate aquifer. Historically, the lower carbonate aquifer discharged upward into the alluvium, but within the past 50 years, the vertical gradient across the confining bed has reversed because of ground-water pumping from the deep aquifer. This reversal has resulted in a downward gradient, causing ground water in the shallow aquifer to discharge to the deeper carbonate aquifer in some areas (DBS&A, 1992).

3.2.3 Quaternary Valley Fill

The Quaternary valley fill in the Roswell area was deposited by shifting streams flowing from the west toward the Pecos River. The valley fill consists of poorly to moderately consolidated deposits of gravel, sand, and clay which mantle the underlying Permian rocks. The thickness of alluvial sediments varies considerably from one locality to another because of the irregular bedrock erosional surface upon which the alluvium was deposited. In some areas the alluvial fill is moderately well cemented.

Lyford (1973) developed a thickness (isopach) map after examination of drill cuttings from 225 wells penetrating the valley fill. Lyford's map indicates that the alluvium near the site is generally less than 50 feet thick. In other areas, however, the thickness can exceed 250 feet thick where the alluvium fills depressions in the underlying bedrock surface. Recent SEO well records indicate that the alluvium near the site is approximately 70 feet thick (DBS&A, 1992).

Lyford (1973) described three distinct units in the valley fill of the Roswell Basin. These units were termed the quartzose, clay, and carbonate gravels. The quartzose unit consists of sandstone, quartzite, quartz, chert, and igneous and carbonate fragments with varying degrees of calcium carbonate cemention. The quartzose unit in the vicinity of the Pecos River consists primarily of medium to coarse, uncemented quartz grains (Welder,1983). Silt and

clay deposits occur as lenses overlying the quartzose unit. These lenses were deposited in small ponds and lakes that resulted from the dissolution and collapse of the underlying carbonate rocks. The carbonate-gravel unit overlies the other valley fill deposits and generally consists of coarse carbonate gravel with intermixed silts and caliche.

The alluvial sediments underlying the compressor station, as observed in borings drilled during several investigations, consist predominantly of interbedded cobbles, gravel, sand, silt, and clay. The finer-grained zones form lenticular beds which appear to be discontinuous across the site. Some of the alluvial deposits are firmly cemented in some places. These lithologic descriptions are consistent with Lyford's descriptions of the valley fill.

The principal water-bearing zones of sands and gravels are separated by less permeable lenses of silt and clay. According to Welder (1983), one to five water-bearing zones exist within the valley fill, and in many areas the alluvium is hydraulically connected to the upper bedrock units of the Artesia Group. The perimeter of the shallow alluvial aquifer is generally bounded by a margin of less permeable alluvium.

Work done by Daniel B. Stephens & Associates, Inc. (1992) approximates the elevation of the water table in the shallow alluvium, as determined from measurements of water levels in wells completed in the alluvium. The work indicates that the station lies slightly outside the mapped extent of the shallow alluvial aquifer and that ground-water flow is toward the Pecos River. Although a thin layer of saturated alluvium exists as far north as Arroyo del Macho, Welder (1983) did not include this area within the extent of the shallow alluvial aquifer as defined by him, primarily because the ground-water quality in this area is too poor to be used for water supply purposes (DBS&A, 1992). The poor water quality in the shallow alluvial aquifer from slightly south of the Roswell compressor station northward is due to the presence of gypsum beds of the Fourmile Draw member at the base of the alluvium.

Because of the poor water quality and the low yields, most wells completed in the shallow alluvium are used primarily as livestock water supplies. In general, the chloride content of water in the shallow aquifer increases from west to east and ranges from 20 mg/L to 3700 mg/L (Welder, 1983). The presence of gypsum beds results in objectionably high calcium and sulfate concentrations in the shallow alluvial aquifer in the vicinity of the Roswell compressor station and northward. Sulfate concentrations are typically in the range of 2,000 to 3,000 mg/L, which is approximately equal to the equilibrium saturation concentration for ground water in direct contact with gypsum ($CaSO_4 \cdot 2H_2O$). Thus, background sulfate concentrations in this area are four to five times above the New Mexico Water Quality Control Commission ground-water standard for sulfate of 600 mg/L. The poor water quality in the alluvium is consistent with the high total dissolved solids concentrations reported for ground water from the on-site monitor wells.

3.3 Water Well Inventory

A survey was conducted to locate water supply wells within 2 miles of the Roswell compressor station. This survey was accomplished by searching a water well database created by DBS&A that is based on the USGS Ground-Water Sites Inventory database. The database contains the locations of all known water wells plus additional information regarding well construction, well use, and aquifer penetrated. The water well database was compiled by DBS&A for a ground-water modeling project conducted for the SEO.

A review of the database revealed that there are 14 wells within 2 miles of the compressor station. Figure 4 shows the locations of the wells relative to the site. The database indicates that 3 of the wells are abandoned (no longer in use). Known uses of the other wells include 2 wells reportedly used as observation wells, 2 as livestock wells, 1 as a domestic well, and 4 as irrigation wells. The use of the 2 remaining wells is unknown.

The closest well to the former surface impoundments is a shallow livestock well completed in alluvium to a depth of 58 feet. This well, which is no longer in use, is located about a half mile due east of the impoundments in the direction that would presumably be downgradient. The well is completed with 8⅝-inch casing, and the depth to water measured in 1937 reportedly was 15 feet. The well is presently abandoned and may be dry because of declining water levels in the Roswell area.

The next nearest well is a 352-foot-deep well located in the southwestern portion of the compressor station property. This well was reportedly drilled in 1969 for use as a water supply well for the compressor station (Campbell, 1994). Following connection of the facility to the City of Roswell water distribution system, however, use of the well was turned over to the Pecos Valley Artesian Conservancy District for monitoring water levels in the Roswell bedrock aquifer. Based on comparison of the drillers' log with the local stratigraphy, the well is completed in limestone of the San Andres Formation. The well is cased with 9⅝-inch steel casing from the surface to a depth of 240 feet, and is open from 240 feet to the total depth of 352 feet. The depth to water as measured in 1969 was 85 feet.

The only reported domestic water supply well within 2 miles of the facility is located approximately 1.3 miles northeast of the compressor station. Although the well is reportedly a domestic well, no dwelling could be seen on aerial photographs at this location. The well is completed to a depth of 375 feet in the San Andres Formation. The depth to water was reportedly 45 feet in 1961, and examination of the drillers' log shows that the well is cased from the surface to a depth of 370 feet.

Several active irrigation and livestock wells are reportedly located from 1 to 2 miles east of the site (Fig. 4). All of these wells are completed in the San Andres limestone aquifer. Given the distance to the downgradient wells and the presence of the aquitard between the alluvium and the bedrock aquifer, it is very unlikely that ground water from the compressor station could impact any of the active water supply wells.

3.4 Past Investigations

Several hydrogeologic investigations have been completed at the Roswell compressor station to characterize the extent of subsurface impacts near the former surface impoundments. The investigations have included (1) a comprehensive soil vapor survey and soil coring program by HLA, (2) a drilling and soil sampling program by Metric Corporation, (3) installation of a monitor well by Halliburton NUS Environmental Corporation (**Halliburton**), (4) installation of a product recovery pump in monitor well MW-1 by Cypress Engineering Services (**CES**), (5) a drilling and soil sampling program by Brown & Root Environmental (**B&R**), and (6) system operation and optimization by Brown & Caldwell (**B&C**).

3.5 Site-Specific Hydrogeology

Based on the above investigations, the following description of the site hydrogeology is provided as supplement to the above hydrogeologic section.

Quaternary sediments beneath the impoundments consist of interbedded cobbles, gravel, sand, silt, and clay to depths of approximately 70 feet bgs. The lithology of the alluvium is consistent with the descriptions provided by Lyford (1973). The hydrogeology underlying the site is as follows:

- From the ground surface to depths of approximately 30 to 35 feet bgs, brown gravelly sands and clays are present. Perched water is often encountered within the bottom few feet of this interval.

- At depths of approximately 35 to 60 feet, light brown to reddish-colored interbedded silts, sands, and clays are encountered. The fine-grained clay lenses serve as the perching layer for the downward moving fluids.

- At depths of approximately 60 to 70 feet, saturated silty sands and sands are present. This zone is referred to as the uppermost aquifer.

- At approximately 70 feet, a red plastic clay of unknown thickness is present. This unit probably represents the transition from the Quaternary alluvium to the Permian-age bedrock of the Artesia Group.

- As discussed in Section 2.5, the background water quality in the shallow alluvial aquifer is very poor in the vicinity of the site due to the presence of gypsum beds beneath the alluvium. Total Dissolved Soilds (**TDS**) concentrations exceed 3000 mg/L in on-site monitor wells MW-3 and MW-5 (Fig. 5). These two wells do not appear to be impacted by site activities; rather, the elevated TDS concentrations in these wells simply reflect the poor background quality of ground water in the region.

CHAPTER 4

4.0 SOLID WASTE MANAGEMENT UNITS

This section covers the 14 SWMUs identified during the PR and VSI at TW facility. Photographs of the SWMUs and AOCs taken by Marc Sides during the VSI are contained in Appendix A.

The identification of SWMUs was determined by employing EPA's definition found in the RCRA Facility Assessment Guidance (EPA, 1986) as, "any discernable waste management unit at a RCRA facility from which hazardous constituents might migrate, irrespective of whether the unit was intended for the management of solid and/or hazardous waste". This definition includes areas contaminated by hazardous constituents from routine, systematic, and deliberate discharges from process areas as well as any RCRA "regulated unit". Storage product tanks and accidental spills (one-time spills) are not considered in the definition of SWMUs as defined in 40 CFR Part 264.501. AOC were distinguished from SWMUs by an evaluation the definition found in EPA's RCRA Facility Assessment Guidance (EPA 1986) as "any suspected release of a hazardous waste or hazardous waste constituent which is not directly associated with a SWMU".

The followings SWMUs are evaluated to determine if no further action or further investigation is needed at each unit. The evaluations are based on the potential for release from the SWMU.

4.1 SWMU 1 - **Parts Washer Area** (Photograph 1)

Description

Unit Type: The Parts Washer Area is located within the northwest portion of the Mechanics Building, as shown in Figure 2. The unit consists of a metal bin approximately 2 foot by 4 foot by 3 foot deep, metal drain value, and hood vent. The metal bin is supported by leg stands which rest on a concrete floor with no visible floor drains in this portion of the building.

Purpose of unit: Parts from the mechanics room used in the everyday operations of the compressor station are washed in the metal bin.

Regulatory Status: unregulated.

Period of Operation: unknown - present.

Waste Type: Zep Dyna 143, a clear water-white liquid with a mild odor, consisting of aliphatics and solvent naphtha. Other biodegradable solvents, "EPA-2000" and Alpha Blue Tiger Soap, are also used.

Waste Management: The waste material is tested by the Toxicity Characteristics Leaching Procedure (**TCLP)** to determine whether or not the material is hazardous. Waste material determined to be hazardous is disposed of by an approved disposal facility. The waste material determined not to be hazardous, is disposed of by Waste Management of Southwest New Mexico to Chaves County Municipal Landfill.

Environmental Releases

No releases have been documented. No visual signs of releases were observed.

Suggested Action

No further action is suggested.

Reasons

The potential for release to the environment from this unit is judged to be low.

4.2 SWMU 2 - **Sand Blasting Area** (Photograph 2)

Description

The Sand Blasting Area is located within the eastern portion of the Mechanics Building, as shown in Figure 2. The unit consists of the sand blaster, a metal semi-square machine, and a glass bead waste container.

Purpose of unit: Glass beads are used within the sand blasting machine to strip water-based paints from valves and parts needed in the everyday operations of the compressor station.

Regulatory Status: unregulated.

Period of Operation: unknown - present.

Waste Type: Paint shavings are produced from the sanding process. The paint shavings and other particulate matter are rinsed from the sand blaster by forced air and stored along with the glass beads in a container marked "waste".

Waste Management: The waste material is stored in a metal container inside the Mechanics Building next to the sand blaster. The waste material is tested by the TCLP to determine whether or not the material is hazardous. Waste material determined to be hazardous is disposed of by an approved disposal facility.

Environmental Releases

No releases have been documented. No visual signs of releases were observed.

Suggested Action

No further action is suggested.

Reasons

The potential for release to the environment from this unit is judged to be low.

4.3 SWMU 3 - Caustic Tank/Sump in Wash Rack Area (Photograph 3,4)

Description

This area is located adjacent to the south side of the Mechanics Building under a covered patio as shown in Figure 2. This unit consists of a caustic tank and an underground sump. The caustic tank is a steel-walled rectangular-shaped unit with an open-top and hinge lid. The tank has a capacity of 910 gallons. The sump dimensions are approximately 2 feet by 3 feet by 2 feet deep. The sump is covered by a metal grate and drains to the Oily Waste Water Tank (SWMU 12). The rectangular Wash Rack Area has a concrete floor and is bermed by a 6-inch concrete footing surrounding the unit.

Purpose of unit: Sodium Hydroxide (Caustic Soda) is used to remove sludges and grease build-up from engine parts. The sump is used to collect waste-water from vehicle washings and accidental spills from the caustic tank.

Regulatory Status: The caustic tank is unregulated. The sump is regulated by OCD. OCD requires an annual inspection of all underground sumps without leak detection construction. TW decided to simplify the OCD inspections by removing most of the below-grade sumps at the facility. The sump removals took place in the summer of 1993. See TW's Spill Prevention, Control and Countermeasure Plan (**SPCC**) for details.

Period of Operation: unknown - present.

Waste Type: Rinse-water from the caustic tank may contain inorganic and organic constituents from the sludges and oils and exhibit the characteristic of corrosivity. Rinse-water from the vehicle washings may contain waste oil from compressor station operations.

Waste Management: The spent caustic solution pH is adjusted to approximately 7 pH. The liquid portion of the solution is then released into the Wash Rack Sump. Sludge from the solution is tested for TCLP and disposed of by an approved facility if determined to be hazardous. The sump drains into the Oily Waste Water Tank (SWMU 12) which is analysised for TCLP on an as-need-basis (usually 1 year) and disposed of by an off-site designated facility.

Environmental Releases

Although stains on the concrete floor were observed, no releases or soil staining outside the bermed area or on top of the concrete berm were observed. According to TW personnel, no releases have been documented.

Suggested Action

No further action is recommended.

Reasons

No releases have been documented. No visual staining was observed during the VSI beyond the bermed area and secondary containment does exist in the form of the concrete floor and berm. Should a spill occur, the sump drains to SWMU 12 in which the waste is analyzed for hazardous waste and disposed of accordingly. The potential for release to the environment from this unit is judged to be low.

4.4 SWMU 4 - Junk Bin (Photograph 5)

Description

This unit is located in the southeastern portion of the facility near SWMU 4 (refer to Fig. 2). The unit consists of various scrap pipe, copper wire, and other metal objects placed around and in a 30 foot by 30 foot wood-paneled fence area.

Purpose of unit: This area is used to store scrap metals and recyclable materials.

Regulatory Status: unregulated.

Period of Operation: Since the beginning of the operations at TW; August 9, 1960 - present.

Waste Type: Various metals, such as: copper, lead, iron, chromium, nickel, etc. Low quantities of hydrocarbons associated with the linings of pipes and mufflers.

Waste Management: On occasion the material is shipped off-site to be recycled.

Environmental Releases

No documented releases have occurred. No visual releases were observed.

Suggested Action

No further action is recommended for this SWMU.

Reasons

The potential for leaching of metals and hydrocarbons into the surrounding soil given the environmental setting of low precipitation and common pH soil conditions is low.

4.5 SWMU 5 - Special Waste Dumpster (Photograph 6)

Description

This unit is located in the southeastern portion of the facility as shown in Figure 2.

Purpose of unit: This dumpster is used to store engine oil filters and filters from gas separators prior to disposal.

Regulatory Status: unregulated.

Period of Operation: 1994 - present.

Waste Type: Arsenic is a common constituent in production oil received at this compressor station. The filters potentially contain various inorganic and organic constituents.

Waste Management: The dumpster is emptied approximately every 6 weeks. The filters are analyzed by TCLP to determine disposal criteria. If the filters are not determined to be hazardous then they are disposed of by Waste Management of Southwest New Mexico to either a Lovington or Hobbs specially designated landfill. If the filters are determined to be hazardous then they are disposed of by a designated facility.

Environmental Releases

No releases from this dumpster have been documented and no visual evidence of release was observed during the VSI. The dumpster appeared to be in good condition.

Suggested Action

No further action is recommended for this SWMU.

Reasons

The potential for release to the environment from this unit is judged to be low.

4.6 SWMU 6 - Used Lube Oil Tank/Waste Oil Tank Area (Photographs 7,8)

Description

This unit is located in the southeastern portion of the facility as shown in Figure 2. This unit consists of two steel-walled tanks capable of storing 8,820 gallons of waste/lube oil and a Load-Out Area. The tanks are located in a common area, 60 foot by 20 foot, which has a concrete pad and a 4 foot high concrete berm. This area is capable of containing approximately 150 percent total volume of the two tanks. These tanks rest on 10 inch I-beams which allow inspection for leak detection. The Load-Out Area consists of two 3 foot by 3 foot concrete pads. One concrete pad contains two pipelines stubbed out to connect to disposal trucks. The other concrete pad holds a small pump and associated equipment.

Purpose of unit: The Used Lube Oil Tank stores oil removed from the compressors and engines at this compressor station. Four internal combustion engines, two axillary engines, and four air compressors are used at this facility. The combustion engines (Cooper-Bessemer Model LSV-16, 4-cycle turbocharged) use separate radiator systems which circulate a mixture of Ambitrol (antifreeze) in a closed-loop. The air compressors (two small Ingersol Rand compressors and two main Worthington Model PSVG-6 generators, and two Kohler Model 15R82 standby compressors) also have a closed-looped radiator systems. When the coolant is changed from the engines and compressors the mixture (Ambitrol (antifreeze) and water) is tempoerory stored in the Waste Oil Tank. The Load-Out Area is used to pump the used oil into disposal trucks periodically by flexible hose connected to the stubbed out pipelines.

Regulatory Status: OCD regulates this unit.

Period of Operation: Installed in 1986; still in use.

Waste Type: The Used Lube Oil Tank receives oil from the engine room. The Waste Oil Tank receives water and Ambitrol from the engine room.

Waste Management: The waste from the Used Lube Oil Tank is tested according to the Used Oil Specifications found in 40 CFR 279.11. If the oil is found to exceed limits set in the Used Oil Specifications then it is sold by an approved recyclable company as specification-oil. If the limits are exceeded as set in the Used Oil Specifications then the oil will be tested by the TCLP. If the oil is determined not to be hazardous then it is sold as off-specification oil and removed from the facility by an approved recycling company. If the oil is determined to be hazardous the oil is disposed of by an approved disposal company. The water-Ambitrol mixture is returned to the engine room after the radiators have been cleaned.

Environmental Releases

No releases from this SWMU have been documented. No visible staining was observed during the VSI near the bermed area. Limited soil staining was observed near the Load-Out Area which is adjacent to the Used Lube Oil Tank.

Suggested Action

No further action is recommended for this SWMU.

Reasons

Releases from this unit appear to be minimum based on observations from the VSI and knowledge of process. The potential for release to the environment from this unit is judged to be low.

4.7 SWMU 7 - Engine Room Basement (Pipewell Area) (Photographs 9, 10)

Description

This SWMU is located in the southeastern portion of the facility as shown in Figure 2. The unit consists of pipewells (concrete corridors approximately 3 feet wide which run the width of the engine room covered by metal grates).

Purpose of unit: The pipewells provide a crawl space between and beneath the engine room and are used as conduits for plumbing and other pipes used to operate the engines. The pipewells collect oil, water, ambitrol, and grease from operations in the engine room.

Regulatory Status: OCD regulates this unit

.

Period of Operation: 1960 - present.

Waste Type: Ambitrol and engine oil.

Waste Management: The waste from the engine room is piped to the Oily Waste Water Tank through a 4 inch diameter coated steel pipe. This area previously drained into a sump located north of the engine room which in turn drained to the Former Surface Impoundments (SWMU 16) and after 1986 into the Oily Waste Water Tank (SWMU 15). OCD requires an annual inspection of all underground sumps without leak detection construction. TW decided to simplify the inspections by removing this sump. The sump removals took place in the summer of 1993. See TW's SPCC for details.

Environmental Releases

No documented environmental releases have been recorded. During the VSI, considerable areas of red Ambitrol were observed within the pipewells.

Suggested Action

An RFI is recommended for this SWMU.

Reasons

No laboratory analysis has ever been performed on the product Ambitrol used at TW. It is common for Ambitrol to contain impurities which when tested by TCLP are determined to be hazardous. OCD has had trouble discerning the integrity of the pipewells due to unvisible conditions. The potential for a release to surrounding soil and possibly groundwater exists.

4.8 SWMU 8 - Panhandle Pig Receiving Area (Photographs 11, 12)

Description

The Panhandle Pig Receiving Area is located in the eastern portion of the facility as shown in Figure 2. This SWMU consists of a 24-inch incoming pipeline, the pipeline receiver sump, and the concrete bermed area. The sump is a below-grade steel-lined 3-foot diameter by 4-foot deep tank. The cement-block, concrete floor bermed area is split into two 7-foot by 8-foot by 1-foot high unconnected sections. The sump is connected to the receiving bermed area by a small opening and steel conduit draining below-grade directly into the sump.

Purpose of unit: Pigs are periodically sent through the pipelines to clean condensate from the pipeline interior walls. This process is calling the "pigging" operation. The pig is a cylindrical metal object which scrapes and brushes the pipeline residual by making use of the pressurized gas stream found in the pipeline. The pigs and condensate are received in this area.

Regulatory Status: The sumps are regulated by OCD.

Period of Operation: 1982 - present.

Waste Type: Hydrocarbon liquids received from the pigging operations are the primary waste of concern. The pipeline condensate may contain alkane compounds, primary methane and various forms of hydrocarbons. Crankcase lubricating oil may also enter the system through upstream reciprocating engine gas compressors. In addition, as communicated by TW personnel, various solvents and metals may also be present due to production enhancement techniques used to increase the recovery of gas from the well fields.

Waste Management: Prior to 1986, the liquids drained into the former surface impoundments now undergoing RCRA closure. The wastes were simply allowed to drain into the unlined "disposal pits" located in the northeastern portion of the facility (SWMU 16). Currently, the sump is drained to the Pipeline Liquids Tank and stored until the liquids are removed off-site by an approved disposal company.

Environmental Releases

No releases from the Panhandle Pig Receiving Area have been documented. During the VSI, staining was observed inside both containment areas. Red-orangish staining was also observed on the top of the berm, over the outsides of the cement blocks and on the gravel and soil near the bermed area closest to the receiving pipeline. It appears that condensate has been spilled over the berm while loading the pigs on the trucks. It does not appear that the present containment area has reached its capacity in the past. Cracks were visible in the concrete floor of the bermed area.

Suggested Action

An RFI is recommended for this SWMU.

Reasons

The height of the bermed area was extended in the early 1990s from ground-level to the present height of approximately 14-inches. The potential exists for condensate to have breached the bermed area and spilled over onto the soil from the time period 1982 unit the early 1990s. The routine and systemic releases that potentially could have taken place over the 8 years of minimum containment is of concern. Surrounding soil and groundwater could have been impacted.

4.9 SWMU 9 - West Texas Pig Receiving Area (Photographs 13, 14)

Description

The West Texas Pig Receiving Area is located in the eastern portion of the facility as shown in Figure 2. This SWMU consists of two 24-inch incoming pipelines, a pipeline receiver sump, and a concrete bermed area. The sump is a below-ground steel-lined 4-foot diameter by 8-foot deep tank. The bermed area consists of cement blocks approximately 30-feet by 8 feet by 14-inch high and concrete floors. The sump area is separated from the receiving area within the bermed area by a small 4-inch rise in the concrete floor. Condensate is drained within the bermed area to the sump by a steel conduit draining below-grade directly into the sump.

Purpose of unit: Pigs are periodically sent through the pipelines to clean condensate from the pipeline interior walls. This process is calling the "pigging" operation. The pig is a cylindrical metal object which scrapes and brushes the pipeline residual by making use of the pressurized gas stream found in the pipeline. The pigs and condensate from the West Texas Lateral pipeline are received in this area.

Regulatory Status: The sumps are regulated by OCD.

Period of Operation: August 1960 - present.

Waste Type: Hydrocarbon liquids received from the pigging operations are the primary waste of concern. The pipeline condensate may contain alkane compounds, primary methane and various forms of hydrocarbons. Crankcase lubricating oil may also enter the system through upstream reciprocating engine gas compressors. In addition, as communicated by TW personnel, various solvents and metals (primarily As) may also be present due to production enhancement techniques producers use to increase the recovery of gas from the well fields.

Waste Management: Prior to 1986, the liquids drained into the former surface impoundments now undergoing RCRA closure. The wastes were simply allowed to drain into the unlined "disposal pits" located in the northeastern portion of the facility (SWMU 14). Currently, the sump is drained to the Pipeline Liquids Tank and stored until the liquids are removed off-site by an approved disposal company.

Environmental Releases

No releases from the West Texas Pig Receiving Area have been documented. During the VSI, staining was observed inside both containment areas. Red-orangish staining was also

observed on the top of the berm, over the outside of the cement blocks and on the gravel and soil near the bermed area closest to the receiving pipeline. It appears that condensate has been spilled over the berm while loading the pigs on the trucks. The sump needed to be pumped at the time of the VSI as oil was noticed surrounding the floor near the sump area. Cracks were visible in the concrete floor of the bermed area. Liquid was standing over the observed cracks during the VSI.

Suggested Action

An RFI is recommended for this SWMU.

Reasons

The height of the bermed area was extended in the early 1990s from ground-level to the present height of approximately 14-inches. The potential exists for condensate to have breached the bermed area and spilled over onto the soil from the time period 1960 unit the early 1990s. The routine and systemic releases that potentially could have taken place over the 30 years of minimum containment is of concern. Surrounding soil and groundwater could have been impacted.

4.10 SWMU 10 - Pig Wash Area (Photograph 15)

Description

The Pig Wash Area is located in the eastern portion of the facility near SWMU 12 as shown in Figure 2. This SWMU consists of an area approximately 30-feet by 30-feet bermed by concrete blocks 2.5 feet high. This area has a concrete floor and a covered patio with the west side closed in. A below-grade sump, 2 foot by 3 foot by 2 foot deep, is located in the center of the floor which collects wash water. The sump is drained by a 4-inch diameter coated steel pipe to the Pipeline Liquids Tank (SWMU 12).

Purpose of unit: This area is used to wash all equipment which comes in contact with the pipeline condensate.

Regulatory Status: unregulated.

Period of Operation: 1988 - present.

Waste Type: Wastes associated with condensate include: various hydrocarbons, lube-oils, solvents, and metals.

Waste Management: Wastes drained from this unit are collected in the Pipelines Liquid Tank to be stored until shipment off-site for disposal by an approved facility. All bermed areas are required to be able to hold at least one-third more than the total volume of the largest tanks within the containment area. TW voluntarily constructs containment area to be 150 percent of the total volume of the largest tanks within the containment area.

Environmental Releases

No releases have been documented from this SWMU. Cracks and slight red-orange staining were observed in the concrete floor of this unit during the VSI.

Suggested Action

No further action is recommended for this SWMU.

Reasons

The potential for release to the environment from this unit is judged to be low.

4.11 SWMU 11 - Mist Extractor or Muffler Area (Photograph 16)

Description

This SWMU is located in the eastern portion of the facility as shown in Figure 2. This unit consists of a mist extractor with an air tower, a sump, a containment area, and associated piping. The mist extractor is entirely surrounded by a 6-inch high concrete berm. A 3 foot by 3 foot diameter below-grade sump collects condensate that is released from the condensate pipeline portion of the mist extractor and drains into the Pipelines Liquid Tank (SWMU 12).

Purpose of unit: The mist extractor separates approximately a total of 1,200 gallons of pipeline liquids from gas per year.

Regulatory Status: OCD-sump, NMAQ-air emissions.

Period of Operation: Unknown; however it is believed that the unit began operations in the early 1980 's and has continued until the present.

Waste Type: Wastes associated with pipeline condensate and natural gas include: various hydrocarbons, lube-oils, solvents, and metals.

Waste Management: Liquids are presently stored in the Pipelines Liquid Tank (SWMU 12) until the liquid is removed off-site by Enron Oil Trading and Transportation Company **(EOTT)** to be recycled and possibly sold. Prior to 1986, the liquids drained into the former surface impoundments now undergoing RCRA closure. The wastes were simply allowed to drain into the unlined "disposal pits" located in the northeastern portion of the facility (SWMU 14).

Environmental Releases

No releases have been documented. No visible soil staining was observed outside the bermed area. The integrity of the containment area appeared to be good.

Suggested Action

An RFI is recommended for this SWMU.

Reasons

Process knowledge surrounding the operations and engineering specifications for the piping from the mist extractor to the pits is not well understood. The potential for past releases to the surrounding soil and possibly groundwater exists.

4.12 SWMU 12 - Pipeline Liquids Tank / Oily Waste Water Tank Area
(Photograph 17)

Description

This SWMU is located in the eastern portion of the facility as shown in Figure 2. This unit consists of one steel-walled 21,000 gallon capacity tank, two steel-walled 8,820 gallon capacity tanks, and two bermed areas. The Pipeline Liquids Tank and one Oil Waste Water Tank are placed together in an concrete bermed area approximately 40-foot by 30 foot by 4-foot high. The other tank is located in a concrete bermed area approximately 40-foot by 20-foot by 4-foot high.

Purpose of unit: The Pipeline Liquids Tank is used to store condensate received from the pig receiving area sumps (SWMU 8 & 9), the mist extractor sump (SWMU 11), and the pig wash sump (SWMU 10). The Oily Waste-Water Tanks are used to store liquids from the Sump in Wash Rack Area (SWMU 3) and Engine Room Basement (SWMU 7).

Regulatory Status: OCD regulates this unit.

Period of Operation: About 1987 - present.

Waste Type: Wastes associated with pipeline condensate and natural gas include: various hydrocarbons, lube-oils, solvents, and metals.

Waste Management: All bermed areas are required to be able to hold at least one-third more than the total volume of the largest tanks within the containment area. TW voluntarily constructs containment area to be 150 percent the total volume of the largest tanks within the containment area.

Environmental Releases

No releases have been documented. No visible signs of releases were observed during the VSI.

Suggested Action

No further action is recommended for this SWMU.

Reasons

The potential for release to the environment from this unit is judged to be low.

4.13 SWMU 13 - Fire Training Area (Photograph 18)

Description

This SWMU is located in the east central portion of the facility as shown in Figure 2. This unit consists of an area covered by volcanic cinder approximately 18,000 square feet with various unlined burn-sites.

Purpose of unit: This area is used to train TW employees in firefighting.

Regulatory Status: Unregulated.

Period of Operation: 1960 - present.

Waste Type: Pipeline liquid condensate.

Waste Management: The liquid condensate is brought in from other locations to assure the desired properties of the liquid. The liquid is ignited within 7 different burn-sites.

Environmental Releases

No documented releases have been documented. During the VSI, it was communicated by TW personnel that the condensate is completely ignited leaving no residual during the training. A drainage was noted extending from one of the burn-sites to outside the firetraining site.

Suggested Action

A RFI is recommended for this SWMU.

Reasons

Considering the unknown quantities of condensate historically used at this site and the nature of the unit, the potential exists for releases to the surrounding soil and possibly ground water.

4.14 SWMU 14 - Former Surface Impoundments (Photographs 19, 20)

Description

This SWMU (Pits 1, 2, and 3) is located in the northeastern portion of the facility as shown in Figure 2. This unit consists of three former "disposal pits" or surface impoundments all approximately 70-feet in diameter and, at the most, 10-feet deep.

Purpose of unit: These pits received pipeline liquid condensate along with miscellaneous solid wastes such as filters, engine parts, and office trash.

Regulatory Status: Undergoing RCRA closure.

Period of Operation: August 1969 - 1986.

Waste Type: Wastes associated with pipeline condensate and natural gas include: various hydrocarbons, lube-oils, solvents, and metals.

Environmental Releases

Releases from these units to the surrounding soil and groundwater have been documented by results from analyses associated with closure activities. The known extent of contamination is undetermined at this time, however, TCA has been detected by OVA measurements as far as 400 feet from the source area. Ground water analysis indicates that VOC, SVOC, and metals have impacted the uppermost aquifer located approximately 70-feet below ground-level.

Suggested Action

Continue RCRA closure activities and schedule for implementation.

Reasons

Interim Measures: "On May 21, 1993 a recovery pump was installed in monitoring well MW-1 by CES (Fig. 5). During July 1993, B&R installed PSH recovery pumps in monitor wells MW-1B, MW-2, and RW-1. Since that time, PSH and water have been pumped from these wells and routed to an aboveground storage tank", DBS&A (1994)(Photo 28). Rollins Environmental Services then periodically transports the waste hydrocarbon liquid to Deer Park, Texas for incineration.

"The interim PSH recovery system has been operated and maintained by B&C. During the fall of 1993, B&C installed skimmers on each recovery pump to reduce the volume of water

recovered. Prior to the installation of the skimmers, B&C measured PSH levels and groundwater levels of approximately 58. 5 and 62 feet bgs in monitor wells MW-1B and MW-2, respectively. The depth to water was approximately 38.6 feet bgs in recovery well RW-1, which contained approximately 0.06 feet of PSH at the time of measurement. The interim PSH recovery system has successfully removed approximately 8,000 gallons of PSH to date", DBS&A (1994).

CHAPTER 7

CONCLUSIONS AND RECOMMENDATIONS

NMED identified 14 SWMUs and 5 AOCs during the RFA conducted at TW facility during the week of August 1, 1994. Recommendations for further investigations are made for 6 SWMUs and 4 AOCs. SWMU 14 (Former Surface Impoundments) is recommended for further action under the ongoing closure plan requirements. An RFI is recommended for the other SWMUs and AOCs at this facility. No further action **(NFA)** is recommended for 8 SWMU and 1 AOC. Summarized in Table 1 are the recommendations for action determined from this RFA.

Table 1. RFA RECOMMENDED ACTIONS for SWMUs and AOC.

SWMU	NFA	RFI	RCRA Closure
1	X		
2	X		
3	X		
4	X		
5	X		
6	X		
7		X	
8		X	
9		X	
10	X		
11		X	
12	X		
13		X	
14			X

AOC	NFA	RFI	RCRA Closure
1	X		
2		X	
3		X	
4		X	
5		X	

SWMU and AOC summary:

SWMU 1	Parts Washer Area
SWMU 2	Sand Blasting Area
SWMU 3	Caustic Tank and Sump in Wash Rack Area
SWMU 4	Junk Bin
SWMU 5	Special Waste Dumpster
SWMU 6	Waste Lube Oil Tank/Used Oil Tank Area
SWMU 7	Engine Room Basement (Pipewell Area)
SWMU 8	Panhandle Pig Receiver Area
SWMU 9	West Texas Pig Receiver Area
SWMU 10	Pig Wash Area/Sump
SWMU 11	Mist Extractor or Muffler Area
SWMU 12	Pipeline Liquids Tank/Oily Waste Water Tank Area
SWMU 13	Fire Training Area
SWMU 14	Former Surface Impoundments
AOC 1	Pig Launching Area
AOC 2	Ambitrol Product Storage Tanks
AOC 3	Wash Rack Sumps/ Former Leachfield (Evaporative Cooler Discharge)
AOC 4	Evaporative Cooler Unit
AOC 5	Stock Pond

CHAPTER 8

8.0 REFERENCES

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CHAPTER 5

5.0 AREAS OF CONCERN

5.1 AOC 1 - Pig Launching Area (Photographs 21, 22)

Description

This AOC is located in the southeastern portion of the facility as shown in Figure 2. This area consist of two 30-inch pig launching pipelines, a diesel storage tank, and associated piping.

Purpose of unit: This area is used to send pigs through the pipelines. See SWMUs 8 and 9 for an explanation of "pigging" operations.

Regulatory Status: Unregulated.

Period of Operation: 1969 - present.

Waste Type: Diesel fuel used to lubricate the pigs to be sent through the pipelines.

Waste Management: The diesel fuel tank has a capacity of 950 gallons and is surrounded by a concrete bermed area.

Environmental Releases

No releases have been documented. During the VSI, no evidence of soil staining was observed.

Suggested Action

No further action is recommended for this AOC.

Reasons

No releases have been documented and no visible evidence of a release was observed during the VSI.

5.2 AOC 2 - Ambitrol Product Storage Tanks (Photograph 23)

Description

These AOCs are located on the western side of the engine room in the southeastern portion of the facility as shown in Figure 2. The product tanks have the capacity to hold 2,705 gallons of Ambitrol.

Purpose of unit: Product storage tanks.

Regulatory Status: unregulated.

Period of Operation: Unknown - present.

Waste Type: The Material Safety Disposal Sheets (**MSDS**) for Ambitrol indicate the following mixture: Ethylene Glycol @ 47%, Diethylene Glycol @ <3%, water @ <50%, and Dipotassium phosphate @ <5%.

Environmental Releases

During the VSI a minor spill to the surrounding soils was noted. The leak appeared to be coming from a seal associated with a pump connected to one of the Ambitrol tanks. Minor spills have been documented in the past to surrounding soils.

Suggested Action

This AOC is suggested to be incorporated in the RFI recommended to be conducted for the Engine Room Basement (SWMU 7).

Reasons

This AOC should be considered as a possible contributor to any detections of Ambitrol that might be found in the RFI conducted for the Engine Room Basement

5.3 AOC 3 - Former Sumps/Leachfield (Evaporative Cooler Discharge)
(Photographs 24,25)

Description

This unit consists of two former sumps, associated drainlines and two line segments of a former leachfield which is located in the southern most portion of TW fenced property as shown on Figure 2. Each underground sump had a capacity of 2,115 gallons and the former leachfield line segments were approximately 300 feet by 75 feet.

Purpose of unit: According to TW personnel, the former sumps received discharge only from Evaporative Coolers (AOC 4) used to cool the engine room. No additives were every used. The leachfield received effluent only from the overflow of the sumps.

Regulatory Status: OCD requires an annual inspection of all underground sumps without leak detection construction. TW decided to simplify the inspections by removing these sumps. The sump removals took place in the summer of 1993. See TW's SPCC for details.

Period of Operation: Approximately late 1960 - about 1986.

Waste Type: Metals, Semi-Volatile Organic Compounds (**SVOC**), VOC, hydrocarbons, and high TDS are waste types of concern. Prior to 1991, the evaporative coolers received water from TW's on-site production well (see figure 2 for location). After 1991 the facility began receiving water from Roswell's municipal supply. If the aquifer conditions and the pumping rates for the production well was such that the radius of effect was greater than 800 feet (distance to the engine room from the production well) or 2200 feet (distance to the surface impoundments from the production well), then the potential exists for hazardous constituents to have been introduced into this system. Also, OCD has required a Discharge plan to regulate the TDS concentration. The build-up of salts due to the evaporative process may introduce a water quality concern.

Environmental Releases

Environmental samples were taken within or adjacent to these units on April 14, 1994. The results of the four soil samples taken in the leachfield and adjacent to the sumps did not detect any constituents for an incomplete 40 CFR Part 264 Appendix IX listing. The sampling and analysis plan appears suspect at this time.

Suggested Action

An RFI is recommended for this SWMU.

Reasons

Knowledge of process concerning the on-site production well is lacking. No chemical analysis exists from the time period the production well was in use. The potential for past releases to soil and groundwater exists.

5.4 AOC 4 - Evaporative Cooler Unit (Photograph 26)

Description

This SWMU is located on the west side of the engine room in the southeastern portion of the facility as shown in Figure 2. This unit consists of four evaporative coolers, splash guards and associated drainlines.

Purpose of unit: Used to cool the engine room (swamp cooler).

Regulatory Status: OCD regulates the discharge from these coolers and spills or salt spray from the evaporative cooling units.

Period of Operation: Approximately 1960 - present.

Waste Type: Prior to 1991 the evaporative coolers received water from TW's on-site production well. After 1991 the facility began receiving water from Roswell's municipal supply. If the aquifer conditions and the pumping rates for the production well were such that the radius of effect was greater than 800 feet (distance to the engine room from the production well) or 2200 feet (distance to the surface impoundments from the production well) then the potential exists for hazardous constituents to have been introduced into this system. Also, OCD has required a Discharge Plan to regulate the TDS concentration (see SPCC Plan). The build-up of salts due to the evaporative process may introduce a water quality concern.

Waste Management: Splash guards have been installed around the radiators. The cooling water is presently discharged into a stockpond (AOC 5) located near the eastern portion of the facility, just outside the property line. Prior to about 1986, the coolers discharged into the Former Sumps/Leachfield (AOC 3). Since about 1986, it is believed that the cooling water has been discharged in the stockpond (AOC 5).

Environmental Releases

No documented releases have occurred. During the VSI, salt build-up was observed near the unit along with a reddish-rust discoloration of adjacent piping near the unit.

Suggested Action

Recommend a coordinated RFI with AOCs 3 & 5.

Reasons

This AOC should be considered as a source for AOCs 3 & 5. At present this unit is currently receiving a water supply different from the source associated with AOC 5.

5.5 AOC 5 - Stockpond (Photograph 27)

Description

This AOC is located off-site near the east central portion of the facility as shown in Figure 2. The unit consists of an unlined earthen pond approximately 60-feet in diameter.

Purpose of unit: To receive discharge water from AOC 4 (evaporative cooler) for the purpose of livestock use.

Regulatory Status: OCD regulates the discharge.

Period of Operation: 1986 - present.

Waste Type: Prior to 1991 the evaporative coolers received water from TW's on-site production well. After 1991 the facility began receiving water from Roswell's municipal supply. If the aquifer conditions and the pumping rates for the production well were such that the radius of effect was greater than 800 feet (distance to the engine room from the production well) or 2200 feet (distance to the surface impoundments from the production well), then the potential exists for inorganic and organic hazardous constituents to have been introduced into this system. The build-up of salts due to the evaporative process may introduce a water quality concern.

Waste Management: OCD has required a Discharge Plan to regulate the TDS concentration (see SPCC Plan). Occasional water chemistry testing is required to assure the TDS remain below livestock standards.

Environmental Releases

No releases have been documented.

Suggested Action

An RFI is recommended for this AOC.

Reasons

Knowledge of process concerning the on-site production well is lacking. No chemical analysis exists from the time period the production well was in use. The potential for past releases to soil and groundwater exists.

CHAPTER 6

HUMAN AND ENVIRONMENTAL TARGETS

This chapter discusses the potential human and environmental targets of releases from SWMUs and AOCs located on TW property. The potential pathways considered include: air, soil, surface water, and ground water. Receptors considered include: on-site workers and nearby residents.

The TW Roswell compressor station is located approximately 6 miles north of the city limits of Roswell in Chaves County, New Mexico. The population of the city of Roswell is approximately 43,000. The approximate population of people within a 3-mile radius of the facility is less than 100 and is located in a rural setting. TW has approximately 40 on-site workers at the Roswell Compressor Station. Land surrounding the facility is used primary for ranching and is thus undeveloped. Highway 285 is adjacent to the west-side of the facility property line.

The investigations completed to date and described in Section 3.4 have been conducted to characterize the subsurface hydrogeology and the distribution of VOCs in the soils and ground water beneath the former surface impoundments. The contaminants detected consist primarily of petroleum hydrocarbons that are typical components of pipeline condensate, which were formerly held in the surface impoundments. Organic and inorganic constituents have been detected in soils and ground water during each of the previous investigations.

6.1 Air Pathway

Air emissions of concern emanate from either the compressor station blow-down stack (Figure 2), the former surface impoundments (SWMU 14), the fire training area (SWMU 13), the engine room or the Mist Extractor (SWMU 11). New Mexico Air Quality Bureau will be regulating air emissions at TW in the very near future under the requirements for NM Title 5.

Volatile air emissions across the facility were investigated during the spring of 1990. A contractor for TW conducted a soil gas survey and soil coring program from which 812 soil vapor samples were collected and analyzed. The results of this sampling indicated that five purgeable hydrocarbons were quantified, (1,1,1-TCA, trichloroethane, perchloroethene, chloroform, and carbon tetrachloride), at the facility. The highest concentrations were detected in the northeastern portion of the facility:

The release potential to on-site workers during fire training exercises is high. The potential for exposure from air emissions to on-site workers appears to range between moderate and high. The potential for exposure from air emissions to near-by residents appears to be low.

6.2 Soil Pathway

As taken directly from DBS&A (1994):

"Based on field OVA measurements and analytical chemistry results from previous investigations, elevated VOC concentrations in soil appear to encompass an area of approximately 600 feet by 400 feet centered between the three former surface impoundments. Near the former surface impoundments, the vertical extent of impacted soils extends from approximately land surface to the uppermost aquifer at approximately 60 feet. The vertical extent of impacted soil decreases as one moves laterally away from the surface impoundments. Due to local soil heterogeneities, it appears that VOCs have spread out along preferential pathways on top of the upper clay unit at the 30- to 40-foot depth, prior to continued downward migration to the uppermost aquifer".

The potential for release of contaminants to the soil at TW's Roswell Compressor Station from SWMUs other than SWMU 14 is judged to be moderate to high. With the exception of the soil sampling conducted at the Former Sumps and Leachfield (AOC 3), limited information is available concerning soil impacts. The potential exists for soils at TW to be impacted by the above listed SWMUs and AOCs.

6.3 Surface Water Pathway

As indicated by TW's SPCC Plan, analysis of the topography, and review of TW's operations, potential contaminants discharged to surface water by non-permitted releases are not indicated. With the exception of the permitted discharges to the stockpond (AOC 5), no releases of effluent are discharged on site.

No major drainages exist at or near the facility property line. One minor topographic drainage is located in the northeastern portion of the facility adjacent to the location of the former surface impoundments (SWMU 14). The potential for surface run-off into this drainage from the former surface impoundments is high.

6.4 Ground Water Pathway

Past releases to the ground water beneath the facility have occurred as discussed in SWMU 14 description. The potential for current and future releases appears to be moderate to high throughout the facility. Typically, ground water occurs in isolated zones at a depth of 30 feet bgs beneath the facility. The uppermost aquifer generally occurs at 70 feet below ground-level. As taken directly from DBS&A (1994):

"The estimated extent of contaminants in ground water is difficult to ascertain due to the limited number of existing monitor wells. The ground-water plume most likely extends downgradient beyond the estimated extent of known soil contamination near the former surface impoundments. Although the direction of the ground-water head gradient cannot be determined with certainty at present, regional water level information obtained from wells completed in the shallow alluvium suggests that the flow direction is generally to the east".

APPENDIX A

VSI PHOTOGRAPHIC LOG

Photo 1. SWMU 1 - Parts Washer Area
This SWMU is located within the northwestern portion of the Mechanics Building in the central portion of the facility. During the VSI, no visual signs of a release were observed.

Photo 2. SWMU 2 - Sand Blasting Area
This SWMU is located in the within the eastern portion of the Mechanics Building, in the central part of the facility. During the VSI, no visual signs of a release were observed.

Photo 3. SWMU 3 - Caustic Tank and Sump in Wash Rack Area
This area is located adjacent to the south side of the Mechanics Building under a covered patio. This photograph shows the Caustic Tank (hot-vat stripper) in the background and the Sump in the foreground.

Photo 4. SWMU 3- Caustic Tank and Sump in Wash Rack Area
This photograph shows the Caustic Tank appropriately labeled by the placard. Note the six-inch concrete berm in the left background. No visual staining or evidence of a release was observed outside the bermed area.


1
8 4'94


2
8 4'94


3
HOT-VA
STRIPPER


4
HOT-VAT STRIPPER
8 4'94

Photo 5. SWMU 4 - Junk Bin
This photograph is facing the northeast and shows the area used to store scrap metal and recyclable materials. No visual releases were observed during the VSI. Note SWMU 6 (Waste Lube Oil Tank/Used Oil Tank Area) in the background.

Photo 6. SWMU 5 - Special Waste Dumpster
This photograph is facing the southwest. The SWMU is shown with AOC 1 (Pig Launching Area) in the background.

Photo 7. SWMU 6 - Waste Lube Oil Tank/Used Oil Tank Area
This photograph is facing the east-northeast and shows the Waste Lube Oil Tank and Used Oil Tank. Note the concrete containment area designed to hold 150 percent total volume of the two tanks.

Photo 8. SWMU 6 - Waste Lube Oil Tank/Used Oil Tank Area
This photograph shows the Load-Out-Area located just to the west of the tank area.


5


6
SPECIAL
WASTE
ONLY


7

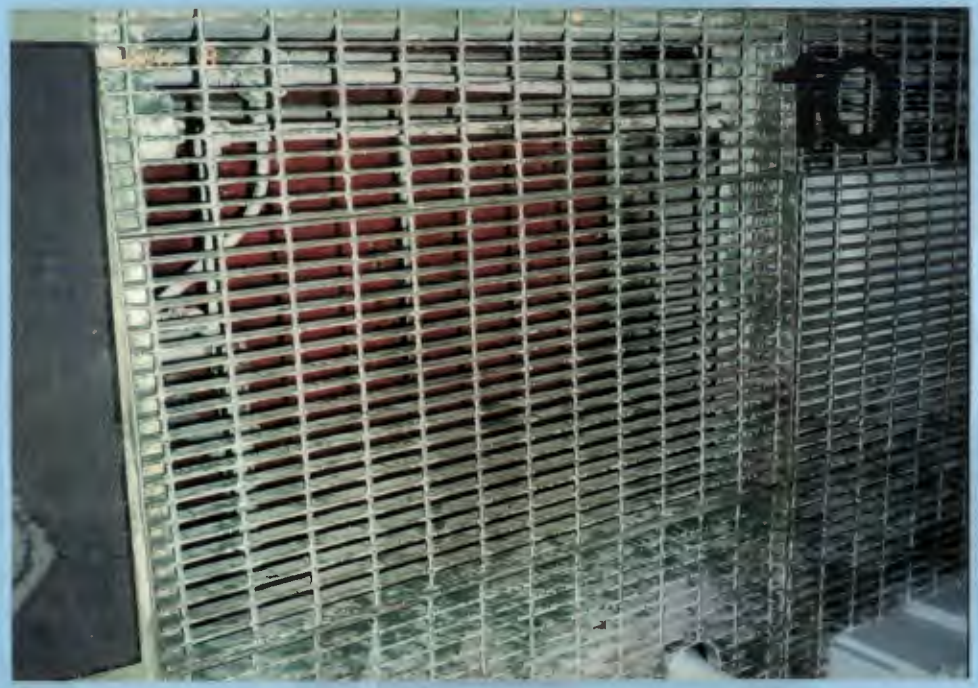

8

Photo 9. SWMU 7 - Engine Room Basement (Pipewells)
This photograph shows the south entrance to the engine room. Note the metal grates across the floor covering the pipewell area.

Photo 10. SWMU 7 - Engine Room Basement (Pipewells)
This photograph shows an Ambitrol release in the pipewell area as noticed by the red color below the metal grate.

Photo 11. SWMU 8 - Panhandle Pig Receiving Area
This photograph is facing north-northwest. This photograph shows the 24-inch incoming pipeline, the pipeline receiver sump area, and the concrete berm area. Liquids or pipeline condensate collects in the incoming pipeline containment area and drains to the sump area through a steel-conduit draining below-grade directly into the sump.

Photo 12. SWMU 8 - Panhandle Pig Receiving Area
This photograph is facing east-northeast. The sump show in this picture is a below-grade steel-lined 3-foot diameter by 4-foot deep tank. Prior to 1986, the liquids from the pipeline drained into the former surface impoundments now undergoing RCRA closure.




11
8 4'94

Photo 13. SWMU 9 - West Texas Pig Receiving Area
This photograph is facing the northwest. One of the two 24-inch incoming pipelines is shown in this photograph. During the VSI, staining was observed outside the containment area show in this photograph.

Photo 14. SWMU 9 - West Texas Pig Receiving Area
This photograph is facing east. This photograph shows a sump which is used to drain the incoming pipeline liquid condensate. During the VSI, cracks were visible in the concrete floor of the bermed area. Liquid was standing over the observed cracks as shown this photograph.

Photo 15. SWMU 10 - Pig Wash Area
This photograph is facing southwest. The sump in the floor of the Pig Wash Area is shown in this photograph. No evidence of a release was observed during the VSI.

Photo 16. SWMU 11 - Mist Extractor or Muffler Area
This photograph is facing northeast. This photograph shows the piping apparatus used to separate pipeline liquids from gas.


13
8 4'94


14
8 4'94


15
8 4'94


16

Photo 17. SWMU 12 - Pipeline Liquids Tank/Oily Waste Water Tank Area
This photograph is facing northwest. The concrete containment area is designed to hold 150 percent of the total volume of the tanks within the bermed area. This photograph shows the pipeline liquids tank and one oily waste water tank within one containment area. The other oily waster water tank is located in a separate containment area.

Photo 18. SWMU 13 - Fire Training Area
This photograph is facing west. The circular fire training area is shown with individual burn-sites. Red volcanic cinder covers the ground beneath the training area.

Photo 19. SWMU 14 - Former Surface Impoundments Area
This photograph is facing north. The former surface impoundment (Pit 2) was located below the area shown in this photograph. This pit was approximately 70-feet in diameter and 10-feet deep.

Photo 20. SWMU 14 - Former Surface Impoundments Area
This photograph is facing north. This photograph shows the remediation wells installed to recover hydrocarbons from groundwater beneath the former impoundments. This recovery system is located between Pit 2 and Pit 1.


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Photo 21. AOC 1 - Pig Launching Area
This photograph is facing south. Two 30-inch pig launching pipelines are shown in the background of this photograph. This area is used to send pigs through the pipelines to clean the sidewalls of the pipelines. Note a diesel fuel storage tank between the launching areas. Diesel fuel is used to lubricate "grease" the pigs to be sent through the pipelines. The pipeline pigs are shown in the foreground on a concrete pad as received from the Pig Washing Area (SWMU 10).

Photo 22. AOC 1 - Pig Launching Area
This photograph is facing east-southeast. Note the two 30-inch outgoing pipelines with the diesel storage tank in the center of the photograph. The pigs are shown in the upper left-hand portion of the photograph.

Photo 23. AOC 2 - Ambitrol Product Storage Tanks
This photograph shows an Ambitrol spill observed during the VSI; note the red discoloration of the soil. The leak appears to be occurring from a seal associated with a pump connected to one of the Ambitrol storage tanks shown raised above ground in the upper right-hand portion of the photograph.

Photo 24. AOC 3 - Former Sumps/Leachfield
This photograph is facing east. This photograph shows the former locations of the sumps as indicated by the overgrown weeds. SWMU 6 (Used Lube Oil Tank/Waste Oil Tank Area) is shown in the background.


21


22


23


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Photo 25. AOC 3 - Former Sumps/Leachfield
This photograph is facing east-northeast. This photograph shows the former location of the leachfeilds as indicated by the green area just to the right of the group of VSI participants. SWMU 6 (Used Lube Oil Tank/Waste Oil Tank Area) can be seen in the background as well as AOC 1 (Pig Launching Area) in the upper right-hand portion of the photograph .

Photo 26. AOC 4- Evaporative Cooler Unit
This photograph is facing east. The photograph shows the radiator system used to generate water used to cool the engine room. Note the Ambitrol spill in the lower right-hand portion of the photograph.

Photo 27. AOC 5 - Stockponds
This photograph is facing east-northeast. This AOC is located off-site near the east-central portion of the facility. This photograph shows the unlined earthen stockpond. In the central portion of the stockpond is a metal discharge pipe.

Photo 28. Environmentally Hazardous Liquid Tank - Remedial Activities Area
This photograph is facing north. This photograph shows the storage tank used to hold remediation liquid waste until it is transported to Deer Park, Texas for incineration. This tank is located just to the east of former Pit 2.


25


26


27


ENVIRONMENTALLY
HAZARDOUS
LIQUID
UN 3082

APPENDIX B

FIGURES

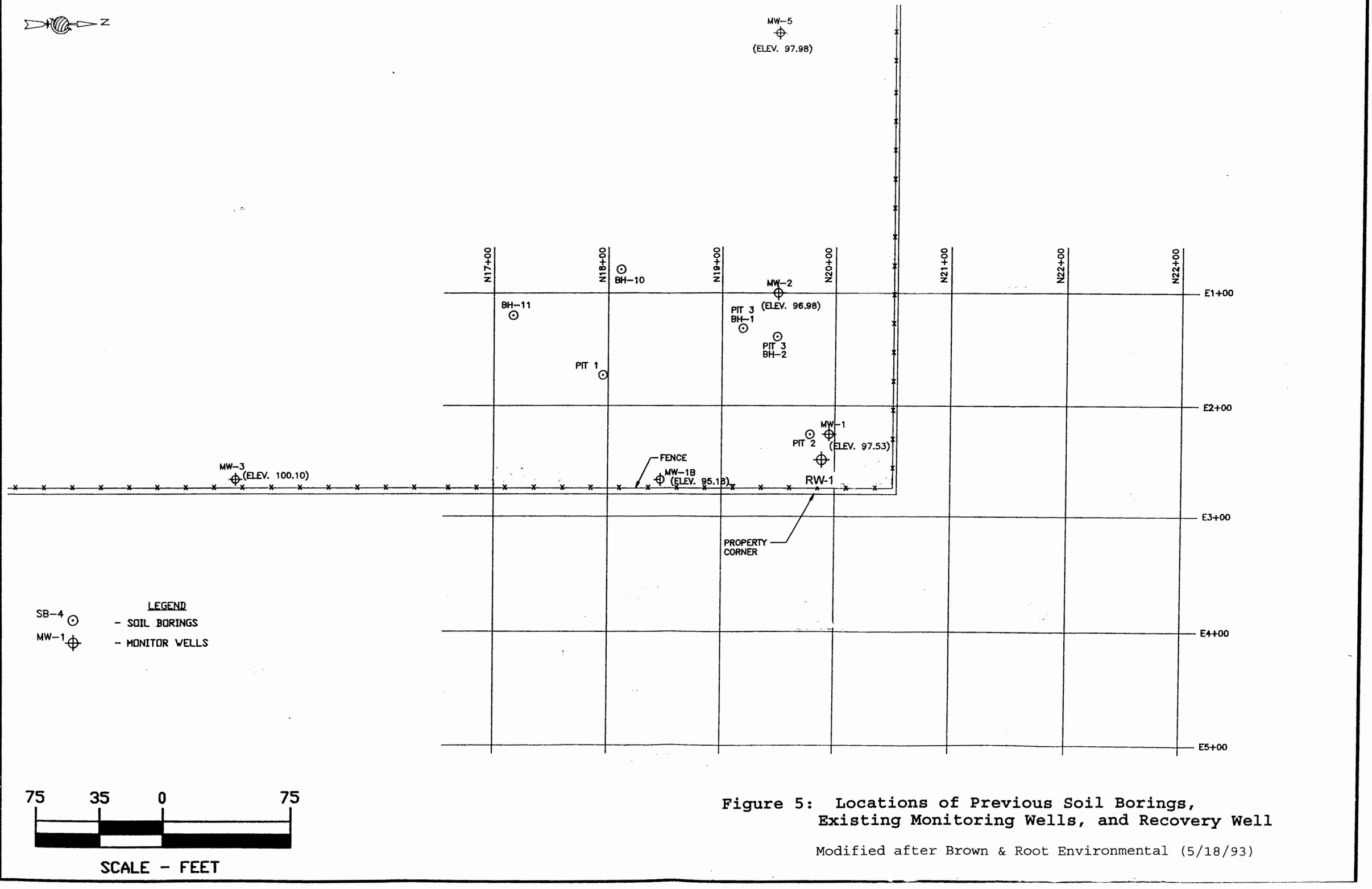


Figure 5: Locations of Previous Soil Borings, Existing Monitoring Wells, and Recovery Well

Modified after Brown & Root Environmental (5/18/93)

R24E

T9S

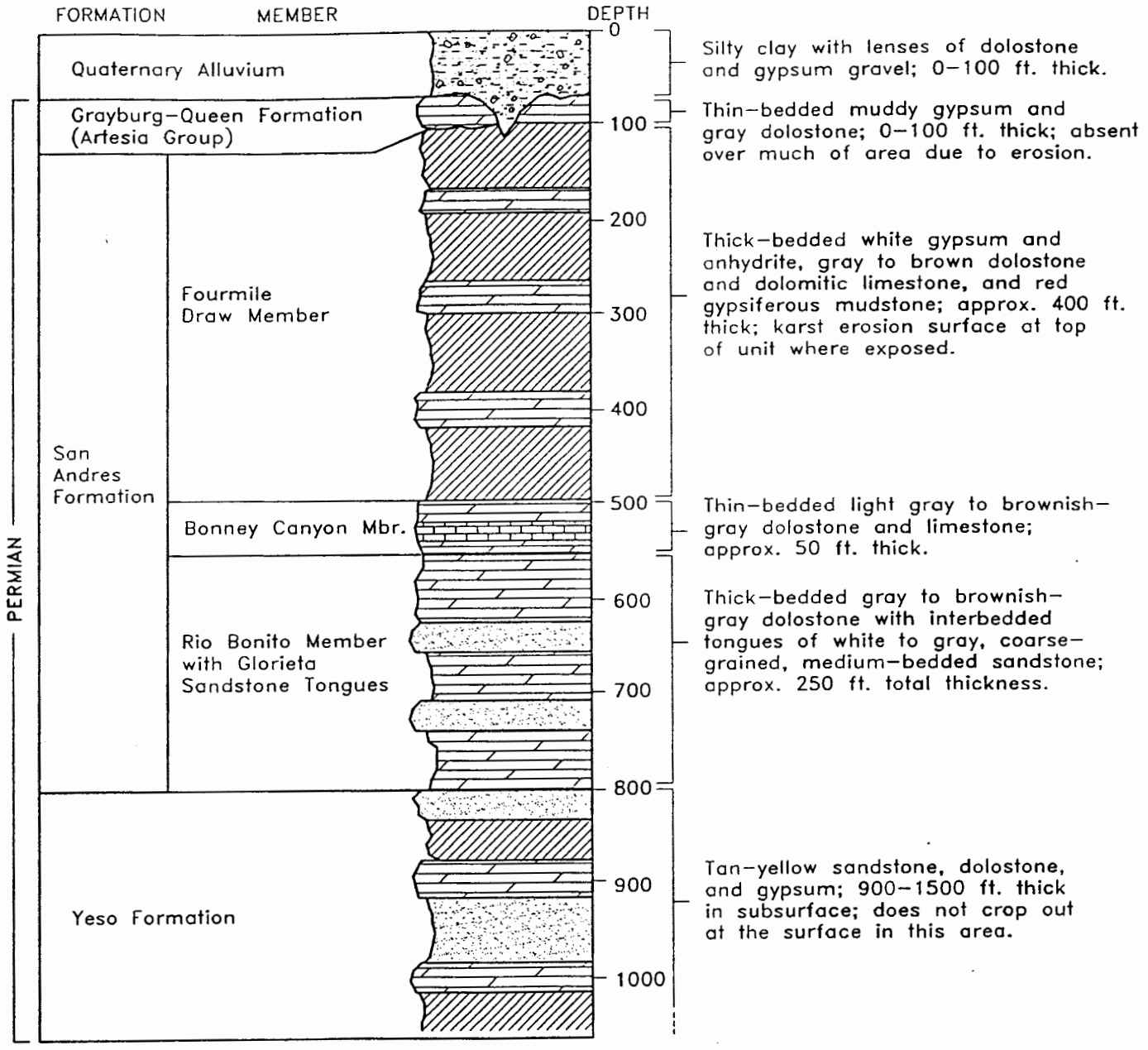
Transwestern Compressor Station No. 9

2 miles

N

0 2000'

Figure 4:
Water Supply Location Map
Modified after Daniel B. Stephens & Assoc., Inc. (4/94)



Information Source: Kelley, 1971

Explanation

- Unconsolidated Alluvium
- Sandstone
- Limestone
- Dolomite
- Gypsum

Figure 3:
Generalized Stratigraphic Section Near Roswell Compressor Station

Modified after Daniel B. Stephens & Assoc., Inc. (5/94)

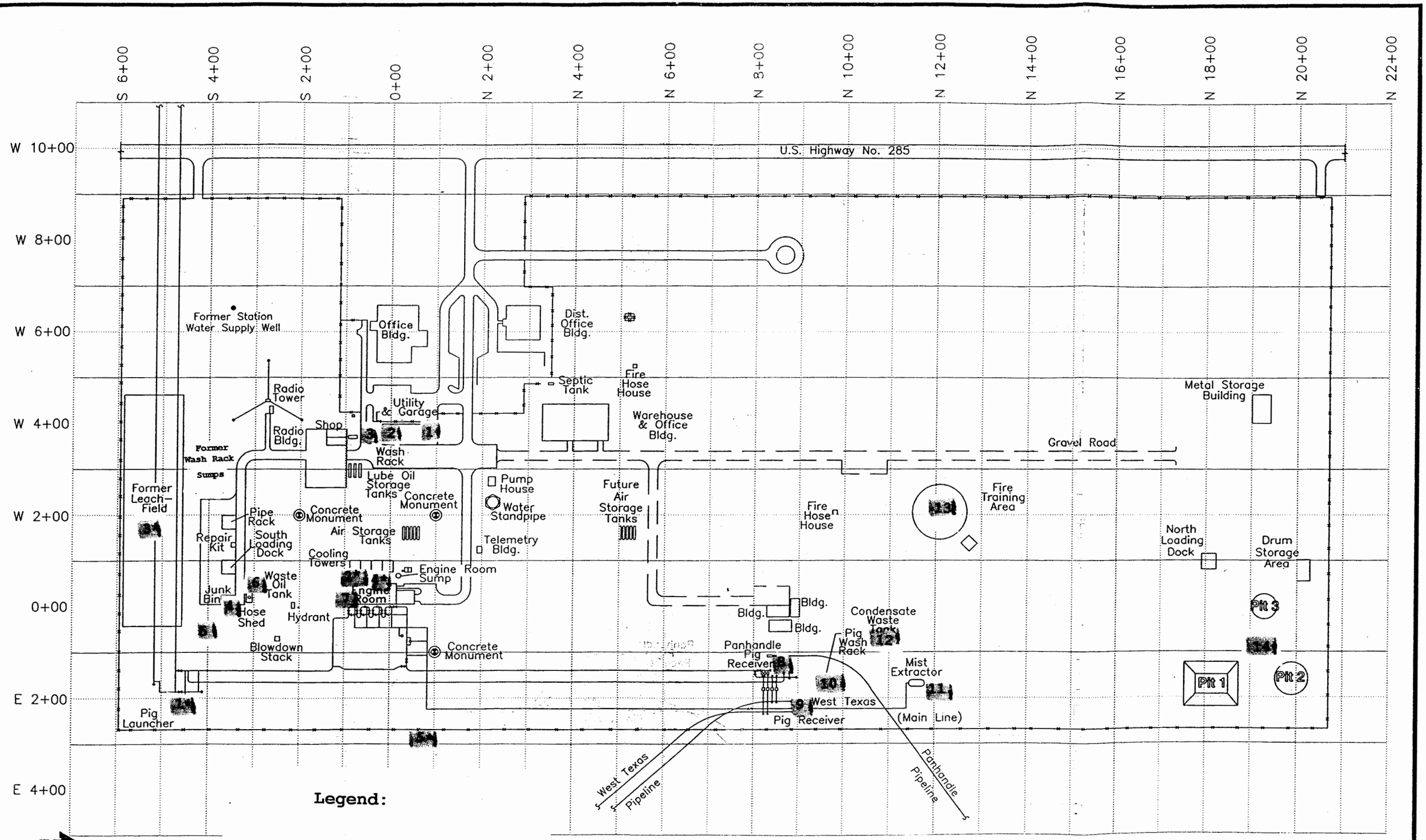
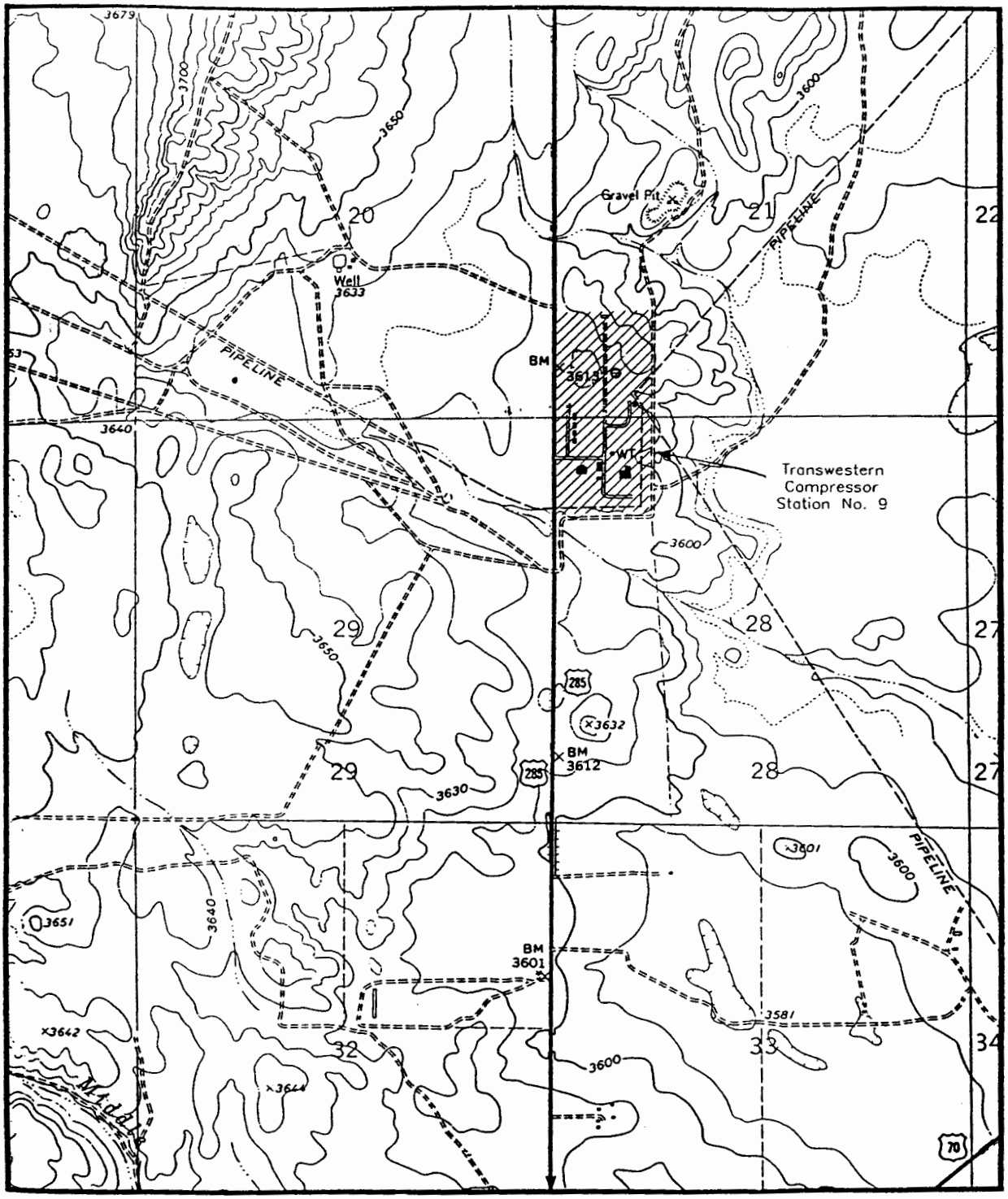
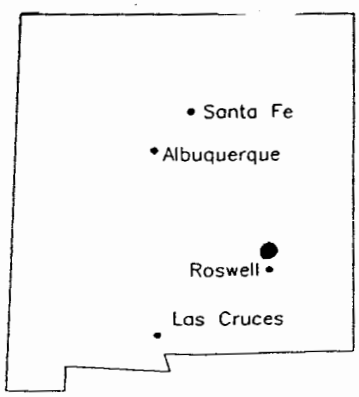
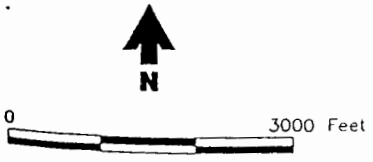


Figure 2:
Site Plan

Modified after Daniel B. Stephens & Assoc., Inc. (5/94)







Source: U.S. Geologicol Survey. 1982 Panther Hill, Roswell North 7 1/2 Minute Topographic Quadrangle Map.

Figure 1: Location Map

Modified after Daniel B. Stephens & Assoc., Inc. (4/94)