LONGHORN ARMY AMMUNITION PLANT

KARNACK, TEXAS

ADMINISTRATIVE RECORD

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Sverdrup

Environmental Baseline Survey
for
Longhorn Army Ammunition
Plant (LHAAP)
Karnack, Texas

Submitted to
U.S. Army Corps of Engineers
Tulsa District
CONTRACT NO. DACA56-96-R-0027
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St. Louis, Missouri

October 1997

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0.0 EXECUTIVE SUMMARY

The purpose of the Environmental Baseline Survey (EBS) is to prepare a document which summarizes, to the extent such information is available, the environmental conditions at Longhorn Army Ammunition Plant (LHAAP). This document includes information on environmental related factors with respect to the land, facilities and other real property assets.

This Environmental Baseline Survey is based upon a review of existing environmental information obtained from previous environmental investigations, studies and surveys conducted at LHAAP. The scope of this report is to provide available information regarding the storage, release, treatment or disposal of hazardous substances or petroleum products at various locations at LHAAP. Following the review of the areas with existing data, the site is then classified into one of the four following environmental condition categories:

Category 1: Uncontaminated properties. Defined as any real property which no hazardous substances and no petroleum products or their derivatives, including aviation fuel and motor oil were stored for one year or more in quantities greater than 1000 kg or its reportable quantity. Known to have been released, or disposed of.

Category 2A: Properties that do not require remedial action and can be defined as areas that have stored hazardous substances and petroleum products in quantities greater than 1000 kg or its reportable quantity for more than one year or had a release or disposal of a hazardous substance but in quantities that require no response or remedial action.

Category 2B: All required remedial action has been taken.

Category 2C: Requires remedial or other action that has not yet been taken or has not yet been completed.

Table ES-1 provides a summary of the EBS category that each of the Group I, II, IV or V sites were classified into on the basis of existing information that was reviewed for the EBS. Of the 20 sites included in the Group I, II, IV and V sites, seven were classified under category 2A and thirteen were classified under category 2C.

The buildings at LHAAP were also included in the EBS and evaluated utilizing similar categories with the exception that an additional category (category 1B) was included for the building EBS to allow for environmental evaluations which had not yet been performed (ie. lead based paint survey) indicating that insufficient data existed to fully evaluate the building status. After the EBS for the buildings was completed using existing information, there were 285 buildings classified in category 1B and 162 buildings classified in category 2C. Section 2.5 of this report includes the LHAAP building EBS and details of the specific buildings, the EBS evaluation category definitions and their designated EBS category.

Section 3.0 of this report provides a list of reference documents used to prepare this report. The Appendix contains copies of some of the LHAAP file information reviewed and is included to provide detailed information concerning an specific building or area of interest.

Table ES-1

LHAAP Site EBS Category Summary

Group	Site - Description	EBS Category [1]
Group I [2]	Site XX - Ground Signal Test Area	2A
	Site 1 - Inert Burning Grounds	2A
	Site 11 - Suspected TNT Burial Site	2A
	Site 27 - South Test Area	2A
Group II	Site 12 - Active Landfill	2C
	Site 16 - Old Landfill	2C
	Site 17 - Burning Ground No. 2/Flashing Area	2C
	Site 18/24 - Burning Ground No.3/Unlined Evaporation Pond	2C
	Site 29 - TNT Production Area	2C
	Site 32 - Former TNT Waste Disposal Plant	2A
Group IV	Site 35A - Shop Area	2C
	Site 35B - Chemical Laboratory	2C
	Site 35C - Static Test Area	2C
	Site 46 - Plant 2	2C
	Site 47 - Plant 3	2C
	Site 48 - Y-Area	2C
Group V	Site 50 - Sump Water Storage Tank	2C
	Site 52 - Magazine Washout Area	2A
	Site 60 - Former Storage Buildings 411, 411A and 714	2C
	Site 63 - Former Burial Pits	2A

1 Category 1 is an uncontaminated property.
Category 2A does not require remedial action but has stored hazardous substances or had a release.
Category 2B has all required remedial action taken.
Category 2C requires remedial action or other action has not yet been taken or has not yet been completed.

2 See Record of Decision Document, September 1997, located in Appendix __ for additional information concerning the Group I sites.

1.0 INTRODUCTION

1.1 PURPOSE

The purpose of the Environmental Baseline Survey (EBS) is to prepare a document which summarizes, to the extent such information is available, the environmental conditions at the Longhorn Army Ammunition Plant (LHAAP). This document includes information on environmental related factors with respect to the land, facilities and other real property assets.

1.2 SCOPE

This Environmental Baseline Survey is based upon the review of existing environmental information obtained from previous environmental investigations, studies and surveys conducted at LHAAP. The scope of this report is to provide available information regarding the storage, release, treatment or disposal of hazardous substances or petroleum products at various locations at LHAAP. Following the review of the areas with existing data, the site is then classified into one of the four following environmental condition categories:

Category 1: Uncontaminated properties. Defined as any real property which no hazardous substances and no petroleum products or their derivatives, including aviation fuel and motor oil were stored for one year or more in quantities greater than 1000 kg or its reportable quantity. Known to have been released, or disposed of.

Category 2A: Properties that do not require remedial action and can be defined as areas that have stored hazardous substances and petroleum products in quantities greater than 1000 kg or its reportable quantity for more than one year or had

a release or disposal of a hazardous substance but in quantities that require no response or remedial action.

Category 2B: All required remedial action has been taken.

Category 2C: Requires remedial or other action that has not yet been taken or has not yet been completed.

1.3 LHAAP HISTORY

LHAAP is a government-owned, contractor-operated industrial facility under the jurisdiction of the U.S. Army Armament, Munitions and Chemical Command (USAMCCOM). Figure 1-1, (Appendix I) is a location map for LHAAP which illustrates the locations of the various facility areas and sites included in the EBS. LHAAP was established in October 1942 with the primary mission to produce 2,4,6-trinitrotoluene (TNT) flake (Plant 1 area). Monsanto Chemical Company was the first contractor-operator of the plant. TNT flake production continued through World War II until August 1945 when Monsanto Chemical Company's role ended and the plant went on standby status until February 1952. From 1952 until 1956, Universal Match Corporation was the contractor-operator, producing such pyrotechnic ammunition as photo flash bombs, simulators, hand signals, and 40-mm tracers. In November 1955, Thiokol Corporation began operation of the rocket motor facility (Plant 3 area). Thiokol Corporation assumed responsibility for total operation of the plant with the departure of Universal Match Corporation in 1956. Production of rocket motors continued to be the primary operation at LHAAP until 1965, when the production of pyrotechnic and illuminating ammunition was re-established.

The installation has also been responsible for the static firing and elimination of Pershing I and II

rocket motors in compliance with the Intermediate-Range Nuclear Force Treaty in effect between the United States and the former Union of Soviet Socialist Republics. In June of 1993, LHAAP was placed on the Army's inactive list.

1.4 SURFACE FEATURES AND SURFACE HYDROLOGY

LHAAP is characterized by mixed pine-hardwood forests that cover gently rolling to hilly terrain with an average slope of 3 percent towards the northeast. Most of the terrain at LHAAP slopes 3 percent or less, but slopes as steep as 12 percent are common in the western and northwestern portions of the installation and along the Harrison Bayou floodplain. LHAAP is surrounded by pine-hardwood forests and agricultural land. The northeastern border is formed by Caddo Lake and Goose Prairie Bayou. Ground surface elevations on LHAAP vary from 170 ft to 335 ft National Geodetic Vertical Datum (NGVD), 1929. Figure 1-2 is a topographic map of the LHAAP.

All surface water from LHAAP drains northeastwardly into Caddo Lake via four drainage systems: Saunder's Branch, Harrison Bayou, Central Creek, and Goose Prairie Creek. Caddo Lake is a part of Big Cypress Bayou, into which a small portion of the northwest corner of the installations drains. Saunder's Branch of Martin's Creek flows onto LHAAP near the southeast corner of the installation and flows northward into Caddo Lake. Approximately 11 percent of the heavily wooded eastern section of the plant is drained by this system. Harrison Bayou enters LHAAP on the southern edge of the installation. The bayou carries 30 percent of the surface drainage of LHAAP and bisects the installation in a northeasterly direction. Central Creek enters LHAAP on its western edge just south of the town of Karnack. Approximately 29 percent of the surface drainage from the installation is carried to Caddo Lake via this drainage course. The headwaters of Goose Prairie Creek are located near the northwest corner of the plant and consist of one larger creek and several smaller tributaries. Goose Prairie Creek flows across the northern edge of the installation and drains approximately 30 percent of LHAAP.

Caddo Lake is created by Caddo Dam, constructed on the Big Cypress Bayou in Caddo Parish, Louisiana. The original dam was constructed in 1914 for local navigation purposes and was reconstructed in 1971. The spillway elevation of the lake is 168.9 ft NGVD. Big Cypress Bayou resumes east of Caddo Lake and joins the Red River at Shreveport, Louisiana. The Red River flows southeast across Louisiana and joins the Mississippi River at Simmesport, Louisiana.

1.5 REGIONAL GEOLOGY

LHAAP is situated on a deep inland extension of the Gulf Coastal Plain Section of the Coastal Plain Physiographic Province, commonly referred to as the Pineywoods. The area is characterized by mixed pine-hardwood forests that cover gently rolling to hilly terrain. The installation lies on the northern flank of the Sabine Uplift, which is bordered on the west by the East Texas Basin.

LHAAP is situated on an outcrop of the Wilcox Group, which crops out over a large part of the eastern half of Harrison County. The base of the Wilcox Group slopes westward and ranges in elevation from +193 ft NGVD in the central part of the county to -70 ft NGVD in the northwest corner of the county. In the LHAAP vicinity, the elevation of the Wilcox Group base is approximately +50 ft NGVD, making the Wilcox Group approximately 120 - 300 ft thick beneath the installation. The Wilcox Group consists mostly of fine- to medium-grained sands interbedded with a considerable amount of silt and clay, and occasional seams of lignite. Although sand beds up to 50 ft thick are present locally, individual beds are generally lenticular, with lenses of clay, sand, and silt pinching out or grading into each other over very short distances, making correlation difficult. The Wilcox Group is underlain conformably by the predominantly calcareous clay of the Midway Group. Regional dip of the Wilcox Group is to the northwest into the East Texas syncline, while the ground surface generally dips to the southeast.

Soil types encountered in borings during the spring of 1993 and 1995 field investigations at LHAAP are generally clays, silts, and fine-grained sands in varying combinations. These occur as residuum, unweathered Wilcox Group materials, or alluvium associated with the drainage systems crossing the installation. Residual soils typically consist of silty or sandy clay occasionally interbedded with sand strata. Alluvial soils occur as interbedded clays, silts, and fine-grained sands.

1.6 REGIONAL HYDROGEOLOGY

The Wilcox Group was identified by the Texas Water Development Board as the basal unit of the regional Cypress Aquifer, also known as the Carrizo-Wilcox Aquifer. The Cypress Aquifer outcrops over most of Harrison County and is comprised of, in ascending order, the Wilcox Group, The Carrizo Sand, the Reklaw Formation, and the Queen City Sand. All units are believed to be hydraulically connected. These units all dip to the northwest into the East Texas Syncline.

The availability of groundwater in Harrison County is largely dependent on the hydrologic characteristics of the units comprising the Cypress Aquifer. The Wilcox Group, outcropping in the area of LHAAP, yields small (<50 gpm) to moderate (50 - 500 gpm) quantities of fresh water to wells throughout the county. As the basal unit of the Cypress Aquifer, the Wilcox Group is also considered as the base of fresh water in the area, conformably overlying the Midway Group, which does not yield usable quantities of water but tends to serve as a relatively impermeable base to the overlying water-bearing Wilcox Group.

Groundwater at LHAAP generally occurs under unconfined to semi-confined conditions, whether in alluvium or Wilcox Group materials, and can be encountered from within 1 ft to 20-30 ft or more below the ground surface. Perched and locally confined conditions frequently occur within the Wilcox Group due to its highly variable stratigraphy with frequent clay lenses. Recharge is primarily by precipitation infiltration from the surface. Depth to groundwater in the Wilcox Group

has been observed to fluctuate as much as 2 ft within a 6-month period in some areas of the installation. These fluctuations are most likely due to seasonal variations in rainfall.

1.7 GROUP LOCATIONS / SITE LOCATION DESCRIPTIONS

LHAAP is located in central east Texas in the northeast corner of Harrison County. The installation occupies 8,493 acres between State Highway 43 at Karnack, Texas and the western shore of Caddo Lake. Figure 1-3, located in Appendix I, depicts the group/site locations at the LHAAP. The nearest major cities are Marshall, Texas, approximately 14 miles to the southwest, and Shreveport, Louisiana, approximately 40 miles to the east. State Highways 43 and 134 provide access to the installation. LHAAP is bounded to the north and east by Caddo Lake, a large fresh water lake situated on the Texas-Louisiana state line. The eastern fence of LHAAP is 3-½ miles from the Texas-Louisiana state border. The small incorporated city of Uncertain and the non-incorporated community of Karnack, Texas, are located immediately north and west of the installation boundary, respectively. The remaining surrounding area is sparsely populated and is known as the Pineywoods of east Texas.

LHAAP has been divided into four major groups of concern with respect to environmental activities that either have already been conducted or are ongoing. Each group has been further subdivided into specific areas or sites. The following Sections 1.7.1 through 1.7.4 discuss the locations of each of the four groups and their corresponding sites. Information on the environmental condition of each of the Group/Sites is contained in Section 2.0. Information on the environmental condition of the buildings at LHAAP is also included in Section 2.0 under Subsection 2.5.

1.7.1 Group I Sites

Group I is located in the southeastern corner of LHAAP and is comprised of four sites: Site XX -

Ground Signal Test Area , Site 1 - Inert Burning Grounds, Site 11- Suspected TNT Burial Site , and Site 27 - South Test Area.

Site XX - Ground Signal Test Area

Site XX - The site is located in the southeastern portion of LHAAP. Access to the site is provided by an asphalt road that intersects Long Point Road just east of its intersection with Avenue Q. The access road proceeds in a general south-southeasternly direction for about 0.4 miles to the center of the site. It then continues for another 0.7 mile to the southern LHAAP boundary.

Site 1 - Inert Burning Grounds

The site is located in the extreme northwestern portion of LHAAP, near the intersection of Avenue P and 32nd Street. Site 1 covers an area of approximately 1.5 acres.

Site 11 - Suspected TNT Burial Site

Site 11 - The site is located in the southern central portion of LHAAP adjacent to the intersection of Avenues P & Q. The site consists of a relatively flat area of cut grass immediately north of the intersection, bounded by Avenue P on the west, Avenue Q on the south and the tree line on the north and east. Power lines parallel Avenues P & Q on the two sides of the site. A large forested area extending to central creek exists north of the site.

Site 27 - South Test Area

Site 27 - The site is located in the south central portion of LHAAP. The eastern test pad is approximately 2,000 feet southeast of Avenue P and the Magazine Area. The entrance to the Test

Area is on Avenue P about 1,700 feet northeast of its intersection with Avenue E. A deteriorated asphalt and gravel road runs from the entrance to the Test Pad.

1.7.2 Group II Sites

Group II is located in the approximate center of LHAAP and is comprised of the following sites: Site 12 - Active Landfill, Site 16 - Old Landfill, Site 17 - Burning Ground No. 2/Flashing Area, Site 18/24 - Burning Ground No. 3/Unlined Evaporation Pond, Site 29 - TNT Production Area, and Site 32 - Former TNT Waste Disposal Plant.

Site 12 - Active Landfill

Site 12 - Active Landfill is located in the central portion of LHAAP and covers an area of approximately 7 acres. The center of the site is about 1,700 ft east-northeast of the intersection of Avenue P and Avenue Q. The entrance to the site's graveled access road is on Avenue Q about 0.2 mile east of Avenue P.

Site 16 - Old Landfill

Site 16 - Old Landfill is located in the south-central portion of LHAAP, just north of Avenue Q and adjacent to the former Retail Sales Area and covers an area of approximately 20 acres. The site consists of an open area of grass that is bounded on the western and northern edges by a gravel road and by wooded areas along the eastern and southern edges. A rectangular paved area, known as the Retail Sales Area, is located at the western edge of the site. Harrison Bayou runs along the northeastern edge of the site area.

Site 17 - Burning Ground No. 2/Flashing Area

Site 17 - Burning Ground No. 2/Flashing Area, is located in the southeastern quadrant of LHAAP at the intersection of Long Point Road and Avenue Q and immediately southwest of Site 18. The site is located within a heavily wooded section of LHAAP. The site has two 185 ft by 305 ft cleared areas separated by a gravel access road. The site is relatively flat and is covered with grass and scattered brush.

Site 18/24 - Burning Ground No. 3/Unlined Evaporation Pond

Site 18/24 - Burning Ground No. 3 is a fenced 34.5 acre secured area located in the southeastern section of LHAAP. The Unlined Evaporation Pond/Rocket Motor Washout Facility site is located within the northern corner of the burning ground. Burning Ground No. 3 is a cleared area within a heavily wooded section of LHAAP. The area is generally vegetated with grass and weeds and is dissected with an asphalt-paved road.

Site 29 - TNT Production Area

Site 29 is a heavily wooded site located in the west central portion of the LHAAP installation. The area of the site is approximately 85 acres. The site is bounded by Avenue E on the southwest, 1st Street on the northwest, 18th Street on the southeast, and Avenue D on the northeast. A portion of Site 29, the Bulk Toluene Storage Area, is located in a wooded area across Avenue D.

Site 32 - Former TNT Waste Disposal Plant

Site 32 is located in the west central portion of LHAAP. The site entrance is on Avenue C about 0.2 miles northwest of its intersection with 1st Street. The site covers approximately 9 acres and is covered extensively with trees and brush that have grown over the site since the late 1940s.

1.7.3 Group IV Sites

Group IV is located in the northern section of LHAAP and is comprised of the following sites: Site 35A - Shop Area, Site 35B - Chemical Laboratory, Site 35C - Static Test Area, Site 46 - Plant 2, Site 47 - Plant 3, and Site 48 - Y-Area.

Site 35A - Shop Area

Site 35A is located approximately 875 ft west of the northern most point of the lagoon. The site is located in the Chemical Laboratory Area and is bisected by two streams that later join together to become Goose Prairie Creek. Four railroad tracks are also located in the site area. One railroad track ends within site boundaries, two railroad tracks end within of 500-550 ft of leaving the site area, and one railroad track stops at Site 46.

Site 35B - Chemical Laboratory

Site 35B overlaps and is located southeast of Site 47. Site 35B is bisected by Goose Prairie Creek and Avenue P.

Site 35C - Static Test Area

Site 35C is located in the Static Test area and is adjacent to Harrison Bayou. A tributary of Central Creek also bisects Site 35C.

Site 46 - Plant 2

Site 46 is located at Plant 2 and adjacent to the Mod Area.

Site 47 - Plant 3

Site 47 is located in one of the two Sump Project Areas and encompass the largest area of the Group IV sites. Two tributaries of Goose Prairie Creek bisect the site.

Site 48 - Y-Area

Site 48 is located in one of the two Sumps Project Areas. One tributary of Central Creek ends within the site boundaries.

1.7.4 Group V Sites

Group V sites are located in the northwestern, southwestern, and southeastern portions of LHAAP. Sites 50 - Sump Water Storage Tank and 60 - Former Storage Buildings 411, 411A and 714 are located in the northwestern portion of LHAAP. Site 52 -Magazine Area Washout is located in the southwestern portion of LHAAP. Site 63 - Former Burial Pits is located in the southeastern portion of LHAAP.

Site 50 - Sump Water Storage Tank

The sump water storage tank site is located approximately 75 ft south of the bridge on South Crockett Avenue which crosses Goose Prairie Creek. A concrete ring, approximately 26 ft in diameter, marks the suspected location of the storage tank and is overgrown with vegetation including one large tree inside the concrete ring parameter. It is assumed that the concrete ring is the remains of the foundation for an above ground storage tank of unknown construction. No other concrete features, drains, or other facilities are observed at the site. No evidence of distressed vegetation or soil staining is observed at or near the storage tank site.

Site 52 -Magazine Area Washout

The magazine area washout site is located at the northeast corner of the Avenue E and 19th Street intersection. The site consists of a grassy area surrounding a water hydrant with an attached standpipe. Drainage at the area is provided by an open ditch located approximately 19 ft from, and parallel to, the Avenue E and 19th Street.

Site 60 - Former Storage Buildings 411, 411A and 714

Site 60 consists of three buildings (411, 411A, and 714) and a shed (TS-80). These buildings were reportedly used for the storage of pesticides and herbicides. Buildings 411 and 411A and shed TS-80 are located on the west side of Avenue T. Building 714 is located on 9th Street and is currently used for the storage of drummed products and other materials. The three buildings have concrete floors with no curbs present at entryways and the shed has an earthen floor.

Site 63 - Former Burial Pits

The suspected burial pits are located adjacent to Bobby Jones Road, beginning at the intersection of Long Point Road and extending north approximately 165 ft on both sides of the roadway.

2.0 SITE EBS EVALUATION

2.1 INTRODUCTION

This section provides the EBS evaluation summary of the properties and buildings at the LHAAP. This evaluation was performed by reviewing existing documents that were available at the time of the report preparation. Reports, studies or survey documents used to perform the EBS are listed in Section 3.0 of this report. The result of the EBS will determine the environmental condition of the property/building with the purpose of placing them into one of four categories. Figure 2-1 (Appendix I) depicts the individual sites and the EBS category as presented in this section. The categories for the properties are as follows:

Category 1: Uncontaminated properties. Defined as any real property which no hazardous substances and no petroleum products or their derivatives, including aviation fuel and motor oil were stored for one year or more in quantities greater than 1000 kg or its reportable quantity. Known to have been released, or disposed of.

Category 2A: Properties that do not require remedial action and can be defined as areas that have stored hazardous substances and petroleum products in quantities greater than 1000 kg or its reportable quantity for more than one year or had a release or disposal of a hazardous substance but in quantities that require no response or remedial action.

Category 2B: All required remedial action has been taken.

Category 2C: Requires remedial or other action that has not yet been taken or has not yet been completed.

2.1 GROUP I SITES

2.1.1 Site XX- Ground Signal Test Area

The Ground Signal Test Area was used for aerial and on-ground testing of various pyrotechnic, illuminant and signal devices manufactured at LHAAP. Since late 1988, the site had also been used for the burn-out of rocket motors in Pershing missiles destroyed in accordance with the INF Treaty.

The site has been used intermittently since April 1963 for aerial and on-ground testing and destruction of a variety of devices, including red phosphorus smoke wedges, infrared flares, illuminating 60 and 81 mm mortar shells, illuminating 40 to 155 mm cartridges, bottom bombs and various types of explosive simulators. Prior to the rocket motor burn-outs at the site for the INF Treaty, the site was used intermittently over a 20-year period for testing and burn-out of rocket motors from Nike-Hercules, Pershing and Sargent missiles. About 1970, one of the Sargent rocket motors was inadvertently destroyed when it exploded in an excavated pit near the center of the site just west of the road crossing the site. Debris from the explosion was reportedly placed in the resulting crater and the crater was backfilled.

Site Investigations

Several investigations were conducted at the Site XX- Ground Signal Test Area. The following paragraph is a summarization of the investigation activities.

The Ground Signal Test Area was included in a contamination survey conducted by EPS under contract to USATHAMA, as documented in June 1984. EPS collected shallow soil samples and installed groundwater monitoring wells. During the Phase 1 RI conducted in 1993, Ebasco performed soil borings which included subsurface soil and groundwater sampling. Additional site

work performed during this investigation included resampling of the existing groundwater monitoring wells and sediment/surface water sample collection. In 1994, SvE conducted a Phase 2 field investigation of the site which included completion of a soil boring and the collection of soil gas samples, subsurface soils and groundwater samples.

Site Summary

Volatile organic compounds and metals have been detected in soils and groundwater during previous investigations. Based on existing information, Site XX would be placed in EBS Category 2A. The reader is referred to the document cited in Reference 7 and the Group 1 Record of Decision (Appendix 2) for additional more detailed information.

2.1.2 Site 1 - Inert Burning Grounds

The Inert Burning Grounds were originally used during World War II by Monsanto Chemical Company for burning trash, ashes, scrap lumber, and waste from burned 2,4,6-trinitrotoluene (2,4,6-TNT). The site was not used between August 1945 and February 1952 when LHAAP was in a standby status. Universal Match Corporation later used the site to burn wastes, including photo flash powder, for a few years during the 1950s until most burning operations were transferred to the Burning Ground No. 2/Flashing Area (Site 17) located on the installation. Intermittent, small-scale burning operations may have continued at the site into the early 1960s. It is suspected that burning operations were conducted in one or more burn pits or pans that were subsequently filled or covered. Burn residues were most likely not removed. It is also suspected that some wastes may have been dumped without burning and were subsequently covered by or mixed with fill material.

Site Investigations

Several investigations were conducted at the Site 1 - Inert Burning Grounds. The following paragraph is a summarization of the investigation activities.

A site investigation (SI) was conducted by EPS for USATHAMA in 1983. The focus of the EPS 1983 SI was the collection of groundwater samples. In 1993, a Phase I Remedial Investigation (RI) was conducted at Site 1 in two separate sections: the first section, Site 1, was the southeastern portion of the site and was investigated by Ebasco Services, Inc. (Ebasco); the second section, Site 1A, was the northwestern portion of the site and was investigated by Roy F. Weston (Weston). SvE conducted a Phase II investigation in 1994. The Phase I and Phase II investigations consisted of the collection of sediment, surface water, groundwater, and subsurface soil samples.

Site Summary

Volatile organic compounds, metals and explosive compounds have been detected in soils, sediment and groundwater during previous investigations. Based on existing information, Site 1 would be placed in EBS Category 2A. The reader is referred to the document cited in Reference 7 and the Group 1 Record of Decision (Appendix 2) for additional more detailed information.

2.1.3 Site 11 - Suspected TNT Burial Site

The suspected TNT Burial Site is an undocumented location where it is suspected that bulk TNT might have been disposed during the 1940s. Other than the designation of this location by USATHAMA in the early 1980s, where contamination investigations were later conducted, there is no confirmed documentation that TNT burial occurred at this site. The site has been inactive since its suspected use in the 1940s.

Site Investigations

Several investigations were conducted at the Site 11 - Suspected TNT Burial Site. The following paragraph is a summarization of the investigation activities.

The Suspected TNT Burial Site was originally investigated by Environmental Protection Systems Inc. (EPS) for USATHAMA and Morton Thiokol Inc., as documented in reports dated June 1984 and May 1988 (see RI/FS Work Plan Volume I-General, COE, June 1992). The investigation included subsurface and surface soil sampling and analysis for explosive compounds. In 1993, Ebasco Services Inc. (Ebasco) performed soil borings and sediment/surface water sampling. Analysis was performed on soil, sediment, surface water and groundwater samples for volatiles, semivolatiles, explosives, metals and anions. During a Phase I Remedial Investigation performed by Ebasco in 1993 soil boring were performed with soil and shallow groundwater samples collected for analysis. In 1994, Sverdrup Environmental, Inc. (SvE) conducted a Phase 2 field investigation which included the installation of groundwater monitoring wells and the collection of soil and groundwater samples for laboratory analysis.

Site Summary

Metals and explosive compounds have been detected in soils and groundwater during previous investigations. Based on existing information, Site 11 would be placed in EBS Category 2A. The reader is referred to the document cited in Reference 7 and the Group 1 Record of Decision (Appendix 2) for additional more detailed information.

2.1.4 Site 27 - South Test Area

The South Test Area was constructed in 1954 and was used by Universal Match Corporation for testing photflash bombs that were produced at LHAAP until approximately 1956. The bombs were tested by exploding them in the air over an elevated, semi-elliptical earthen Test Pad within the floodplain of Harrison Bayou. Testing was observed and controlled from a building on a hilltop 1,000 feet wet-northwest of the test pad. Bombs awaiting testing were apparently stored in three earth-covered concrete bunkers a few hundred feet west of the Observation Building.

During the late 1950's, illuminating (signal) devices were demilitarized within pits excavated in the vicinity of the Test Pad. During the early 1960s, leaking production items (possibly 3- to 4- pound canisters of white phosphorus) were demilitarized in the vicinity of the Test Pad. In the early 1980s, approximately 52,000 half and one pound photoflash cartridges were demilitarized in a 500-square foot area situated about 300 feet east of the Observation Building and immediately north of the road running from the Observation Building to the Test Pad.

Site Investigations

Several investigations were conducted at the Site 27 - South Test Area. The following paragraph is a summarization of the investigation activities.

Site 27 was investigated by EPS for USATHAMA and a contamination survey report was published in 1984. EPS collected shallow soil, and groundwater samples. In 1993 Ebasco conducted a Phase I RI. SvE conducted a Phase II RI in 1994. Sediment, surface water, groundwater and subsurface soil samples were collected during the 1993 and 1994 investigations.

Site Summary

Explosive compounds and metals have been detected in soils and groundwater during previous investigations. Based on existing information, Site 27 would be placed in EBS Category 2A. The reader is referred to the document cited in Reference 7 and the Group 1 Record of Decision (Appendix 2) for additional more detailed information.

2.2 GROUP II SITES

2.2.1 Site 12- Active Landfill

The Active Landfill was established in 1963 and was used for the disposal of industrial solid wastes, and possibly hazardous wastes, generated at LHAAP. From 1978, the landfill was used continuously for the disposal of non-hazardous industrial solid waste until it's closure in April 1994.

Aerial photographs taken in May 1954, 1963, January 1970, December 1978, and February 1985 (USACE, 1992a) represent the evolution of LHAAP's history.

In 1954, photographs indicate the beginning of several projects: construction of warehouses located at the north of the site; the construction of a north-northwest trending railroad spur track located in the east-northeast portion of the site; and the excavation of a diversion ditch.

The diversion ditch was excavated through a low ridge that lies between Central Creek and one of its principal tributaries that collects surface runoff from the southern part of the Magazine Area. The diversion ditch paralleled the railroad spur and was used to change the direction of flow of the tributary. The alteration of the tributary's flow patterns eliminated the need for a bridge or large drainage structure where the railroad crossed the stream. The upstream end of the diversion ditch

was bounded by a borrow area, on the northeast side of the site, that was created by the excavation. The low-ridge segment of the diversion ditch and part of the borrow area were filled with waste and soil to form the nucleus of the current Active Landfill site.

The diversion ditch remained functional until 1963 when aerial photographs illustrated the beginning of the disposal of waste materials in the diversion ditch about 350 ft downstream (north-northeast) from its confluence with the diverted tributary stream. Waste disposal in the diversion ditch apparently continued for several years. An aerial photo taken in January 1970 indicated that enough waste had been disposed in the diversion ditch to block its flow, but the site did not appear to be active at that time due to the presence of vegetation on fill materials. Sometime between 1970 and 1978, the site was reactivated for waste disposal. By December 1978, aerial photographs show that a considerable volume of additional waste materials had been disposed in the former diversion ditch and a previously undisturbed hillside adjoining the ditch had become another location for waste disposal. The hillside later became the northeast part of the site. At that time, most of the original ditch through the low ridge and part of the former borrow area had been filled with waste materials.

Since 1978, until its closure in 1994, the site was used for the disposal of industrial solid wastes generated at LHAAP. In the early 1980s, a large area, alongside the southeast margin of the former diversion ditch, was cleared for waste disposal, and was used for this purpose until the closure of the site in 1994.

Site Investigations

Several investigations were conducted at the Site 12 - Active Landfill area. The following paragraph is a summarization of the investigation activities.

Site 12 was originally investigated by the U.S. Army Environmental Hygiene Agency (USAEHA)

in 1980. In 1982, Environmental Protection Systems, Inc. (EPS) conducted a "LHAAP Contamination Survey" which included the Active Landfill. Thiokol Corporation collected surface water samples and sediment samples from the bottom of the former diversion ditch and at a railroad siding near Warehouse Building 46-W, in 1991. Additional samples were collected in 1991 by Thiokol Corporation and the TNRCC when they obtained a sample of suspected sawdust waste material from a pile near the northwest boundary of the site. SvE conducted a Phase I and Phase II Remedial Investigation (RI) at Site 12 in 1993 and 1995, respectively. The Phase I and Phase II investigations consisted of the collection of sediment, surface water, groundwater, and subsurface soil samples.

Site Summary

Volatile organic compounds and explosive compounds were detected in surface water, soil and groundwater samples collected at the site. At the time of this document, the site is being capped as part of an ongoing remedial action. In addition to the remedial action being undertaken, a Phase III investigation is scheduled for January 1998 to further study those areas identified in the Phase II Remedial Investigation which require additional investigations in order to fully verify the presence of contaminants and to characterize any releases that may have occurred. Based on existing information, Site 12 would be placed in EBS Category 2C. The reader is referred to the documents cited in References 2, 6, and 8 for additional more detailed information.

2.2.2 Site 16 - Old Landfill

The Old Landfill was used from 1942 to 1944 for the disposal of TNT wastewater ash generated from the TNT Waste Disposal Plant (Site 32). In the mid- to late-1950s, three rocket motor casings were reportedly burned and possibly buried on the eastern side of the site. During this time, a large bermed depression encompassing the central section of the site was reportedly used for the disposal

of a variety of materials such as substandard TNT, barrels of chemicals, oil, paint, scrap iron, and wood. This area was filled in, and landfilling operations continued moving eastward, raising the ground surface to its current elevation approximately 15 ft above the original grade. Burn pits and waste storage were common at the site during the history of its operation, but little is known about the nature of the wastes dealt with by these activities. The site continued to be used for a variety of waste disposal and treatment activities to the 1980s, when the disposal of inert solid wastes was moved to Active Landfill (Site 12).

Site Investigations

Several investigations were conducted at the Site 16 - Old Landfill area. The following paragraph is a summarization of the investigation activities.

Site 16 was originally investigated by the USAEHA in 1980. In 1982, EPS investigated the site for the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA) and published a report documenting the investigation in June 1984. In 1987, an investigation was performed by EPS for Thiokol Corporation, to verify the presence of explosive compound contamination at the Site 16. The EPS report was published in May 1988. SvE conducted a Phase I and Phase II RI at Site 16 in 1993 and 1995, respectively. The Phase I and Phase II investigations consisted of the collection of sediment, surface water, groundwater, and subsurface soil samples. SvE designed and implemented a groundwater control system, in 1996, after the completion of Phase II activities.

Site Summary

Volatile organic compounds and explosive compounds were detected in soil and groundwater samples collected at the site. At the time of this report, a groundwater extraction system is operating on site as part of a feasibility study to evaluate potential groundwater remediation alternatives. The

landfill portion of the site is scheduled to be capped as part of a remedial action. In addition, a Phase III remedial investigation was conducted in July 1997 at the site. Results of the Phase III investigation were not available at the time of this report. Based on existing information, Site 16 would be placed in EBS Category 2C. The reader is referred to the documents cited in References 2, 6, 5, and 8 for additional more detailed information.

2.2.3 Site 17 - Burning Ground No. 2/Flashing Area

Site 17 - Burning Ground No. 2/Flashing Area was used for burning bulk TNT, photo flash powder, and reject material when LHAAP was operated by Universal Match Corporation. In 1959, all of the materials removed from the TNT Production Area (Site 29) and the TNT Waste Disposal Plant (Site 32) during razing were burned and/or flashed at this site. The site was then used until 1980 as a flashing area to decontaminate recoverable metal by-products. Burning trenches were located around the inside perimeter of the previously fenced area and within the open area on the western side of the site. As each trench filled with ash, it was covered and a new trench was dug. The waste residues were reportedly removed in 1984 and the site was allowed to revegetate. The site is presently inactive (USACE, 1992a).

Site Investigations

Several investigations were conducted at the Site 17 - Burning Ground No. 2/Flashing Area. The following paragraph is a summarization of the investigation activities.

The site was originally investigated as a potentially contaminated site by EPS for USATHAMA and a report was published in June 1984. A study was conducted in February of 1986 by Camp, Dresser, and McKee, Inc. (CDM) for groundwater contamination related to operation of the unlined evaporation pond, located inside Burning Ground No. 3 (Site 18) to the northeast of Site 17. An

additional site investigation was performed by EPS for Thiokol Corporation in 1987. SvE conducted a Phase I and Phase II RI at Site 17 in 1993 and 1995, respectively. The Phase I and Phase II investigations consisted of the collection of sediment, surface water, groundwater, and subsurface soil samples.

Site Summary

Volatile organic compounds and explosive compounds were detected in soil and groundwater samples collected at the site. A Phase III investigation is scheduled for Site 17 for January 1998, to further study those areas identified in the Phase II Remedial Investigation which require additional investigations in order to fully verify the presence of contaminants and to characterize any releases that may have occurred . Based on existing information, Site 17 would be placed in EBS Category 2C. The reader is referred to the documents cited in References 2, 6, and 8 for additional more detailed information.

2.2.4 Site 18/24 - Burning Ground 3/Unlined Evaporation Pond

Site 18 has been used since 1955 as a burial and burning ground for various industrial wastes and hazardous wastes generated at LHAAP. Burned wastes include solvents, oil, and red phosphorus. Buried wastes include rocket motor washout residues, illuminating mixtures, oxidizing agents, solvents, oils, and detergents. Site 24 is located within the boundary of Site 18. Site 24 was an unlined evaporation pond constructed in 1963 and used as a holding pond for explosives wastes from the washout of rocket motor casings with the wash water containing solvent and metal residues.

Because operation of the unlined evaporation pond appeared to be causing the metals and organics groundwater contamination identified by these studies, the U.S. Army ceased operation of the unlined evaporation pond in 1984 and began formal closure activities for the unit as an interim status

surface impoundment following RCRA regulations. In 1985, liquid, sludge, and soil contaminated with elevated concentrations of total barium were removed from the pond and were disposed in accordance with USEPA regulations. The pond was then backfilled and capped. The TNRCC certified in March 1986 that the unlined evaporation pond was closed in accordance with the approved closure plan. The pond's function was replaced by a pilot industrial wastewater treatment facility located elsewhere on the installation.

Site Investigations

Numerous investigations have been conducted at Site 18/24 since 1976. Data from the previous investigations has been summarized by the USACE-Tulsa District in the report "Data Summary Report of Investigation Results from 1976 through 1992 for Burning Ground 3 and the Unlined Evaporation Pond", (USACE, 1993). Presented below is a summary of the previous investigations and their general findings.

The U.S. Army first began conducting studies in 1976 in an effort to characterize the wastes that were being placed in the unlined evaporation pond. Several of these studies were conducted by USAEHA from 1976 until 1983. Only one study, however, was documented that investigated contamination related to open burning activities at Burning Ground No. 3. This investigation was performed in 1981 by USAEHA and was documented in a report entitled "Phase II, Hazardous Waste Management Special Study No. 39-26-0147-83, DARCOM Open-Burning/Open Detonation Grounds Evaluation". Results as they were presented in the CDM report entitled "Groundwater Quality Assessment, Longhorn Army Ammunition Plant, Marshall, Texas: Groundwater Contamination Related to the Seepage from an Unlined Evaporation Pond", (CDM, 1985).

USAEHA conducted an investigation in 1980 which resulted in the following report: "Ground-Water Quality Assessment Plan, Hazardous Waste Special Study No. 32-26-0252-83", (USAEHA,

1980). EPS performed an investigation, for USATHAMA, and was documented in the report entitled "Longhorn Army Ammunition Plant Contamination Survey" (EPS, 1984).

Upon closure of the unlined evaporation pond, LHAAP began a quarterly monitoring program for eight of the remaining monitoring wells in the burning ground area. The U.S. Army also implemented a Ground-Water Quality Assessment (GWQA) for the contamination caused by operation of the unlined evaporation pond. CDM performed the GWQA under contract to the USACE- Huntsville District.

In response to the CDM conclusions, the U.S. Army developed a proposal for continued groundwater monitoring and assessment efforts at Burning Ground No. 3. This document, prepared by U.S. Army Engineer Division, Huntsville, is entitled "U.S. Army Proposal for Additional Groundwater Monitoring at the Closed Unlined Evaporation Pond, Longhorn Army Ammunition Plant, Marshall, Texas", and was submitted by LHAAP to the TNRCC in April 1987.

The USACE-Fort Worth District was tasked by Huntsville Division in March 1987 to perform the work outlined in the proposal submitted to the TNRCC. Two documents were produced by the USACE from these investigations: "Installation and Sampling of Compliance Monitoring Wells, Unlined Evaporation Pond, Longhorn Army Ammunition Plant, Karnack, Texas", (USACE, 1989a); and "RCRA Facility Investigation for Active Burning Ground and Unlined Evaporation Pond, Phase I, Longhorn Army Ammunition Plant, Karnack, Texas", (USACE, 1989b). Sverdrup Environmental, Inc. conducted a Phase II RI at Site 18 in 1995. The Phase II investigations consisted of the collection of sediment, surface water, groundwater, and subsurface soil samples.

Site Summary

Volatile organic compounds, explosive compounds, and metals were detected in groundwater and

soil samples collected on site during previous investigations. Since data indicated that the unlined evaporation pond was contaminating groundwater beneath the site, the unlined evaporation pond was closed as a RCRA interim status surface impoundment in 1986. Presently a remedial action consisting of the construction of a groundwater recovery system is being implemented on site. Based on existing information, Site 18/24 would be placed in EBS Category 2C. The reader is referred to the documents cited in References 1 2, 6, 8, and 11 for additional more detailed information.

2.2.5 Site 29 - TNT Production Area

Site 29 was a TNT Production Area from October 1942 to August 1945. The production facility produced almost 400 million pounds of flake TNT from five regular production lines and one standby line. Each production line was essentially the same and consisted of four main elements: an unloading area where acids and toluene were unloaded and held in above ground storage tanks until use; a nitrating area where flake TNT was produced by nitrating toluene with nitric acid; a wash area where the flake TNT was washed to remove impurities and then dried; and a loading area where the cardboard-boxed flake TNT was loaded onto trucks.

The TNT wastewater ("red liquor") generated at the wash areas of the production facility was collected in a storage tank and pump house adjacent to 16th Street and then pumped through a 6-in. underground wooden pipeline to the TNT Waste Disposal Plant (Site 32). A wastewater ("yellow liquor") generated by the production facility was also pumped to Site 32 through the pipeline.

Cooling water ("blue water") drain lines from the production facility emptied into an open ditch alongside 16th Street. The "blue water", likely contaminated with acids, was conveyed to the Neutralization House for neutralization and discharge to the natural surface water regime.

Based on analyses of TNT wastewater generated at another U.S. Army ammunition plant (USATHAMA, April 1990), and assuming that a continuous-type TNT purification process was employed, the "red liquor" was most likely a strongly acidic (pH of 3 - 4) wastewater containing approximately 15 percent total dissolved solids comprised of roughly equal parts of inorganic salts and nitrobodies. The inorganic salts were principally sodium sulfite, sodium sulfate, and sodium nitrite. The nitrobodies were sodium salts of dinitrotoluene sulfonic acids with traces of 2,4,6-TNT.

The composition of the "yellow liquor" is uncertain. It may have been principally a mixture of water, nitric acid, and sulfuric acid generated by washing crude TNT free of acids, hence the yellow color. The "yellow liquor" was likely compatible with the "red liquor" because it was pumped through the same wooden pipeline from the production facility to the TNT Disposal Plant. "Yellow liquor" was likely mixed with the "red liquor" at some point during the treatment and disposal process.

Both the "red liquor" and "yellow liquor" likely contained low concentrations of metals derived from the source water and picked up during the TNT purification and wastewater treatment processes.

The production facility was inactive from August 1945 to 1959 when most of its building and above ground storage tanks were removed. The debris were burned or flashed at Burning Ground No. 2/Flashing Area (Site 17). There have been only limited activities at the site since the end of World War II.

Site Investigations

Several investigations were conducted at the Site 29 - TNT Production Area. The following paragraph is a summarization of the investigation activities.

This site was originally investigated as a potentially contaminated site by EPS for USATHAMA, and a report was published in 1984. In 1984 investigation sediment, surface water and subsurface soil samples were collected. EPS also conducted an investigation in 1988 to further characterize potential explosive compounds contamination. EPS collected groundwater, surface water and subsurface soil samples during the 1984 investigation. SvE conducted a Phase I and Phase II RI at Site 32 in 1993 and 1995, respectively. The Phase I and Phase II investigations consisted of the collection of sediment, surface water, groundwater, and subsurface soil samples.

Site Summary

Volatile organic compounds and explosive compounds were detected in surface water, soil and groundwater samples collected at the site. A Phase III investigation is scheduled for Site 29 for January, 1998 to further study those areas identified in the Phase II Remedial Investigation which require additional investigations in order to fully verify the presence of contaminants and to characterize any releases that may have occurred. Based on existing information, Site 29 would be placed in EBS Category 2C. The reader is referred to the documents cited in References 2, 6, and 8 for additional more detailed information.

2.2.6 Site 32 - Former TNT Waste Disposal Plant

The former TNT Waste Disposal Plant was constructed in 1942 to treat and dispose of wastewaters generated at the nearby TNT Production Area (Site 29) as a result of the production of almost 400 million pounds of TNT. The wastewaters were transferred to the disposal area through a 6-in. wooden pipeline and stored in holding tanks until treatment. During operation of the disposal plant, leakage from its many tanks and pipelines was reportedly a constant problem. In addition, because of the large volumes of wastes that were handled, occasional spills resulting from the overflow of tanks and manual handling of wastes was a possibility.

Wastewaters were pumped to the Settling Tanks and then to the Raw Storage Tank, or the Temporary Wastes Storage Tanks during periods of large inflow. They were then piped to the Evaporator Building where the pH was increased by mixing in sodium hydroxide from the Caustic Soda Storage Tanks. The mixture was stored in the Neutralized Wastes Storage Tank, and then returned to the Evaporator Building for water content reduction. Condensate was collected and stored in the Condensate Storage Tank, and eventually released via the "blue water" ditch to Goose Prairie Creek.

The thickened and neutralized wastes were stored in the Thick Liquor Storage Tanks until they were burned in the Incinerator Facility. Resultant ashes were disposed in the Old Landfill (Site 16) until early 1944, when an ash sluicing system was added to the treatment plant to dispose of the solids via a ditch to Goose Prairie Creek.

The "blue water" ditch, which appears to have had its upstream terminus at a detention pond, also carried acidic cooling water from the disposal plant to the Neutralization Plant located next to the Bulk Toluene Storage Area (Site 29).

The former TNT Waste Disposal Plant was not operated after 1945. In 1959, most of the buildings and tanks used in the disposal process were removed and the debris burned at Burning Ground No. 21/Flashing Area (Site 17) (USACE, 1992a).

Site Investigations

Several investigations were conducted at the Site 32 - Former TNT Waste Disposal Plant. The following paragraph is a summarization of the investigation activities.

In November 1982, EPS collected a groundwater, surface water, sediment, and shallow soil samples.

The results of the 1982 site investigation conducted by EPS for USATHAMA, were published in June 1984 (EPS, 1984). Thiokol Corporation collected and analyzed surface water samples in 1991. SvE conducted a Phase I and Phase II RI at Site 32 in 1993 and 1995, respectively. The Phase I and Phase II investigations consisted of the collection of sediment, surface water, groundwater, and subsurface soil samples.

Site Summary

Metals and explosive compounds were detected at low concentrations in several samples of sludge material collected from one of the site wastelines. Based on existing information, Site 32 would be placed in EBS Category 2A. The reader is referred to the documents cited in References 2, 6, and 8 for additional more detailed information.

2.3 GROUP IV SITES

2.3.1 Manufacturing Areas

The manufacturing areas at LHAAP consist of Site 35A - Shop Area, Site 35B - Chemical Laboratory, Site 35C - Static Test Area, Site 46 - Plant 2, Site 47 - Plant 3, and Site 48 - Y-Area. Buildings and equipment at these areas were periodically washed down with water to reduce propellant, explosives and pyrotechnics (PEP) dusts which would otherwise collect and pose a safety hazard. Chlorinated solvents were also utilized to dissolve difficult binders. These solvents and PEP compositions were washed into sumps with large volumes of water. The wastewater sumps typically collect a large volume of water and PEP sludge from building washdown.

Site Investigations

Phase I, Phase II and Pre-Phase III investigations were conducted by the USACE, Tulsa District. Phase I investigations involved the collection of subsurface soil samples. Groundwater samples were collected during the Phase II investigations. Pre-Phase III investigations consisted of the collection of groundwater and surface water samples.

Site Summary

A Phase III RI is currently being scheduled for 1998 to determine the extent of contamination at the Group IV sites. Media of concern at Group IV Sites include sediment/surface soils, subsurface soils and groundwater. Based on existing information, the manufacturing area would be placed in EBS Category 2C. The reader is referred to the documents cited in References 10, 12, 13, and 14 for additional more detailed information.

2.4 GROUP V SITES

2.4.1 Site 50 - Sump Water Storage Tank

Site 50 was identified through historical records as an above ground storage tank for industrial waste water collected from industrial waste production sumps located at various sites throughout LHAAP. As described in the Longhorn Missile publication dated 15 September 1966, all operating buildings at the LHAAP installation were provided with individual concrete sumps to collect industrial waste water. If the nature of the operations were such that contamination was considered negligible, the sump was permitted to overflow and drain by its natural course into main drainage ditches that join Goose Prairie Creek. All other sumps were emptied and trucked to a 47,000-gal above ground storage tank located at Site 50. Discharges from this storage tank were made upstream of the bridge

on South Crockett Avenue which crosses Goose Prairie Creek just south of 51st Street. According to the 15 September 1966 Longhorn Missile article, contents from this storage tank were emptied into Goose Prairie Creek after all solids were filtered out and the natural flow in the creek was sufficient to "dilute the waste to a level which is safe for fish and other aquatic life". If natural flow in the creek was considered insufficient, clean water was apparently pumped into the creek to dilute the contents. Because the storage tank was described as holding industrial waste water collected from various process sump locations, a review of preliminary data from surface soil and water samples collect at Group 5 Sites was reviewed to identify potential contaminants.

Site Investigations

Sverdrup Environmental, Inc. conducted a Site Investigation (SI) at Site 50 in 1997. SI field activities included the collection of sediment, surface soil and subsurface soil samples. Recommendations contained in the report, Final Site Characterization Investigation Report for the Group 5 Sites (50,52,60 and 63), Sverdrup Environmental, Inc, June 1997, included additional sediment sampling to determine the source and extent of volatile organic compounds (VOCs) detected in sediment samples collected in Goose Prairie Creek, surface water sampling to be performed in conjunction with the sediment sampling, a groundwater study to determine the nature and extent of VOCs in the shallow groundwater and the collection of background soil samples for beryllium. No additional surface soil samples were recommended to be collected.

Site Summary

Volatile organic compounds were detected in subsurface soil samples and in sediments samples collected from Goose Prairie Creek. Based on existing information, Site 50 would be placed in EBS Category 2C. A Phase III RI is currently being scheduled for 1998. Media of concern at Site 50 include sediment/surface soil, surface water and groundwater. The reader is referred to the

documents cited in References 3 and 4 for additional more detailed information.

2.4.2 Magazine Washout Area

Site 52 was a washout area for transport vehicles operating in the Magazine Area located near Plant 1. The Magazine Area contains 58 Richmond-type magazines and two above ground magazines, all of which have been used for the storage of TNT. The standpipe at this location was presumed to have provided a water source for the washout of trucks used to transport TNT to and from this area. It is unknown if solvents were used in truck washout activities. Washout waste waters from these activities were reported to have been discharged onto the ground surface.

Site Investigations

SvE conducted a SI at Site 52 in 1997. The SI field activities performed at Site 52 included the collection of surface soil and subsurface soil samples. Recommendations contained in the report, Final Site Characterization Investigation Report for the Group 5 Sites (50,52,60 and 63), Sverdrup Environmental, Inc, June 1997, indicated no further action is required at Site 52 since no significant release of contaminants has been identified.

Site Summary

No release of contaminants was detected at Site 52. Based on existing information, Site 52 would be placed in EBS Category 2A. The reader is referred to the documents cited in References 3 and 4 for additional more detailed information.

2.4.3 Site 60 - Buildings 411, 411A, and 714

Records indicated that pesticides and herbicides were originally stored in building 714 and that, in 1970, the stock was moved to building 411. A site visit and communications with LHAAP personnel indicated building 411A and shed TS-80, not building 411, may have been used as a pesticide and herbicide storage area.

Site Investigations

At the time of the LHAAP installation assessment in 1980, 386 kilograms of 10 percent chlordane was present at the installation.

Sverdrup Environmental, Inc. conducted a Site Investigation (SI) in 1997 at Site 60. The SI field activities performed at Site 60 included the collection of surface soil and subsurface soil samples. Recommendations contained in the report, Final Site Characterization Investigation Report for the Group 5 Sites (50,52,60 and 63), Sverdrup Environmental, Inc, June 1997, included additional surface soil samples to be collected around buildings 411 and 411A to determine the extent of pesticides present at this site.

Site Summary

Pesticides were detected in shallow soil samples collected from Site 60. Based on existing information, Site 60 would be placed in EBS Category 2C. A Phase III RI is currently being scheduled for 1998. Media of concern at Site 60 is the surface soil. The reader is referred to the documents cited in References 3 and 4 for additional more detailed information.

2.4.4 Site 63 - Former Burial Pits

LHAAP Site 63 was identified as pits that were used for the detonation and burial of Plant 3 reject materials of unknown composition. It is assumed that no burning occurred within the pits, therefore, fuels or solvents normally used to burn materials are not anticipated to be contaminants of concern. A review of aerial photography of LHAAP taken in 1954, 1958, 1963 and 1970 revealed indications of surface soil disturbance. It is assumed that the burial pits area was developed sometime between May 1954 and March 1958. The period of operational history is unknown.

Site Investigations

SvE conducted a SI at Site 63 in 1997. The SI field activities performed at Site 63 included the collection of surface soil and subsurface soil samples. Recommendations contained in the report, Final Site Characterization Investigation Report for the Group 5 Sites (50,52,60 and 63), Sverdrup Environmental, Inc, June 1997, indicated no further action is required at Site 63 since no significant release of contaminants has been identified.

Site Summary

No release of contaminants was detected at Site 63. Based on existing information, Site 63 would be placed in EBS Category 2A. The reader is referred to the documents cited in References 3 and 4 for additional more detailed information.

2.5 LHAAP BUILDINGS

The following section presents a summary of the documents reviewed concerning the environmental condition of the buildings at LHAAP. This section includes an evaluation of the buildings

concerning asbestos, radon and sumps. The buildings have been grouped into the following categories: Administration, Shops and Power, Plant 2, Plant 3, Y Area and the 800 area Buildings. Information reviewed for this section included "Plant Wide Asbestos Survey Longhorn Army Ammunition Plant" prepared by Pollution Management, Inc. (PMI), January 1995; "Environmental Baseline Inspection of LHAAP Buildings", 1995-1996 (Appendix 3); results from a radon survey conducted in 1991 and personal communications with a Radian Corporation representative. The current status of sumps is presented in tables located in Appendix VII. The table indicates if the sumps were filled in place, removed as hazardous waste or removed as non-hazardous waste.

Data, survey and file information reviewed for this EBS did not indicate surveys for lead based paint (LBP) or PCB light ballasts have been performed on the LHAAP buildings. This leaves a gap in fully evaluating the building and placing into one of the previously defined EBS categories. Other environmental factors may be unique to each building which could also create uncertainty into placing the building into a category. Specific concerns to a building should be performed as needed and were not included in this EBS.

Figures 2-2 to 2-7 (Appendix I) depicts the building area locations on the LHAAP property. The EBS category for each building is included on Tables 2-2 to 2-6. The categories were modified slightly to include a new category which was unique to the building EBS evaluation. The following categories were used for the LHAAP buildings as follows:

Category 1A: Uncontaminated properties. Defined as any real property which no hazardous substances and no petroleum products or their derivatives, including aviation fuel and motor oil were stored for one year or more in quantities greater than 1000 kg or its reportable quantity. Known to have been released, or disposed of.

Category 1B: Insufficient data to determine if contamination is present.

Category 2A: Properties that do not require remedial action and can be defined as areas that have stored hazardous substances and petroleum products in quantities greater than 1000 kg or its reportable quantity for more than one year or had a release or disposal of a hazardous substance but in quantities that require no response or remedial action.

Category 2B: All required remedial action has been taken.

Category 2C: Requires remedial or other action that has not yet been taken or has not yet been completed.

2.5.1 Administration Buildings

Table 2-1 presents a summary of environmental assessments/surveys for the presence of asbestos, radon gas and sumps conducted on the buildings included in the Administration category. Surveys for the presence of Lead Based Paint and PCB light ballasts have not been performed on the administration buildings.

Asbestos

PMI performed an asbestos survey of the 19 administration buildings on October 11, 1994 and November 1, 1994. Results of the PMI asbestos survey indicated 5 buildings with verified friable asbestos, 2 with verified non-friable asbestos, 5 with assumed friable asbestos and 17 with assumed non-friable asbestos. See Table 2-1 for the specific buildings and the asbestos survey findings. The

media sampled and asbestos type, percentage and estimated remediation costs are located in the PMI report.

Radon

A radon survey (Appendix 6) was performed on a portion of the Administration Buildings in 1991 under the direction of the Thiokol Corporation. The monitoring stations were placed in most cases in one room of the building on the first floor and were in place for approximately a 2 week duration. See Table 2-1 for the specific buildings and the radon survey findings.

Sumps

The presence or absence of a sump at a particular building (See Table 2-1) was determined by reviewing the "Environmental Baseline Inspection of LHAAP Buildings 1995-1996" (Appendix 3) and References 12, 13, and 14. These reports should be reviewed to determine specific information regarding the sump use, TNRCC registration number and other pertinent information.

Table 2-1

LHAAP Administration Buildings

Building No.	Building Name	Asbestos [1]	Radon Gas	Sumps	EBS Category
703-A	Administration Building	VF, AF, AN-F	No Data	Unknown	2C
704-A	Corps of Engineers	AN-F	No Data	None	1B
720-A	Safety/Security	VN-F, AF, AN-F	< 0.1pCi/l	None	2C
736-A	Conference Building	VF, AN-F	< 0.1pCi/l	None	2C
703-B	Administration Building	AN-F	No Data	None	1B
708-B	Equipment Building	AN-F	No Data	Unknown	1B
703-C	Heating Plant	VF, VN-F	No Data	Unknown	2C
720-C	Sentry Station	AN-F	No Data	Unknown	1B
703-D	ADP Building	AN-F	< 0.1pCi/l	Unknown	1B
703-E	Autodin Facility	AN-F	No Data	Unknown	1B
707-E	Radio Maint. Shop	AN-F	< 0.1pCi/l	Unknown	1B
701	Warehouse	AN-F	No Data	None	1B
702	Telephone Exchange	AF, AN-F	0.2 pCi/l	Unknown	2C
703	Administration Building	AN-F	No Data	Unknown	1B
705	Personnel Building	AF, AN-F	< 0.1pCi/l	None	2C
708	Cafeteria	VF, AF, AN-F	No Data	Unknown	2C
719	Dispensary	VF, AN-F	< 0.1pCi/l	Unknown	2C
730	Vehicle Storage	AN-F	No Data	None	1B
704-D		Unknown	< 0.1pCi/l	Unknown	1B

1 - VF - Verified Friable ACBM; VN-F - Verified Non-Friable ACBM; AF- Assumed Friable ACBM; AN-F - Assumed Non-Friable ACBM; 2- Building Survey report (Appendix 3)for specific sump information.

2.5.2 Shops and Power Areas

Table 2-2 presents a summary of environmental assessments/surveys for the presence of asbestos, radon gas and sumps conducted on the buildings included in the shops and power areas category. Surveys for the presence of Lead Based Paint and PCB light ballasts have not been performed on the shops and power area buildings.

Asbestos

PMI performed an asbestos survey of the 49 buildings in the shops and power areas on October 13, 1994 and November 1 and 2, 1994. Results of the PMI asbestos survey indicated 5 buildings with verified friable asbestos, none with verified non-friable asbestos, 15 with assumed friable asbestos, 32 with assumed non-friable asbestos and 11 with no asbestos. See Table 2-2 for the specific buildings and the asbestos survey findings. The media sampled and asbestos type, percentage and estimated remediation costs are located in the PMI report.

Radon

A radon survey (Appendix 6) was performed on a portion of the shops and power buildings in 1991 under the direction of the Thiokol Corporation. The monitoring stations were placed in most cases in one room of the building on the first floor and were in place for approximately a 2 week duration. See Table 2-2 for the specific buildings and the radon survey findings.

Sumps

The presence or absence of a sump at a particular building (See table 2-2) was determined by reviewing the "Environmental Baseline Inspection of LHAAP Buildings 1995-1996" (Appendix 3) and References 12, 13, and 14. These reports should be reviewed to determine specific information regarding the sump use, TNRCC registration number and other pertinent information.

Table 2-2

Shops and Power Buildings

Building No.	Building Name	Asbestos [1]	Radon Gas	Sumps	EBS Category
201-A	Property Administration	AN-F	No Data	Unknown	1B
308-A	Storehouse	None	No Data	None	1B
413-A	Water Treatment Plant	AF, AN-F	No Data	Unknown	2C
601-A	Track Scale House	AN-F	No Data	None	1B
630-A	Pump House	No Data	No Data	Unknown	1B
709-A	Fire Station	AF, AN-F	< 0.1pCi/l	None	2C
718-A	Locomotive Shop	VF, AN-F	No Data	Unknown	2C
308-B	Storehouse	None	No Data	None	1B
601-B	Track Scale House	AN-F	No Data	Unknown	1B
713-B	Receiving Building	AF	No Data	Unknown	2C
726-C	Acetylene Storage	AN-F	No Data	None	1B
726-D	Oxygen Storage	AN-F	No Data	None	1B
722-E	Conference Building	AN-F	No Data	None	1B
707-F	Change House	AF, AN-F	No Data	None	2C
722-F	Lunch Room	AN-F	No Data	Unknown	1B
707-G	Change House	AN-F	No Data	None	1B
722-G	Dunnage Building	None	No Data	Unknown	1B
707-J	Change House	AN-F	No Data	None	1B
722-P	Paint Shop	VF, AN-F	< 0.1pCi/l	Unknown	2C

1 - VF - Verified Friable ACBM; VN-F - Verified Non-Friable ACBM; AF- Assumed Friable ACBM; AN-F - Assumed Non-Friable ACBM; 2- Building Survey report (Appendix 3)for specific sump information.

Table 2-2 (Cont.)

Shops and Power Buildings

Building No.	Building Name	Asbestos [1]	Radon Gas	Sumps	EBS Category
713-R	Loading Dock	AF	No Data	None	2C
201	Warehouse	AN-F	< 0.1pCi/l	None	1B
202	Warehouse	AF, AN-F	No Data	None	2C
203	Lumber and Pipe Shed	AN-F	No Data	None	1B
204	Air Conditioning Shop	AF, AN-F	No Data	None	2C
205	Storehouse-Flammable	AF	No Data	None	2C
206	Machine Shop	VF, AN-F	0.1pCi/l	None	2C
207	Manufacturing Eng. Fac.	AF, AN-F	< 0.1pCi/l	None	2C
208	Storage Shed	AN-F	No Data	None	1B
209	Storehouse-Flammable	None	No Data	None	1B
210		No Data	No Data	Yes	1B
213	Warehouse	None	No Data	Unknown	1B
214	Warehouse	None	No Data	Unknown	1B
215	Warehouse	None	No Data	Unknown	1B
216	Warehouse	None	No Data	Unknown	1B
272	Storage Shed	AN-F	No Data	None	1B
401	Power House	VF, AF, AN-F	< 0.1pCi/l	Unknown	2C
411	Warehouse	None	No Data	Unknown	1B
414	River Pumphouse	AF, AN-F	No Data	Unknown	2C

1 - VF - Verified Friable ACBM; VN-F - Verified Non-Friable ACBM; AF- Assumed Friable ACBM; AN-F - Assumed Non-Friable ACBM; 2- Building Survey report (Appendix 3)for specific sump information.

Table 2-2 (Cont.)

Shops and Power Buildings

Building No.	Building Name	Asbestos [1]	Radon Gas	Sumps	EBS Category
451	Compressor Building	AN-F	No Data	None	1B
713	Warehouse	AF, AN-F	No Data	Unknown	2C
714	Warehouse	AN-F	No Data	None	1B
715	Storehouse - Flammable	AF	No Data	Unknown	2C
716	Garage	AN-F	No Data	Unknown	1B
717	Maintenance Shop	AF, AN-F	No Data	Unknown	2C
723	Plant Laundry	VF, AN-F	< 0.1pCi/l	Unknown	2C
725	Herbicide/Insecticide	None	< 0.1pCi/l	2 Sumps [2]	1B
726	Storage Shed	None	No Data	None	1B
734	Lumber and Pipe Shed	AN-F	No Data	None	1B
744	Service Station	AF, AN-F	No Data	Unknown	2C

1 - VF - Verified Friable ACBM; VN-F - Verified Non-Friable ACBM; AF- Assumed Friable ACBM; AN-F - Assumed Non-Friable ACBM; 2- Building Survey report (Appendix 3)for specific sump information.

2.5.3 Plant 2, Modification and 400 Areas

Table 2-3 presents a summary of environmental assessments/surveys for the presence of asbestos, radon gas and sumps conducted on the buildings included in the Plant 2, Modification and 400 areas. Surveys for the presence of Lead Based Paint and PCB light ballasts have not been performed on these buildings.

Asbestos

PMI performed an asbestos survey of the 144 buildings in these areas on October 13, 1994, November 3 and 4, 1994 and December 13, 1994. Results of the PMI asbestos survey indicated 19 buildings with verified friable asbestos, none with verified non-friable asbestos, 46 with assumed friable asbestos, 99 with assumed non-friable asbestos and 33 with no asbestos. See Table 2-3 for the specific buildings and the asbestos survey findings. The media sampled and asbestos type, percentage and estimated remediation costs are located in the PMI report.

Radon

A radon survey (Appendix 6) was performed on a portion of these buildings in 1991 under the direction of the Thiokol Corporation. The monitoring stations were placed in most cases in one room of the building on the first floor and were in place for approximately a 2 week duration. See Table 2-3 for the specific buildings and the radon survey findings.

Sumps

The presence or absence of a sump at a particular building (See Table 2-3) was determined by reviewing the "Environmental Baseline Inspection of LHAAP Buildings 1995-1996" (Appendix 3) and References 12, 13, and 14. These reports should be reviewed to determine specific information regarding the sump use, TNRCC registration number and other pertinent information.

Table 2-3

Plant 2, Modification and 400 Area Buildings

Building No.	Building Name	Asbestos [1]	Radon Gas	Sumps	EBS Category
Shed A	Pyrotechnic Production	AN-F	No Data	Unknown	1B
Shed B	Covered Walkway	AF, AN-F	No Data	Unknown	2C
Shed C	Pyrotechnic Production	AN-F	< 0.1pCi/l	None	1B
Shed D	Covered Walkway	AF, AN-F	No Data	Unknown	2C
Shed E	Covered Walkway	AN-F	No Data	None	1B
Shed F	Covered Walkway	AF, AN-F	No Data	Unknown	2C
Shed G	Covered Walkway	AF, AN-F	No Data	Unknown	2C
Shed H	Covered Walkway	VF, AN-F	No Data	Unknown	2C
Shed J	Covered Walkway	AF, AN-F	No Data	None	2C
Shed K	Covered Walkway	AF, AN-F	No Data	None	2C
Shed L	Covered Walkway	AN-F	No Data	None	1B
B-6	Pyrotechnic Production	AN-F	No Data	None	1B
B-7	Pyrotechnic Production	None	< 0.1pCi/l	2 Sumps [2]	1B
B-8	Pyrotechnic Production	VF	No Data	None	2C
B-9	Pyrotechnic Production	AN-F	No Data	2 Sumps [2]	1B
B-10	Pyrotechnic Production	VF, AF, AN-F	No Data	Unknown	2C
B-11	Pyrotechnic Production	VF, AF, AN-F	No Data	1 Sump [2]	2C
B-12	Pyrotechnic Production	VF, AN-F	No Data	1 Sump [2]	2C
B-13	Pyrotechnic Production	VF, AF, AN-F	No Data	1 Sump [2]	2C

1 - VF - Verified Friable ACBM; VN-F - Verified Non-Friable ACBM; AF- Assumed Friable ACBM; AN-F - Assumed Non-Friable ACBM; 2- Building Survey report (Appendix 3)for specific sump information.

Table 2-3

Plant 2, Modification and 400 Area Buildings (Cont.)

Building No.	Building Name	Asbestos [1]	Radon Gas	Sumps	EBS Category
B-14		No Data	No Data	1 Sump [2]	1B
B-15	Pyrotechnic Production	AF, AN-F	No Data	1 Sump [2]	2C
B-16	Pyrotechnic Production	VF, AF, AN-F	No Data	1 Sump [2]	2C
C-1	Covered Walkway	None	No Data	None	1B
C-2	Composition Storage	None	No Data	Unknown	1B
C-3	Covered Walkway	None	No Data	None	1B
C-4	Covered Walkway	None	No Data	None	1B
C-5	Covered Walkway	None	No Data	None	1B
C-6	Covered Walkway	None	No Data	None	1B
C-8	Covered Walkway	None	No Data	None	1B
C-9	Pyrotechnic Surge	None	No Data	Unknown	1B
C-10	Covered Walkway	None	No Data	None	1B
C-11	Covered Walkway	None	No Data	None	1B
CB-1	Chiller Building	None	No Data	Unknown	1B
CB-2	Air Compressor Shed	None	No Data	None	1B
L-5	Covered Walkway	AN-F	No Data	Unknown	1B
L-6	Covered Walkway	AF, AN-F	No Data	Unknown	2C
LR-1	Lunch Room	AN-F	< 0.1pCi/l	None	1B
M-1	Covered Walkway	AN-F	No Data	Unknown	1B

1 - VF - Verified Friable ACBM; VN-F - Verified Non-Friable ACBM; AF- Assumed Friable ACBM; AN-F - Assumed Non-Friable ACBM; 2- Building Survey report (Appendix 3)for specific sump information.

Table 2-3

Plant 2, Modification and 400 Area Buildings (Cont.)

Building No.	Building Name	Asbestos [1]	Radon Gas	Sumps	EBS Category
M-2	Covered Walkway	AF, AN-F	< 0.1pCi/l	Unknown	2C
P-1	Fuel Weighup	VF, AF, AN-F	No Data	1 Sump [2]	2C
P-1-R	Covered Walkway	AF, AN-F	No Data	Unknown	2C
P-3	Oxidizer Weighup	VF, AF, AN-F	No Data	4 Sumps [2]	2C
P-9	Bucket Washout	AF, AN-F	< 0.1pCi/l	1 Sump [2]	2C
P-10	Covered Walkway	VF, AF, AN-F	No Data	None	2C
P-11	Covered Walkway	VF, AF, AN-F	No Data	Unknown	2C
P-12	Inert Storage	VF, AN-F	No Data	None	2C
P-13	Pyrotechnic Production	VF, AF, AN-F	No Data	None	2C
P-14	Covered Walkway	AF, AN-F	No Data	None	2C
P-14-R	Covered Walkway	AN-F	No Data	None	1B
P-108	Candle Cure	None	No Data	None	1B
P-109	Equipment Shed	None	No Data	Unknown	1B
P-112	Pyrotechnic Production	AF	No Data	Unknown	2C
P-113	Pyrotechnic Production	AF	No Data	Yes	2C
P-116	Pyrotechnic Production	None	No Data	Unknown	1B
P-117	Pyrotechnic Production	None	No Data	2 Sumps [2]	1B
P-118	Pyrotechnic Production	None	No Data	4 Sumps [2]	1B
P-120	Canister Coat & Wrhse.	None	No Data	None	1B

1 - VF - Verified Friable ACBM; VN-F - Verified Non-Friable ACBM; AF- Assumed Friable ACBM; AN-F - Assumed Non-Friable ACBM; 2- Building Survey report (Appendix 3)for specific sump information.

Table 2-3

Plant 2, Modification and 400 Area Buildings (Cont.)

Building No.	Building Name	Asbestos [1]	Radon Gas	Sumps	EBS Category
P-122	Oxidizer Process	None	No Data	1 Sump [2]	1B
P-123	Magnesium Stg./ Weigh.	None	No Data	1 Sump [2]	1B
P-124	Train Shed	None	No Data	1 Sump [2]	1B
S-1	Warehouse	AF, AN-F	No Data	None	2C
S-2	Warehouse	AF, AN-F	No Data	Unknown	2C
S-3	Warehouse	AF, AN-F	No Data	Unknown	2C
S-3-R	Covered Walkway	AN-F	No Data	Unknown	1B
S-4	Warehouse	AF, AN-F	No Data	Unknown	2C
S-5	Millhouse Test	None	No Data	None	1B
S-7	Millhouse - Storage	None	No Data	None	1B
S-8	Millhouse - Storage	None	No Data	Unknown	1B
S-9	Warehouse - Inert	AF	No Data	Unknown	2C
S-11	Warehouse	AF	No Data	Unknown	2C
S-13	Warehouse - Inert	None	No Data	None	1B
S-15	Storage Shed -Explosive	None	No Data	None	1B
T-1	Restroom	AF, AN-F	No Data	Unknown	2C
T-2	Restroom	AF, AN-F	No Data	Unknown	2C
T-3	Restroom	AF	No Data	Unknown	2C
101	Office - Admin.	VF, AN-F	< 0.1pCi/l	None	2C

1 - VF - Verified Friable ACBM; VN-F - Verified Non-Friable ACBM; AF- Assumed Friable ACBM; AN-F - Assumed Non-Friable ACBM; 2- Building Survey report (Appendix 3)for specific sump information.

Table 2-3

Plant 2, Modification and 400 Area Buildings (Cont.)

Building No.	Building Name	Asbestos [1]	Radon Gas	Sumps	EBS Category
102	Change House	AN-F	< 0.1pCi/l	Unknown	1B
102-R	Covered Walkway	AN-F	No Data	Unknown	1B
103	Change House	AN-F	< 0.1pCi/l	Unknown	1B
211-1	Break Area	AF, AN-F	No Data	Unknown	2C
211-2	Break Area	AN-F	No Data	None	1B
212-1	Millhouse Storage	AN-F	No Data	Unknown	1B
212-2	Millhouse Storage	VF, AN-F	No Data	Unknown	2C
212-3	Millhouse Storage	AN-F	No Data	Unknown	1B
212-4	Millhouse Storage	AN-F	No Data	Unknown	1B
212-5	Millhouse Storage	AN-F	No Data	Unknown	1B
212-6	Millhouse Storage	AN-F	No Data	Unknown	1B
212-7	Millhouse - Storage	AN-F	No Data	Unknown	1B
212-8	Millhouse - Storage	AN-F	No Data	Unknown	1B
212-9	Millhouse Storage	AN-F	No Data	Yes	1B
212-10	Millhouse Storage	AN-F	No Data	Unknown	1B
212-11	Millhouse Storage	AN-F	No Data	None	1B
212-12	Pyrotechnic Production	None	No Data	1 Sump [2]	1B
212-12-R	Covered Walkway	VF, AN-F	No Data	None	2C
212-13	Millhouse Storage	AN-F	No Data	None	1B

1 - VF - Verified Friable ACBM; VN-F - Verified Non-Friable ACBM; AF- Assumed Friable ACBM; AN-F - Assumed Non-Friable ACBM; 2- Building Survey report (Appendix 3)for specific sump information.

Table 2-3

Plant 2, Modification and 400 Area Buildings (Cont.)

Building No.	Building Name	Asbestos [1]	Radon Gas	Sumps	EBS Category
212-14	Pyrotechnic Production	VF, AN-F	No Data	Unknown	2C
212-14-1	Millhouse Storage	None	No Data	Unknown	1B
212-15	Millhouse Storage	AN-F	No Data	None	1B
212-16	Pyrotechnic Production	AN-F	No Data	1 Sump [2]	1B
212-17	Millhouse Storage	None	No Data	None	1B
212-18	Pyrotechnic Production	AN-F	No Data	1 Sump [2]	1B
212-19	Millhouse Storage	None	No Data	None	1B
212-20	Pyrotechnic Production	AF, AN-F	No Data	Yes	1B
212-21	Millhouse Storage	AN-F	No Data	None	1B
212-23	Millhouse Storage	AN-F	No Data	None	1B
212-25	Millhouse Storage	AN-F	No Data	Unknown	1B
212-27	Millhouse - Storage	AN-F	No Data	None	1B
212-29	Millhouse - Storage	AF, AN-F	No Data	None	2C
212-31	Millhouse Storage	AN-F	No Data	None	1B
212-32	Millhouse Storage	AN-F	No Data	1 Sump [2]	1B
212-33	Pyrotechnic Production	AF, AN-F	No Data	2 Sumps [2]	2C
212-34	Millhouse Storage	AN-F	No Data	None	1B
212-35	Pyrotechnic Production	AF	No Data	1 Sump [2]	2C
212-35-R	Covered Walkway	AN-F	No Data	Unknown	1B

1 - VF - Verified Friable ACBM; VN-F - Verified Non-Friable ACBM; AF- Assumed Friable ACBM; AN-F - Assumed Non-Friable ACBM; 2- Building Survey report (Appendix 3)for specific sump information.

Table 2-3

Plant 2, Modification and 400 Area Buildings (Cont.)

Building No.	Building Name	Asbestos [1]	Radon Gas	Sumps	EBS Category
212-36	Pyrotechnic Production	VF, AN-F	No Data	None	2C
212-37	Pyrotechnic Production	None	No Data	1 Sump [2]	1B
212-38	Pyrotechnic Production	AF	No Data	Unknown	2C
212-38-R	Covered Walkway	AF, AN-F	No Data	Unknown	2C
212-39	Millhouse Storage	AN-F	No Data	Unknown	1B
212-40	Millhouse Storage	AN-F	No Data	Unknown	1B
212-42	Millhouse Storage	AN-F	No Data	Unknown	1B
212-44	Millhouse Storage	AN-F	No Data	Unknown	1B
212-46	Millhouse Storage	AN-F	No Data	Unknown	1B
212-48	Millhouse Storage	AN-F	No Data	Unknown	1B
212-50	Millhouse Storage	AN-F	No Data	Unknown	1B
212-51	Millhouse - Storage	AN-F	No Data	Unknown	1B
212-52	Millhouse - Storage	AN-F	No Data	Unknown	1B
212-53	Millhouse Storage	AN-F	No Data	Unknown	1B
212-54	Millhouse Storage	AN-F	No Data	Unknown	1B
212-55	Millhouse Storage	AN-F	No Data	Unknown	1B
212-56	Millhouse Storage	AN-F	No Data	Unknown	1B
212-57	Millhouse Storage	AN-F	No Data	Unknown	1B
212-59	Millhouse Storage	AN-F	No Data	Unknown	1B

1 - VF - Verified Friable ACBM; VN-F - Verified Non-Friable ACBM; AF- Assumed Friable ACBM; AN-F - Assumed Non-Friable ACBM; 2- Building Survey report (Appendix 3)for specific sump information.

Table 2-3

Plant 2, Modification and 400 Area Buildings (Cont.)

Building No.	Building Name	Asbestos [1]	Radon Gas	Sumps	EBS Category
402	Break Area	AF, AN-F	< 0.1pCi/l	None	2C
403	Pyrotechnic Production	AF	No Data	1 Sump [2]	2C
404	Restroom	AN-F	No Data	None	1B
405	Restroom	AF, AN-F	No Data	None	2C
406	Pyrotechnic Production	AF, AN-F	No Data	1 Sump [2]	2C
407	Pyrotechnic Production	AF, AN-F	No Data	None	2C
408	Pyrotechnic Production	AF, AN-F	No Data	1 Sump [2]	2C
409	Pyrotechnic Production	VF, AN-F	No Data	None	2C
410	Pyrotechnic Production	None	No Data	None	1B
411		No Data	No Data	Unknown	1B
727-R	Storage Shed	AF	No Data	None	2C

1 - VF - Verified Friable ACBM; VN-F - Verified Non-Friable ACBM; AF- Assumed Friable ACBM; AN-F - Assumed Non-Friable ACBM; 2- Building Survey report (Appendix 3)for specific sump information.

2.5.4 Plant 3 Area

Table 2-4 presents a summary of environmental assessments/surveys for the presence of asbestos, radon gas and sumps conducted on the buildings included in the Plant 3 area. Surveys for the presence of Lead Based Paint and PCB light ballasts have not been performed on these buildings.

Asbestos

PMI performed an asbestos survey of the 111 buildings in these areas on October 13 and 14, 1994 and November 2, 1994. Results of the PMI asbestos survey indicated 21 buildings with verified friable asbestos, none with verified non-friable asbestos, 39 with assumed friable asbestos, 76 with assumed non-friable asbestos and 23 with no asbestos. See Table 2-4 for the specific buildings and the asbestos survey findings. The media sampled and asbestos type, percentage and estimated remediation costs are located in the PMI report.

Radon

A radon survey (Appendix 6) was performed on a portion of these buildings in 1991 under the direction of the Thiokol Corporation. The monitoring stations were placed in most cases in one room of the building on the first floor and were in place for approximately a 2 week duration. See Table 2-4 for the specific buildings and the radon survey findings.

Sumps

The presence or absence of a sump (See Table 2-4) at a particular building was determined by reviewing the "Environmental Baseline Inspection of LHAAP Buildings 1995-1996" (Appendix 3) and References 12, 13, and 14. These reports should be reviewed to determine specific information regarding the sump use, TNRCC registration number and other pertinent information.

Table 2-4

Plant 3 Area Buildings

Building No.	Building Name	Asbestos [1]	Radon Gas	Sumps	EBS Category
21-A	Office	VF, AN-F	No Data	None	2C
22-A	QA Office	AF, AN-F	< 0.1pCi/l	None	2C
27-A	Office	AF, AN-F	No Data	None	2C
29-A	Chemistry Lab	VF, AF, AN-F	< 0.1pCi/l	None	2C
31-A	Solvent Storage Shed	AF, AN-F	No Data	Unknown	2C
46-A	Surge/Storage	VF, AN-F	No Data	Unknown	2C
22-B	Inert Warehouse	AN-F	No Data	Unknown	1B
26-B-1	Restroom	None	No Data	None	1B
32-B	Warehouse	AN-F	No Data	Unknown	1B
35-B	Surge/Storage	AN-F	No Data	None	1B
36-B	Surge/Storage	AF, AN-F	No Data	1 Sump [2]	2C
38-B	Surge/Storage	Unknown	No Data	Unknown	1B
46-B	Surge/Storage	AF, AN-F	No Data	1 Sump [2]	2C
47-B	Control Room	AN-F	No Data	None	1B
49-B	X-Ray Building	AF, AN-F	No Data	Unknown	2C
53-B	X-Ray (Surge)	AF, AN-F	No Data	Unknown	2C
53-B-1	Restroom	None	No Data	None	1B
54-B	X-Ray (Surge)	AF, AN-F	No Data	Unknown	2C
55-B	X-Ray	AN-F	No Data	Unknown	1B

1 - VF - Verified Friable ACBM; VN-F - Verified Non-Friable ACBM; AF- Assumed Friable ACBM; AN-F - Assumed Non-Friable ACBM; 2- Building Survey report (Appendix 3)for specific sump information.

Table 2-4

Plant 3 Area Buildings (Cont.)

Building No.	Building Name	Asbestos [1]	Radon Gas	Sumps	EBS Category
56-B	X-Ray Inspection	AN-F	No Data	None	1B
56-B-1	Restroom	AF, AN-F	No Data	Unknown	2C
59-B	X-Ray (Surge)	AN-F	No Data	Unknown	1B
60-B	Film Developing	Unknown	No Data	None	1B
25-C	Oxidizer Grinding	VF, AF, AN-F	No Data	Unknown	2C
25-C-1	Restroom	AF, AN-F	No Data	None	2C
68-C	Pyrotechnic Production	AF	No Data	3 Sumps [2]	2C
69-C	Storage Building	None	No Data	None	1B
25-D	Blender Building	VF, AN-F	No Data	1 Sump [2]	2C
29-D	Grinder Building	AF, AN-F	< 0.1pCi/l	1 Sump [2]	2C
29-D-1	Restroom	AF, AN-F	No Data	Unknown	2C
38-D	Surge/Storage	None	No Data	None	1B
40-D	Surge/Storage	None	No Data	None	1B
53-D	Surge/Storage	AF	No Data	Unknown	2C
62-D	Surge/Storage	VF, AN-F	No Data	None	2C
65-D	Storage Shed	AN-F	No Data	Unknown	1B
26-E	Base Burner Prod.	VF, AN-F	< 0.1pCi/l	Unknown	2C
26-E-1	Restroom	AF, AN-F	No Data	None	2C
32-E	Surge/Storage	AN-F	No Data	None	1B

1 - VF - Verified Friable ACBM; VN-F - Verified Non-Friable ACBM; AF- Assumed Friable ACBM; AN-F - Assumed Non-Friable ACBM; 2- Building Survey report (Appendix 3)for specific sump information.

Table 2-4

Plant 3 Area Buildings (Cont.)

Building No.	Building Name	Asbestos [1]	Radon Gas	Sumps	EBS Category
37-E	Control Room	AN-F	No Data	None	1B
38-E	Control Room	AN-F	No Data	None	1B
39-E	Covered Ramp	None	No Data	Unknown	1B
40-E	Covered Ramp	None	No Data	Unknown	1B
41-E	Mixer Building	None	No Data	1 Sump [2]	1B
42-E	Mixer Building	AF	No Data	1 Sump [2]	2C
43-E	Equipment Building	None	No Data	Unknown	1B
45-E	Rocket Motor Prod.	VF, AF, AN-F	No Data	6 Sumps [2]	2C
46-E	Equipment Building	None	No Data	Unknown	1B
27-F	Control Room	None	No Data	None	1B
37-F	Surge/Storage	AF	No Data	None	2C
39-F	Surge/Storage	None	No Data	None	1B
54-F	HMX Pilot Demo	VF, AF, AN-F	No Data	Unknown	2C
54-F-1	Restroom	AF, AN-F	No Data	Unknown	2C
68-F	Pyrotechnic/Production	VF, AN-F	< 0.1pCi/l	3 Sumps [2]	2C
68-F-1	Restroom	AF, AN-F	No Data	Unknown	2C
15-G	Pumphouse	AN-F	No Data	Unknown	1B
18-G	Meter House	AN-F	No Data	Unknown	1B
25-G	Lunchroom	AN-F	No Data	Unknown	1B

1 - VF - Verified Friable ACBM; VN-F - Verified Non-Friable ACBM; AF- Assumed Friable ACBM; AN-F - Assumed Non-Friable ACBM; 2- Building Survey report (Appendix 3)for specific sump information.

Table 2-4

Plant 3 Area Buildings (Cont.)

Building No.	Building Name	Asbestos [1]	Radon Gas	Sumps	EBS Category
25-G-2	Clock Alley	VF, AN-F	No Data	None	2C
26-G	Change House	AN-F	< 0.1pCi/l	None	1B
28-G	Item Prep and Layaway	VF, AF, AN-F	No Data	Unknown	2C
28-G-1	Restroom	AN-F	No Data	None	1B
30-G	Storage Shed	None	No Data	Unknown	1B
31-G	Material Prep/Control	VF, AN-F	< 0.1pCi/l	Unknown	2C
32-G		No Data	No Data	None	1B
33-G	Material Prep	AN-F	No Data	Unknown	1B
33-G-1	Restroom	AF, AN-F	No Data	None	2C
34-G		No Data	No Data	None	1B
36-G		No Data	No Data	None	1B
50-G	Parts Cleaning	AN-F	< 0.1pCi/l	Unknown	1B
54-G	Pyrotechnic Production	VF, AN-F	< 0.1pCi/l	3 Sumps [2]	2C
54-G-1	Restroom	AN-F	No Data	None	1B
62-G	Heated Storage	VF, AN-F	No Data	4 Sumps [2]	2C
62-G-1	Restroom	VF, AN-F	No Data	None	2C
68-G	Pyrotechnic Production	VF, AN-F	< 0.1pCi/l	Unknown	2C
68-G-1	Restroom	None	No Data	None	1B
82-G	Inert Storage	None	No Data	Unknown	1B

1 - VF - Verified Friable ACBM; VN-F - Verified Non-Friable ACBM; AF- Assumed Friable ACBM; AN-F - Assumed Non-Friable ACBM; 2- Building Survey report (Appendix 3)for specific sump information.

Table 2-4

Plant 3 Area Buildings (Cont.)

Building No.	Building Name	Asbestos [1]	Radon Gas	Sumps	EBS Category
28-H-1	Restroom	AF, AN-F	No Data	None	2C
32-H	Teflon Coating	VF, AF, AN-F	< 0.1pCi/l	1 Sump [2]	2C
32-H-1	Restroom	AF, AN-F	No Data	None	2C
40-H	Utility Building	None	No Data	Unknown	1B
42-H	Mixer Building	None	No Data	Unknown	1B
53-H	Storage Shed	None	No Data	Unknown	1B
54-H	Pyrotechnic Production	VF, AF, AN-F	No Data	Unknown	2C
54-H-1	Restroom	AN-F	No Data	Unknown	1B
55-H	Storage Shed	None	No Data	Unknown	1B
60-I	Equipment Shed	None	No Data	Unknown	1B
61-I	Compressor Building	AN-F	No Data	Unknown	1B
62-I	Storehouse	AN-F	No Data	Unknown	1B
75-I	Black Powder Drying	VF, AF, AN-F	No Data	3 Sumps [2]	2C
75-I-1	Restroom	AF, AN-F	No Data	None	2C
61-J	Change House	AF, AN-F	No Data	None	2C
61-J-2	Clock Alley	AF	No Data	None	2C
75-J	Storage Building	AN-F	No Data	None	1B
90-J	Guard House	AN-F	No Data	None	1B
90-J-1	Restroom	AN-F	No Data	None	1B

1 - VF - Verified Friable ACBM; VN-F - Verified Non-Friable ACBM; AF- Assumed Friable ACBM; AN-F - Assumed Non-Friable ACBM; 2- Building Survey report (Appendix 3)for specific sump information.

Table 2-4

Plant 3 Area Buildings (Cont.)

Building No.	Building Name	Asbestos [1]	Radon Gas	Sumps	EBS Category
15-K	Storage	AF, AN-F	No Data	Unknown	2C
18-K	Battery Charger Bldg	AF, AN-F	< 0.1pCi/l	Unknown	2C
18-K-1	Restroom	AF, AN-F	No Data	Unknown	2C
31-W	Warehouse	AN-F	No Data	Unknown	1B
33-W	Warehouse	AN-F	< 0.1pCi/l	Unknown	1B
35-W	Warehouse	AN-F	No Data	Unknown	1B
41-W	Component Inspection	VF, AF, AN-F	< 0.1pCi/l	Unknown	2C
41-W-1	Restroom	AN-F	No Data	None	1B
41-W-2	Clock Alley	None	No Data	None	1B
42-W	Warehouse	AF, AN-F	No Data	Unknown	2C
44-W	Warehouse	AN-F	No Data	Unknown	1B
46-W		No Data	No Data	None	1B
47-W	Storage Shed	None	No Data	Unknown	1B
48-W	Storage Shed	AF	No Data	Unknown	2C
49-W	Storage Shed	AN-F	No Data	Unknown	1B
52-W	Environmental Control	None	No Data	Unknown	1B

1 - VF - Verified Friable ACBM; VN-F - Verified Non-Friable ACBM; AF- Assumed Friable ACBM; AN-F - Assumed Non-Friable ACBM; 2- Building Survey report (Appendix 3)for specific sump information.

2.5.4 Y Area

Table 2-5 presents a summary of environmental assessments/surveys for the presence of asbestos, radon gas and sumps conducted on the buildings included in the Y, Static Test, Signal Test and Burning Grounds area. Surveys for the presence of Lead Based Paint and PCB light ballasts have not been performed on these buildings.

Asbestos

PMI performed an asbestos survey of the 48 buildings in these areas on October 12, 1994. Results of the PMI asbestos survey indicated 8 buildings with verified friable asbestos, none with verified non-friable asbestos, 19 with assumed friable asbestos, 32 with assumed non-friable asbestos and 11 with no asbestos. See Table 2-5 for the specific buildings and the asbestos survey findings. The media sampled and asbestos type, percentage and estimated remediation costs are located in the PMI report.

Radon

A radon survey (Appendix 6) was performed on a portion of these buildings in 1991 under the direction of the Thiokol Corporation. The monitoring stations were placed in most cases in one room of the building on the first floor and were in place for approximately a 2 week duration. See Table 2-5 for the specific buildings and the radon survey findings.

Sumps

The presence or absence of a sump (See Table 2-5) at a particular building was determined by reviewing the "Environmental Baseline Inspection of LHAAP Buildings 1995-1996" (Appendix 3) and References 12, 13, and 14. These reports should be reviewed to determine specific information regarding the sump use, TNRCC registration number and other pertinent information.

Table 2-5

Y Area Buildings

Building No.	Building Name	Asbestos [1]	Radon Gas	Sumps	EBS Category
8-T	Office and Changehouse	AF, AN-F	< 0.1pCi/l	None	2C
8-T-2	Clock Alley	AN-F	No Data	None	1B
13-T	Office	AN-F	< 0.1pCi/l	None	1B
16-T	Conditioning Building	VF, AF, AN-F	No Data	Unknown	2C
16-T-1	Restroom	AF, AN-F	No Data	Unknown	2C
18-T	Storage Shed	None	No Data	Unknown	1B
20-T	Conditioning Building	AF, AN-F	No Data	Unknown	2C
20-T-1	Restroom	AF, AN-F	No Data	None	2C
21-T	Magazine	AN-F	No Data	None	1B
23-T	HMX Pilot Plant	VF, AF, AN-F	No Data	Yes	2C
25-T	HMX Pilot Plant	AF, AN-F	< 0.1pCi/l	None	2C
31-T	Magazine	AN-F	No Data	Unknown	1B
34-T	Test Operation	VF, AN-F	0.5pCi/l	Unknown	2C
34-T-1	Restroom	AF, AN-F	No Data	Unknown	2C
35-T	Test Operations	AN-F	No Data	None	1B
36-T-1	Test Operations	AF	No Data	Unknown	2C
36-T-2	Test Operations	VF	No Data	Unknown	2C
36-T-3	Test Operations	VF, AF	No Data	Unknown	2C
36-T-4	Test Operations	AF	No Data	Unknown	2C

1 - VF - Verified Friable ACBM; VN-F - Verified Non-Friable ACBM; AF- Assumed Friable ACBM; AN-F - Assumed Non-Friable ACBM; 2- Building Survey report (Appendix 3)for specific sump information.

Table 2-5

Y Area Buildings (Cont.)

Building No.	Building Name	Asbestos [1]	Radon Gas	Sumps	EBS Category
39-T	Test Operations	AN-F	No Data	Unknown	1B
39-T-1	Restroom	AN-F	No Data	Unknown	1B
40-T	Storage Shed	None	No Data	None	1B
44-T	Warehouse	None	No Data	Unknown	1B
61-T	Test Operations	None	No Data	Unknown	1B
20-X	Break Area	AN-F	< 0.1pCi/l	Unknown	1B
21-X	Demolition Facility	None	No Data	Unknown	1B
22-X	Magazine	None	No Data	Unknown	1B
22-X-1	Restroom	AN-F	No Data	Unknown	1B
27-X	Magazine	None	No Data	Unknown	1B
33-X	Storage Shed	None	No Data	Unknown	1B
35-X	Control Room	None	No Data	Unknown	1B
41-X	Storehouse	None	No Data	Unknown	1B
3-Y	Break Area	AN-F	< 1.6pCi/l	Unknown	1B
4-Y	Change Area	AF, AN-F	No Data	Unknown	2C
4-Y-2	Clock Alley	AN-F	No Data	Unknown	1B
13-Y	Igniter Magazine	AF, AN-F	< 0.1pCi/l	Unknown	2C
16-Y	Pyrotechnic Production	VF, AF, AF-N	No Data	Unknown	2C
16-Y-1	Restroom	AF, AF-N	No Data	Unknown	2C

1 - VF - Verified Friable ACBM; VN-F - Verified Non-Friable ACBM; AF- Assumed Friable ACBM; AN-F - Assumed Non-Friable ACBM; 2- Building Survey report (Appendix 3)for specific sump information.

Table 2-5

Y Area Buildings (Cont.)

Building No.	Building Name	Asbestos [1]	Radon Gas	Sumps	EBS Category
16-Y-2	Lunch Room	None	< 0.1pCi/l	Unknown	1B
18-Y	Pyrotechnic Production	VF, AN-F	No Data	Yes	2C
18-Y-1	Restroom	AF, AN-F	No Data	None	2C
29-Y	Storage Magazine	AF, AN-F	No Data	Unknown	2C
32-Y	Storage Magazine	AN-F	No Data	Unknown	1B
34-Y	Pyrotechnic Production	AN-F	< 0.1pCi/l	2 Sumps [2]	1B
38-Y	Pyrotechnic Production	AF, AN-F	No Data	3 Sumps [2]	2C
40-Y	Pyrotechnic Production	AF	No Data	Unknown	2C
45-Y	Pyrotechnic Production	VF, AN-F	No Data	Unknown	2C
48-Y	Pyrotechnic Production	AN-F	No Data	Unknown	1B

1 - VF - Verified Friable ACBM; VN-F - Verified Non-Friable ACBM; AF- Assumed Friable ACBM; AN-F - Assumed Non-Friable ACBM; 2- Building Survey report (Appendix 3)for specific sump information.

2.5.4 800 Area

Table 2-6 presents a summary of environmental assessments/surveys for the presence of asbestos, radon gas and sumps conducted on the buildings included in the 800 and Magazine areas. Surveys for the presence of Lead Based Paint and PCB light ballasts have not been performed on these buildings.

Asbestos

PMI performed an asbestos survey of the 76 buildings in these areas on October 11, 1994 and November 3, 1994. Results of the PMI asbestos survey indicated 6 buildings with verified friable asbestos, none with verified non-friable asbestos, 5 with assumed friable asbestos, 66 with assumed non-friable asbestos and 8 with no asbestos. See Table 2-6 for the specific buildings and the asbestos survey findings. The media sampled and asbestos type, percentage and estimated remediation costs are located in the PMI report.

Radon

A radon survey (Appendix 6) was performed on a portion of these buildings in 1991 under the direction of the Thiokol Corporation. The monitoring stations were placed in most cases in one room of the building on the first floor and were in place for approximately a 2 week duration. See Table 2-6 for the specific buildings and the radon survey findings.

Sumps

The presence or absence of a sump (See Table 2-6) at a particular building was determined by reviewing the "Environmental Baseline Inspection of LHAAP Buildings 1995-1996" (Appendix 3) and References 12, 13, and 14. These reports should be reviewed to determine specific information regarding the sump use, TNRCC registration number and other pertinent information.

Table 2-6

800 and Magazine Area Buildings

Building No.	Building Name	Asbestos [1]	Radon Gas	Sumps	EBS Category
707-A	Changehouse	VF, AF, AN-F	No Data	None	2C
821-A	Loading Dock	None	No Data	Unknown	1B
707-B	Changehouse	VF, AF, AN-F	No Data	None	2C
707-C	Warehouse	VF, AF, AN-F	No Data	None	2C
801-F	Washout Building	AN-F	No Data	Unknown	1B
31-M		No Data	No Data	None	1B
33-M	Magazine	AN-F	No Data	Unknown	1B
35-M	Magazine	AN-F	No Data	Unknown	1B
39-M	Magazine	AN-F	No Data	Unknown	1B
810	Warehouse	None	No Data	Unknown	1B
811-1	Richmond Magazines	AN-F	No Data	Unknown	1B
811-2	Richmond Magazines	AN-F	No Data	Unknown	1B
811-3	Richmond Magazines	AN-F	No Data	Unknown	1B
811-4	Richmond Magazines	AN-F	No Data	Unknown	1B
811-6	Richmond Magazines	AN-F	No Data	Unknown	1B
811-7	Richmond Magazines	AN-F	No Data	Unknown	1B
811-8	Richmond Magazines	AN-F	No Data	Unknown	1B
811-9	Richmond Magazines	AN-F	No Data	Unknown	1B
811-10	Richmond Magazines	AN-F	No Data	Unknown	1B

1 - VF - Verified Friable ACBM; VN-F - Verified Non-Friable ACBM; AF- Assumed Friable ACBM; AN-F - Assumed Non-Friable ACBM; 2- Building Survey report (Appendix 3)for specific sump information.

Table 2-6

800 and Magazine Area Buildings (Cont.)

Building No.	Building Name	Asbestos [1]	Radon Gas	Sumps	EBS Category
811-11	Richmond Magazines	AN-F	No Data	Unknown	1B
811-12	Richmond Magazines	AN-F	No Data	Unknown	1B
811-13	Richmond Magazines	AN-F	No Data	Unknown	1B
811-14	Richmond Magazines	AN-F	No Data	Unknown	1B
811-15	Richmond Magazines	AN-F	No Data	Unknown	1B
811-16	Richmond Magazines	AN-F	No Data	Unknown	1B
811-17	Richmond Magazines	AN-F	No Data	Unknown	1B
811-18	Richmond Magazines	AN-F	No Data	Unknown	1B
811-19	Richmond Magazines	AN-F	No Data	Unknown	1B
811-20	Richmond Magazines	AN-F	No Data	Unknown	1B
811-21	Richmond Magazines	AN-F	No Data	Unknown	1B
811-22	Richmond Magazines	AN-F	No Data	Unknown	1B
811-23	Richmond Magazines	AN-F	No Data	Unknown	1B
811-24	Richmond Magazines	AN-F	No Data	Unknown	1B
811-25	Richmond Magazines	AN-F	No Data	Unknown	1B
811-26	Richmond Magazines	AN-F	No Data	Unknown	1B
811-27	Richmond Magazines	AN-F	No Data	Unknown	1B
811-28	Richmond Magazines	AN-F	No Data	Unknown	1B
811-29	Richmond Magazines	AN-F	No Data	Unknown	1B

1 - VF - Verified Friable ACBM; VN-F - Verified Non-Friable ACBM; AF- Assumed Friable ACBM; AN-F - Assumed Non-Friable ACBM; 2- Building Survey report (Appendix 3)for specific sump information.

Table 2-6

800 and Magazine Area Buildings (Cont.)

Building No.	Building Name	Asbestos [1]	Radon Gas	Sumps	EBS Category
811-30	Richmond Magazines	AN-F	No Data	Unknown	1B
811-31	Richmond Magazines	AN-F	No Data	Unknown	1B
811-32	Richmond Magazines	AN-F	No Data	Unknown	1B
811-33	Richmond Magazines	AN-F	No Data	Unknown	1B
811-34	Richmond Magazines	AN-F	No Data	Unknown	1B
811-35	Richmond Magazines	AN-F	No Data	Unknown	1B
811-36	Richmond Magazines	AN-F	No Data	Unknown	1B
811-37	Richmond Magazines	AN-F	No Data	Unknown	1B
811-38	Richmond Magazines	AN-F	No Data	Unknown	1B
811-39	Richmond Magazines	AN-F	No Data	Unknown	1B
811-40	Richmond Magazines	AN-F	No Data	Unknown	1B
811-41	Richmond Magazines	AN-F	No Data	Unknown	1B
811-42	Richmond Magazines	AN-F	No Data	Unknown	1B
811-43	Richmond Magazines	AN-F	No Data	Unknown	1B
811-44	Richmond Magazines	AN-F	No Data	Unknown	1B
811-45	Richmond Magazines	AN-F	No Data	Unknown	1B
811-46	Richmond Magazines	AN-F	No Data	Unknown	1B
811-47	Richmond Magazines	AN-F	No Data	Unknown	1B
811-48	Richmond Magazines	AN-F	No Data	Unknown	1B

1 - VF - Verified Friable ACBM; VN-F - Verified Non-Friable ACBM; AF- Assumed Friable ACBM; AN-F - Assumed Non-Friable ACBM; 2- Building Survey report (Appendix 3)for specific sump information.

Table 2-6

800 and Magazine Area Buildings (Cont.)

Building No.	Building Name	Asbestos [1]	Radon Gas	Sumps	EBS Category
811-49	Richmond Magazines	AN-F	No Data	Unknown	1B
811-50	Richmond Magazines	AN-F	No Data	Unknown	1B
811-51	Richmond Magazines	AN-F	No Data	Unknown	1B
811-52	Richmond Magazines	AN-F	No Data	Unknown	1B
811-53	Richmond Magazines	AN-F	No Data	Unknown	1B
811-54	Richmond Magazines	AN-F	No Data	Unknown	1B
811-55	Richmond Magazines	AN-F	No Data	Unknown	1B
811-56	Richmond Magazines	AN-F	No Data	Unknown	1B
811-57	Richmond Magazines	AN-F	No Data	Unknown	1B
811-58	Richmond Magazines	AN-F	No Data	Unknown	1B
812	Heating Plant	VF, AF	No Data	Unknown	2C
813	Pyrotechnic	VF	< 0.1pCi/l	Unknown	2C
813-1	Storage Shed	None	No Data	Unknown	1B
814	Pyrotechnic	VF, AF, AN-F	< 0.1pCi/l	None	2C
815	Compressor Building	AN-F	No Data	None	1B
823	Above Ground Mag.	None	No Data	Unknown	1B
824	Above Ground Mag	None	No Data	Unknown	1B
BST-2	Storage Igloo	None	No Data	Unknown	1B
BST-3	Storage Igloo	None	No Data	Unknown	1B
BST-4	Storage Igloo	None	No Data	Unknown	1B

1 - VF - Verified Friable ACBM; VN-F - Verified Non-Friable ACBM; AF- Assumed Friable ACBM; AN-F - Assumed Non-Friable ACBM; 2- Building Survey report (Appendix 3)for specific sump information.

2.6 OTHER ENVIRONMENTAL CONSIDERATIONS

This section presents other environmental considerations at the LHAAP which has not been included in either the individual sites or building sections. The majority of this information was obtained from reviewing documents contained in files from the LHAAP or from personal communications with sources from the LHAAP.

Transformers

A document in the files (Transformer Master Listing) at LHAAP indicated their are 383 electrical transformers at the facility and 294 contain PCB free liquids. The transformers are at various locations throughout the facility. Refer to the Transformer Master Listing (Appendix 4) to determine the location, PCB content, testing date and other information regarding the status of the transformers at LHAAP.

Underground Storage Tanks

Documents in the files (Appendix 5) concerning underground storage tanks (USTs) indicated at one time there were seven (7) USTs in use at LHAAP. According to the file information, all USTs have been removed and replaced, if needed, with an above ground tank. The file documents did not indicate if remediation of soil or groundwater occurred during the UST removal. LHAAP did perform monthly inventory control and annual leak testing based on a letter in the file. No data or reports were located in the file to indicate the continuity of these programs. See Table 2-7 for location, size, former contents and year installed of USTs.

Table 2-7

USTs and Locations at LHAAP

Location	Size	Contents	Year Installed
Bldg. 12-G	280 gal.	Unknown	1976
Bldg. 37-X-1	N/A	Propane	1979
Bldg. 724-A	12,000 gal.	Gasoline	1942
Bldg. 724-B	17,130 gal.	Gasoline	1975
Bldg. 724-D1	1,000 gal.	Gasoline	1942
Bldg. 724-D2	1,000 gal.	Gasoline	1942
703-CL	10,000	Diesel	1978

Spills

A file containing spill incident reports at LHAAP was reviewed and is summarized in this section. The spill file contained information on spill events from 1990 to 1996. The file should be reviewed to obtain specific information regarding the location, quantity, actions taken and impact of the spill. Table 2-8 provides a summary of the spill documents from LHAAP files. Based on existing information, most spills were responded to before major impacts had occurred. The spills varied in size from a quart of hydraulic oil to hundreds of gallons of wastewater. The spills are grouped into type of material and the location the spill occurred.

Table 2-8
Spill Incidents at the LHAAP
1990 - 1996

Type of Spill	Location	Date	Quantity Spilled
Hydraulic Oil	Bldg. 35-W	4/95	15 gallons
	Bldg. 49-W	4/95	10 gallons
	Bldg. 45-E	3/95	4 gallons
	Bldg. S-1	1/95	2 quarts
	Bldg. B-7	10/94	300 gallons
	Bldg. 401	8/94	100-200 gal. w/water from OWS
	Bldg. P-116	3/94, 2/94	75 gal. / 150 gal.
	Bldg. B-7	12/93	3 - 4 gallons
	Dispensary	11/93	2 quarts
	Bldg. P-117	2/92	25 gallons
	Bldg. B-11	1/92, 1/91	1 gal. / 1 drum soil removed
	Bldg. 206	1/91	1 drum soil removed
	CB - 1	1/91	Periodic containment overflows
	Y-Area Ditch	5/90	Unknown-17 cy. soil removed
Mercury	Bldg. 213	11/95	4 ounces
	Bldg. 8-T	6/95	< 1 lb. (broken manometer)
Diesel	Bldg. 50-G	6/93	Unknown-6 cy. soil removed
	Bldg. 401	1/91	Leaking fill line
	UST 703-C-1	1/91	Tank overfill
Gasoline	Bldg. 49-W	2/94	1 ½ - 2 gallons
Hexane	Bldg. 54-H	11/93, 6/92	20 gal. / 10 gal.
Resin Spill	Bldg. B-9	7/95	5 gallons
Ammonium Perchlorate	Bldg. 25-C	3/94	6-8 lbs. w/water
Nitric Acid, Nit. Tet , Nit. Pent.	HMX Pilot Plant	9/91	45 lb.(solid), 300 gal. (gas)
Mineral Oil	Bldg. 34-T	10/93	1 gallon
Sodium Chlorite	Bldg. 413-A	9/90	Unknown
Oil from truck	Roads & Grounds Lot	4/93	25 gallons
Deluge system overflow	Bldg. 42-H	8/91	Unknown
Wastewater overflow	Bldg. 45-E	1/96	Unknown
	Bldg. 401C	7/94	1000 gallons

Medical Waste

There are no known areas where medical wastes were generated, stored or disposed of at LHAAP.

Unexploded Ordnance (UXO)

Many of the areas at LHAAP have been screened for UXO during the various environmental investigations and environmental remedial activities that have taken place or are currently underway. Only one piece of UXO was discovered and that was at Site 18/24. Areas where UXO could possibly be encountered are as follows:

- Site XX-Ground Signal Test Area - This area could possibly contain UXO primarily in the form of unexploded or incompletely burned flares.
- Site 27-South Test Area - This area could possibly contain UXO primarily in the form of unexploded or incompletely burned flares.
- Site 12-Active Landfill - This area could possibly of had UXO disposed of at it, however, it is being capped as part of the ongoing remedial activities being conducted at LHAAP.
- Site 16-Old Landfill - This area could possibly of had UXO disposed of at it, however, it is being capped as part of the ongoing remedial activities being conducted at LHAAP.
- Site 17-Burning Ground No. 2/Flashing Area - This area could possibly contain UXO or raw TNT.
- Site 18/24-Burning Ground No. 3/Unlined Evaporation Pond - This area could possibly contain UXO raw TNT, however, it is currently undergoing remedial activities.
- Site 29-TNT Production Area - This area could possibly contain raw TNT.

Radioactive Waste

There are no known areas where radioactive wastes were generated, stored or disposed of at LHAAP.

Water/Wastewater Treatment

LHAAP does have a water treatment facility and a wastewater treatment facility. There is no information concerning any environmental investigations having been conducted at either of these two facilities.

Wetlands

There are several areas at LHAAP that could be considered as wetlands. These are primarily low lying/floodplain areas associated with Goose Prairie Creek, Central Creek, Harrison Bayou and Saunders Branch. However, there has been no specific survey conducted at LHAAP to identify areas that would be classified as wetlands.

Sole Source Aquifers

There are no aquifers beneath LHAAP that are designated as sole source aquifers.

SECTION 3.0 REFERENCES

1.) Draft Hydrogeological Assessment Report, Volumes I & II, for the Unlined Evaporation Pond and Active Burning Ground at the Longhorn Army Ammunition Plant (LHAAP), Karnack Texas, Sverdrup Environmental, Inc., June 1997.

2.) Final Sampling and Data Results Report, Phase II Remedial Investigation, Group 2 Sites 12, 16, 17, 18/24, 29. and 32, Longhorn Army Ammunition Plant, Karnack, Texas, Sverdrup Environmental, Inc., May 1996.

3.) Draft Sampling and Data Results Report, Parts 1 & 2, Group 5 Sites (50, 52, 60, and 63) Site Investigation, Longhorn Army Ammunition Plant, Karnack, Texas, Sverdrup Environmental Inc., August 1996.

4.) Final Site Characterization Investigation Report, Group 5 Sites (50, 52, 60, and 63) Site Investigation, Longhorn Army Ammunition Plant, Karnack, Texas, Sverdrup Environmental Inc., June 1997.

5.) Draft Final Design Analysis Report, Site 16 (Old Landfill) Time Critical Removal Action, Longhorn Army Ammunition Plant, Karnack, Texas, Sverdrup Environmental Inc., June 1996.

6.) Draft Final Field Summary Report, Phase II, Group 2 Sites, Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas, Sverdrup Environmental Inc., July 1996.

7.) Site Characterization Summary Report, Phase 2 Remedial Investigation of the Group No. 1 Sites, Longhorn Army Ammunition Plant, Karnack, Texas, Sverdrup Environmental Inc., February 1996.

8.) Final Field Investigation Report, Phase I Remedial Investigation, Group 2 Sites (12, 16, 17, 18/24, 29. and 32), Longhorn Army Ammunition Plant, Karnack, Texas, Sverdrup Environmental Inc., February 1995.

9.) Plant Wide Asbestos Survey, Volumes I & II, Longhorn Army Ammunition Plant, Karnack, Texas, Pollution Management Inc., January 1995.

10.) Group IV Pre-Phase III Groundwater Investigation Report, Longhorn Army Ammunition Plant, Karnack, Texas, United States Army Corps of Engineers-Tulsa District, September 1996.

11.) Record of Decision for Early Interim Remedial Action at Burning Ground No. 3, Longhorn Army Ammunition Plant, Karnack, Texas, May 1995.

12.) Waste Sump Inventory, Longhorn Army Ammunition Plant, Karnack, Texas, United States Army Corps of Engineers-Tulsa District, April 1993.

13.) Final Phase II Sumps Investigation Sample and Data Results Report, Volume 6, Longhorn Army Ammunition Plant, Karnack, Texas, Roy F. Weston, October 1995.

14.) Draft Phase II Investigations of 125 Waste Process Sumps and 20 Waste Rack Sumps, Longhorn Army Ammunition Plant, Karnack, Texas, United States Army Corps of Engineers-Tulsa District, September 1995.

File Documents Received from Radian International

- Transformer Master Listing (9-30-96)
- Building Survey, Environmental Baseline Inspection of LHAAP Buildings, 1995-1996
- Radon Monitoring Data (October and November 1992)
- Spill Events File (1990 - 1996)
- UST Correspondence
    - December 20, 1988 to LHAAP, from
    - March 2, 1989 to LHAAP, from Morton Thiokol, Inc.
    - December 14, 1993 to LHAAP, from Thiokol Corporation

APPENDIX I

Figures

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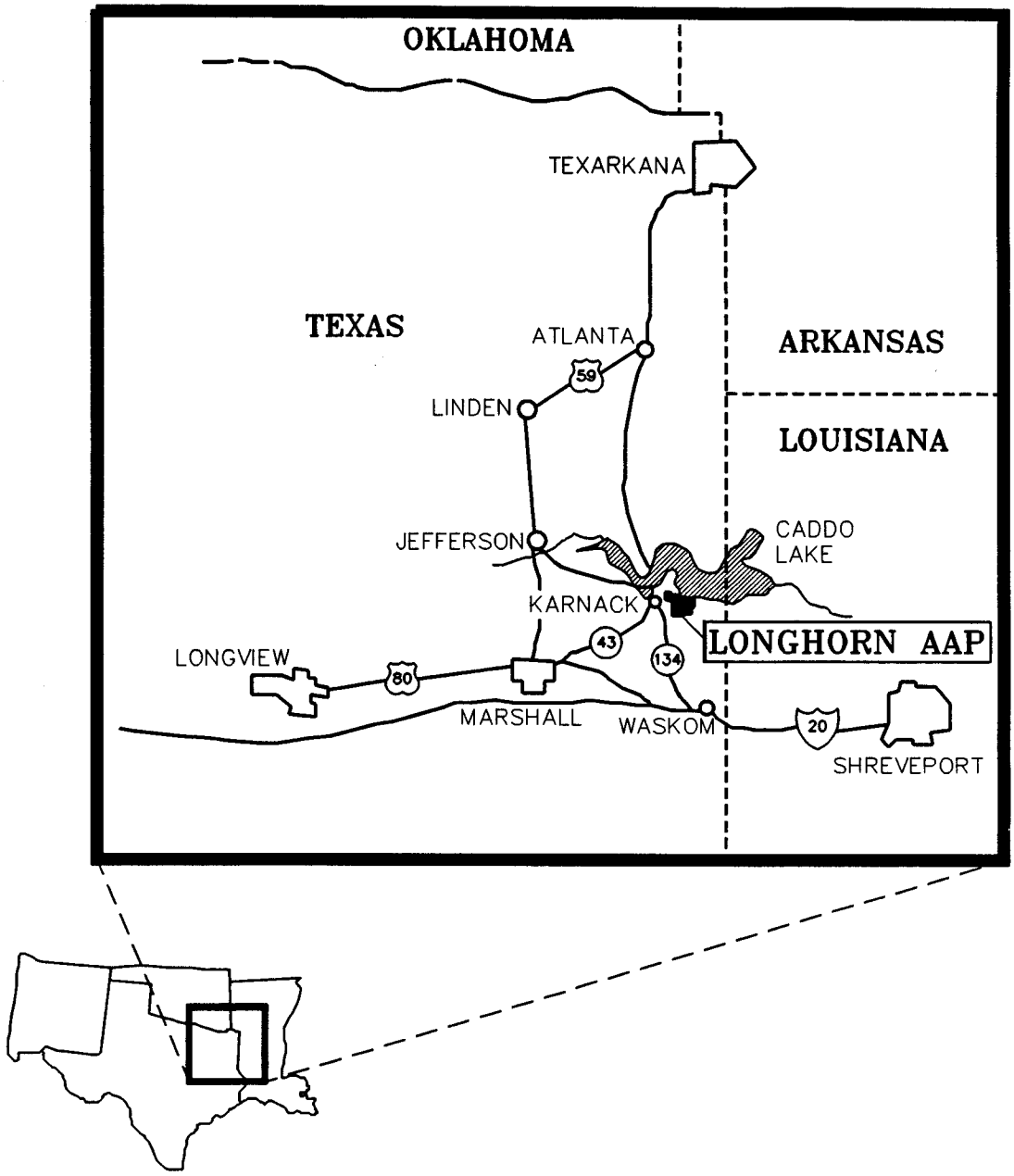

US Army Corps of Engineers Tulsa District Sverdrup ENVIRONMENTAL	**SITE VICINITY MAP LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS**	DWN:	DES.:	PROJECT NO.: 000187
		CHKD:	APPD:	
		DATE: JUNE 97	REV.:	FIGURE NO.: 1-1

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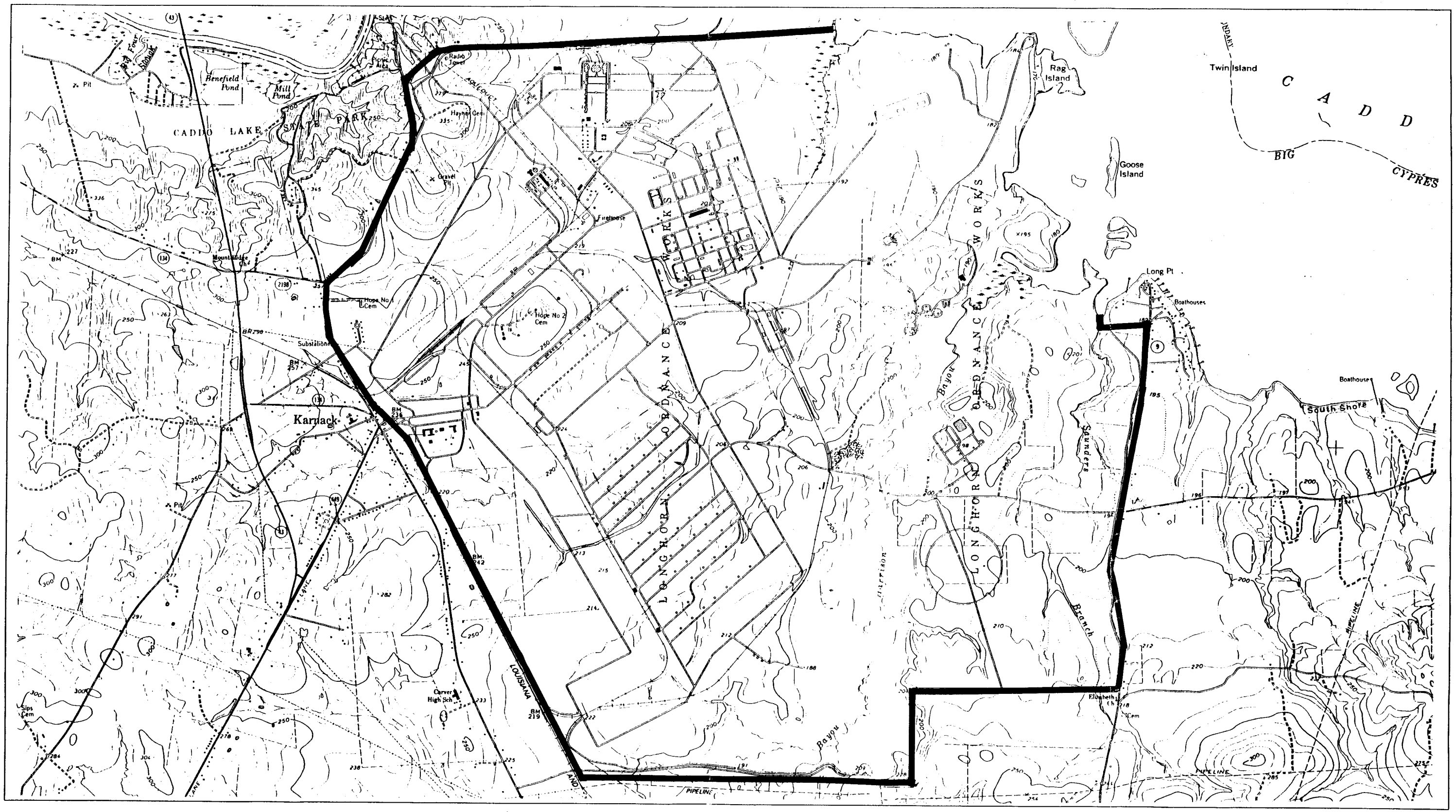

SOURCE: USGS 7.5 MINUTE QUAD MAPS –
KARNACK, TX (1978) AND POTTERS POINT, TX–LA (1978)

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FEET

US Army Corps of Engineers
Tulsa District

Sverdrup
ENVIRONMENTAL

ENVIRONMENTAL BASELINE STUDY
TOPOGRAPHIC MAP
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

DWN: BSM	DES.:	PROJECT NO.: 000187	
CHKD:	APPD:		
DATE: OCT 97	REV.:	FIGURE NO.: 1-2	

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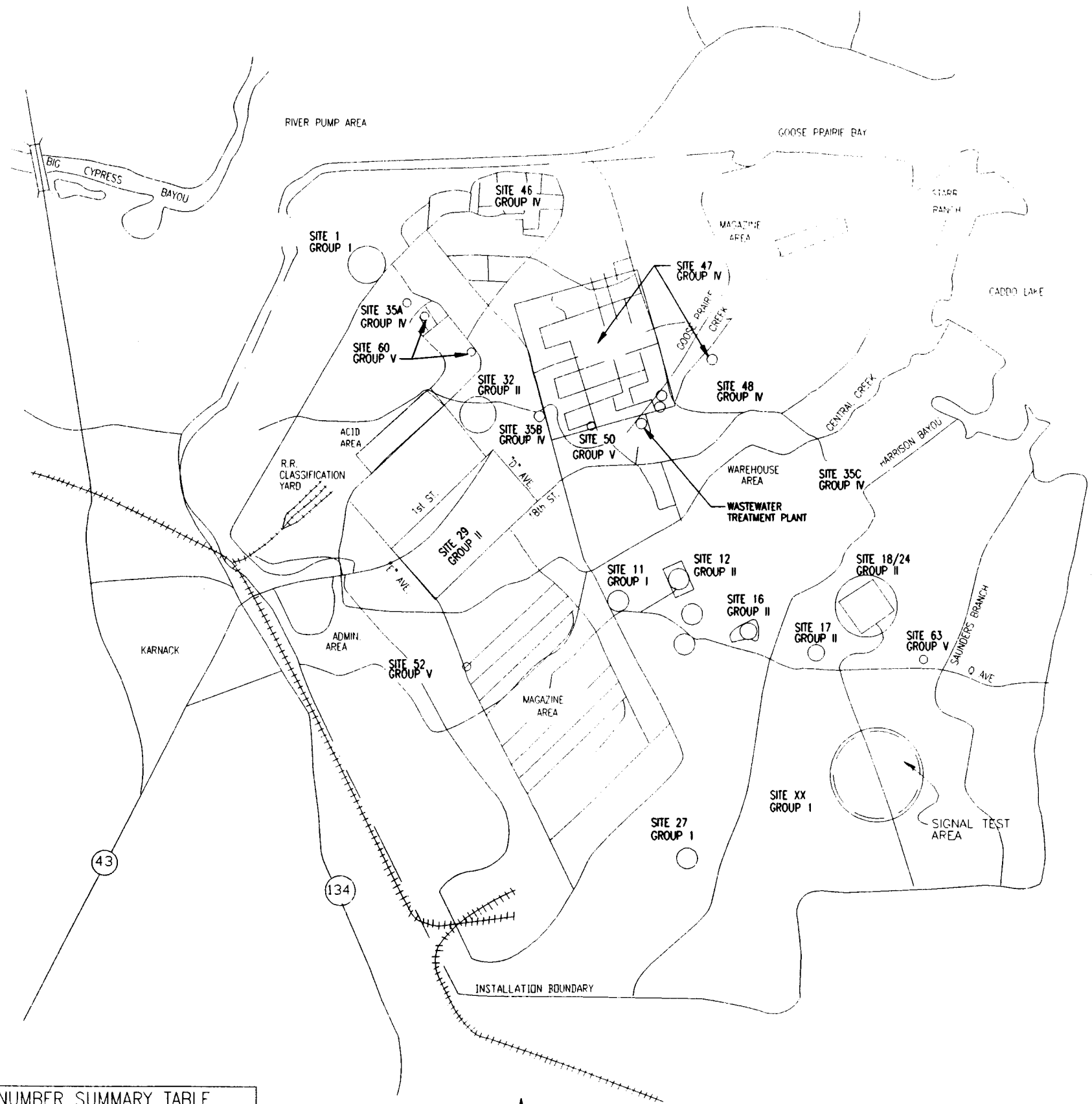

GROUP\SITE NUMBER SUMMARY TABLE	
GROUP NUMBER	SITE NUMBERS
GROUP I	SITES 1, 11, 27 AND XX
GROUP II	SITES 12, 16, 17, 18/24, 29 AND 32
GROUP IV	SITES 35A, 35B, 35C, 46, 47 AND 48
GROUP V	SITES 50, 52, 60, AND 63

N

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FEET

US Army Corps of Engineers
Tulsa District

Sverdrup ENVIRONMENTAL

ENVIRONMENTAL BASELINE STUDY
GROUP/SITE LOCATION MAP
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

DWN	DES.	PROJECT NO.:
BSM		000187
CHKD:	APPD:	FIGURE NO.:
DATE: OCT 97	REV.:	1-3

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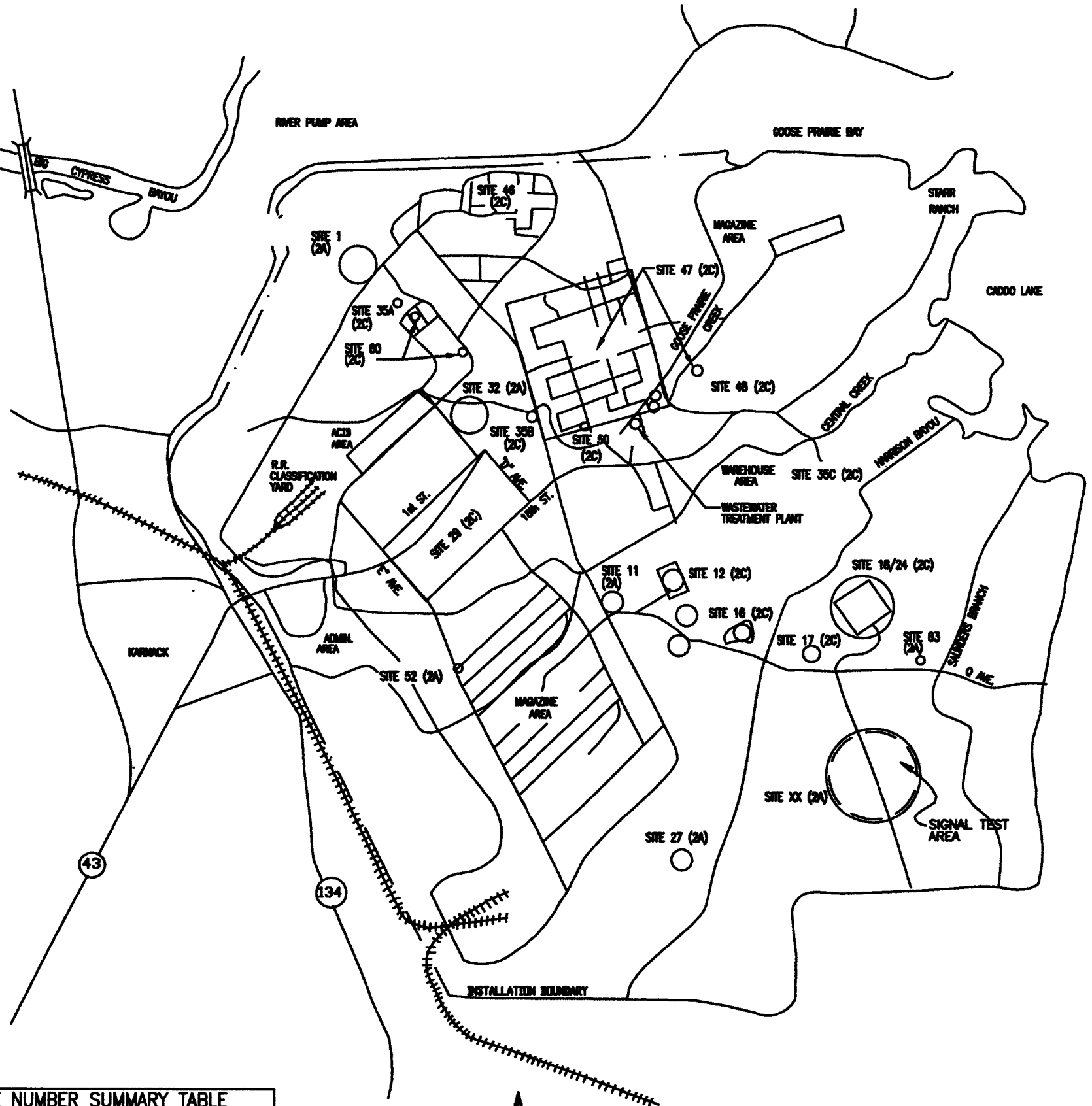

LEGEND

CATEGORY 1 – UNCONTAMINATED PROPERTY

CATEGORY 2A – DOES NOT REQUIRE REMEDIAL ACTION BUT HAS STORED HAZARDOUS SUBSTANCES OR HAD A RELEASE

CATEGORY 2B – HAS ALL REQUIRED REMEDIAL ACTION TAKEN

CATEGORY 2C – REQUIRES REMEDIAL ACTION OR OTHER ACTION HAS NOT YET BEEN TAKEN

GROUP/SITE NUMBER SUMMARY TABLE	
GROUP NUMBER	SITE NUMBERS
GROUP I	SITES 1, 11, 27 AND XX
GROUP II	SITES 12, 16, 17, 18/24, 29 AND 32
GROUP IV	SITES 35A, 35B, 35C, 46, 47 AND 48
GROUP V	SITES 50, 52, 60, AND 63

N

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FEET

US Army Corps of Engineers Tulsa District

Sverdrup ENVIRONMENTAL

ENVIRONMENTAL BASELINE STUDY
SITE STATUS MAP
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

DWN: BSM	DES.:	PROJECT NO.: 000187
CHKD:	APPD:	FIGURE NO.: 2-1
DATE: OCT 97	REV.:	

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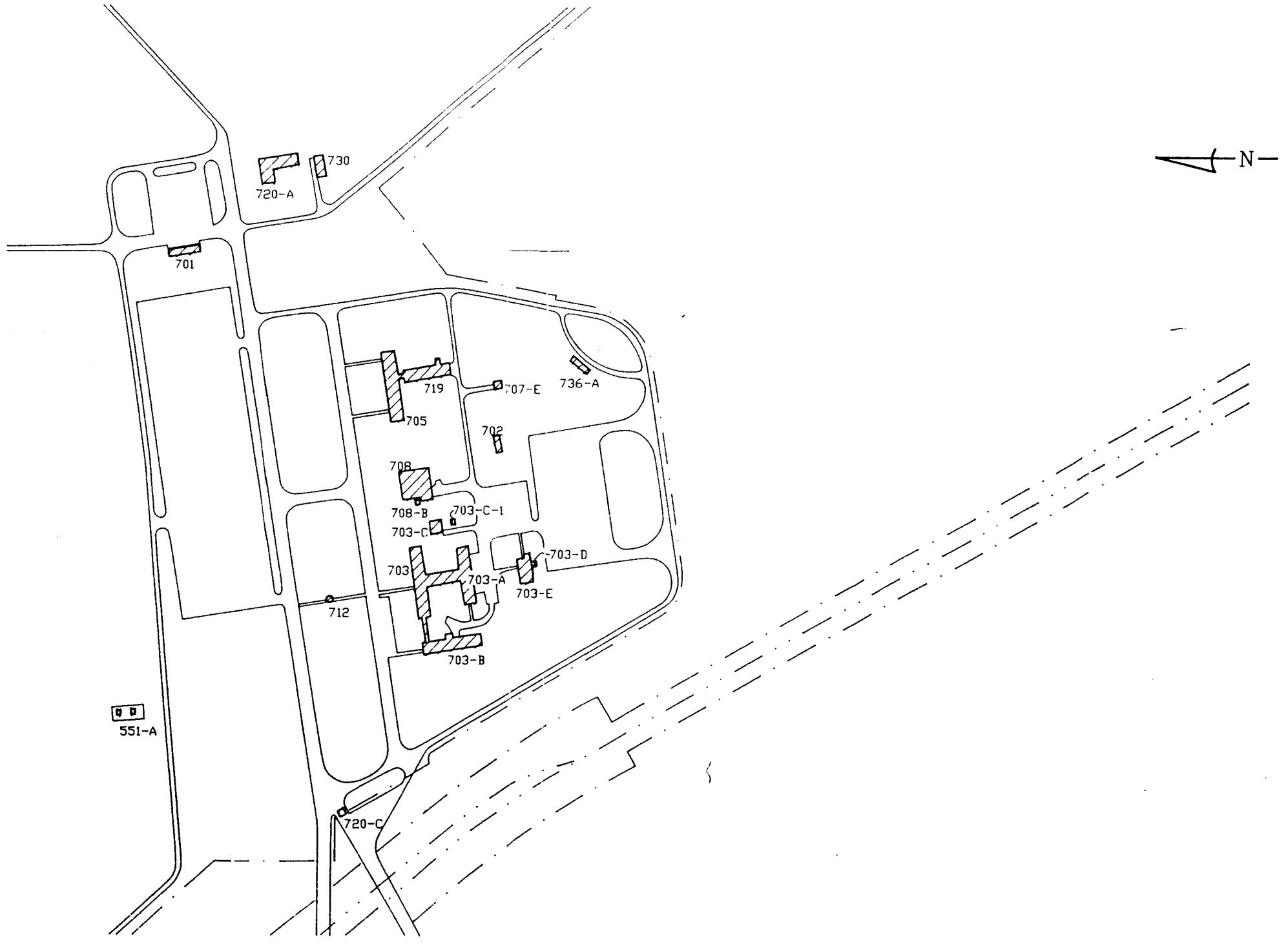

SOURCE: PLANT WIDE ASBESTOS SURVEY BY POLLUTION MANAGEMENT, INC. (1994)

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US Army Corps of Engineers Tulsa District

Sverdrup ENVIRONMENTAL

ENVIRONMENTAL BASELINE STUDY
SITE MAP - ADMINISTRATION AREA
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

DWN:	DES.:	PROJECT NO.: 000187
CHKD:	APPD:	
DATE: OCT 97	REV.:	FIGURE NO.: 2-2

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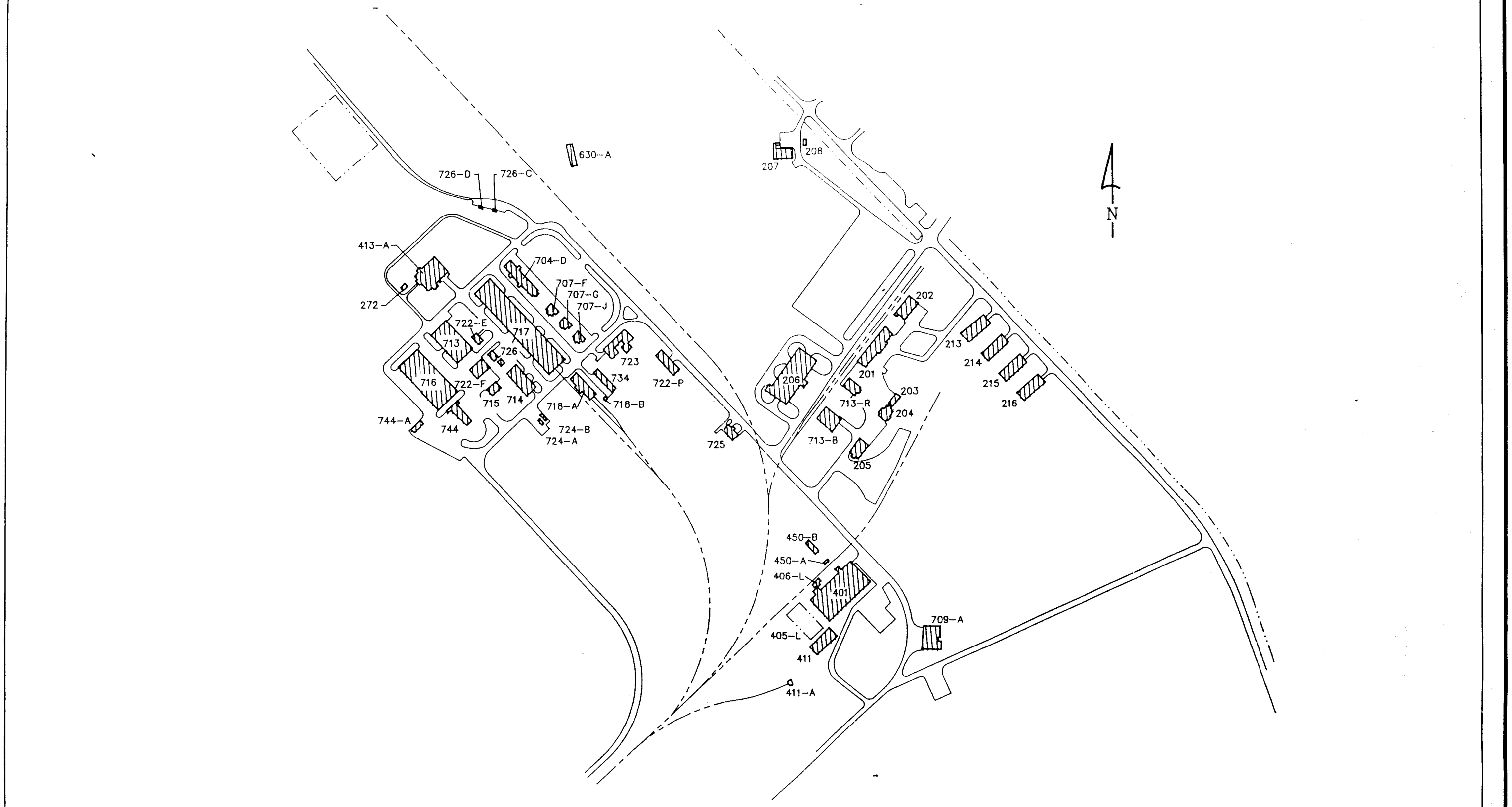

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SCALE IN FEET

SOURCE: PLANT WIDE ASBESTOS SURVEY BY POLLUTION MANAGEMENT, INC. (1994)

US Army Corps of Engineers Tulsa District

Sverdrup ENVIRONMENTAL

ENVIRONMENTAL BASELINE STUDY
SITE MAP - SHOP AND POWER AREA
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

DWN:	DES.:	PROJECT NO.: 000187
CHKD:	APPD:	
DATE: OCT 97	REV.:	FIGURE NO.: 2-3

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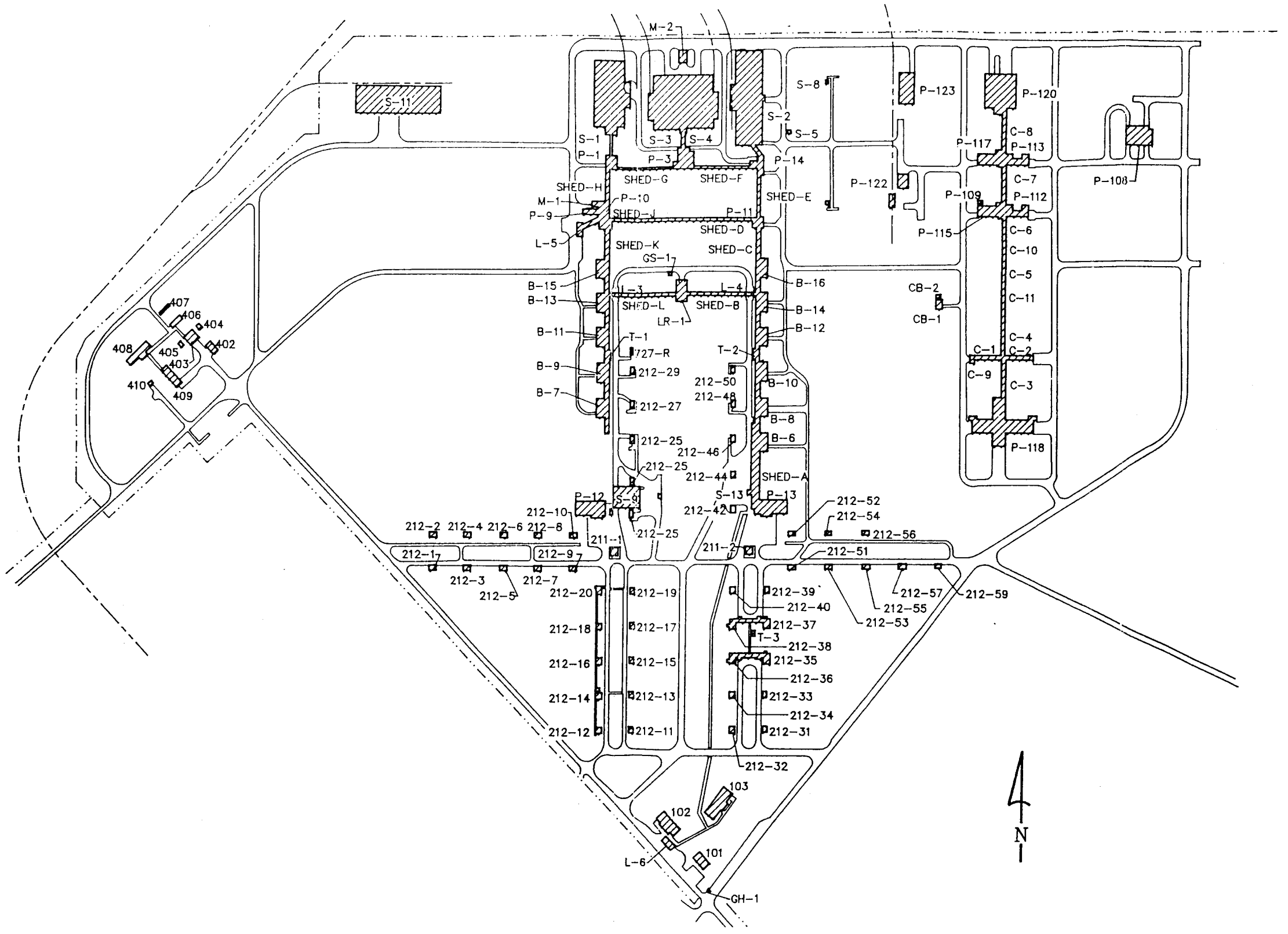

SOURCE: PLANT WIDE ASBESTOS SURVEY BY POLLUTION MANAGEMENT, INC. (1994)

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FEET

US Army Corps of Engineers Tulsa District

Sverdrup ENVIRONMENTAL

ENVIRONMENTAL BASELINE STUDY
SITE MAP - PLANT 2, MODIFICATION AND AREA 400
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

DWN:	DES.:	PROJECT NO.:
		000187
CHKD:	APPD:	FIGURE NO.:
		2-4
DATE: OCT 97	REV.:	

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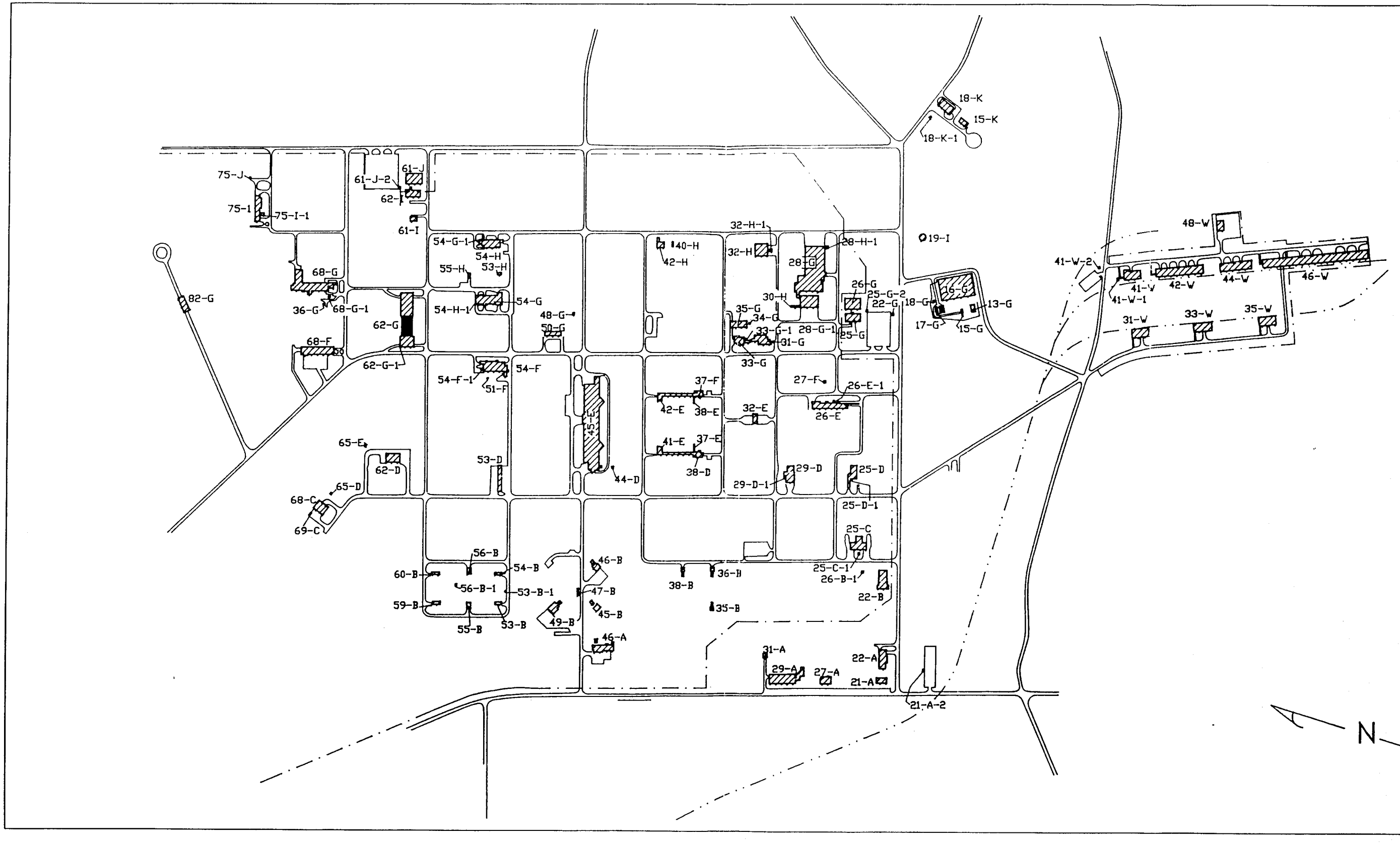

SOURCE: PLANT WIDE ASBESTOS SURVEY BY POLLUTION MANAGEMENT, INC. (1994)

SCALE: NOT TO SCALE

US Army Corps of Engineers Tulsa District

Sverdrup ENVIRONMENTAL

ENVIRONMENTAL BASELINE STUDY
SITE MAP - PLANT 3 AREA
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

DWN:	DES.:	PROJECT NO.: 000187
CHKD:	APPD:	
DATE: OCT 97	REV.:	FIGURE NO.: 2-5

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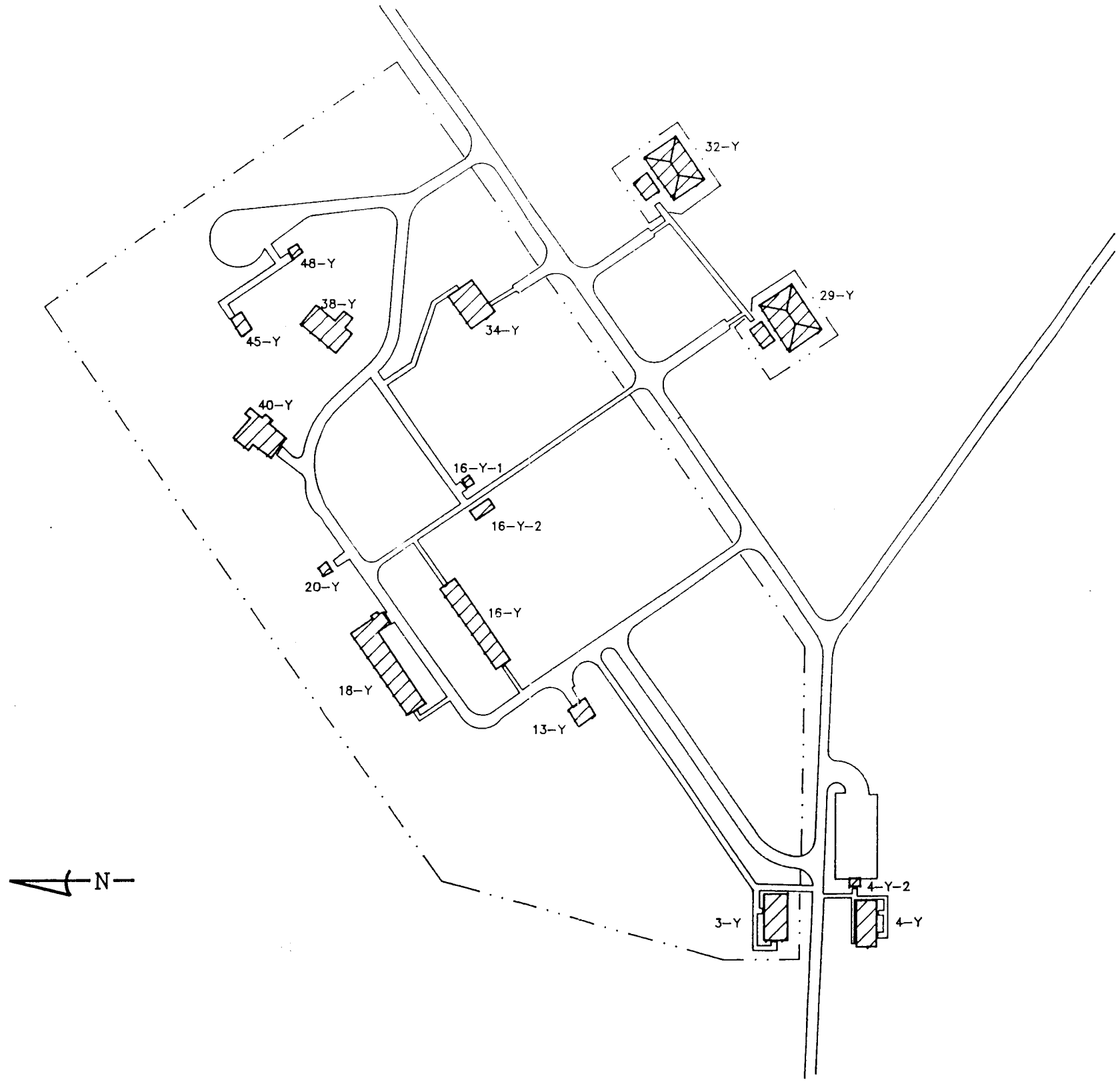

SOURCE: PLANT WIDE ASBESTOS SURVEY BY POLLUTION MANAGEMENT, INC. (1994)

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FEET

US Army Corps of Engineers Tulsa District

Sverdrup ENVIRONMENTAL

ENVIRONMENTAL BASELINE STUDY
SITE MAP - AREA Y SHEET 1 OF 3
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

DWN:	DES.:	PROJECT NO.: 000187
CHKD:	APPD:	FIGURE NO.: 2-6A
DATE: OCT 97	REV.:	

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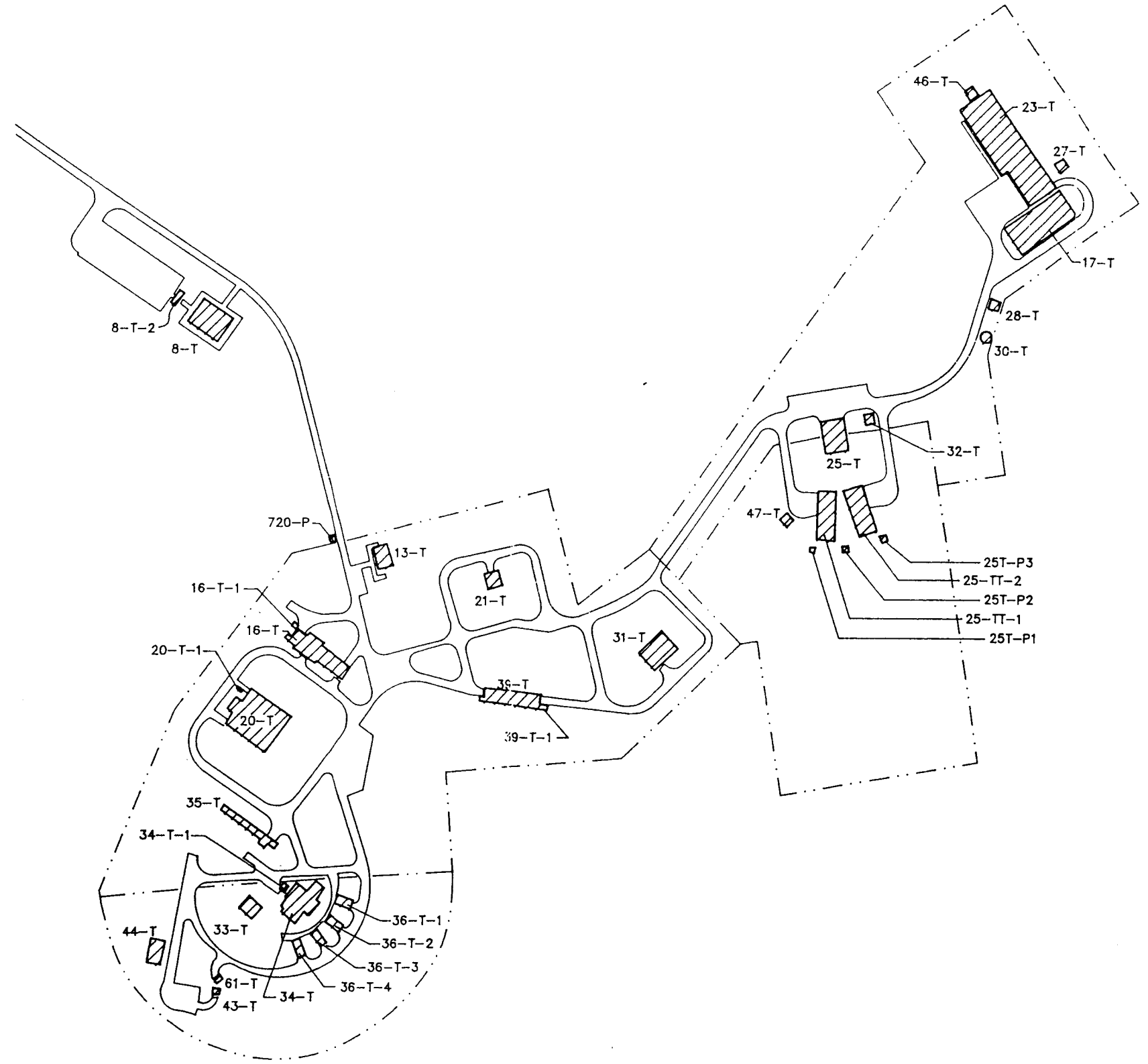

SOURCE: PLANT WIDE ASBESTOS SURVEY BY POLLUTION MANAGEMENT, INC. (1994)

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FEET

US Army Corps of Engineers Tulsa District

Sverdrup ENVIRONMENTAL

ENVIRONMENTAL BASELINE STUDY
SITE MAP - AREA Y SHEET 2 OF 3
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

DWN:	DES.:	PROJECT NO.: 000187
CHKD:	APPD:	
DATE: OCT 97	REV.:	FIGURE NO.: 2-6B

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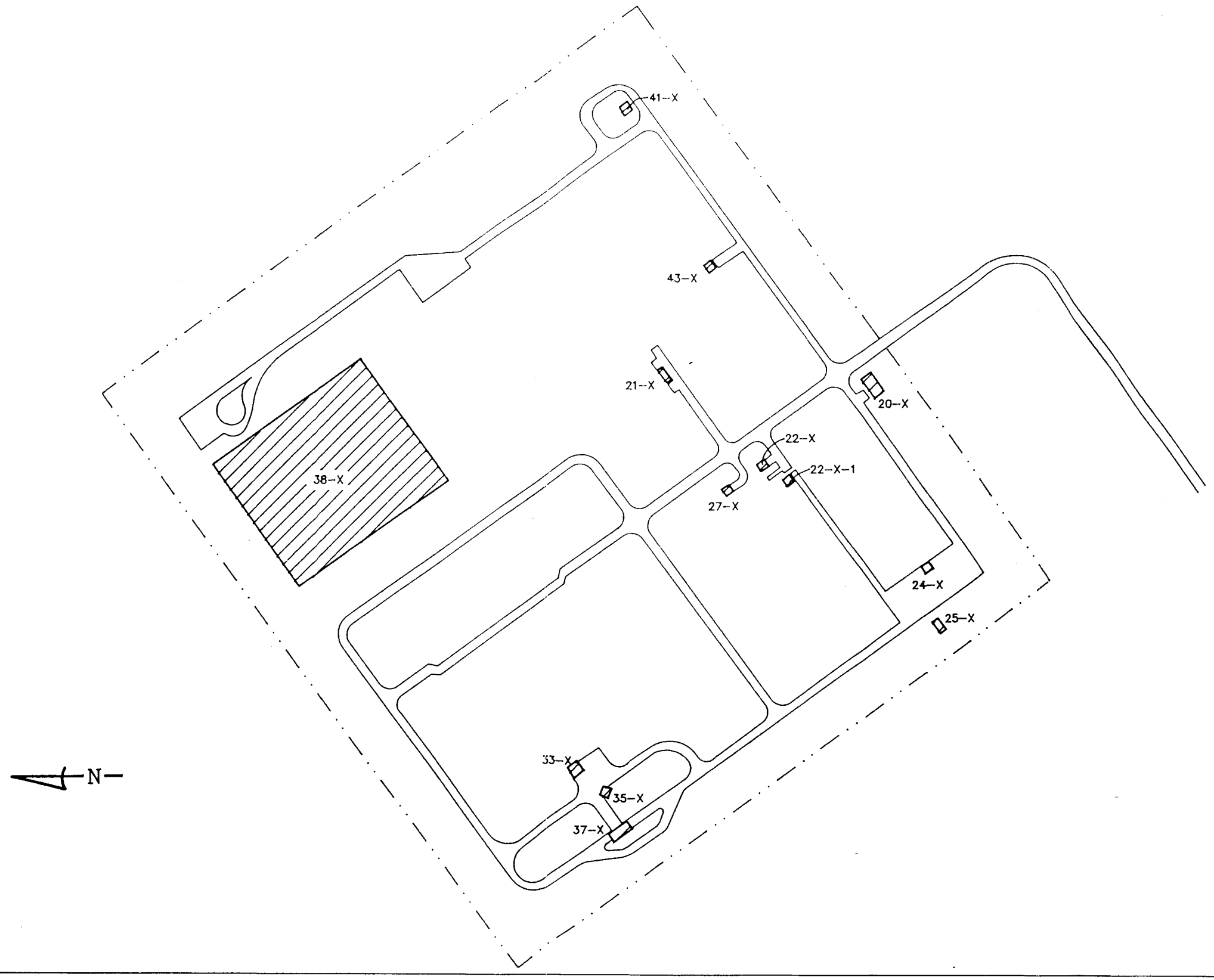

SOURCE: PLANT WIDE ASBESTOS SURVEY BY POLLUTION MANAGEMENT, INC. (1994)

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FEET

US Army Corps of Engineers Tulsa District

Sverdrup ENVIRONMENTAL

ENVIRONMENTAL BASELINE STUDY
SITE MAP - AREA Y SHEET 3 OF 3
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

DWN:	DES.:	PROJECT NO.: 000187
CHKD:	APPD:	
DATE: OCT 97	REV.:	FIGURE NO.: 2-6C

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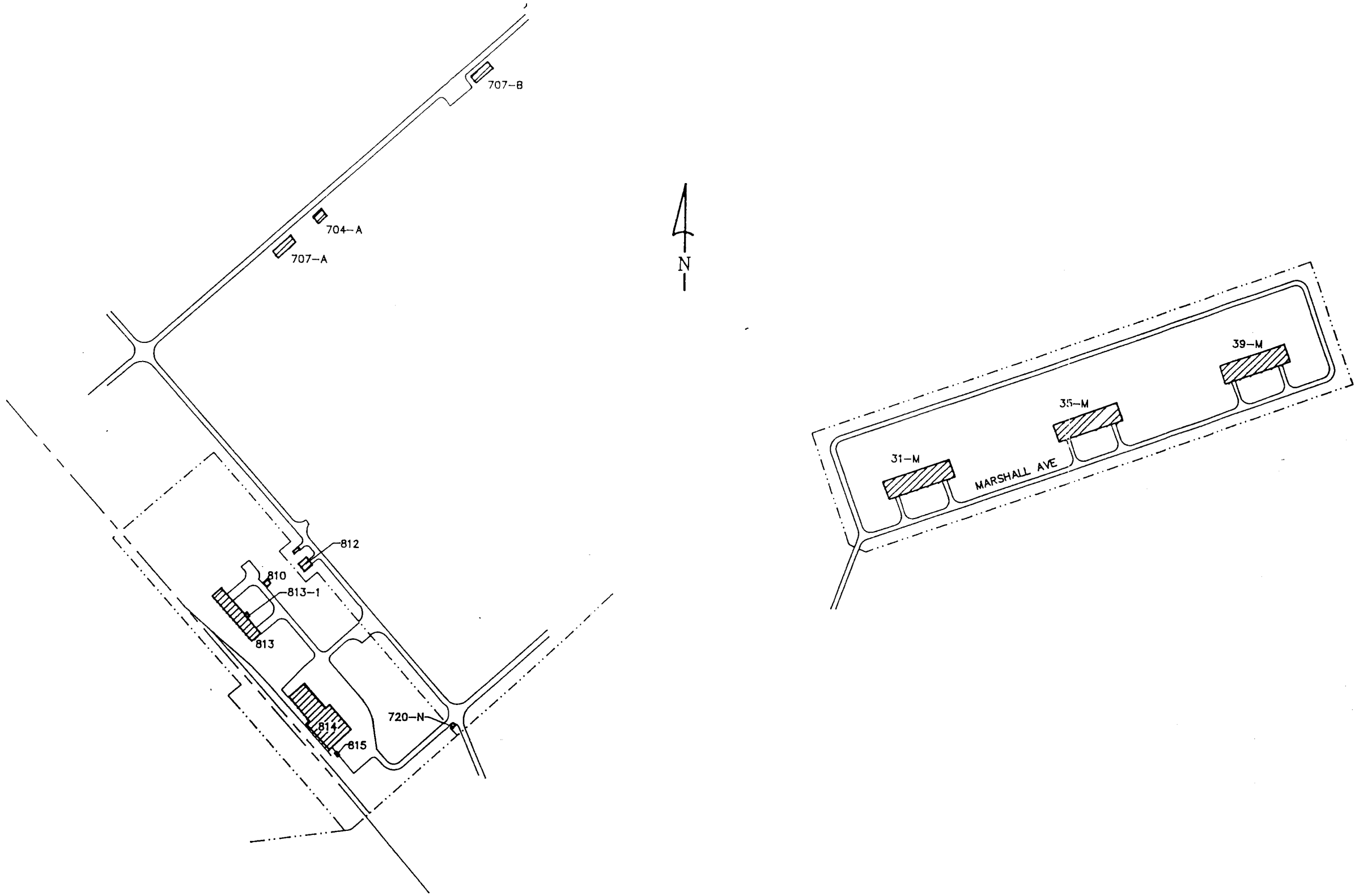

SOURCE: PLANT WIDE ASBESTOS SURVEY BY POLLUTION MANAGEMENT, INC. (1994)

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FEET

US Army Corps of Engineers Tulsa District

Sverdrup ENVIRONMENTAL

ENVIRONMENTAL BASELINE STUDY
SITE MAP - AREA 800 SHEET 1 OF 2
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

DWN:	DES.:	PROJECT NO.: 000187
CHKD:	APPD:	
DATE: OCT 97	REV.:	FIGURE NO.: 2-7A

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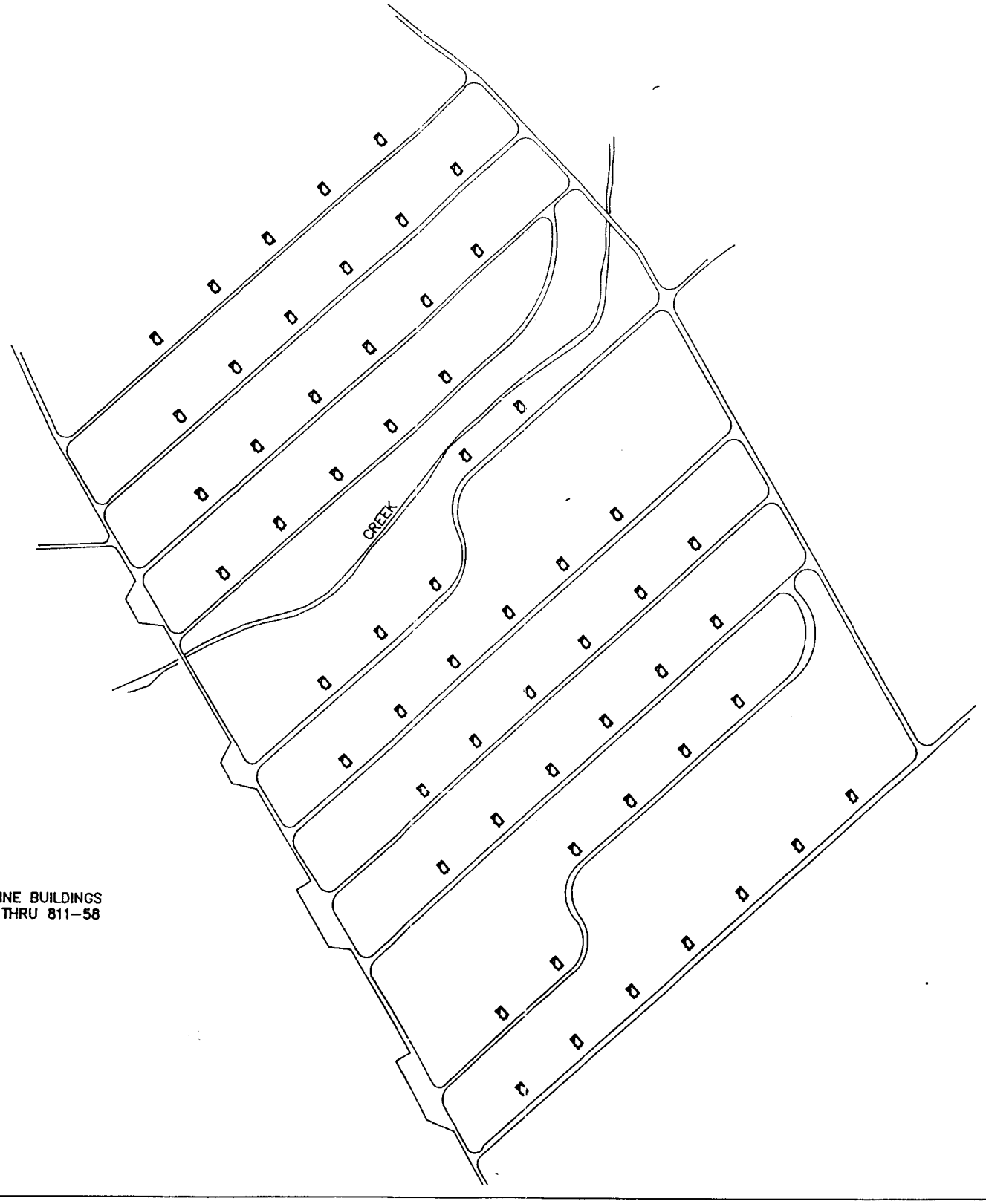

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MAGAZINE BUILDINGS
811–1 THRU 811–58

600 0 600 1200 1800

SOURCE: PLANT WIDE ASBESTOS SURVEY BY POLLUTION MANAGEMENT, INC. (1994)

US Army Corps of Engineers Tulsa District

Sverdrup ENVIRONMENTAL

ENVIRONMENTAL BASELINE STUDY
SITE MAP - AREA 800 SHEET 2 OF 2
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

DWN:	DES.:	PROJECT NO.: 000187
CHKD:	APPD:	FIGURE NO.: 2-7B
DATE: OCT 97	REV.:	

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APPENDIX II

Record of Decision - Group I Sites

RECORD OF DECISION

FOR

NO FURTHER ACTION

AT

GROUP 1 SITES

LONGHORN
ARMY AMMUNITION PLANT

KARNACK, TEXAS

SEPTEMBER 1997

GROUP 1 SITES
LONGHORN ARMY AMMUNITION PLANT
RECORD OF DECISION

NO FURTHER ACTION

SEPTEMBER 1997

A. SITE NAME AND LOCATION

Group 1 Sites, Longhorn Army Ammunition Plant
Karnack, Texas

B. STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected No Further Action alternative for Group 1 Sites, Longhorn Army Ammunition Plant (LHAAP), in Karnack, Texas. This selection is made in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the administrative record for this site.

The State of Texas concurs with the selected remedy. A copy of the concurrence letter is attached (Appendix A).

C. ASSESSMENT OF THE SITES

There are no actual or threatened releases of hazardous substances as a result of suspected previous activities from these sites that may present an imminent and substantial endangerment to public health, welfare, or the environment.

D. DESCRIPTION OF THE SELECTED REMEDY

The Record of Decision for the sites addresses No Further Action.

E. STATUTORY DETERMINATION

Based on previous studies and surveys, no remedial action is warranted to protect human health and the environment at Site 1, 11, 27 and XX. This decision complies with Federal and State applicable or relevant and appropriate requirements and is cost effective.
There will be no further action at Group 1 Sites.

_____ _____

Jane N. Saginaw
Regional Administrator
EPA Region 6

Date

Signature sheet for the foregoing Group 1 Sites No Further Action Record of Decision between the Department of the Army and the U.S. Environmental Protection Agency, with concurrence by the Texas Natural Resource Conservation Commission.

_____ _____

Mr. Raymond J. Fatz
Acting Deputy Assistant Secretary
of the Army (Environment, Safety
and Occupational Health)
OASA (I, L, & E)

Date

_____ _____

James McPherson
Commander's Representative
Longhorn/Louisiana Army Ammunition Plant

Date

TABLE OF CONTENTS

A. Longhorn Army Ammunition Plant Location and Description

Longhorn Army Ammunition Plant (LHAAP) is located in central east Texas in the northeast corner of Harrison County, approximately 14 miles northeast of Marshall, Texas, and approximately 40 miles west of Shreveport, Louisiana (Figure 1). The installation occupies 8,493 acres between State Highway 43 and the western shore of Caddo Lake and is accessed by State Highways 43 and 134. Site 11, suspected TNT Burial Site, and Site 27, South Test Area, are situated in the south central portion of LHAAP(Figure 2). Site 1, Inert Burning Grounds, is situated in the extreme northwestern portion of LHAAP. Site XX, Ground Signal Test Area, is located in the southeastern portion of LHAAP.

LHAAP is situated on gently rolling land with an average slope of 3 percent towards the northeast. Most of the terrain slopes 3 percent or less, but slopes as steep as 12 percent are common in the western and northwestern portions of the installation and along the Harrison Bayou floodplain. Elevations on LHAAP vary from 335 to 170 feet above mean sea level (msl).

LHAAP is located in a region commonly called the Pineywoods, a deep inland extension of the Gulf Coastal Plain that extends into Texas, Louisiana, Arkansas, and Oklahoma. The area is characterized by mixed pine hardwood forests that cover gently rolling to hilly terrain. Mild temperatures and ample rainfall in east Texas provide excellent conditions to support an abundant and diverse plant community. This, in turn, provides a number of niches for a rich faunal community. LHAAP is forested with loblolly and shortleaf pines, a variety of oaks, sweet gum, black tupelo, ash, bald cypress, and a few scattered willows. Pine trees are predominate throughout the installation.

Caddo Lake, Caddo Lake State Park, and the small unincorporated town of Karnack border LHAAP. Other surrounding land is forested, with an oil and natural gas field located to the east of LHAAP along the Louisiana border. Caddo Lake State Park is located ~~approximately 2.8 miles~~ west-northwest of the installation. Other recreational facilities and nearby lake shore communities are within 5 miles. The town of Uncertain is ~~1.9 miles~~ located north of LHAAP.

All surface water from LHAAP drains into Caddo Lake via four drainage systems that cross portions of the installation. These systems are known as Saunders Branch, Harrison Bayou, Central Creek, and Goose Prairie Creek.

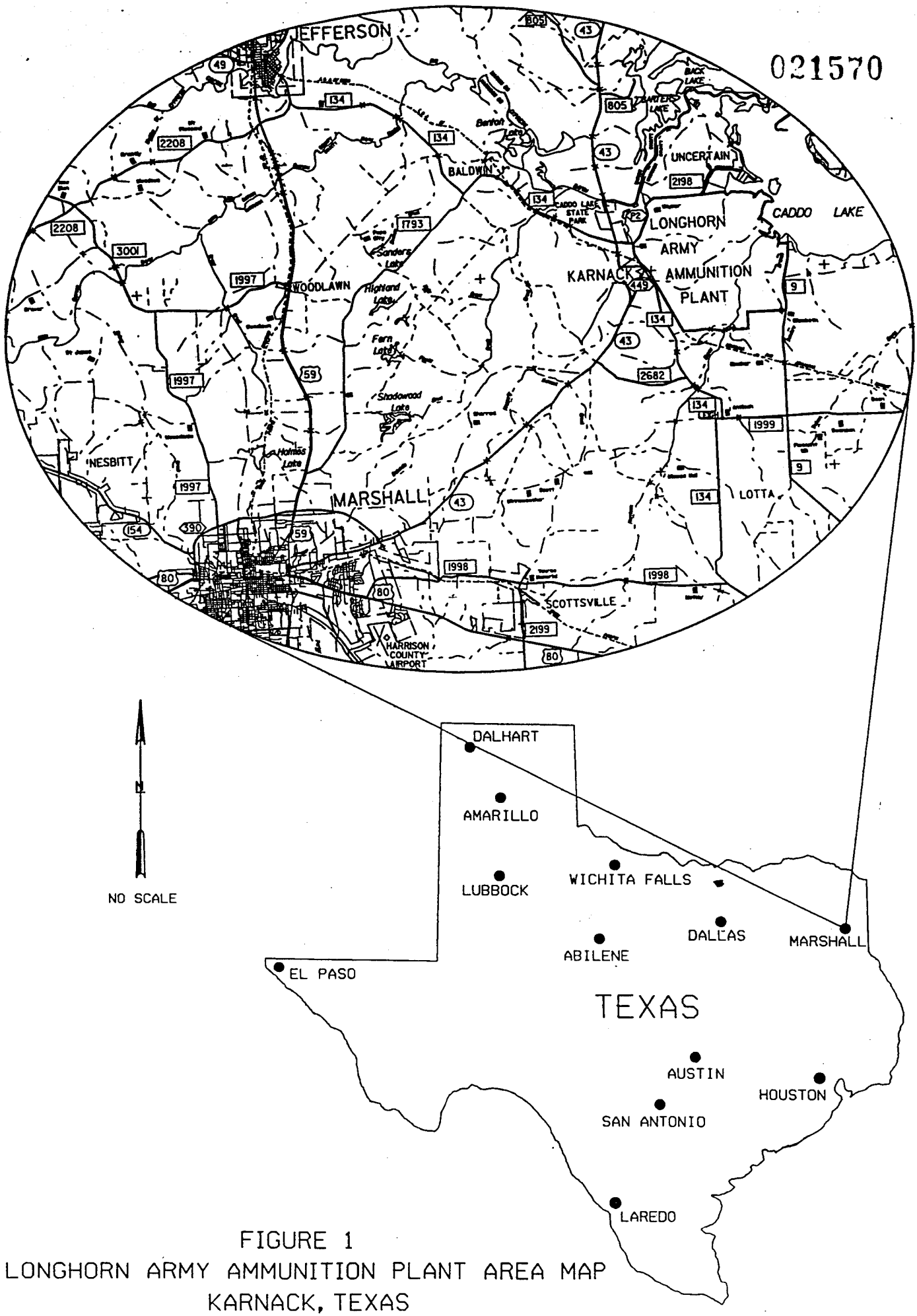
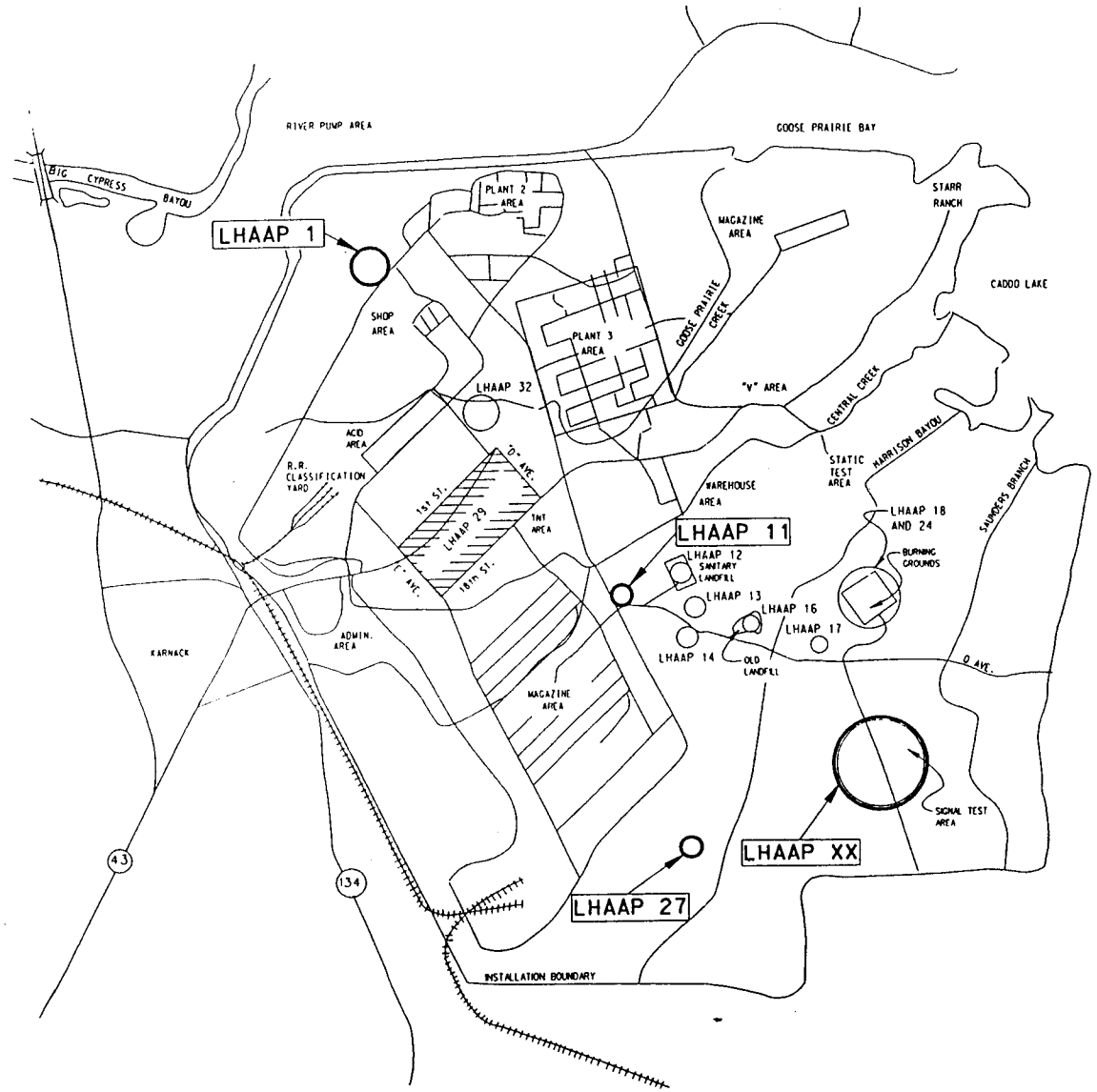


FIGURE 1
LONGHORN ARMY AMMUNITION PLANT AREA MAP
KARNACK, TEXAS



SITES IN THIS INVESTIGATION

LHAAP 11
LHAAP 1
LHAAP XX
LHAAP 27

3000 0 3000 6000

SCALE IN FEET

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

$ THINK VALUE ENGINEERING - IT SAVES MONEY $

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
TULSA, OKLAHOMA

DESIGNED BY:
DRAWN BY:
CHECKED BY:
SUBMITTED BY:
CHIEF, GEOTECH BR.

LONGHORN ARMY AMMUNITION PLA
HARRISON COUNTY, TEXAS

LHAAP
SITE LOCATION
MAP

FIGURE 2

1h310.dg

LHAAP is situated on an outcrop of the Wilcox Group, which crops out over a large part of the eastern half of Harrison County. The Wilcox consists mostly of fine- to medium-grained sands interbedded with a considerable amount of clay and seams of lignite. The Wilcox Group is underlain conformably by the predominantly calcareous clay of the Midway Group. Regional dip of the Wilcox is to the northwest into the East Texas Syncline, while the ground surface generally dips to the southeast.

The Wilcox Group has been identified by the Texas Water Development Board as the basal unit of the regional Cypress aquifer, also known as the Carrizo-Wilcox aquifer. The Cypress aquifer outcrops over most of Harrison County and is comprised of, in ascending order, the Wilcox Group, the Carrizo Sand, the Reklaw Formation, and the Queen City Sand. All units are believed to be hydraulically connected. All of these units dip to the northwest into the East Texas Syncline. At LHAAP, only the Wilcox Group of the Cypress aquifer is present.

The availability of ground water in Harrison County is largely dependent on the hydrologic characteristics of the units comprising the Cypress aquifer. The Wilcox Group outcropping in the area of LHAAP yields small (less than 50 gallons per minute (gpm) to moderate (50-500 gpm) quantities of fresh water to wells throughout the county. As the basal unit of the Cypress aquifer, the Wilcox is also considered as the base of fresh water in the area. The Midway Group, which does not yield usable quantities of water, tends to serve as a relatively impermeable basement to the overlying water-bearing Wilcox.

B. LHAAP History and Enforcement Activities

Longhorn Army Ammunition Plant was, until 1996, a government-owned, contractor-operated (Longhorn Division of Thiokol Corporation) industrial facility under the jurisdiction of the U.S. Army. Its primary mission was to load, assemble, and pack pyrotechnic and illuminating/signal ammunition and solid propellant rocket motors. The installation is currently inactive, but overseen by the U.S. Army Industrial Operations Command (IOC).

Longhorn Army Ammunition Plant was established in October 1942 with the primary mission of producing trinitrotoluene (TNT) flake in the Plant 1 area. Production of TNT continued through World War II until August 1945 when the plant went on standby status until February 1952. Pyrotechnic ammunition, such as photoflash bombs, simulators, hand signals, and tracers for 40mm ammunition were manufactured at LHAAP from 1952 until 1956. The Plant 3 area rocket motor facility began operation in November of 1955. Production of rocket motors continued to be the primary mission of LHAAP until 1965, when the production of pyrotechnic and illuminating ammunition was re-established.

Recent operations consisted of compounding pyrotechnic and propellant mixtures; loading, assembling and packing activities; accommodating receipt and shipment of containerized

cargo; and maintenance and/or layaway of standby facilities and equipment as they apply to mobilization planning. The installation has also been responsible for the static firing and elimination of Pershing I and II rocket motors in compliance with the Intermediate-Range Nuclear Force Treaty in effect between the United States and the former Soviet Union.

As part of the U.S. Army Installation Restoration Program, the installation began an environmental investigation of current and previously used waste disposal sites in 1976. The LHAAP installation was added to the National Priorities List (NPL) on August 30, 1990 (54 Federal Register 35509). After being listed on the NPL, The U.S. Army, U.S. Environmental Protection Agency (EPA), and Texas Natural Resource Conservation Commission (TNRCC) - formerly known as the Texas Water Commission (TWC) - entered into a Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 Agreement for remedial activities at the facility. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991.

C. Highlights of Community Participation

The U.S. Army, EPA, and TNRCC have provided public outreach to the community surrounding LHAAP concerning the Group 1 sites on the facility. The outreach program has included fact sheets, media interviews, site visits, invitations to attend quarterly technical and regulatory review meetings, and public meetings.

Copies of the Administrative Record documents have been made available to the public at several information repository locations, including Karnack High School, EPA Region VI Library, TNRCC, and Marshall Public Library. The Proposed Plan for No Further Action was released to the public on July 21, 1997. Copies of the Proposed Plan were placed at the Karnack Post Office, and the Marshall Library. In addition, copies of the Proposed Plan, Fact Sheet and notice of the upcoming Public Meeting were sent to members of the community that have shown interest in activities at LHAAP and attended other public meetings. Notice of the public meeting was also published in the Marshall News Messenger, Longview News and Journal, and The Times in Shreveport. A public comment period was designated from July 21, 1997, to August 20, 1997, and a public meeting was held on August 7, 1997, at the Karnack High School. The purpose of the meeting was to discuss the proposed plan and to solicit public comments on the No Further Action alternative for the Group 1 Sites.

Representatives of the U.S. Army and TNRCC answered several questions at the public meeting. Only one written comment was received during the public comment period. Comments expressed at the public meeting and during the comment period are addressed in the Responsiveness Summary which is attached to the Record of Decision (ROD) as Appendix B.

D. Site 1, Inert Burning Grounds

1. ***Location and Description.*** Site 1 is approximately 1 2 acres in size and is lightly timbered. Current vegetation patterns serve as only a rough indication of past disposal areas due to considerable regrowth of trees during the 25 or more years that have elapsed since the site was used for waste disposal. The area of investigation comprises about 10 acres. Surface drainage flows in a southeasterly direction to Goose Prairie Creek. Total surface drainage distance from the site to Caddo Lake is approximately four miles via Goose Prairie Creek.

2. ***Site History and Enforcement Activities.*** The Inert Burning Grounds ~~were~~ was originally used during World War II by Monsanto Chemical Company for burning trash, ashes, scrap lumber, and waste from burned 2,4,6-TNT. Bulk 2,4,6-TNT may also have been burned at the site. The site was not used between August 1945 and February 1952 when LHAAP was in a standby status. Universal Match Corporation later used the site to burn wastes, including photo flash powder, for a few years during the 1950s until most burning operations were transferred to the Burning Ground No. 2/Flashing Area (Site 17) located on the installation. Intermittent, small-scale burning operations may have continued at the site into the early 1960s. It is suspected that burning operations were conducted in one or more burn pits or pans that were subsequently filled or covered. Burn residues were most likely not removed. It is also suspected that some wastes may have been dumped without burning and were subsequently covered by or mixed with fill material.

3. ***Summary of Site Characteristics.*** Soils encountered at Site 1 consist of interbedded silty and clayey sands, and sandy silts and clays of the Wilcox Group. Groundwater is encountered at approximately 10 feet below ground surface.

   The soil investigations at Site 1 included 115 soil samples from 17 borings. The following compounds were detected in the soil (the concentrations found are shown in parentheses): toluene (6.7 ug/kg), xylene (30.6 ug/kg), styrene (6 ug/kg), acetone (10-32 ug/kg), methylene chloride (7-20 ug/kg), di-n-butyl phthalate (330-3580 ug/kg), and bis(2-ethylhexyl) phthalate (330-1200 ug/kg). The phthalates are a common plastic additive and is most likely a field contaminant resulting from the interaction of decontamination fluids with plastic gloves on the workers (leaching

out the phthalate). Methylene chloride ~~is also a~~ common laboratory contaminant. The following metals were detected in the soils (the concentrations found are shown in parentheses): arsenic (0.057-6 mg/kg), barium (17.3-18.8 mg/kg), chromium (1.7-32.1 mg/kg), lead (4-75 mg/kg), nickel (1.5-44.4 mg/kg).

Twelve groundwater grab samples and seven groundwater monitoring well samples (from newly installed wells) were obtained from Site 1 during the RI. The purpose of collecting groundwater grab samples was to obtain preliminary field screening data of potential groundwater contaminants. No explosive or metal contaminants were found in the grab samples. The only explosive to appear in the monitoring well samples was 2,6-dinitrotoluene (2,6 DNT) which was detected at 14 ug/l. Acetone (12 and 19 ug/l) and 2-butanone (11 and 18 ug/l) were also detected. The following metals and anions were detected in the groundwater monitoring wells (the maximum concentrations found are in parentheses): barium (0.19 mg/l), chromium (0.056 mg/l), lead (0.041 mg/l), chlorides (13.3 mg/l), nitrate/nitrite (3.5 mg/l), sulfate (3490 mg/l). All metals detected are approximately at or below background levels.

During the RI, 10 surface water and 13 sediment samples were collected. The only organic compound detected in the surface water at Site 1 was toluene (6.3 ug/l). The following metals and anions were detected in the surface water (the concentrations found are in parentheses): barium (0.052-0.47 mg/l), lead (0.005-0.045 mg/l), chlorides (3.8-17 mg/l), sulfates (2-69.5 mg/l). The following compounds were detected in the sediments (the concentrations found are in parentheses): acetone (57-94 ug/kg), 2-butanone (13 ug/kg), benzoic acid (2300-2700 ug/kg) and methylene chloride (13 ug/kg). No explosives were found in any sample. The following metals and anions were detected in the sediments (the concentrations found are in parentheses): arsenic (0.76-5.1 mg/kg), barium (13.4-88.4 mg/kg), chromium (4.4-21 mg/kg), lead (3.6-13 mg/kg), nickel (1.2-6.3 mg/kg), chlorides (44-1060 mg/kg), sulfates (30 - 74.6 mg/kg).

4. *Summary of Site Risks.*

Chemicals of Potential Concern (COPC)

COPCs in site soils and ditch sediments included several organic compounds, a variety of polynuclear aromatic hydrocarbons, and metals. COPCs in groundwater included organics and metals. With the exception of a few chemicals eliminated from evaluation due to detection in blank samples or not detected in verification sampling, all detected chemicals were carried through risk quantification procedures.

Risk Analysis
Based on an analysis of site data and criteria for performing a risk analysis, it was concluded that the conditions at the site do not pose an unacceptable risk to human health.

Ecological Assessment
Based on ecological methodology used in the risk assessment, four metals (antimony, chromium, lead, and nickel) were identified as main contributors to screening-level risk estimates. Further evaluation of data for Site 1 revealed that these metals exist at concentrations approximating background levels for the facility. As such, it is the conclusion of this screening-level assessment that little or no ecological concerns are associated with Site 1 and that further ecological evaluations and remediation are unwarranted.

E. Site 11, Suspected TNT Burial Site

1. ***Location and Description.*** The 10-acre site has been inactive since its suspected use in the 1940s (USACE, 1992). The site consists of a relatively flat area of cut grass immediately north of the intersection, bounded by Avenue P on the west, Avenue Q on the south, and the tree line on the north and east. A large forested area extending to Central Creek is present north of the site. Surface drainage from the area flows to ditches along the eastern and western edges of the site, eventually draining to Central Creek. Total surface water flow distance from the site to Caddo Lake via Central Creek is approximately three miles. A small depression, about 100 feet wide, exists on the north side of the site.

2. ***Site History and Enforcement Activities.*** Based on information gathered by USATHAMA, bulk trinitrotoluene (TNT) may have been disposed of near the intersection of avenues P and Q during the 1940s. Other than the designation of this location by USATHAMA in the early 1980s as the Suspected TNT Burial Site, there is no confirmed documentation that TNT burial occurred at this site.

3. ***Summary of Site Characteristics*** Soils encountered at the site consist primarily of interbedded silty and clayey sands, and sandy silts and clays of the Wilcox

Group. Groundwater is encountered at depths of 4 to 12 feet below ground surface.

The soil investigations at Site 11 included 33 soil samples from nine borings. The following compounds were detected in the soil (the concentrations found are shown in parentheses): methylene chloride (14-32 ug/kg), acetone (23-80 ug/kg), and di-n-butyl phthalate (440-755 ug/kg). Acetone was detected in field blanks indicating field contamination. Di-n-butyl phthalate was found in the laboratory method blank and is a common laboratory contaminant along with methylene chloride. The following metals were detected in the soil (the range of concentrations found are in parentheses): arsenic (0.3 -9.7 mg/kg), barium (1.5 - 167 mg/kg), chromium (1.1 - 18.5 mg/kg), lead (1.6 - 16 mg/kg), nickel (1.5 - 15.1 mg/kg) . All metals concentrations are approximately at or below background levels.

Six groundwater grab samples and three groundwater monitoring well samples from newly installed wells were taken at the site during the RI. The purpose of collecting groundwater grab samples was to obtain preliminary field screening data of potential groundwater contaminants. No organic, explosive, or metal contaminants were found in the grab samples except for .0.62 ug/l of 1,3,5 trinitrobenzene. Although the explosive constituent was detected in the grab samples, the explosive contamination was not confirmed in the monitoring well samples. The following metals were detected in the groundwater monitoring wells (the maximum concentrations found are in parentheses): barium (0.139 mg/l), chromium (.049 mg/l), lead (.016 mg/l), and nickel (.051 mg/l). All detected metals concentrations are approximately at or below background levels.

Two surface water and two sediment samples were collected during the RI. The following metals were detected in the surface water (the maximum concentrations found are in parentheses): barium (0.18 mg/l), and lead (0.011 mg/l). The following metals and anions were detected in the sediments: arsenic (3.9 mg/kg), barium (41.7 mg/kg), lead (13 mg/kg), nickel (3.1 mg/kg), chloride (44 mg/kg) and sulfate (30 mg/kg). No organic or explosive type contaminants were detected.

4. *Summary of Site Risks.*

Chemicals of Potential Concern (COPC)

An initial step in selection of COPCs is comparison of site data with background concentrations. Most metals detected in all media at the site were below background levels. However, due to detection of low levels of methylene chloride and single detection of two metals exceeding background ranges in site soils, risk evaluations were performed for the site. All detected chemicals were retained as

COPC for evaluation of total cumulative risk. The chemicals considered in this evaluation include: methylene chloride, arsenic, barium, chromium, lead, mercury, nickel, selenium, and thallium.

Risk Analysis
Based on an analysis of site data and criteria for performing a risk analysis, it was concluded that the conditions at the site do not pose an unacceptable risk to human health.

Ecological Risk Assessment.
Based on ecological methodology used in the risk assessment, three metals (chromium, lead, and nickel) were identified as main contributors to screening-level risk estimates. Further evaluation of data for Site 11 revealed that these metals exist at concentrations approximating background levels for the facility. As such, it is the conclusion of this screening-level assessment that no ecological concerns are associated with Site 11 consituents and that further ecological evaluations and remediation are unwarranted.

F. Site 27, South Test Area

1. ***Location and Description.*** The South Test Area is in the south central portion of LHAAP. The earthen test pad is approximately 2,000 feet southeast of Avenue P and the magazine area. The entrance to the test area is on Avenue P approximately 1,700 feet northeast of its intersection with Avenue E. A deteriorated asphalt and gravel road runs from the entrance to the test pad. The concrete bunkers and observation building previously described are located alongside the road approximately halfway between the entrance and the test pad. A circular, 50-foot wide fire lane with a 2,000-foot diameter is centered at the test pad. The fire lane was constructed in 1954 and was apparently maintained until the early 1960s. It is now partially overgrown with brush and small trees. Site 27 lies within the Harrison Bayou Flood Plain. Total surface water flow distance from the site to Caddo Lake via Harrison Bayou is approximately three miles.

   The site boundary is based on a study of historical aerial photographs, current vegetation patterns, and field observations. The site covers an area of approximately 6.6 acres

2. ***Site History and Enforcement Activities.*** The South Test Area was constructed in 1954 and was used by Universal Match Corporation for testing photoflash bombs that were produced at LHAAP until about 1956. The bombs were tested

by exploding them in the air over an elevated, semi-elliptical earthen test pad within the floodplain of Harrison Bayou. Testing was observed and controlled from a building on a hilltop 1,000 feet west-northwest of the test pad. Bombs awaiting testing were stored in three earth-covered concrete bunkers a few hundred feet west of the observation building.

During the late 1950s, illuminating (signal) devices were disabled within pits excavated in the vicinity of the test pad. During the early 1960s, leaking production items (possibly 3- to 4-pound canisters of white phosphorus) were disabled in the vicinity of the test pad. In the early 1980s, approximately 52,000 ½- and 1-pound photoflash cartridges were destroyed in a 500-square foot area situated about 300 feet east of the observation building and immediately north of the road extending from the observation building to the test pad. The South Test Area has apparently not been used since the early 1980s.

3. ***Summary of Site Characteristics.*** Soils encountered at Site 27 consist of interbedded silty and clayey sands, and sandy silts and clays of the Wilcox Group. Groundwater is encountered at 7 to 9 feet below ground surface.

The RI soil investigations at Site 27 included 47 soil samples from 14 borings. The following metals were detected in the soil (the range of concentrations found are in parentheses): arsenic (0.4-5.2 mg/kg), barium (9.8-639 mg/kg), chromium (1.6-22.2 mg/kg), lead (2-26.3 mg/kg), nickel (1-18.6 mg/kg). All metals detected are approximately at or below background levels. No explosives or volatile organic compounds were detected in any of the soil samples.

Ten groundwater grab samples and four groundwater monitoring well samples (from newly installed wells) were obtained from Site 27 during the RI. The purpose of collecting groundwater grab samples was to obtain preliminary field screening data of potential groundwater contaminants. No explosives were found in the groundwater grab samples. The following metals and anions were detected in the groundwater monitoring wells (the maximum concentrations found are in parentheses): barium (0.097 mg/l), chromium (.053 mg/l), nickel (.37 mg/l), chloride (3700 mg/l), and nitrate (1.17 mg/l). No explosive, semivolatile or volatile organics were detected in any of the monitoring well samples. All metals detected are approximately at or below background levels.

Four sediment and four surface water samples were collected during the RI. The only organic compound found in the sediments was di-n-butylphthalate found in two of the samples. The following metals and anions were detected in

the sediments (the concentrations found are in parentheses): arsenic (0.7-1.1 mg/kg), barium (39-254 mg/kg), chromium (1.9-5.2 mg/kg), lead (4-9 mg/kg), nickel (2.8-6 mg/kg), nitrate/nitrite (2.17-2.36 mg/kg), sulfate (30-50 mg/kg). No volatiles, semivolatiles, or explosives were found in the surface water. The following metals and anions were detected in the surface water (the concentrations found are in parentheses): barium (0.11-0.29 mg/l), lead (0.015 mg/l), chlorides (15.1-48.7 mg/l), nitrate/nitrite (0.2-0.33 mg/l), sulfate (30-50 mg/l).

4. ***Summary of Site Risks.***

Chemicals of Potential Concern

COPC in site soils and ditch sediments included several metals at levels approximating background concentrations. COPCs in groundwater included several metals within background ranges and below drinking water MCLs. Most notable among groundwater COPC was nickel which exceeded its MCL and background levels in all detected samples. No detected chemicals at the site were eliminated from evaluation and all were carried through risk quantification procedures.

Risk Analysis

Based on an analysis of site data and criteria for performing a risk analysis, it was concluded that the conditions at the site do not pose an unacceptable risk to human health.

Ecological Risk Assessment

Based on ecological methodology used in the risk assessment, four metals (barium, chromium, lead, and nickel) were identified as main contributors to screening-level risk estimates in surface and subsurface soils. Further evaluation of data for Site 27 revealed that these metals exist at concentrations approximating background levels for the facility. As such, it is the conclusion of this screening-level assessment that little or no ecological concerns are associated with Site 27 and that further ecological evaluations and remediation are unwarranted.

G. Site XX, Ground Signal Test Area

1. ***Location and Description.*** The Ground Signal Test Area is in the southeastern portion of LHAAP. Access to the site is provided by an asphalt paved road that intersects Long Point Road just east of its intersection with Avenue Q. The access road proceeds in a general south-southeasterly direction for about 0.4 mile to the center of the site and continues for another 0.7 mile to the southern

LHAAP boundary. Approximately 70 percent of the site is located within the watershed of Saunders Branch. The remaining 30 percent lies within the watershed of Harrison Bayou. Both of these streams flow into Caddo Lake. The total surface water flow distance from the site to Caddo Lake via Saunders Branch and its tributaries is about 2.0 miles and via Harrison Bayou and its tributaries is about 2.3 miles.

Surface water runoff from the Saunders Branch watershed portion of the site is collected by drainage ditches along the circular dirt road forming the outer margin of the site. These ditches converge to form a northeast-trending drainage way that carries the runoff to Saunders Branch. Surface water runoff from the remainder of the site is collected by drainage ditches alongside the circular road or by the drainage ways extending into the southwestern part of the site. The drainage ditches and drainage ways converge to form a drainage way that conveys the runoff onto the floodplain of Harrison Bayou. The site encompasses an area of approximately 80 acres.

2. ***Site History and Enforcement Activities.*** The Ground Signal Test Area has been used intermittently since April 1963 for aerial and on-ground testing and destruction of a variety of devices, including red phosphorus smoke wedges, infrared flares, illuminating 60 and 81 mm mortar shells, illuminating 40 to 155 mm cartridges, button bombs, and various types of explosive simulators. Prior to the recent rocket motor burn-outs at the site for the INF Treaty, the site was used intermittently over a 20-year period for testing and burn-out of rocket motors from Nike-Hercules, Pershing, and Sargent missiles. About 1970, one of the Sargent rocket motors was inadvertently destroyed when it exploded in an excavated pit near the center of the site just west of the road crossing the site. Debris from the explosion was reportedly placed in the resulting crater and the crater was backfilled. Since late in 1988, the site has also been used for the burn-out of rocket motors in Pershing missiles destroyed in accordance with the INF Treaty between the United States and the former Soviet Union.

3. ***Summary of Site Characteristics.*** Soils encountered at Site XX consist of interbedded silty and clayey sands, and sandy silts and clays of the Wilcox Group. Groundwater is encountered at 10 to 15 feet below ground surface.

The RI soil investigations at Site XX included 18 soil samples from 8 borings. The following compounds were detected in the soil (the concentrations found are shown in parentheses): acetone (10,300 ug/kg), trichloroethylene (42 ug/kg), and methylene chloride (18 ug/kg). Methylene chloride and acetone are common laboratory contaminants. The following metals were detected in the soil

(the range of concentrations found are in parentheses): arsenic (1 -328 mg/kg), barium (20.2 - 227.8 mg/kg), chromium (4.9 - 28.9 mg/kg), lead (4-27.6 mg/kg). All metals are approximately at or below background levels.

Seven groundwater grab samples and two groundwater monitoring well samples were obtained from Site XX during the RI. The purpose of collecting groundwater grab samples was to obtain preliminary field screening data of potential groundwater contaminants. No organics or explosives were detected in any groundwater samples (grab samples or monitoring wells). The following metals and anions were detected in the groundwater monitoring wells (the maximum concentrations found are in parentheses): barium (.11 mg/l), nickel (0.157 mg/l), sulfates (1622 mg/l), chlorides (1000 mg/l). All metals and anions detected are approximately at or below background levels.

Seven sediment samples and seven surface water samples were collected during the RI. No volatiles, semivolatiles, or explosives were detected in any of the samples, with the exception of phthalates in four of the sediment samples. Phthalates are a common laboratory contaminant. The following metals and anions were detected in the surface water (the concentrations found are in parentheses): barium (0.06-0.13 mg/l), chlorides (2.6 - 31.0 mg/l), nitrate/nitrites (0.09 - 0.3 mg/l), sulfates (2.0- 32 mg/l). The following metals and anions were detected in the sediments (the concentrations found are in parentheses): arsenic (0.9-3.5 mg/kg), barium (23.3 - 126 mg/kg), chromium (3.5-9.8 mg/kg), lead (4-9 mg/kg), nickel (3.1-14.7 mg/kg). All metals and anions detected are approximately at or below background levels.

4. *Summary of Site Risks.*

Chemicals of Potential Concern

COPCs in site soils and ditch sediments included several metals at levels approximating background concentrations. COPCs in groundwater included several metals within background ranges and below drinking water maximum contaminant levels (MCLs). Due to failure to detect organic compounds through phase 2 verification soil-gas sampling, acetone and methylene chloride were eliminated as COPCs.

Risk Analysis

Based on an analysis of site data and criteria for performing a risk analysis, it was concluded that the conditions at the site do not pose an unacceptable risk to human health.

Ecological Risk Assessment

Based on ecological methodology used in the risk assessment, two metals (chromium and nickel) were identified as main contributors to screening-level risk estimates. Further evaluation of data for Site XX revealed that these metals exist at concentrations approximating background levels for the facility. As such, it is the conclusion of this screening-level assessment that little or no ecological concerns are associated with Site 1 and that further ecological evaluations and remediation are unwarranted.

H. Summary of The Comparative Analysis of Alternatives

CERCLA regulations require that remedial alternatives be evaluated against nine criteria to determine which alternative(s) provide the best balance between the criteria and, therefore, should be implemented at the site. The following presents an explanation of the criteria:

1. Overall Protection of Public Health and the Environment

This criteria addresses the way in which a potential remedy would reduce, eliminate, or control the risks posed by the site to human health and the environment. The methods used to achieve an adequate level of protection may be through engineering controls, treatment, techniques, or other controls such as restrictions on the future use of the site.

2. Compliance with ARARs

Compliance with applicable or relevant and appropriate requirements (ARARs) assures that a selected remedy will meet all related Federal, State, and local requirements. The requirements may specify maximum concentrations of chemicals that can remain at a site; design or performance requirements for treatment technologies; and restrictions that may limit potential remedial activities at a site because of its location.

3. Long-term Effectiveness or Permanence

This criteria addresses the ability of a potential option to reliably protect human health and the environment over time, after the cleanup goals have been accomplished.

4. Reduction of Toxicity, Mobility, or Volume of Contaminants

This criteria assesses how effectively a proposed remedy will address the contamination problem. Factors considered include: the nature of the treatment process; the amount of hazardous materials that will be destroyed by the treatment process; how effectively the process reduces the toxicity, mobility, and volume of waste; and the type and quantity of contamination that will remain after treatment.

5. Short-term Effectiveness

This criteria assesses short-term risks to the workers, the community, and the time factor. Cleanup technologies often require several years for implementation. A potential remedy is evaluated for the length of time required for implementation and the potential impact on human health and the environment during the remedial action.

6. Implementability

Implementability addresses the ease with which a potential remedy can be put in place. Factors such as technical feasibility and availability of materials and services are considered.

7. Cost
Costs (including estimated capital costs required for design and construction and projected long-term maintenance costs) are considered and compared to the benefit that will result from implementing the remedy.

8. State Acceptance
The State has an opportunity to review the documents in the Administrative Record and the Proposed Plan and offer comments. The State may agree with, oppose, or have no comment on the preferred alternatives.

9. Community Acceptance
During the public comment period, interested persons or organizations may comment on the alternatives. These comments are considered in making the final remedy selection. The comments are addressed in a document called Responsiveness Summary which is part of the Record of Decision.

The following is a narrative analysis for the alternatives considered:

Overall Protection of Human Health and the Environment: Based on an analysis of site data, and criteria for performing a risk analysis, it was concluded that the sites do not pose an unacceptable risk to human health or the environment. There is no risk identified as a result of past activities.

Compliance with Applicable or Relevant and Appropriate Requirements (ARARs): The RI was conducted in accordance with the CERCLA as amended by the SARA and the National Oil and Hazardous Substances Pollution Contingency Plan. Since no further action is being proposed, further compliance with ARARs is not necessary.

Long-term Effectiveness or Permanence: Although chemicals of concern are identified, future use scenarios are evaluated in the risk assessment and no future remedial activity is found to be necessary. Therefore, this criteria is not applicable.

Reduction of Toxicity, Mobility or Volume through Treatment: This criteria is not applicable since no remedial action is warranted.

Short-Term Effectiveness: No short term risks were identified during the RI. Since no further action is recommended, short term risks of exposure from future response actions are not present.

Implementability: Since no further action is recommended, implementability is not an issue.

Cost: Since no further action is recommended, cost is not an issue.

Regulatory Acceptance: TNRCC and EPA have been consulted throughout the investigations at the Group 1 Sites. Both agencies have reviewed the Proposed Plan for No Further Action. The preferred alternative of No Further Action was fully evaluated during the public comment period, and support for the alternative has been indicated.

Community Acceptance: Community comments will be an important consideration in the final decision for the site. A public meeting was held August 7, 1997 and verbal public comments were

received. Only one written comments was received during the public comment period. These comments have been addressed in the Responsiveness Summary included as Appendix B.

I. The Selected Remedy

Based on the information available and studies performed, the U.S. Army believes that no further remedial action is warranted at the Group 1 Sites.

J. Statutory Determination

The primary responsibility at CERCLA sites is to select actions that are protective of human health and the environment. Section 121 of CERCLA requires that the selected action for the site comply with applicable or relevant and appropriate environmental standards established under Federal and State environmental laws, unless a waiver is granted. The selected remedy must also be cost effective. The following sections discuss how the selected alternative for the Group1 Sites meet the statutory requirements.

Protection of Human Health and the Environment:

Based on an analysis of site data and criteria for performing a risk analysis, it was concluded that the site does not pose an unacceptable risk to human health or the environment.

Compliance with Applicable or Relevant and Appropriate Requirements:

The RI was conducted in accordance with the CERCLA as amended by the SARA and the National Oil and Hazardous Substances Pollution Contingency Plan. Since no further action is being proposed, further compliance with ARARs is not necessary.

Cost Effectiveness:

Since no further action is recommended, cost is not an issue.

Use of Permanent Solutions and Alternative Treatment Technologies or Resource Recovery Technologies to the Maximum Extent Practicable:

Since no further action is recommended, this is not an issue.

Preference for Treatment as a Principal Element:

Since no further action is recommended, this is not an issue.

APPENDIX A

The State of Texas, Letter of Concurrence

APPENDIX B

RESPONSIVENESS SUMMARY

NO FURTHER ACTION
GROUP 1 SITES
LONGHORN ARMY AMMUNITION PLANT

NO FURTHER ACTION
GROUP 1 SITES
LONGHORN ARMY AMMUNITION PLANT

This Community Relations Responsiveness Summary provides written responses to comments submitted during the public comment period (21 July to 20 August 1997) regarding the Proposed Plan of Action for Group 1 Sites.

Section I: Background of Community Involvement and Concerns. This section provides a brief history of community interest and concerns raised during the remedial planning activities at the sites.

Section II: Summary of Major Comments Received: The comments (both oral and written) are summarized. The U.S. Army responses are provided.

I. Background of Community Involvement and Concerns

The community surrounding the Longhorn Army Ammunition Plant (LHAAP) is aware of histories associated with the Group 1 Sites. This awareness is evident by the community participation in the public meeting held at Karnack High School on 7 August 1997, and by participation of local officials and community activists in the Technical Review Committee meetings held quarterly at LHAAP since 1992. The community has not expressed any opposition to the proposal for no further action at the sites. However, the community has raised come concerns through comments made during the public meeting and through written comments. The comments received from the community concentrated mainly on public groundwater usage and future land use.

II. Summary of Major Comments Received

The Proposed Plan of Action was released to the general public on 21 July 1997. The public comment period began 21 July and ended 20 August 1997. A public meeting was held on 7 August 1997 at Karnack High School. The purposed of the meeting was to discuss the proposed plant and to solicit public comments on no further action at the Group 1 Sites. Representatives of the U.S. Army made presentations about the history of the sites and answered public comments during the public meeting. Representatives of the Texas Natural Resource Conservation Commission (TNRCC) attended the meeting and assisted in the responses to public comments. Notice of the comment period and public meeting was given in the Marshall News Messenger, The Times in Shreveport, and the Longview News and Journal. Invitation letters and copies of the proposed plan were mailed to previous attendees of public meetings and to people who have shown interest in the Longhorn program.

The following comments and questions were received during the comment period and the public meeting. A full account of the public meeting can be found in the public meeting transcripts that are documented in the LHAAP Administrative Record.

1. Written comment received from Tony N. Williams, City Manager, City of Marshall:
   I am concerned that the proposed plan will make the reuse of the 8,400 acres that was the Longhorn Army Ammunition Plant less likely. Does this proposed plan restrict or delay the Army or others from using the property in any reasonable manner? Would this plan prevent the Army from selling or leasing this acreage and its buildings to others for business or industrial usage in the near future?

   I, and many others in the area near Longhorn, want to see this facility creating jobs and other economic benefits. The local economy has been hurt by the loss of jobs from the ammunition plant shut down.

   Without a clean environmental survey report, who will buy, lease, or operate a business on these premises?

   East Texas needs the property that was the Longhorn Army Ammunition Plant creating jobs to support families.

   Response:

   The entire 8400 acres comprising Longhorn Army Ammunition Plant are not contaminated. However portions of the installation have: 1) been found to be contaminated; or, 2) are under investigation to determine the presence and extent of contamination, or confirm the absence of contamination. The Army is committed to the clean up of all sites as identified using the RCRA and CERCLA processes and in accordance with EPA and TNRCC rules and regulations.

   The Proposed Plan is not a document for citing such restrictions on land use. Any site on the installation that is closed under the CERCLA process which contains known levels of constituents in the groundwater or soil, but the constituents' concentrations are at or near background levels or at levels below risk based levels as established by the EPA or TNRCC is required by Texas law to be deed recorded with such information attached. Much of the Installation will be open for any type of redevelopment once disposed. Any areas meeting this criteria will be deed recorded appropriately, and if restricted, the goal is to restrict to industrial development and use.

2. Comment from public meeting, offered by Ms. Mary Humphries: Ms. Humphries inquired if PCB's were found on the site.

Response:

It was not PCBs, polychlorinated biphenyls, but TCE, trichloroethylene.

3. Comment at the Public Meeting from Mr. Kelvin Boykins. Mr. Boykins general concerns were over the groundwater migrating off-base containing possible constituents that might be damaging to the drinking water supply out of Leigh. Mr. Boykins questioned how the Army was able to adequately characterize all contamination in the groundwater and suggested that monitoring wells be installed outside the base boundary to assure that no contaminants from the installation were outside the boundary. He mentioned discoloration of his drinking water over the past few years.

   Response: Both Mr. James McPherson, Longhorn AAP, and Mr. Bud Jones, TNRCC, responded to Mr. Boykins questions. They explained to Mr. Boykins that the Army had thoroughly investigated suspect sites on Longhorn AAP and no contamination had been found to migrate off the installation through the groundwater. Mr. McPherson further explained that the groundwater flow was across the installation toward Caddo Lake and not in the general direction of the surrounding communities drinking water supply. Mr. Jones added that any suspected contamination, from any source, in the drinking water would be discovered through annual monitoring rounds required by the TNRCC. All of these results are available to the public through the local water supplier or through the Region 5, TNRCC office.

4. Comment from the public meeting provided by Mr. David Carlile. Mr. Carlile asked if he was correct that there has been no samples, whether groundwater, surface water or soil borings off site? He further stated that he had read in reports in the Marshall Library that perimeter wells showed low levels of Benzene and TCE above background. He further questioned Mr. Jones about the detection limit of sampling that TNRCC does on drinking water wells. He questioned whether they were low enough to detect anything that would be a level harmful to anyone consuming the water.

Response: Mr. McPherson answered the first part of Mr. Carlile's questions. There has been no sampling off the installation, because there has been no indication from studies on the installation to cause the Army to believe there to be contamination beyond the plant boundary. As for the perimeter wells, Mr. McPherson stated that he was not aware of the reports that Mr. Carlile was referring to that contained this information. Perimeter wells are sampled quarterly and have never shown any detection of these type of contaminants. Mr. Jones clarified for Mr. Carlile that the detection limits of TNRCC sampling on drinking water wells was low enough to show harmful effects to the receptors.

APPENDIX C

INDEX OF ADMINISTRATIVE RECORD

APPENDIX III

Building Survey 1996-1996

Building Survey

ENVIRONMENTAL BASELINE INSPECTION OF LHAAP BUILDINGS
1995-1996

*All sumps are assumed to have contained F-listed solvents. Scheduled for CERCLA investigation.

TANKS

35G - Tank Truck Unloading Facility

Friable Asbestos: Yes. Outside steamlines and material transfer lines are insulated with asbestos. The lines and asbestos are damaged and deteriorating.
Sump: No
Site survey: Site consist of an open shed and concrete pad for truck parking during unloading. There are three tanks(approximately 2000 gal each) and associated pumps and piping. The system is very deteriorated. Area smells from a pungent chemical smell. Likely polymer materials left in tanks. Ground scarring is visible in the vicinity around the tanks.
Air photos: No noticeable problems.

510B1 - 560,000 gallon diesel storage tank.

Friable Asbestos: No
Sump: No
Site survey: No visible oil releases. Underground pipelines and containment area may require remediation. This tank has never been cleaned out. The "heel" in the tank will require disposal and the tank will require decontamination by a contractor with a Texas UST liscense.

One large manometer will require disposal. The manometer may contain mercury.

Air Photos: Ground stains from a fuel oil release are obvious within secondary containment area(Sept. 19, 1981). Area should have a Site Assessment Survey done to verify non-contamination or contamination of soil.

RICHMOND MAGAZINES

811-2, 811-3, 811-4, 811-5, 811-6, 811-8, 811-9, 811-15, 811-16, 811-19, 811-20, 811-23, 811-25, 811-26, 811-27, 811-29, 811-30, 811-31, 811-32, 811-33, 811-34, 811-35, 811-36, 811-37, 811-38, 811-39, 811-40, 811-42, 811-44, 811-46, 811-47, 811-48, 811-49, 811-50, 811-51, 811-52, 811-53, 811-54, 811-55, 811-57, 811-58

Site Survey:
Richmond Magazines (HE), concrete floor, back & sides. Back & sides bermed with soil. Wood frame roof with composite shingles, transite siding, no stressed vegatation.

Friable Asbestos: Non Friable
Sumps: None
Comments: Used for storage of all types of PEP ordnance items. Good chance for explosive contamination.

The following Richmond Magazines are exceptions to the above:
811-33 - Eroded baracade.
811-27 - Grass thin on West side.

811-1 - Explosive Hazardous waste storage area.
811-22 - Loading dock, smaller door.
811-17 - Loading dock, smaller door.

"BST" IGLOOS

Friable Asbestos: No
Sump: No
Condensate Discharges: No
Comments: No stressed Vegetation

GENERAL PURPOSE MAGAZINES

31-M
Friable Asbestos: No
Sump: No
Condensate Discharges: No
Comments: Good chance for explosive contamination

21-T
Friable Asbestos: No
Sump: No
Condensate Discharges: No
Comments: Good chance for explosive contamination

48-Y
Friable Asbestos: No
Sump: No
Condensate Discharges: No
Comments: Good chance for explosive contamination

STORAGE BUILDINGS

726-C
Acetylene Storage Facility
Friable Asbestos: No
Sump: No
Condensate Discharges: No
Comments: No stressed vegetation

726-D
Oxygen Storage Facility
Friable Asbestos: No
Sump: No
Condensate Discharges: No
Comments: No stressed vegetation

Insecticide Facility
12/4/1995

725
Friable Asbestos: No
Sump: Yes. Two sumps, TNRCC I.D. numbers 148 & 149. Longhorn AAP I.D. numbers 119 & 120. Both sumps were supposedly capped with concrete prior to use. However, both sumps are scheduled to be sampled and "clean closed" per a sump closure plan. The scheduled closure date is likely to be in CY 1997.
Comments: No apparent spills or stressed vegetation.

FLAMMABLE MATERIAL STOREHOUSES (SMALL)
12/4/1995

30-G
Friable Asbestos: No
Sump: No
Comments: No obvious stressed vegetation. However, contamination is possible. Shed is located near areas of known contamination.

75-J
Friable Asbestos: No
Sump: No
Comments: No obvious stressed vegetation. However, contamination is possible.

OPEN WAREHOUSES
12/4/95

810
Friable Asbestos: No
Sump: No
Comments: Used for empty drum storage, pallets, grease rack, etc. No obvious stressed vegetation. However, contamination from explosives or chemicals is possible.

S-15
Friable Asbestos: No
Sump: No
Comments: Open shed for explosives storage. No obvious stressed vegetation. However, contamination is possible.

OPEN WAREHOUSES
12/4/95

47-W
Friable Asbestos: No
Sump: No
Comments: No obvious stressed vegetation. However, contamination is possible. Currently in RCRA Part B permit and must be closed in accordance with an approved closure plan by the TNRCC. Contamination is possible from any number of chemicals that were stored on site.

GENERAL PURPOSE WAREHOUSES
12/4/95

308-A
Friable Asbestos: No
Sump: No
Comments: Concrete building from old acid plant. No obvious stressed vegetation. However, contamination is possible, but not from present use.

308-B
Friable Asbestos: No
Sump: No
Comments: Concrete building from old acid plant. No obvious stressed vegetation. However, contamination is possible, but not from present use.

15-K
Friable Asbestos: No
Sump: No
Comments: No obvious stressed vegetation. No indication of contamination.

62-I
Friable Asbestos: No
Sump: No
Comments: No obvious stressed vegetation. Asphalt parking/pavement around the building. Contamination is unlikely.

ACID STORAGE BUILDING

210
Friable Asbestos: No
Sump: No*
Comments: *Concrete floor with sumps for spills. No stressed vegetation.

GENERAL PURPOSE WAREHOUSES

701
Friable Asbestos: No
Sump: No
Comments: No stressed vegetation

707-C
Friable Asbestos: Yes
Sump: No
Comments: Old changehouse for TNT plant. Old storage area for PCB transformers. PCB contamination possible. Slight TNT contamination possible. No stressed vegetation

714
Friable Asbestos: No
Sump: No
Comments: No stressed vegetation. Area used for maintenance warehouse.

411
Friable Asbestos: No
Sump: No
Comments: Warehouse for boiler parts, electric motors, and wastewater plant. No stressed vegetation. Soil boring and monitor wells are around the building. Concrete pads around the building have been used to store drums.

44-W
Friable Asbestos: No
Sump: No
Comments: Some bare areas around building. No sign of spills.

42-W
Friable Asbestos: Yes
Sump: No
Comments: Some bare areas around building. No sign of spills.

46-W
Friable Asbestos: No
Sump: No
Condensate Discharges: No
Comments: Some bare areas around building. No sign of spills. A large portion of the building has been removed.

48-W
Friable Asbestos: Yes
Sump: No
Comments: All types of containers around building, some empty drums. Asphalt paving with little vegetation around area.

CHEMICAL STORAGE SHED
12/4/95

205
Friable Asbestos: Yes
Sump: No
Comments: Signs of spills in building, should not have been explosive contamination. No stressed vegetation.

FLAMMABLE MATERIAL STORAGE BUILDING
12/4/95

33-W
Friable Asbestos: No
Sump: No
Comments: No stressed vegetation. Some chance of contamination from solvents.

LUMBER & PIPE SHED
12/4/95

734
Friable Asbestos: No
Sump: No
Comments: No stressed vegetation.

203
Friable Asbestos: No
Sump: No
Comments: No stressed vegetation.

VEHICLE STORAGE
12/4/95

730
Friable Asbestos: No
Sump: No
Comments: No stressed vegetation outside of shed.
Gravel Floor: Expect small quantities of spilled motor oil, gasoline, diesel, and/or antifreeze.

36-G
Friable Asbestos: No
Sump: No
Comments: Small metal shed not attached to anything. No way to determine where it has been or how long. Sits on concrete.

40-T
Friable Asbestos: No
Sump: No
Comments: Foundation is all that is left of building.

69-C
Friable Asbestos: No
Sump: No
Comments: No stressed vegetation, however, some stressed vegatation is nearby at 68-C. Use?

53-H
Friable Asbestos: No
Sump: No
Comments: Chemical storage building. Contamination is possible. No stressed vegetation.

55-H
Friable Asbestos: No
Sump: No
Comments: Storage building used for explosives. Contamination possible. No stressed vegetation

208
Friable Asbestos: No
Sump: No
Comments: Flammable material storage (diesel?).No stressed vegetation

65-D
Friable Asbestos: No
Sump: No
Comments: Storage building used for explosives. Contamination possible. No stressed vegetation

726
Friable Asbestos: No
Sump: No
Comments: No stressed vegetation

S-13
Friable Asbestos: No
Sump: No
Comments: No vegetation due to pavement. Contamination likely.

STORAGE SHEDS

727-R
Friable Asbestos: No
Sump: No
Comments: No stressed vegetation

272
Friable Asbestos: No
Sump: No
Comments: No stressed vegetation

Y-AREA

13Y
Friable Asbestos: Yes
Sump: No
Condensate discharges: Yes
- Oil contamination on soil (heat transfer fluid)

16Y
Friable Asbestos: Yes
Sump: No
Condensate discharges: Yes
- Contamination under waste dock on North side of building.
- One oil pump overflowed around containment pad. Oil stain on ground, stressed vegetation.
- Possible leaded paint on building.
- Possible oil at NW corner of building.

16Y-2
Friable Asbestos: No
Sump: No
Condensate discharges: Yes

18Y/18Y-1
Friable Asbestos: Yes
Sump: Yes
Condensate discharges: Yes
- Oil Stains on West side of building.
- Stressed vegetation at rear/West side of building.
- Old foundations on East side of building.

29Y
Friable Asbestos: Yes
Sump: No
Condensate discharges: Yes

32Y
Friable Asbestos: No
Sump: No
Condensate discharges: Yes

34Y
Friable Asbestos: No
Sump: Sumps 095 & 096
Condensate discharges: Yes
- Contamination around waste dock

38Y
Friable Asbestos: Yes
Sump: Sumps 660(sidewald & ground stained), 098, and 097.
Condensate discharges: Yes
- Possible contamination around waste dock.

62-D Loading Assembly Surge
Friable Asbestos: No
Sump: No
Condensate discharges: Yes

S-1 General Purpose Warehouse
Friable Asbestos: Yes
Sump: No
Condensate discharges: Yes
Spills: 1/23/95
- Hydraulic oil spill on parking lot. Oil removed with oil dry.

S-5
Friable Asbestos: No
Sump: No
Site Survey: (1-11-96) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs or spill file.
Building for explosives storage/processing, concrete floor and cinder block walls, wood roof with asphalt/gravel cover.

S-7
Friable Asbestos: No
Sump: No
Condensate discharges: No
Site Survey: (1-11-96) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs or spill file.
Building for explosives storage/processing, concrete floor and cinder block walls, wood roof with asphalt/gravel cover. Small fiberglass shed attached to building.

209 Flammable Material Storage
Friable Asbestos: No
Sump: No
Condensate discharges: No.

B-6
Friable Asbestos: No
Sump: No
Site Survey: (1-11-96) Possible stressed vegetation around building.
Comments: No evidence of past contamination indicated in air photographs or spill file. Building used for explosives storage/processing. Building has a concrete floor, wood frame, transite siding, asphalt/gravel roof.

B-7 Mix Illuminant Composition/Consolidate/Finish Candles
Friable Asbestos: No
Sump: Sumps No. 044 & 045
Condensate discharges: Yes
Spills: 12/1/93
- Hydraulic oil leak from heat exchanger.

7/19/95
- Five-gallon bucket of resin spilled in roadway. Resin removed with oil-dry.

Comments: Rear area of building is likely to have contamination from total petroleum hydrocarbons and solvents. Evidence at building suggests that some building washdown has been released from building rather than into sump.

B-8
Friable Asbestos: Yes. Steamline insulation
Sump: No
Site Survey: (1-11-96) Stressed vegetation around building. Possibly from run-off of metal building.
Comments: No evidence of past contamination indicated in air photographs or spill file. Building used for explosives storage/processing. Building has a concrete floor, cinderblock and metal walls, asphalt/gravel roof, and a loading dock.

B-11 Mix First Fire and Mix Fire Clay
Friable Asbestos: Yes
Sump: Sump 020
Condensate discharges: Yes
Spills: 1/14/91
-Spills of oil around waste dock.
- Trough on dispensing pad broken.
- Poor housekeeping.

1/28/92
- One gallon of hydraulic fluid leaked onto ground. Soil was removed.

B-12
Friable Asbestos: Yes. Steamline insulation
Sump: Yes. Lhaap sump number 21, TNRCC ID number 050.
Site Survey: (1-11-96) No visual evidence of stressed vegetation around building.
Comments: No evidence of past contamination indicated in air photographs or spill file. Building used for explosives storage/processing. Building has a concrete floor, wood frame, transite siding, asphalt/gravel roof.
Excellent chance of solvent contamination in and around sump from past activities.

B-13
Friable Asbestos: Yes
Sump: Sump 022
Condensate discharges: Yes

B-14
Friable Asbestos: Yes. Steamline insulation
Sump: Yes. Lhaap sump number 23, TNRCC ID number 052.
Site Survey: (1-11-96) No visual evidence of stressed vegetation around building.
Comments: No evidence of past contamination indicated in air photographs or spill file.
Building used for explosives storage/processing. Building has a concrete floor, wood frame, transite siding, with fiberglass siding on East wall, asphalt/gravel roof.
Excellent chance of solvent contamination in and around sump from past activities.

B-15
Friable Asbestos: Yes
Sump: Sump 024
Condensate discharges: Yes

B-16
Friable Asbestos: Yes
Sump: Sump 025
Condensate discharges: Yes

B-9
Friable Asbestos: Assumed
Sump: Sumps 017, 018
Condensate discharges: Yes

P-1 Process Fuels
Friable Asbestos: Yes
Sump: Sump 001
Condensate discharges: Yes

P-3 Process Oxidizers
Friable Asbestos: Yes
Sump: Sumps 002, 003, 004, & 005
Condensate discharges: Yes

P-9
Friable Asbestos: Yes
Sump: Sump 027
Condensate discharges: Yes

P-10
Friable Asbestos: Yes
Sump: No
Condensate discharges: Yes

P-12
Friable Asbestos: Yes. Steam line insulation, damaged transite siding.
Sump: No
Site Survey: (1-11-96) No visual stressed vegetation around building.
Comments: No evidence of past contamination indicated in air photographs or spill file.
Building used for explosives storage/processing. Building has a concrete floor, loading docks, wood frame, transite siding, asphalt/gravel roof.
- Fire has damaged part of the building limiting its use.

P-13

Friable Asbestos: Yes. Steam line insulation, damaged transite siding.
Sump: No
Site Survey: (1-11-96) Some stressed vegetation around building.
Comments: No evidence of past contamination indicated in air photographs or spill file. Building used for explosives storage/processing. Building has a concrete floor, loading docks, wood frame, transite siding, asphalt/gravel roof.

P-14
Friable Asbestos: Yes. Steam line insulation, damaged transite siding.
Sump: No
Site Survey: (1-11-96) No visual stressed vegetation around building.
Comments: No evidence of past contamination indicated in air photographs or spill file. Storage and intersection of sheds. Building used for explosives storage/processing. Variety of container stored in building. Building has a concrete floor, wood frame, transite siding and fiberglass walls, and asphalt/gravel roof.

212-9
Friable Asbestos: No
Sump: Yes, above ground sump
Condensate discharges: Yes

212-11
Friable Asbestos: No
Sump: No
Condensate discharges: Yes
- Oil contamination from vacuum pump.

212-12
Friable Asbestos: No
Sump: Yes. Building is serviced by Lhaap sump number 30, TNRCC ID number 059. It is unknown if the sump contains contamination from solvents. The sump is likely contaminated from pyrotechnic materials.
Site Survey: (1-11-96) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs or spill file. Building is serviced by a loading dock.

212-13
Friable Asbestos: No
Sump: No
Condensate discharges: Yes

212-15
Friable Asbestos: No
Sump: No
Condensate discharges: Yes

212-16
Friable Asbestos: No
Sump: Sump 034
Condensate discharges: Yes
- Ground scarring behind building due to vehicle/trailer traffic.

212-17
Friable Asbestos: No
Sump: No
Condensate discharges: Yes

212-18
Friable Asbestos: No
Sump: Sump 035
Condensate discharges: Yes

212-19
Friable Asbestos: No
Sump: No
Condensate discharges: Yes

212-20
Friable Asbestos: Yes
Sump: Yes, above ground sump

Condensate discharges: Yes
- Oil/diesel contamination from forklift at loading dock. Drainage under dock is extremely poor resulting in standing water depth of approximately 1 ft.

212-21
Friable Asbestos: No
Sump: No
Site Survey: (1-11-96) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs or spill file. Magazine for explosives storage, concrete floor and walls, wood supported transite roof, fiberglass patches, concrete walk around building.

212-23
Friable Asbestos: No
Sump: No
Site Survey: (1-11-96) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs or spill file. Magazine for explosives storage, concrete floor and walls, wood supported transite roof, fiberglass patches, concrete walk around building. A flammable liquid storage sign is located on building.

212-27 Candle Cure/Storage
Friable Asbestos: No
Sump: Sump: No
Condensate discharges: Yes

212-29
Friable Asbestos: Yes. Steamline insulation and damaged transite siding.
Sump: No
Site Survey: (1-11-96) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs or spill file. Magazine for explosives storage, concrete floor and walls, wood supported transite roof, concrete walk around building, extended roof on east side. A flammable liquid storage sign is located on building.

212-31 TNC Storage
Friable Asbestos: No
Sump: No
Condensate discharges: Yes

212-32
Friable Asbestos: No
Sump: Sump 038
Condensate discharges: Yes

212-33
Friable Asbestos: Yes
Sump: Sumps 039, 040
Condensate discharges: Yes

212-34
Friable Asbestos: No
Sump: No
Condensate discharges: Yes

212-35
Friable Asbestos: Yes
Sump: Sump 040
Condensate discharges: Yes
- Diesel spill contamination at site of drum rack.

212-36
Friable Asbestos: Yes
Sump: No
Condensate discharges: Yes

212-37 Mix Slurry
Friable Asbestos: No
Sump: Sump 042
Condensate discharges:

25D
Friable Asbestos: Yes
Sump: Sump 047
Condensate discharges: Yes
- Contamination near East end of building near collectors

27F Control Room
Friable asbestos:
Sump: No
Comments: Steel (tank) with spray on coating on the exterior. No visible signs of contamination on the building interior or on the grounds around the building. Based upon use, no contamination expected.

29A Chemical Laboratory
Friable Asbestos: Yes
Sump: No
Condensate discharges: Yes

29D
Friable Asbestos: Yes
Sump: Sump 053
Condensate discharges: Yes
- Ground scar on North side of parking lot.

32E
Friable Asbestos: No
Sump: No
Condensate discharges: Yes

32-H Teflon Coating Building
Friable Asbestos:
Sump: No. 121
Comments: Building used for facility to teflon coat molds and also contained bakeout ovens for removing teflon from molds. Building contains degreaser. Solvent contamination in sump or area may be expected from chlorinated compounds.
Paint flaking throughout building. Lead content of this paint is unknown.

32-G Small out building with Air Dryer
Friable Asbestos:
Sump: No
Comments: No visible signs of contamination inside the building. Possible small spill evident outside at southwest corner. Possibly only drip from roof but dirt is partially barren with oily apperarance. This possible small spill is minor. No visible signs of gross contamination on grounds around the building.

34-G Small Out Building with Deluge Valves
Friable Asbestos:
Sump: No
Comments: Transite on concrete slab. No signs of contamination

35-B
Friable Asbestos: No
Sump: No

Site Survey: (1-11-96) No visually stressed vegetation around building.
Comments: No evidence of past contamination indicated in air photographs or spill file. Building used for explosives storage/processing. Building has a concrete foundation, cinder block/brick walls, and transite,metal, and asphalt/gravel roof.

36-B Preparation or Storage
Friable Asbestos:
Sump: 058. Sump is missing. Trough leaves from collector area but there is no sump.
Comments: Painted brick on concrete slab No visible signs of contamination
Earthen erm has been removed from building leaving a large retangular barren area.
No visible signs of contamination around the building.

37-E Control Room
Friable Asbestos:
Sump: No
Comments: Earth covered igloo type construction with concrete walls and slab. No visible signs of contamination around building.

38-E Control Room
Friable Asbestos:
Sump: No
Comments: Earth covered igloo type construction with concrete walls and slab. No signs of contamination around building.

39-F Heated Storage
Friable Asbestos:
Sump: No
Comments: Metal on concrete slab. Insulation blown onto inside of overhead door. No signs of contamination around building.

40-D Heated Storage
Friable Asbestos:
Sump: No
Comments: Metal on concrete slab. Insulation blown onto inside of overhead door. No signs of contamination around building.

41-E Propellant Mixing
Friable Asbestos:
Sump: 059
Comments: Metal on concrete with earth and timber barricade. Sump on northwest side of building. No signs of contarnination around building. Contamination from chlorinated compounds of metals is possible.
Paint flaking inside of building. Lead content unknown.

42-E Propellant Mixing
Friable Asbestos:
Sump: 060
Comments: Metal on concrete with earth and timber barricade. Sump on north side of building outside of barricade. No signs of contamination around building. Contamination from chlorinated compounds of metals is possible.

45E
Friable Asbestos: Yes
Sump: Sumps 062, 063, 064, 065, 066, and 067. Also, 1 each above ground sump.
Condensate discharges: Yes

Spills: 4/3/95 - Oil spill at vacuum pump.
- Oil contamination from hydraulic pump, contained on pad by absorbant.
- Oil contamination from hydraulic oil cooler, contained on pad.
- Diesel contamination at drum storage site.

46-B Motor Casting
Friable Asbestos:
Sump: 069
Comments: Concrete, metal, and transite building on concrete slab. Sump on southwest side. No visible sign of stressed begetation at sump or along troughs.
Paint flaking inside building. Lead content is unknown.
No visible signs of gross contamination inside of building or on grounds around the building.

47-B Control Room
Friable Asbestos:
Sump:
Comments: Earth covered igloo type construction with concrete walls and slab with earth and timber barricade. In ground concrete structure with rigid metal cover at southeast corner. No visible signs of gross contamination inside building or on the grounds around the building.

56B X-ray Building
Friable Asbestos: No
Sump: No
Condensate discharges: No

60B Film Evaluation Building
Friable Asbestos: Assumed yes
Sump: No
Condensate discharges: Yes
- Possible contamination from silver from x-ray development fluid.

62-D Storage
Friable Asbestos:
Sump: No
Comments: Metal on concrete slab with eathern barricade. No visible signs of contamination in or around building.

62-G Heated Surge (Designed for Pressure/Heat Cure)
Friable Asbestos: Yes (Removed in Spring 1996 as part of abatement project)
Sumps: Four each, one on each end of the pressure/heat cure tunnels.
Comments: No visible signs of stressed vegetation at sumps with the minor exception of the southeast sump. Adjacent to this sump, inside the openbuilding is a hydraulic oil resevoir. Hydraulic fluid has leaked onto the floor and outside the building. The ground adjacent to the sump has some contamination. This is a minor contaminated area. No visible signs of gross contamination inside of building or on grounds around the building.

68-C Production/Assembly
Friable Asbestos:
Sump: 078, 079, 080
Comments: There is significant evidence of gross contamination of the grounds surrounding this building. There is a large barren area, approximately 20' x 30', directly north and downhill form the two sumps. there is a barren trail starting at the northeast corner of the building, leading downhill northwest into a wooded area. It appears to be a path of stormwater flow away from the building. Adjacent to these two barren areas is a much larger area with sparse vegetation. At

the west end of the building is a large area with sparse vegetation. Oil/fluid has leaked from a piece of manufacturing equipment onto the floor inside the buildings northwest corner. This is a minor spill. There is no evidence of gross contamination inside the building. Findings of sparsely vegetated and barren areas on the grounds around the building is of concern.

68-F Manufacture Loading Assemble
Friable Asbestos: Yes
Sumps No.: 081, 082, & 083.
Condensate discharges: Yes
Comments: Hydraulic oil contamination on pad at East side of building (2-each hydraulic units that serve drill & pin machines)

68-G-1 Public Toilet
Friable Asbestos: No
Sumps: No
Condensate discharges: No

75-I Black Powder Drying
Friable Asbestos:
Sumps: 091, 092, 093
Comments: Transite and concrete on concrete slab with 2 structures with 3 concrete walks and concrete slab for dust collectors. Three sumps. No visible evidence of stressed vegetation of two of the sumps. For the sump at the northeast corner, directly north and downhill from the sump there is an area of stressed vegetation(sparse to barren). This area is at the point where a small culvert/large clay type pipe exits the ground. this pipe leads from the direction of the sump. There is no visible evidence of gross contamination inside the building.

Building was used for drying black powder. Ovens may have been used for drying other materials.

402
Friable Asbestos: Yes
Sump: No
Condensate discharges: Yes

403
Friable Asbestos: Yes
Sump: Sump 107
Condensate discharges: Yes

404
Friable Asbestos: No
Sump: No
Condensate discharges: Yes

405
Friable Asbestos: Yes
Sump: No
Condensate discharges: Yes

406
Friable Asbestos: Yes
Sump: Sump 108
Condensate discharges: Yes
- Stressed vegetation over condensate runoff pipe.

407
Friable Asbestos: Yes. Steam line insulation, damaged transite siding.
Sump: No
Condensate discharges: Yes
Site Survey: (1-11-96) Apparent stressed vegetation around building.
Comments: No evidence of past contamination indicated in air photographs or spill file. Building used for explosives storage/processing. Building has a concrete floor, one end has concrete walls, wood frame, transite siding, asphalt/gravel roof.
- Diesel contamination next to drum storage area.

408
Friable Asbestos: Yes
Sump: Sump 109
Condensate discharges: Yes

409
Friable Asbestos: Yes
Sump: No
Condensate discharges: Yes
- Oil contamination at hydraulic pump.

410
Friable Asbestos: No
Sump: No
Site Survey: (1-11-96) No visual stressed vegetation around building.
Comments: No evidence of past contamination indicated in air photographs or spill file.

Building used for explosives storage/processing. Building has a concrete floor, one end is cinder block and brick the other half is fiberglass and metal on a wood frame, asphalt/gravel roof, and a blast barrier.

P-108
Friable Asbestos: No
Sump: No
Site Survey: (1-11-96) Stressed vegetation from down spouts from roof mounted units.
Comments: No evidence of past contamination indicated in air photographs or spill file.
Building used for candle curing. Building has a concrete floor, cinder block and metal walls, with a sheet metal roof.
Site has had the deluge system activated numerous time. However, this was not likely to make any contamination problems.

P-113
Friable Asbestos: Yes. Steamline insulation
Sump: Yes
Site Survey: (1-11-96) No visual evidence of stressed vegetation around building.
Comments: No evidence of past contamination indicated in air photographs or spill file.
Building used for explosives storage/processing. Building has a concrete floor, cinder block and metal walls, with a sheet metal roof.

P-117
Friable Asbestos: No
Sump: Yes. 2-each Lhaap Numbers 8 & 9. TNRCC ID numbers 037 & 038.
Site Survey: (1-11-96) No visual evidence of stressed vegetation around building.
Comments: No evidence of past contamination indicated in air photographs.
Spills: February 27, 1992 - Approximately 25 gallons of oil. Oil was contained around machine and cleaned up by operators. (EQ file 2.17)
Building used for explosives storage and processing of large caliber mortar illuminating candles. Three station press in building. Building has a concrete floor, cinder block and metal walls, with a sheet metal roof. Likely chance of solvent contamination in and around sumps. Currently under investigation under CERCLA requirements.

P-118
Friable Asbestos: No
Sump: Sumps 010, 011, 012, and 013
Condensate discharges: Yes
- Diesel contamination near drum rack.
- Oil contamination from hydraulic pump.

P-120 Can Coating
Friable Asbestos: No
Sump: Sumps: No
Condensate discharges: Yes

P-122
Friable Asbestos: No
Sump: Yes. Lhaap sump number 28, TNRCC ID number 057.
Site Survey: (1-11-96) No visual evidence of stressed vegetation around building except for one stressed area under steamline.
Comments: No evidence of past contamination indicated in air photographs or spill file.
Building used for sodium nitrate processing. Building has a concrete floor, cinder block and metal walls, with a sheet metal roof. Flammable liquid storage sign on building

P-123
Friable Asbestos: No
Sump: Yes. Lhaap number 29, TNRCC ID number 058.
Site Survey: (1-11-96) No visual evidence of stressed vegetation around building except for one stressed area under steamline.
Comments: No evidence of past contamination indicated in air photographs or spill file.
Building used for magnesium processing. Building has a concrete floor, cinder block and metal walls, with a sheet metal roof, and a loading dock.
Stain on concrete by loading dock.

P-124
Friable Asbestos: No
Sump: Sump 028. Sump is part of Lhaap Site Group 4 which is part of an ongoing RI/FS study
Site Survey: Sodium Nitrate unloading/dispensing facility Tanks and hoppers are empty and clean. No ground contamination evident.

MISCELLANEOUS AREAS

90J Sentry Station
Friable Asbestos: No
Sump: No
Site Survey: (9-11-95) No visual contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

709-A Fire Station
Friable Asbestos: Yes
Sump: No
Site Survey: (9-11-95) No visual contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

C-1 Covered Walkway
Friable Asbestos: No
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

C-3 Covered Walkway
Friable Asbestos: No
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

C-4 Covered Walkway
Friable Asbestos: No
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

C-5 Covered Walkway
Friable Asbestos: No
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

C-6 Covered Walkway
Friable Asbestos: No
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

C-7 Covered Walkway
Friable Asbestos: No
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

C-8 Covered Walkway
Friable Asbestos: No
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

C-10 Covered Walkway
Friable Asbestos: No
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

C-11 Covered Walkway
Friable Asbestos: No
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

38-D Covered Walkway
Friable Asbestos:
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

40-E Covered Walkway
Friable Asbestos: No
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

39-E Covered Walkway
Friable Asbestos: No
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

P-14-R Covered Walkway
Friable Asbestos: No
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

212-12R Covered Walkway
Friable Asbestos: Yes
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

37-F Covered Walkway
Friable Asbestos: Yes
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

LR-1 Lunchroom
Friable Asbestos: Yes
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

Shed-E Covered Walkway
Friable Asbestos: No
Sump: No
Site Survey: (1-11-96) No visual contamination evident.
Comments: No evidence of past contamination indicated in air photographs or spill file. Walkway has concrete floor, wood frame, transite siding, fiberglass siding, asphalt/gravel roof. Building used for storage of some pyrotechnic materials and solvents during manufacturing process.

Shed-J Covered Walkway
Friable Asbestos: Yes. Steam line insulation.
Sump: No
Site Survey: (1-11-96) No visual contamination evident.
Comments: No evidence of past contamination indicated in air photographs or spill file. Walkway to lunch area. It has concrete floor, wood frame, transite siding, fiberglass siding, asphalt/gravel roof. Minimal chance of contamination.

Shed-K Covered Walkway
Friable Asbestos: Yes. Steam line insulation, damaged transite siding.
Sump: No
Site Survey: (1-11-96) No visual contamination evident.
Comments: No evidence of past contamination indicated in air photographs or spill file. Walkway to lunch area. It has concrete floor, wood frame, transite siding, fiberglass siding, asphalt/gravel roof. Minimal chance of contamination.

Shed-L Covered Walkway
Friable Asbestos: No (Some damaged transite siding)
Sump: No
Site Survey: (1-11-96) No visual contamination evident.
Comments: No evidence of past contamination indicated in air photographs or spill file. Walkway to lunch area. It has concrete floor, wood frame, transite siding, fiberglass siding, asphalt/gravel roof. Minimal chance for contamination.

3-Y Lunchroom
Friable Asbestos: No
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

722-F Lunchroom
Friable Asbestos: No
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

211-2 Lunchroom
Friable Asbestos: No
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

4-Y-2 Clock Alley
Friable Asbestos: No
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

8-T-2 Clock Alley
Friable Asbestos: No
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

41-W-2 Clock Alley
Friable Asbestos: No
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

25-G-2 Clock Alley
Friable Asbestos: Yes
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

61-J-2 Clock Alley
Friable Asbestos: Yes
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

61-J Changehouse
Friable Asbestos: Yes
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

26-G Changehouse
Friable Asbestos: No
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

4-Y Changehouse
Friable Asbestos: Yes
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

707-B Changehouse
Friable Asbestos: Yes
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

8-T Changehouse
Friable Asbestos: Yes
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

707-A Changehouse
Friable Asbestos: Yes
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

707-J Changehouse
Friable Asbestos: No
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

707-G Changehouse
Friable Asbestos: No
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

707-F Changehouse
Friable Asbestos: Yes
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

53-B-1 Public Toilet
Friable Asbestos: No
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

90-J-1 Public Toilet
Friable Asbestos: No
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

62-G-1 Public Toilet
Friable Asbestos: Yes
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

32-H-1 Public Toilet
Friable Asbestos: Yes
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

54-G-1 Public Toilet
Friable Asbestos: No
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

28-G-1 Public Toilet
Friable Asbestos: No
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

28-H-1 Public Toilet
Friable Asbestos: Yes
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

25-C-1 Public Toilet
Friable Asbestos: Yes
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

PUBLIC TOILETS

41-W-1 Public Toilet
Friable Asbestos: No
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

26-B-1 Public Toilet
Friable Asbestos: No
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

33-G-1 Public Toilet
Friable Asbestos: Yes
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

26-E-1 Public Toilet
Friable Asbestos: Yes
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

75-I-1 Public Toilet
Friable Asbestos: Yes
Sump: No
Site Survey: (9-11-95) No visual Contamination evident.
Comments: No evidence of past contamination indicated in air photographs.

101 - Administration BuildingGeneral Purpose
Friable Asbestos: Yes
Sump: No
Condensate discharges: No
Site Survey: No known present or historical problems.

21A - Administration Building
Friable Asbestos: Yes
Sump: No
Condensate discharges: No
Site Survey: No known present or historical problems.

22A - Administration Building General Purpose
Friable Asbestos: Yes
Sump: No
Condensate discharges: No
Site Survey: No known present or historical problems.

27A - Administration Building General Purpose
Friable Asbestos: Yes
Sump: No
Condensate discharges: No
Site Survey: No known present or historical problems.

601A - Track Scale House
Friable Asbestos: Yes
Sump: No
Condensate discharges: No
Site Survey: No present or historical problems.

ADMINISTRATION AREA

705 - Administration Building
Friable Asbestos: Yes
Sump: No
Condensate discharges: No
Site Survey: No known present or historical problems.

720A - PM Administrative Building
Friable Asbestos: Yes
Sump: No
Condensate discharges: No
Site Survey: No known present or historical problems.

704A - Engineering Administration Building
Friable Asbestos: No
Sump: No
Condensate discharges: No
Site Survey: No known present or historical problems.

722E - General Instruction Building
Friable Asbestos: No
Sump: No
Condensate discharges: No
Site Survey: No known present or historical problems.

736A - General Instruction Building
Friable Asbestos: Yes
Sump: No
Condensate discharges: No
Site Survey: No known present or historical problems.

021641

811-XX Richmond Magazines
Friable Asbestos: No
Sump: No
Condensate discharges: No

812 Package Boiler
Friable Asbestos: Yes
Sump: No
Condensate discharges: Yes

814 Final Assemble/Packout
Friable Asbestos: Yes
Sump: No
Condensate discharges: Yes
Comments: Possible contamination around waste dock and drum rack.

815 Compressed Air Plant Building
Friable Asbestos: No
Sump: No
Comments: No visual contamination (9-11-95). No evidence of past contmination indicated in air photographs.

451 Compressed Air Plant Building
Friable Asbestos: No
Sump: No
Comments: No visual contamination (9-11-95). No evidence of past contmination indicated in air photographs.

43-E Equipment Building
Friable Asbestos: No
Sump: No. However there is a sump associated with building 45-E within twenty-feet of equipment pad.
Comments: Some petroleum hydrocarbon contamination on ground at the South end of equipment pad (9-11-95).

46-E Equipment Building
Friable Asbestos: No
Sump: No
Comments: No visual contamination (9-11-95).

CB-2 Equipment Building
Friable Asbestos: No
Sump: No
Comments: Some petroleum hydrocarbon contamination on ground around equipment pad (9-11-95).

54G
Friable Asbestos: Yes
Sump: Sumps 073, 074, 075
Condensate discharges: Yes
Spills: 6/10/92 - Spill at waste hexane tank. Ten gallons released into secondary containment area. Contaminated soil removed.
- Oil release on hydraulic unit pad on East side of building.

62G
Friable Asbestos: Yes
Sump: Yes
Condensate discharges: Yes
- Oil release on North East side of building from old equipment.
- Large quantity of unused equipment.

13T Administration Building General Purpose
Friable Asbestos: No
Sump: No
Condensate discharges: No
Site Survey: No known present or historical problems.

23T
Friable Asbestos: Yes
Sump: Yes
Condensate discharges: Yes
- Building 23T originally used as storage for solvents (methylene chloride & trichloroethane 1,1,1) during the 1950 & 1960's. Equipment was brought to the sight for cleaning. There is an abandoned chiller at the NW side of the building that could be a source of pollution from cooling water treated with chromium compounds.
Air Photographs: 1958 - Ground scaring behind (East) building.
Spills: 9/17/92 - Nitric Acid/Nitrogen Pentoxide release. Captured in sump. Small quantity of HNO3 released as vapor. Acics were neutralized. No environmental effects.

25T
Friable Asbestos: Yes
Sump: No
Condensate discharges: Yes
- Building 25T was heavily used for static test of rocket motors in the 1970's.

35T
Friable Asbestos: No
Sump: No
Condensate discharges: Yes
Spills: 10/1/93 - Transformer oil spill. One gallon non PCB mineral oil. Contaminated oil removed.

APPENDIX IV

Transformer Master Listing

TRANSFOR. MASTER LISTING

MANUFACTURER	SERIAL NO.	LOCATION	PCB CONTENT	DATE TESTED	KVA RATING	CAPACITY	CIRCUIT
MCGRAW-EDISON	70BK289004	101	PCB FREE	12/26/95	10.0	12.00	1
MCGRAW-EDISON	70BK289007	101	PCB FREE	12/26/95	10.0	12.00	1
MCGRAW-EDISON	70BK289009	101	PCB FREE	12/26/95	10.0	12.00	1
ALLIS-CHAMBERS	1901280	201	PCB FREE	5/19/94	25.0	18.50	1
ALLIS-CHAMBERS	1901282	201	PCB FREE	5/19/94	25.0	18.50	1
CENTRAL	1980-13	201	PCB FREE	5/19/94	37.5	31.50	1
MOLONEY	1320673	204	4.00	2/21/94	15.0	16.00	8
MOLONEY	1308933	204	PCB FREE	2/21/94	15.0	16.00	8
MOLONEY	1310502	204	PCB FREE	2/21/94	15.0	16.00	8
MOLONEY	1307805	205	PCB FREE	2/21/94	25.0	18.50	8
GENERAL ELECTRIC	6911286	206	33.00	7/18/96	100.0	75.00	1
WESTINGHOUSE	71AL9540	206	PCB FREE	10/30/95	100.0	75.00	1
GENERAL ELECTRIC	6911284	206	31.90 ~~TBD~~	8/15/96	100.0	75.00	1
MOLONEY	1308934	207	3.00	5/19/94	15.0	16.00	1
MOLONEY	1308932	207	5.00	5/19/94	15.0	16.00	1
CENTRAL	2324-5	207	PCB FREE	5/19/94	25.0	18.50	1
MOLONEY	1310498	207	PCB FREE	5/19/94	15.0	16.00	1
UNKNOWN	LM126214	214	PCB FREE	3/6/96	25.0		1
WESTINGHOUSE	3157792	272	16.00	2/21/94	5.0	10.50	4
WESTINGHOUSE	3157796	272	26.00	2/21/94	5.0	10.50	4
ALPHA	85F07901	401	PCB FREE	NEW	167.0		9
SUNBELT	STO89454701	401	PCB FREE	NEW	300.0		9
WESTINGHOUSE	3156921	414	4.00	4/15/96	3.0	10.50	8
WESTINGHOUSE	3156923	414	5.00	4/15/96	3.0	10.50	8
GENERAL ELECTRIC	6050945GT	414	24.00	4/15/96			8
WESTINGHOUSE	3153082	414	32.00	4/15/96	333.0	220.00	8
WESTINGHOUSE	3153081	414	37.00	4/15/96	333.0	220.00	8
WESTINGHOUSE	3153080	414	39.00	4/15/96	333.0	220.00	8
ESCO	4331	414	PCB FREE	4/15/96	7.5	10.00	8
WESTINGHOUSE	82A081335	414	PCB FREE	4/15/96	112.5	80.00	8
WAGNER	366262 (TC-26)	451	PCB FREE	2/21/94	1.5	5.00	7
WAGNER	347254 (TC-24)	451	PCB FREE	3/6/96	1.5	5.00	7
WAGNER	365168 (TC-25)	451	PCB FREE	3/6/96	1.5	5.00	7

MANUFACTURER	SERIAL NO.	LOCATION	PCB CONTENT	DATE TESTED	KVA RATING	CAPACITY	CIRCUIT
ESCO	1126006	702	PCB FREE	12/26/95	15.0	16.00	3
ESCO	1126008	702	PCB FREE	12/26/95	15.0	16.00	3
UNKNOWN	941024872	702	PCB FREE	NEW	15.0	16.00	3
WESTINGHOUSE	74G10544	703	27.00	3/6/96	100.0		3
CENTRAL	2315-7	703	PCB FREE	3/6/96	75.0	50.00	3
LINE MATERIAL	G3609516	705	PCB FREE	3/8/96	100.0	75.00	3
ALLIS-CHAMBERS	1901277	708	24.00	3/6/96	25.0	18.50	3
WESTINGHOUSE	3158312	708	25.00	3/6/96	25.0	18.50	3
ALLIS-CHAMBERS	1901279	708	PCB FREE	3/6/96	25.0	18.50	3
ALLIS-CHAMBERS	1901281	708	PCB FREE	3/6/96	25.0	18.50	3
MOLONEY	1307806	716	PCB FREE	12/26/95	25.0	18.50	4
GENERAL ELECTRIC	85NRC0540	717	10.00	5/31/95	37.5	0.00	4
CENTRAL	2781626-1	717	PCB FREE	3/6/96	75.0	50.00	4
CENTRAL	2781626-3	717	PCB FREE	3/6/96	25.0	50.00	4
CENTRAL	2781626-4	717	PCB FREE	3/6/96	75.0	50.00	4
CENTRAL	2440-2-12	719	PCB FREE	2/21/94			3
GENERAL ELECTRIC	G294740-65Y	723	PCB FREE	3/8/96	25.0	18.50	4
MOLONEY	1307804	723	PCB FREE	5/19/94	25.0	18.50	4
WESTINGHOUSE	76A341516	725	PCB FREE	4/15/96	25.0	18.50	8
CENTRAL MOLONEY	289232502	812	PCB FREE	NEW	25.0	18.50	7
GENERAL ELECTRIC	N246021YBTA	812	PCB FREE	NEW	100.0		7
GENERAL ELECTRIC	N259837YCTA	812	PCB FREE	NEW	100.0		7
WESTINGHOUSE	67AC2424	812	PCB FREE	3/6/96	25.0	18.50	7
WESTINGHOUSE	67AC2430	812	PCB FREE	3/6/96	25.0	18.50	7
SESCO	67ZN3694	813	4.00	12/26/95	100.0	75.00	7
SESCO	67ZN3931	813	PCB FREE	12/26/95	100.0	75.00	7
SESCO	67ZN3932	813	PCB FREE	12/26/95	100.0	75.00	7
SESCO	67ZN3933	813	PCB FREE	12/26/95	100.0	75.00	7
UNKNOWN	3162822	814	31.00	4/15/96	75.0		7
VANTRAN	74V2582	814	PCB FREE	5/19/94	300.0	200.00	7
WESTINGHOUSE	A731ZA50AA2	823	PCB FREE	3/6/96	50.0	37.00	7
MCGRAW-EDISON	6-03333-2-2	824	PCB FREE	3/6/96	50.0	37.00	7
WESTINGHOUSE	3165797	101 ANNEX	18.00	3/8/96	50.0	37.00	1
GENERAL ELECTRIC	G225116-65Y	13-T	PCB FREE	5/31/95	37.5	31.50	5

MANUFACTURER	SERIAL NO.	LOCATION	PCB CONTENT	DATE TESTED	KVA RATING	CAPACITY	CIRCUIT
WESTINGHOUSE	74AL4781	13Y	PCB FREE	1/25/95	10		5
ABB	90A490754	15-G	PCB FREE	MFG. 12/90	50		5
ABB	90A490758	15-G	PCB FREE	MFG. 12/90	50		5
ABB	90A490757	15-G	PCB FREE	MFG. 12/90	50		5
MOLONEY	1422323	15-K	PCB FREE	5/19/94	25.0	18.50	5
ALLIS-CHAMBERS	1901268	16-T	PCB FREE	12/26/95	75.0	50.00	5
CENTRAL	9383-18	16-T	PCB FREE	12/26/95	37.5	31.50	5
MOLONEY	754933	16-T	PCB FREE	12/26/95	75.0	50.00	5
WESTINGHOUSE	3162887	16-T	PCB FREE	12/26/95	75.0	50.00	5
GENERAL ELECTRIC	G996440-67Y	16-Y	PCB FREE	1/25/95	75.0	50.00	5
GENERAL ELECTRIC	G996444-67Y	16-Y	PCB FREE	1/25/95	75.0	50.00	5
GENERAL ELECTRIC	H526495-67K	16-Y	PCB FREE	1/25/95	75.0	50.00	5
WESTINGHOUSE	71AG6628	18-K	23.00	5/19/94	75.0	50.00	5
WESTINGHOUSE	71AF4109	18-K	29.00	5/19/94	75.0	50.00	5
WESTINGHOUSE	71AF17895	18-K	31.00	5/19/94	75.0	50.00	5
WESTINGHOUSE	98J373157	18-K	PCB FREE	NEW	37.5		5
COOPER	941132188	18-Y	PCB FREE	MFG. 1994	25.0	389.0	5
VANTRAN	84V4076	1ST ST. PAD (3RD PAD SPARE)	PCB FREE	NEW			NA
UNKNOWN	A7212A25AAK	20-X	PCB FREE	3/6/96	25.0		7
WESTINGHOUSE	89A192333	20-Y	PCB FREE	NEW(1994)	37.5	38.00	5
SESCO	67ZN3692	212-14	3.00	12/26/95	37.5	31.50	1
SESCO	67ZN3696	212-14	PCB FREE	12/26/95	167.0	125.00	1
SESCO	67ZN3697	212-14	PCB FREE	12/26/95	167.0	125.00	1
SESCO	67ZN3699	212-14	PCB FREE	12/26/95	167.0	125.00	1
UNKNOWN	4335	212-20	PCB FREE	12/26/95	10.0		1
CENTRAL	2388-2	212-36	PCB FREE	12/26/95	5.0	10.50	1
ALAMO ATSCO	D239127R	212-37	PCB FREE	NEW	25.0	0.00	1
ALAMO ATSCO	E079154R	212-37	PCB FREE	NEW	25.0	0.00	1
ALAMO ATSCO	E079156R	212-37	PCB FREE	NEW	25.0	0.00	1
WESTINGHOUSE	3158317	212-37	PCB FREE	12/26/95	37.5	31.50	1
ESCO	5916891	22-A	PCB FREE	2/21/94			5
ESCO	5916892	22-A	PCB FREE	2/21/94			5
VANTRAN	81V3006	22-A	PCB FREE	2/21/94	15.0	16.00	5
ALLIS-CHAMBERS	3070255	23-T	PCB FREE	10/30/95	75.0	50.00	5

MANUFACTURER	SERIAL NO.	LOCATION	PCB CONTENT	DATE TESTED	KVA RATING	CAPACITY	CIRCUIT
CENTRAL	2440-2-9	25-C	5.00	3/6/96	15.0	16.00	5
CENTRAL	2440-2-8	25-C	22.10	NO OIL	15.0	16.00	5
ALLIS-CHAMBERS	1901263	25-C	PCB FREE	5/19/94	100.0	75.00	5
ALLIS-CHAMBERS	1901265	25-C	PCB FREE	5/19/94	100.0	75.00	5
CENTRAL	2440-7-3	25-D	6.00	3/6/96	50.0	37.00	5
ALLIS-CHAMBERS	2613068	25-D	PCB FREE	3/6/96	50.0	37.00	5
ALLIS-CHAMBERS	2632327	25-D	PCB FREE	3/6/96	50.0	37.00	5
MCGRAW-EDISON	84NF076005	25-D	PCB FREE	3/6/96	50.0		5
ALLIS-CHAMBERS	3070273	25-T	PCB FREE	3/6/96	75.0	50.00	5
VANTRAN	88V4308	25-T	PCB FREE	NEW	100.0	0.00	5
VANTRAN	88V4309	25-T	PCB FREE	NEW	100.0	0.00	5
VANTRAN	88V4310	25-T	PCB FREE	NEW	100.0	0.00	5
UNKNOWN	880479-A1	25-T COMPRESSOR	PCB FREE	N/A	1000.0		5
GENERAL ELECTRIC	225219	26-E	PCB FREE	5/31/95	100.0	75.00	5
GENERAL ELECTRIC	M226312	26-E	PCB FREE	5/31/95	100.0	75.00	5
GENERAL ELECTRIC	M226315	26-E	PCB FREE	5/31/95	100.0	75.00	5
WESTINGHOUSE	3162920	26-E	PCB FREE	5/31/95	75.0	50.00	5
ALLIS-CHAMBERS	2495486	28-G	PCB FREE	5/19/94	75.0	50.00	5
ALLIS-CHAMBERS	2495497	28-G	PCB FREE	5/19/94	75.0	50.00	5
ALLIS-CHAMBERS	2495502	28-G	PCB FREE	5/19/94	75.0	50.00	5
CENTRAL	1759-5-1	28-G	PCB FREE	5/19/94	15.0	16.00	5
CENTRAL	1759-5-2	28-G	PCB FREE	5/19/94	15.0	16.00	5
CENTRAL	1759-5-3	28-G	PCB FREE	5/19/94	15.0	16.00	5
CENTRAL	2113-7	28-G	PCB FREE	10/30/95	50.0	37.00	5
CENTRAL	F-23076-1	29-A	PCB FREE	3/6/96	50.0		5
CENTRAL	F-23076-3	29-A	PCB FREE	3/6/96	50.0		5
CENTRAL	F-23076-5	29-A	PCB FREE	3/6/96	50.0		5
McGRAW EDISON	84NH200-056	29-A	PCB FREE	N/A	25.0		5
McGRAW EDISON	84NL147-009	29-A	PCB FREE	N/A	25.0		5
McGRAW EDISON	84NH200-005	29-A	PCB FREE	N/A	25.0		5
WESTINGHOUSE	77J606093	29-A	PCB FREE	3/6/96	167.0		5
WESTINGHOUSE	3149282	29-D	25.00	5/31/95	50.0	37.00	5
ALLIS-CHAMBERS	1871085	29-D	PCB FREE	5/31/95	25.0	18.50	5
ALLIS-CHAMBERS	1901551	29-D	PCB FREE	5/31/95	50.0	37.00	5

MANUFACTURER	SERIAL NO.	LOCATION	PCB CONTENT	DATE TESTED	KVA RATING	CAPACITY	CIRCUIT
ALLIS-CHAMBERS	1901552	29-D	PCB FREE	5/31/95	50.0	37.00	5
WESTINGHOUSE	3158310	3-Y	7.00	1/25/95	25.0	18.50	5
LINE MATERIAL	281134	308-A	PCB FREE	2/21/94	7.5	10.50	3
CENTRAL	2332-30	31-M	PCB FREE	5/31/95	25.0	18.50	5
ALLIS-CHAMBERS	2725299	31-T	15.00	3/6/96	5.0	10.50	5
ALLIS-CHAMBERS	2725302	31-T	16.00	3/6/96	5.0	10.50	5
ALLIS-CHAMBERS	2731213	31-T	PCB FREE	3/6/96	10.0	12.00	5
WESTINGHOUSE	74H12772	31-W (SPARE)	46.00	3/8/96	167.0	125.00	NA
COOPER	94NC803001	31-W (SPARE)	PCB FREE	MANU. 1994	37.5	26	NA
GENERAL ELECTRIC	G422167-65K	31-W (SPARE)	PCB FREE	3/8/96	25.0	395.00	NA
GENERAL ELECTRIC	N308302YFTA	31-W (SPARE)	PCB FREE	3/8/96	25.0	301.00	NA
GENERAL ELECTRIC	N383850YKTA	31-W (SPARE)	PCB FREE	3/8/96	25.0	355.00	NA
VANTRAN	74V2587	31-W (SPARE)	PCB FREE	3/8/96	25.0	14.70	NA
VANTRAN	81V3010	31-W (SPARE)	PCB FREE	3/8/96	167.0	57.00	NA
ESCO	4347	32-E	PCB FREE	5/31/95	5.0	10.50	5
ALLIS-CHAMBERS	1786551	32-H	PCB FREE	5/31/95	50.0	37.00	5
ALLIS-CHAMBERS	1901257	33-G	PCB FREE	5/19/94	100.0	75.00	5
ALLIS-CHAMBERS	1901264	33-G	PCB FREE	5/19/94	100.0	75.00	5
MOLONEY	749047	33-G	PCB FREE	5/19/94	25.0	18.50	5
CENTRAL	2351-1	33-W	PCB FREE	5/31/95	15.0	16.00	5
CENTRAL	2096-3-4	34-T	PCB FREE	5/31/95	50.0	37.00	5
SUNBELT	77A400351	34-T	PCB FREE	5/31/95	25.0		5
SUNBELT	80H056	34-T	PCB FREE	5/31/95	25.0		5
SUNBELT	81B1103	34-T	PCB FREE	5/31/95	25.0		5
WESTINGHOUSE	63AM5703	34-X	PCB FREE	3/6/96	10.0	12.00	7
GENERAL ELECTRIC	G572199-66K	34-Y	5.00	1/25/95	37.5	31.50	5
GENERAL ELECTRIC	G672198-66K	34-Y	5.00	1/25/95	37.5	31.50	5
GENERAL ELECTRIC	G442067-66Y	34-Y	PCB FREE	1/25/95	37.5	31.50	5
CENTRAL	1980-22	35-B	PCB FREE	5/31/95	37.5	31.50	5
CENTRAL	2332-50	35-M	PCB FREE	5/31/95	25.0	18.50	5
CENTRAL	1990-1-1	35-W	6.00	5/31/95	10.0	12.00	5
ESCO	4346	36-B	PCB FREE	5/31/95	5.0	10.50	5
WESTINGHOUSE	63AM5712	36-X	PCB FREE	3/6/96	10.0	12.00	7
GENERAL ELECTRIC	E104558-60Y	37-E	PCB FREE	5/31/95	100.0	75.00	5

MANUFACTURER	SERIAL NO.	LOCATION	PCB CONTENT	DATE TESTED	KVA RATING	CAPACITY	CIRCUIT
GENERAL ELECTRIC	E104559-60Y	37-E	PCB FREE	5/31/95	100.0	75.00	5
MCGRAW-EDISON	E104557-60Y	37-E	PCB FREE	5/31/95	100.0	75.00	5
MOLONEY	1422696	38-B	6.00	2/21/94	10.0	12.00	5
MOLONEY	1422703	38-B	7.00	2/21/94	10.0	12.00	5
GENERAL ELECTRIC	1312387	38-B	8.00	2/21/94	10.0	12.00	5
MCGRAW EDISON	69BG085008	38-Y	PCB FREE	1/25/95	50	37	5
MCGRAW-EDISON	69B593508	38-Y	PCB FREE	NEW	50.0	37.00	5
MOLONEY	69B593507	38-Y	PCB FREE	1/25/95	50.0	37.00	5
RTE DISTRIBUTION	891044482	38-Y	PCB FREE	1/25/95	50.0	37.00	5
CENTRAL	2332-36	39-M	PCB FREE	5/31/95	25.0	18.50	5
GENERAL ELECTRIC	H696244Y68AA	39-T	PCB FREE	3/6/96	100.0	75.00	5
GENERAL ELECTRIC	H730858Y69AA	39-T	PCB FREE	3/6/96	100.0	75.00	5
GENERAL ELECTRIC	H730863Y69AA	39-T	PCB FREE	3/6/96	100.0	75.00	5
UNKNOWN	70BF053001	39-T	PCB FREE	3/6/96	25.0		5
WESTINGHOUSE	74F16985	4-Y	19.00	1/25/95	50.0	37.00	5
CENTRAL	2096-9	400 AREA	5.00	10/30/95	10.0	12.00	1
WESTINGHOUSE	6571477	400 AREA	13.00	1/25/95	37.5	31.50	1
WESTINGHOUSE	6574819	400 AREA	26.00	1/25/95	50.0	37.00	1
MOLONEY	704040	400 AREA	PCB FREE	1/25/95	37.5	31.50	1
MOLONEY	704042	400 AREA	PCB FREE	1/25/95	37.5	31.50	1
MOLONEY	704043	400 AREA	PCB FREE	1/25/95	37.5	31.50	1
WESTINGHOUSE	6491237	400 AREA	PCB FREE	1/25/95	50.0	37.00	1
UNKNOWN	79NJ099-007	401-C	PCB FREE	3/6/96	25.0		4
UNKNOWN	79NJ099-010	401-C	PCB FREE	3/6/96	25.0		4
UNKNOWN	79NG215-002	401-C	PCB FREE	3/6/96	25.0		4
GENERAL ELECTRIC	K6206224(201-1)	405-L	2.00	10/30/95	69.0	45.00	PRIMARY
GENERAL ELECTRIC	K6206224(202-1)	405-L	2.00	10/30/95	69.0	45.00	PRIMARY
GENERAL ELECTRIC	K6206224(202-2)	405-L	PCB FREE	10/30/95	69.0	45.00	PRIMARY
GENERAL ELECTRIC	K6206224(202-3)	405-L	PCB FREE	10/30/95	69.0	45.00	PRIMARY
GENERAL ELECTRIC	K6206224(201-2)	405-L	PCB FREE	10/30/95	69.0	45.00	PRIMARY
GENERAL ELECTRIC	K6206224(201-3)	405-L	PCB FREE	10/30/95	69.0	45.00	PRIMARY
MOLONEY	704738	405-L (SUBSTATION)	PCB FREE	10/30/95	10.0	12.00	PRIMARY
MOLONEY	704739	405-L (SUBSTATION)	PCB FREE	10/30/95	10.0	12.00	PRIMARY
ALLIS-CHAMBERS	2706841	41-W	PCB FREE	5/19/94	15.0	16.00	5

MANUFACTURER	SERIAL NO.	LOCATION	PCB CONTENT	DATE TESTED	KVA RATING	CAPACITY	CIRCUIT
ALLIS-CHAMBERS	2706861	41-W	PCB FREE	5/19/94	15.0	16.00	5
ALLIS-CHAMBERS	2706865	41-W	PCB FREE	5/19/94	15.0	16.00	5
GENERAL ELECTRIC	6607366	413-A	12.00	5/22/96	37.5	31.50	4
GENERAL ELECTRIC	6607370	413-A	15.00	5/22/96	37.5	31.50	4
GENERAL ELECTRIC	6709121	413-A	41.00	12/26/95	25.0	18.50	4
CENTRAL	3918-8	413-A	PCB FREE	12/26/95	50.0	37.00	4
CENTRAL	3918-9	413-A	PCB FREE	12/26/95	50.0	37.00	4
GENERAL ELECTRIC	6607371	413-A	9.00 ~~TBD~~	9/24/96	37.5	31.50	4
GENERAL ELECTRIC	N337866YGTA	413-A (NEW IN STORAGE)	PCB FREE	NEW	10.0	12.00	NA
GENERAL ELECTRIC	H660200Y68AA	42-E	PCB FREE	5/19/94	100.0	75.00	5
GENERAL ELECTRIC	H660201Y68AA	42-E	PCB FREE	5/19/94	100.0	75.00	5
VANTRAN	81V3009	42-E	PCB FREE	5/19/94	100.00		5
CENTRAL	2332925	42-H	PCB FREE	10/30/95	25.0	18.50	2
WESTINGHOUSE	88A232716	44-T	PCB FREE	MFG .6/88	100.0		5
WESTINGHOUSE	88A280864	44-T	PCB FREE	MFG .6/88	100.0		5
WESTINGHOUSE	88A280863	44-T	PCB FREE	MFG .6/88	100.0		5
CENTRAL	2440-1-7	44-W	14.00	12/26/95	10.0	12.00	5
CENTRAL	2332-26	44-W	PCB FREE	12/26/95	25.0	18.50	5
CENTRAL	2440-1-13	44-W	PCB FREE	12/26/95	10.0	12.00	5
CENTRAL	2440-1-6	44-W	PCB FREE	12/26/95	10.0	12.00	5
ALLIS-CHAMBERS	3119944	45-E	6.00	10/30/95	100.0	75.00	2
ALLIS-CHAMBERS	3070057	45-E	6.00	7/18/96	100.0	75.00	2
ALLIS-CHAMBERS	3042817	45-E	16.00	10/30/95	100.0	75.00	2
ALLIS-CHAMBERS	3041143	45-E	PCB FREE	10/30/95	100.0	75.00	2
ALLIS-CHAMBERS	3041145	45-E	PCB FREE	10/30/95	100.0	75.00	2
ALLIS-CHAMBERS	3070123	45-E	PCB FREE	10/30/95	100.0	75.00	2
ESCO	4336	45-Y	PCB FREE	1/25/95	15.0	16.00	5
ESCO	4337	45-Y	PCB FREE	1/25/95	15.0	16.00	5
ESCO	4338	45-Y	PCB FREE	1/25/95	15.0	16.00	5
UNKNOWN	TC-20	451 (CIRCUIT BREAKER)	PCB FREE	3/8/96	N/A	2.00	
UNKNOWN	TC-21	451 (CIRCUIT BREAKER)	PCB FREE	3/8/96	N/A	2.00	
UNKNOWN	TC-22	451 (CIRCUIT BREAKER)	PCB FREE	3/8/96	N/A	2.00	
UNKNOWN	TC-23	451 (CIRCUIT BREAKER)	PCB FREE	3/8/96	N/A	2.00	
ALLIS-CHAMBERS	3073563	46-A	PCB FREE	5/31/95	25.0	18.50	2

MANUFACTURER	SERIAL NO.	LOCATION	PCB CONTENT	DATE TESTED	KVA RATING	CAPACITY	CIRCUIT
ESCO	10919593	46-A	PCB FREE	5/31/95	25.0		2
ALLIS-CHAMBERS	3102209	46-B	PCB FREE	2/21/94	15.0	16.00	2
ALLIS-CHAMBERS	3102216	46-B	PCB FREE	2/21/94	15.0	16.00	2
ALLIS-CHAMBERS	3102227	46-B	PCB FREE	2/21/94	15.0	16.00	2
ALLIS-CHAMBERS	3069323	46-B	PCB FREE	12/26/95	5.0	10.50	2
ALLIS-CHAMBERS	3069378	46-B	PCB FREE	12/26/95	5.0	10.50	2
ALLIS-CHAMBERS	3069422	46-B	PCB FREE	12/26/95	5.0	10.50	2
WESTINGHOUSE	3165798	46-W	15.00	2/21/94	50.0	37.00	5
ESCO	3811109	46-W	PCB FREE	2/21/94	15.0	16.00	5
ESCO	3811110	46-W	PCB FREE	2/21/94	15.0	16.00	5
ESCO	3811111	46-W	PCB FREE	2/21/94	15.0	16.00	5
ESCO	7128669	46W, 5/H81	PCB FREE	2/21/94	37.5	31.50	5
WESTINGHOUSE	3157785	48-G	14.00	12/26/95	5.0	10.50	2
WESTINGHOUSE	3167786	48-G	16.00	12/26/95	5.0	10.50	2
ESCO	8813096	48-W	PCB FREE	2/21/94	50.0	37.00	7
ALLIS-CHAMBERS	0055193	49-B	PCB FREE	3/6/96	15.0	16.00	2
GENERAL ELECTRIC	D882655-58Y	49-B	PCB FREE	2/21/94	50.0	37.00	2
GENERAL ELECTRIC	D603196-57Y	49-B	PCB FREE	12/26/95	15.0	16.00	2
GENERAL ELECTRIC	D609142-57Y	49-B	PCB FREE	12/26/95	15.0	16.00	2
GENERAL ELECTRIC	D609143-57Y	49-B	PCB FREE	12/26/95	15.0	16.00	2
COPPER IND.	CP921065625	49-W	PCB FREE	NEW	25.0	18.50	7
GENERAL ELECTRIC	G436009-66Y	49-W	PCB FREE	4/15/96	25.0	18.50	7
GENERAL ELECTRIC	G455387-66Y	49-W	PCB FREE	4/15/96	25.0	18.50	7
GENERAL ELECTRIC	G455393-66Y	49-W	PCB FREE	4/15/96	25.0	18.50	7
KUHLMAN	C11492	50-G	PCB FREE	5/31/95	25.0	32.00	2
KUHLMAN	C11492	50-G	PCB FREE	NEW	50.0		2
VANTRAN	74V2586	50-G	PCB FREE	5/31/95	25.0		2
MOLONEY	701570	503-C(WATER TANK)	15.00	3/6/96	5.0	10.50	3
ESCO	7128670	53-D	PCB FREE	12/26/95	15.0	16.00	2
CENTRAL	2324-1	54-F	PCB FREE	10/30/95	25.0	18.50	2
GENERAL ELECTRIC	N889128YCY	54-F	PCB FREE	10/30/95	50.0		2
GENERAL ELECTRIC	N889129YCY	54-F	PCB FREE	10/30/95	50.0		2
GENERAL ELECTRIC	N889130YCY	54-F	PCB FREE	10/30/95	50.0		2
CENTRAL	1980-39	54-G	PCB FREE	3/6/96	37.5	31.50	2

MANUFACTURER	SERIAL NO.	LOCATION	PCB CONTENT	DATE TESTED	KVA RATING	CAPACITY	CIRCUIT
SESCO	672N3698	54-G	PCB FREE	N/A	167.0	125.00	2
SESCO	672N8709	54-G	PCB FREE	N/A	167.0	125.00	2
MOLONEY	908278	54-G, S.L. BANK	9.00	2/21/94	20.0	18.50	2
SOUTH BEND	34386	54-G, S.L. BANK	PCB FREE	2/21/94			2
CENTRAL	2440-7-1	54-H	13.00	12/26/95	50.0	37.00	2
CENTRAL	1349-3-1	54-H	PCB FREE	5/19/94	37.5	44.00	2
UNKNOWN	N384076YKTA	54-H	PCB FREE	12/26/95	37.5		2
VANTRAN	81V3008	54-H	PCB FREE	12/26/95	37.5	31.50	2
GREENVILLE	91-306-1	55-B	PCB FREE	NEW	100.0		2
WESTINGHOUSE	3157798	601-B	15.00	4/15/96	5.0	10.50	7
CENTRAL	2332-2	61-J	PCB FREE	2/21/94	75.0	50.00	2
UNKNOWN	N711809-YCX	Ground water ~~61-T~~ Treatment	PCB FREE	3/6/96	10.0		5
WAGNER	5N43299	62-D	PCB FREE	5/31/95	15.0	16.00	2
WAGNER	5N43306	62-D	PCB FREE	5/31/95	15.0	16.00	2
WAGNER	5N43307	62-D	PCB FREE	5/31/95	15.0	16.00	2
WAGNER	5P11868	62-D	PCB FREE	5/31/95	37.5	31.50	2
ALLIS-CHAMBERS	2493655	62-G	2.00	2/21/94	100.0	75.00	2
ALLIS-CHAMBERS	2495051	62-G	PCB FREE	2/21/94	100.0	75.00	2
ALLIS-CHAMBERS	2495072	62-G	PCB FREE	2/21/94	100.0	75.00	2
CENTRAL	2332-44	62-G	PCB FREE	2/21/94	25.0	18.50	2
WESTINGHOUSE	76AZ53011	631-A	PCB FREE	4/15/96	10.0	12.00	8
WESTINGHOUSE	76AZ53010	631-A	PCB FREE	4/15/96	10.0	12.00	8
WESTINGHOUSE	76AZ253010	631-A	PCB FREE	4/15/96	10.0	12.00	8
ESCO	5127260	68-C	12.00	12/26/95	37.5	31.50	2
LINE MATERIAL	G6980901	68-C	PCB FREE	5/19/94	37.5	31.50	2
LINE MATERIAL	G6980904	68-C	PCB FREE	5/19/94	37.5	31.50	2
LINE MATERIAL	G6980905	68-C	PCB FREE	5/19/94	37.5	31.50	2
WESTINGHOUSE	68AH2134	68-C	PCB FREE	5/19/94	37.5	31.50	2
WESTINGHOUSE	68AH2135	68-C	PCB FREE	5/19/94	37.5	31.50	2
WESTINGHOUSE	68AH2136	68-C	PCB FREE	5/19/94	37.5	31.50	2
CENTRAL	2440-3-1	68-F	7.00	5/31/95	25.0	18.50	2
CENTRAL	2440-3-2	68-F	9.00	5/31/95	25.0	18.50	2
CENTRAL	2383-17	68-F	PCB FREE	5/31/95	37.5	31.50	2
SESCO	67H8984	68-G	7.00	5/31/95	75.0	50.00	2

MANUFACTURER	SERIAL NO.	LOCATION	PCB CONTENT	DATE TESTED	KVA RATING	CAPACITY	CIRCUIT
WESTINGHOUSE	67G11266	68-G	22.00	5/31/95	250.0	175.00	2
WESTINGHOUSE	67H10068	68-G	22.00	5/31/95	250.0	175.00	2
WESTINGHOUSE	76A343411	68-G	PCB FREE	5/31/95	25.0		2
WESTINGHOUSE	74H14517	703-A	26.00	3/6/96	100.0	75.00	3
WESTINGHOUSE	74H14521	703-A	31.00	3/6/96	100.0	75.00	3
GRNVILL TRANSFORMER	91-306-2	703-A	PCB FREE	3/6/96	100.0	45.00	3
WESTINGHOUSE	3158309	703-A	PCB FREE	3/6/96	25.0	18.50	3
ESCO	1126009	703-B	PCB FREE	3/6/96	37.5	31.50	3
ESCO	1126010	703-B	PCB FREE	3/6/96	37.5	31.50	3
ESCO	1126011	703-B	PCB FREE	3/6/96	37.5	31.50	3
GENERAL ELECTRIC	N755584-YFX	703-D	PCB FREE	MFG.6/84	50.0		3
GENERAL ELECTRIC	N755579-YFX	703-D	PCB FREE	MFG.6/84	50.0		3
GENERAL ELECTRIC	N755582-YFX	703-D	PCB FREE	MFG.6/84	50.0		3
GENERAL ELECTRIC	P066812-YOA	703-E	PCB FREE	NEW	75.0		3
GENERAL ELECTRIC	P066815-YOA	703-E	PCB FREE	NEW	75.0		3
GENERAL ELECTRIC	PO66813-YOA	703-E	PCB FREE	NEW	75.0		3
EISLER	48381-J	704-D	13.00	5/19/94	37.5	31.50	4
ALLIS-CHAMBERS	1848509	707-A	4.00	4/15/96	15.0	16.00	7
UNKNOWN	921023244	707-C	49.90	NEW	10.0	10.00	7
CENTRAL	2351-2	709-A	PCB FREE	12/26/95	25.0	16.00	2
SESCO	67ZN3693	720-A	4.00	2/21/94	75.0	50.00	3
MOLONEY	700757	720-A	16.00	2/21/94	5.0	10.50	3
MOLONEY	700764	720-A	17.00	2/21/94	5.0	10.50	3
LINE MATERIAL	312144	744-A	PCB FREE	12/26/95	15.0	16.00	4
LINE MATERIAL	312151	744-A	PCB FREE	12/26/95	15.0	16.00	4
CENTRAL	2440-2-10	75-I	5.00	5/31/95	15.0		2
CENTRAL	2440-2-3	75-I	15.00	5/31/95	15.0	16.00	2
CENTRAL	2331-1	75-I	PCB FREE	5/31/95	15.0	16.00	2
ALLIS-CHAMBERS	2731216	8-T	PCB FREE	2/21/94	10.0	12.00	5
ALLIS-CHAMBERS	2731234	8-T	PCB FREE	2/21/94	10.0	12.00	5
UNKNOWN	90A490102	8-T	PCB FREE	MFG. 11/90	10.0		5
UNKNOWN	90A490100	8-T	PCB FREE	MFG. 11/90	10.0		5
UNKNOWN	90A490101	8-T	PCB FREE	MFG. 11/90	10.0		5
LINE MATERIAL	G3724510	82-G	PCB FREE	3/6/96	25.0	18.50	2

MANUFACTURER	SERIAL NO.	LOCATION	PCB CONTENT	DATE TESTED	KVA RATING	CAPACITY	CIRCUIT
MOLONEY	1226285	821-A	3.00	4/15/96	10.0	12.00	7
MOLONEY	1226284	821-A	5.00	4/15/96	10.0	12.00	7
MOLONEY	1226292	821-A	6.00	4/15/96	10.0	12.00	7
UNKNOWN	3687715	Groundwater Treatment	3.00	4/15/96	10.0		5
MCGRAW-EDISON	69B2337005	AIR HORN Y-AREA	PCB FREE	12/26/95	10.0	12.00	5
MCGRAW-EDISON	70BB726004	AIR HORN Y-AREA	PCB FREE	12/26/95	10.0	12.00	5
MCGRAW-EDISON	70BB726006	AIR HORN Y-AREA	PCB FREE	12/26/95	10.0	12.00	5
WESTINGHOUSE	3157787	B-10	10.00	1/25/95	5.0	10.50	1
GENERAL ELECTRIC	G431710-65K	B-10	PCB FREE	1/25/95	167		1
GENERAL ELECTRIC	G431711-65K	B-10	PCB FREE	1/25/95	167.0	125.00	1
GENERAL ELECTRIC	G571599-66K	B-10	PCB FREE	1/25/95	167		1
WESTINGHOUSE	74H12767	B-15	29.00	1/25/95	167		1
WESTINGHOUSE	3157784	B-7	9.00	1/25/95	5.0	10.50	1
GENERAL ELECTRIC	M634891YJPA	BG #3	PCB FREE	3/6/96	50.0	37.00	7
GENERAL ELECTRIC	M634892YJPA	BG #3	PCB FREE	3/6/96	50.0	37.00	7
GENERAL ELECTRIC	M649475YKPA	BG #3	PCB FREE	3/6/96	50.0	37.00	7
WESTINGHOUSE	31577783	BG#1 POLE 7/239	PCB FREE	2/21/94	5.0	10.50	7
GENERAL ELECTRIC	6422167-65K	BLD. 723	PCB FREE	3/8/96	25.0	18.50	4
GENERAL ELECTRIC	9668046	BREAKER (S.L. BANK 212-12)	PCB FREE	2/21/94	15.0		1
VANTRAN	74V2583	BST AREA	PCB FREE	2/21/94	5.0	10.50	7
STANDARD	RIG-0585	CB-1	PCB FREE	12/26/95	1500.0		6
COOPER	931001557	GROUNDWATER TREATMENT	PCB FREE	NEW	15		7
GENERAL ELECTRIC	PO83934-YPA	GROUNDWATER TREATMENT	PCB FREE	NEW	50		7
GENERAL ELECTRIC	N866437-YAY	GROUNDWATER TREATMENT	PCB FREE	NEW	75		7
GREENVILLE TRANS.	96-176-1	HARRISON BAYOU PUMP	PCB FREE	NEW	15		7
GREENVILLE TRANS.	96-176-1A	HARRISON BAYOU PUMP	PCB FREE	NEW	75		7
GREENVILLE TRANS.	96-176-3	HARRISON BAYOU PUMP	PCB FREE	NEW	50		7
GENERAL ELECTRIC	C223609	M-2	41.00	1/25/95	25.0	18.50	1
GENERAL ELECTRIC	C223610	M-2	42.00	1/25/95	25.0	18.50	1
MOLONEY	700762	MAGAZINE DUNNAGE YARD 7/E29	33.00	2/21/94	5.0	10.50	7
STANDARD	RIG-0491	P-108	PCB FREE	12/26/95	112.5	100.00	6
STANDARD	RIG-0582	P-116	PCB FREE	12/26/95	750.0		6
STANDARD	RIG-0583	P-117	PCB FREE	12/26/95	750.0		6
STANDARD	RIG-0488	P-118	PCB FREE	12/26/95	500.0		6

MANUFACTURER	SERIAL NO.	LOCATION	PCB CONTENT	DATE TESTED	KVA RATING	CAPACITY	CIRCUIT
STANDARD	RIG-0500	P-118	PCB FREE	12/26/95	225.0	150.00	6
STANDARD	RIG-0501	P-120	PCB FREE	12/26/95	225.0	150.00	6
STANDARD	RIG-0712	P-122	PCB FREE	12/26/95	300.0	200.00	6
STANDARD	RIG-0490	P-123	PCB FREE	12/26/95	112.5	100.00	6
GENERAL ELECTRIC	G209631-65Y	P-13	PCB FREE	1/25/95	100.0	75.00	1
GENERAL ELECTRIC	G209634-65Y	P-13	PCB FREE	1/25/95	100.0	75.00	1
WESTINGHOUSE	70J16274	P-14	47.00	1/25/95	250	175.00	1
MCGRAW-EDISON	69B2201003	POLE 3/10, CATH. PROT.	PCB FREE	12/26/95	5.0	10.50	3
ALLIS-CHAMBERS	2470049	POLE 3/B26, BALLFIELD	5.00	12/26/95	25.0	18.50	3
UNKNOWN	3144153	POLE 5-225, S.L. BANK	18.00	3/8/96	25.0		5

APPENDIX V

UST Correspondence

021658

December 20, 1988

Contracting Officer's Representative
Longhorn Army Ammunition Plant
Marshall, Texas 75670

Subject: Underground Storage Tanks - Final Rule

Dear Sir:

Reference SMCLO-EN/OR (200-1a) letter dated November 29, 1988, same subject as above.

An environmental project was submitted in the 1383 Report to remove the underground storage tanks at Longhorn Army Ammunition Plant. It is Project Number LH-SW-29. It is presently unfunded.

A PE&ER project will be submitted at the earliest opportunity to obtain funding to remove or replace these underground tanks.

If you have any questions, please contact me at Ext. 2219.

Very truly yours,

Jerry W. Thurman
Environmental Engineer

AVO 880318

UNDERGROUND STORAGE TANKS

021659

Location	Size	Year Installed		Last Tested
12-G*	280 Gal.	1976	Closed	1986
37-X-1**	N/A	1979	Propane	N/A
724-A	12,000 Gal.	1942	Gasoline	1988
724-B	17,130 Gal.	1975	Gasoline	1988
724-D1	1,000 Gal.	1942	Gasoline	1986
724-D2	1,000 Gal.	1942	Gasoline	1986
703-CL***	10,000 Gal.	1978	Diesel	1986

*Closed and replaced with an aboveground tank.

**Propane tank not subject to regulations.

***Diesel tank used for heating oil - not subject to regulations, but tested as a part of the program.

Thiokol CORPORATION

021660

ORDNANCE OPERATIONS

December 14, 1993

Administrative Contracting Officer
Longhorn/Louisiana Army Ammunition Plants
ATTN: SMCLO-EN
Marshall, TX 75671

SUBJECT: Information Update for Underground Storage Tanks

Reference: 1) AMSMC-EQ (200-1a) letter dated 10 Nov 93 supsense 16 Dec 93 subject as above
2) Thiokol letter dated 14 Dec 93 subject as above
3) Contract DAAA09-87-Z-0010
4) Contract DAAA09-87-Z-0014

Dear Sir:

Attached is Reference 2, which was faxed to Headquarters, AMCCOM on 14 Dec 93 in response to Reference 1.

If you have any questions, call Connie Dunavant at extension 5124.

Sincerely,

Connie Dunavant

for David Burroughs
Manager Environmental Quality

Attch

bc: D. Williams (ACO)

AVO #930261

021661

Thiokol CORPORATION

ORDNANCE OPERATIONS

December 14, 1993

Ms. Laura Ulrich
Headquarters, U.S. Army Armament,
Munitions and Chemical Command
Department of the Army
Rock Island, Illinois 61299-6000

Dear Ms. Ulrich

SUBJECT: Information Update for Underground Storage Tanks (USTs)

Reference: AMSMC-EQ (200-1a) letter dated 10 Nov 93 suspended 16 Dec 93

Attached is the updated Underground Storage Tank Chart for both Longhorn (LHAAP) and Louisiana (LAAP) Army Ammunition Plants.

The data received in the Tankman database was obsolete and will have to be reworked in order to reflect the correct information. This will be forwarded to you as soon as it is available.

If you have any questions, please call me at DSN 673-5124.

Sincerely yours,

Connie Dunavant

Connie Dunavant

Attch a/s

Longhorn Plant P.O. Box 1029 Marshall, TX 75671-1029 903/679-3181
Louisiana Plant P.O. Box 30058 Shreveport, LA 71130-0058 318/459-5051

UPDATED 8/30/93

021662

INSTALL	# UST INVTORY (A)	DERA ELEG USTs (B)	# USTs IN USE (C)	# USTs NOT USE (D)	# UST REGU LATED (E)	COST EST. DERA (F)	NUMBER OF USTs REQUIRED TO SATISFY RELEASE DETECT BY 22 DEC OF FOLLOWING YRS 1989 (G)	1990 (H)	1991 (I)	1992 (J)	1993 (K)	SPILL OVER PREV (L)	CORR SION PROT (M)
							# RDCS	# RDCS	# RDCS	# RDC	# RDCS		
ALABAMA AAP	3	3	0	3	3		3 NC	0	C	0	0		
BADGER AAP	5	0	5	0	5		C	C	2 INC	1 INC	2		
CORNHUSKER	1	0	1	0	0		0	0	0	0	0		
CRDEC	10	0	9	1	1		0	0	0	0	1		
CRANE AAA	0	0	0	0	0		0	0	0	0	0		
ETHAN ALLEN	2	0	2	0	2		0	0	0	0	2		
HAWTHORNE	48	3	30	18	10		2 INC	0	0	0	8		
HAYS AAP	0	0	0	0	0		0	0	0	0	0		
HOLSTON AAP	18	0	18	0	5		2 INC	1 INC	1 INC	0	+ 1		
INDIANA AAP	36	5	28	8	10		0	0	0	1 INC	9		
IOWA AAP	10	0	10	0	0		0	0	0	0	0		
JOLIET AAP	45	0	10	45	16		11 INC	0	2 INC	0	3		
KANSAS AAP	16	0	12	4	14		1 INC	0	2 INC	7 INC	4		
LAKE CITY AAP	10	0	8	2	5		0	1 INC	0	2 INC	2		
LONE STAR AAP	61	0	47	14	24		22 INC	0	0	0	2		
LONGHORN AAP	~~0~~	0	~~0~~	~~0~~	~~10~~		~~0~~ 3 INC	0	0	~~0~~ 4 INC	0		
LOUISIANA AAP	~~16~~	0	~~8~~	~~8~~	~~15~~		1 INC	0	0	7 INC	~~7 INC~~ 8		
MCALESTER AAP	0	0	0	0	0		0	0	0	0	0		
MILAN AAP	50	0	43	7	13		5 INC	4	4 INC	0	0		
MISSOURI AAP	6	0	6	0	3		0	0	0	0	3		
NEWPORT AAP	6	6	6	0	3 77		1 INC	0	0	0	0		
PICATINNY AR	75	0	44	31	14		6 INC	0	0	3 INC	5		
PINE BLUFF AR	61	0	63	2	16		0	0	4 INC	1 INC	11		
RAVENNA AAP	5	0	7	0	7		0	0	0	0	0		
RIVERBANK AAP	17	0	1	16	17		16 NC	0	0	0	1 INC		
RADFORD AAP	37	0	31	6	37		5 INC	1 INC	4 INC	15 INC	12		
ROCK ISLAND	8	0	8	0	5		0	0	1 INC	0	7		
SCRANTON AAP	0	0	0	0	0		0	0	0	0	0		
SUNFLOWER	8	0	7	1	8		0 NC	0	2 INC	0	2 INC		
TWIN CITIES	3	0	3	0	3		0	0	0	0	3		
YOUNGSTOWN	2	2	2	0	2		0	0 INC	0	0	0		
WATERVLIET	23	0	23	0	15		10 NC	1 INC	2 INC	0	2 INC		

KEY

** REMOVAL COMPLETED

UST UNDERGROUND STORAGE TANK

USTR UNDERGROUND STORAGE TANKS REPORT SEPTEMBER 1989

RDCS RELEASE DETECTION COMPLIANCE STATUS (INC = IN COMPLIANCE; NIC = NOT

NUMBER OF REGULATED UST

ENCL 1

021663

MORTON THIOKOL, INC.
Longhorn Division

March 2, 1989

Administrative Contracting Officer
Longhorn Army Ammunition Plant
Marshall, Texas 75670

Subject: Compliance with Underground Storage Tank (UST) Regulations

Dear Sir:

Reference SMCLO-EN letter dated February 13, 1989, same subject as above.

Monthly inventory control is in effect for all five remaining regulated underground tanks (seven have been removed or deactivated). We are currently receiving bids for the annual leak testing, which was first completed in 1988.

We continue to seek funding to replace the remaining tanks with aboveground tanks. Four of our remaining tanks hold gasoline and the remaining one is used to store diesel fuel. Attached is a current list of our remaining underground storage tanks.

We have no objections to the Draft AMCCOM Underground Tank Compliance Policy.

Very truly yours,

Allen B. Childress, Jr.
Environmental Coordinator

Marshall, Texas 75671 (214) 679-3181

APPENDIX VI

Building Radon Survey Data

RADON BUILDING SURVEY

021665

	BUILDING	PRIORITY	SQUARE FOOTAGE	DETECTORS
1.	LR-1	3	3734	2
2.	M-2	2	768	1
3.	B-7	3	3368	2
4.	SHED-C	3	1674	1
5.	15-K	3	1800	1
6.	29-D	3	7397	4
7.	13-T	2	2405	1
8.	16Y-2	3	480	1
9.	18-K	3	4236	2
10.	20-X	3	300	1
11.	22-A	2	4920	3
12.	25-T	3	7641	4
13.	POST-1	2	225	1
14.	26-E	3	10551	5
15.	26-G	3	5824	3
16.	29-A	2	12750	6
17.	31-G	3	5234	3
18.	32-H	3	6176	3
19.	34-T	3	2738	1
20.	34-Y	3	2906	2
21.	41-W	2	5746	3
22.	54-G	3	10247	5
23.	54-H	3	6459	3
24.	101	2	2175	1
25.	102	3	3275	2
26.	103	3	4929	2
27.	207	2	5543	3
28.	401	2	24097	12
29.	409	3	2605	1
30.	702	3	2459	1
31.	50-G	3	3138	2
32.	704-D	2	5375	3
33.	705	2	8706	4
34.	707-E	3	1164	1
35.	709-A	2	5831	3
36.	33-W	3	5823	3
37.	719	2	6737	3
38.	722-P	3	2614	1
39.	720-A	2	7073	4
40.	723	3	4806	2
41.	725	3	1099	1
42.	736-A	3	1568	1
43.	813	3	9320	5
44.	814	3	21507	11
45.	68-G	3	14325	7
46.	68-F	3	9546	5
47.	P-9	3	1985	1
48.	206	3	16000	8
49.	201	2	7168	4
50.	8T	3	2158	1
Subtotal				150
(+ 20% spike samples)				30
TOTAL			288605	180

LANDAUER

021666

LAYOUT FOR dBASE III+ COMPATIBLE DISKETTES

5 1/4" Diskette

Volume Label: TERRADEX
File I.D.: A:TER.DAT

Records are Variable Length, ASCII Text
Double-Sided, Double-Density

One ASCII record, terminated with a carriage return and line feed, will be used to transmit the data for one monitor. The fields in this record will be separated with appropriate delimiters so that the data can be read into a dBASE III+ file using the "APPEND FROM" command.

Delimiters will be the dBASE III+ default, character fields enclosed in quotes, and all fields separated by commas. Illustration on page 1, Figure #1.

The following is a step-by-step instruction for installing the data file onto your dBASE III+ file.

1. Create a dBASE III+ file or use your own exactly or similar to the one illustrated on page 2, Figure #2.

2. Skip 2a and 2d if you are not using the dBASE III+ "ASSIST" to create your dBASE file.

    a. Hit the "ESC" to enter the dot prompt.

    b. Type "USE" and your filename.

    c. Type "APPEND FROM A:TER.DAT TYPE DELIMITED".

    d. Type "ASSIST" to return to dBASE III+ ASSIST.

3. Browse the file to ensure data has been retrieved.

Figure #1

```
"001286480","DRNA","A04257  ","19890206","19890424","NE","*",   115.5,"*",  1.3
"001212121","DRNA","A04257  ","19890206","19890424","  ","  ",       ,"  ",  0.2
.................
.................
```


Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586 Telephone: (708) 755-7000 Facsimile: (708) 755-7016

LANDAUER

021667

NOTE:

The starting dates and ending dates shown on the enclosed reports were taken from the ATM labels. If any label dates were missing, they were taken from the detector deployment data sheets.

If the starting and/or ending date on the ATM label did not match those on the data sheet, the comment "DATE DISCREPANCY" appears in Column 5 of the Radon Monitoring Report.

LANDAUER, INC.

Ralph Schnabel
Contract Administrator

RS/njw

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586 Telephone: (708) 755-7000 Facsimile: (708) 755-7016

LANDAUER

021668

CERTIFICATION OF TECHNICAL DATA CONFORMITY

The Contractor, Landauer, Inc., hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. DACA 72-89-D-0002 is complete, accurate, and complies with all requirements of the contract.

4/27/93
Date

Sharon Barbeauld
Sharon Barbeauld, QC Supervisor

njw sbctdcfm

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586 Telephone: (708) 755-7000 Facsimile: (708) 755-7016

14971

DETECTOR DEPLOYMENT DATA SHEET (for ATMs)

Army Installation:
LONGHORN ARMY AMMO PLANT
Address: PO BOX 1149
MARSHALL TX 75671

CODES USED IN DETECTOR DEPLOYMENT DATA SHEET

***QA SAMPLE CODES**
S = Spike
D = Duplicate
F = Field Blank

***BUILDING USE CODES**
1 = Day Care Center, School, or Hospital
2 = Quarters, BOQ/BEQ, or Billet
3 = Workplace
4 = Other

***FLOOR CODES**
0 = Basement
1 = First Floor
2 = Second Floor
3 = Other

Terradex
Radon Detection Products
Tech/Ops Landauer, Inc.
2 Science Road
Glenwood, Illinois 60425-1586
Telephone (312) 755-7911

	ATM Serial No.	Placement Date MO. DAY YR.	Removed Date MO. DAY YR.	QA Sample Type*	Serial No. of Adjacently Placed Duplicate	Building Use*	Bldg. No.	Floor*	Room No.	Further Location ID & Any Remarks
1	344543 6	10 09 91	10 26 92			3	703D	1	MGR OFFICE	#3445436
2	344543 7	10 09 91	10 27 92			3	20X	1	BREAK	#3445437
3	344543 3	10 07 91	10 27 92	S		4	726A	1	7	
4	344543 5	10 10 91	10 27 92			4	814	1	S Corner	#3445445
5	344543 6	10 07 91	10 26 92			4	4R1	1	S Wall	#3445446
6	344543 9	10 10 91	10 27 92			3	814	1	W Wall	#3445449
7	344543 0	10 10 91	10 27 92			4	814	1	E Wall	#3445450
8	344543 1	10 08 91	10 27 92			3	349	1	210 7	
9	344543 2	10 10 91	10 27 92			3	401	1	W. Wall	#3445452
10	344543 4	10 07 91	10 27 92	F		4	720A	1	7	
11	344543 5	10 08 91	10 27 92	D	344528 5	3	25T	1	OFFICE	#3445455
12	344543 6	10 08 91	10 27 92			3	164Z	1	BREAK	#3445456
13	344543 7	10 07 91	10 27 92	F		4	720A	1	7	
14	344543 8	10 10 91	10 27 92			3	29A	1	Break Room	#3445458
15	344543 9	10 10 91	10 27 92			3	401	1	W Wall	#3445459
16	344544 2	10 10 91	10 26 92			3	703D	1	BREAK	#3445462
17	344544 3	10 07 91	11 10 92			3	B7	1	N. RAMP	#3445463
18	344544 4	10 10 91	10 27 92			3	29A	1	1R5	#3445464
19	344544 5	10 10 91	11 04 92			3	401	1	N. Wall	#3445465
20	344544 6	10 08 91	11 04 92			3	8T	1	Hall Post	#3445466

021669

DETECTOR DEPLOYMENT DATA SHEET

14977

DETECTOR DEPLOYMENT DATA SHEET (for ATMs)

Army Installation:

LONGHORN Army Ammunition Plant

Address: PO Box 1149

MARSHALL TX 75671

CODES USED IN DETECTOR DEPLOYMENT DATA SHEET

***QA SAMPLE CODES**
S = Spike
D = Duplicate
F = Field Blank

***BUILDING USE CODES**
1 = Day Care Center, School, or Hospital
2 = Quarters, BOQ/BEQ, or Billet
3 = Workplace
4 = Other

***FLOOR CODES**
0 = Basement
1 = First Floor
2 = Second Floor
3 = Other

Terradex
Radon Detection Products
Tech/Ops Landauer, Inc.
2 Science Road
Glenwood, Illinois 60425-1586
Telephone (312) 755-7911

	ATM Serial No.	Placement Date MO. DAY YR.	Removed Date MO. DAY YR.	QA Sample Type*	Serial No. of Adjacently Placed Duplicate	Building Use*	Bldg. No.	Floor*	Room No.	Further Location ID & Any Remarks
1	345362	10 10 91	10 26 92			3	686	1	Room 7.	#3445362
2	345364	10 10 91	11 04 92	D	345366	3	316	1	EVES	#3445364
3	345365	10 4 91	11 04 92			3	266	1	LADIES.	#3445365
4	345366	10 10 91	11 04 92			3	316	1	EVE	#3445366
5	345367	10 07 91	11 04 92	S		4	720A	1	7	
6	345368	10 10 91	11 04 92			3	686	1		#3445368
7	345369	10 10 91	11 04 92	F			720A	1		
8	345370	10 4 91	11 04 92			3	26E	1	R121	#3445370
9	345371	10 10 91	11 04 92			3	32H	1	OFFICE	#3445371
10	345372	10 4 91	10 29 92			1	719	1	DR OFFICE	#3445372
11	345373	10 10 91	11 04 92			3	316	1	IPDT	#3445373
12	345374	10 4 91	11 09 92				33W	1		#3445374
13	345375	10 10 91	10 27 95			3	813	1	OFFICE	#3445375
14	348738	10 10 91	10 26 92			3	402	1	Break	#3448738
15	348739	10 10 91	10 26 92			3	686	1	N Wall	#3448739
16	348740	10 10 91	11 04 92				207	1		
17	348741	10 10 91	11 02 92			3	546	1	ME WALL	#3448741
18	348742	10 10 91	10 27 92			3	206	1	BANDSAW	#3448742
19	348743	10 10 91	10 27 92	F			720A	1		
20	348744	10 10 91	11 02 92			3	546	1	MW Wall	#3448744

0216700

14981

DETECTOR DEPLOYMENT .TA SHEET (for ATMs)

Army Installation:

LONG HORN ARMY AMMUNITION PLANT

Address: PO BOX 1149

MARSHALL TX 75671

CODES USED IN DETECTOR DEPLOYMENT DATA SHEET

***QA SAMPLE CODES**
S = Spike
D = Duplicate
F = Field Blank
N = Missing

***BUILDING USE CODES**
1 = Day Care Center, School, or Hospital
2 = Quarters, BOQ/BEQ, or Billet
3 = Workplace
4 = Other

***FLOOR CODES**
0 = Basement
1 = First Floor
2 = Second Floor
3 = Other

Tech/Ops Landauer

Terradex
Radon Detection Products
Tech/Ops Landauer, Inc.
2 Science Road
Glenwood, Illinois 60425-1586
Telephone (312) 755-7911

	ATM Serial No.	Placement Date MO. DAY YR.	Removed Date MO. DAY YR.	QA Sample Type*	Serial No. of Adjacently Placed Duplicate	Building Use*	Bldg. No.	Floor*	Room No.	Further Location ID & Any Remarks
1	344534 0	10 14 91	11 09 92			4	33W	1	Shell	#3445340
2	344534 1	10 07 91	~~10 09 92~~	S		4	720A	1	7	
3	344534 4	10 07 91	~~10 09 92~~	S		4	720A	1	7	
4	344534 5	10 14 91	11 04 92			3	26E	1	office	#3445345
5	344534 6	10 14 91	11 04 92	D		3	26G	1	office	#3445346
6	344534 7	10 10 91	10 26 92			3	686	1	W wall	#3445347
7	344534 8	10 10 91	10 27 92			3	546	1	RIOT	#3445348
8	344534 9	10 14 91	10 22 92			1	719		EXAM	#3445349
9	344535 0	10 14 91	11 04 92			1	266	1	office	#3445350
10	344535 1	10 10 91		M		3	206	1		#3445351
11	344535 2	10 14 91	10 22 92			1	719		AUDIO	#3445352
12	344535 3	10 10 91	11 04 92			3	32H	1	S wall	#3445353
13	344535 4	10 10 91	10 26 92			3	101	1		#3445354
14	344535 5	10 10 91	10 27 92			3	207	1	RIS	#3445355
15	344535 6	10 14 91	11 02 92			3	103	1	news	#3445356
16	344535 7	10 14 91	11 02 92							
17	344535 8	10 10 91	11 04 92			3	41W	1	office	#3445358
18	344535 9	10 10 91	10 27 92			3	206	1	Tool Room	#3445359
19	344536 0	10 14 91		M		3	26E	1	109	#3445360
20	344536 1	10 10 91		M		3	546	1		#3445361

021671

14969

DETECTOR DEPLOYMEN ATA SHEET (for ATMs)

Army Installation:

LONG HORN ARMY AMMO PLANT

Address: PO BOX 1149

MARSHALL TX 75671

CODES USED IN DETECTOR DEPLOYMENT DATA SHEET

***QA SAMPLE CODES**
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Terradex
Radon Detection Products
Tech/Ops Landauer, Inc.
2 Science Road
Glenwood, Illinois 60425-1586
Telephone (312) 755-7911

	ATM Serial No.	Placement Date MO. DAY YR.	Removed Date MO. DAY YR.	QA Sample Type*	Serial No. of Adjacently Placed Duplicate	Building Use*	Bldg. No.	Floor*	Room No.	Further Location ID & Any Remarks
1	344526	10 07 91	11 09 92			3	18K	1		#3445286
2	344528	10 08 91	10 27 92			3	34	1	MAIN AREA	#3445287
3	344528	10 10 91	10 26 92			3	704D	1	RM 81	#3445288
4	344528	10 10 91	10 29 92			3	723	1		#3445289
5	344529	10 10 91	10 27 92			3	401	1	KITCHEN	#3445290
6	344529	10 10 91	10 27 92			3	401	1	BATHROOM	#3445291
7	344529	10 10 91		M		3	814	1	AIR UNIT	#3445292
8	344529	10 10 91	10 22 92				720A	1	BRIG Room	#3445293
9	344529	10 10 91	10 26 92			3	704D	1	1B	#3445294
10	344529	10 10 91	10 27 92			3	401	1	OFFICE	#3445295
11	344529	10 09 91	10 26 92			3	201	1	WAREHOUSE	#3445296
12	344529	10 09 91	10 26 92			3	201	1	1ST OFFICE	#3445297
13	344529	10 10 91	11 09 92			3	707E	1		#3445299
14	344530	10 10 91	10 29 92	D	344548	3	709A	1	Break Area	#3445300
15	344530	10 10 91	10 27 92			3	506	1	SE CORNER	#3445301
16	344530	10 10 91	10 22 92			3	720A	1	1	#3445302
17	344530	10 10 91	10 27 92	D	344529	3	401	1	OFFICE 1	#3445304
18	344530	10 08 91	11 04 92	E	344527	3	68F	1	OFFICE	#3445305
19	344530	10 09 91	10 26 92			3	201	1	WAREHOUSE	#3445306
20	344531	10 07 91	10 26 92	S		4	720A	1		

02 1672

14972

DETECTOR DEPLOYMENT DATA SHEET (for ATMs)

Army Installation:

LONGHORN ARMY AMMO PLANT

Address: PO BOX 1149
MARSHALL TX 75671

CODES USED IN DETECTOR DEPLOYMENT DATA SHEET

***QA SAMPLE CODES**
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Terradex
Radon Detection Products
Tech/Ops Landauer, Inc.
2 Science Road
Glenwood, Illinois 60425-1586
Telephone (312) 755-7911

	ATM Serial No.	Placement Date MO. DAY YR.	Removed Date MO. DAY YR.	QA Sample Type*	Serial No. of Adjacently Placed Duplicate	Building Use*	Bldg. No.	Floor*	Room No.	Further Location ID & Any Remarks
1	344546 7	10 08 91	11 04 92			3	68F	1	R103	#3445467
2	344546 8	10 09 91	10 29 92			3	709A	1	Soap Room	#3445468
3	344546 9	10 10 91	10 27 92			3	814	1	R106	#3445469
4	344547 0	10 10 91	10 27 92	D	344548 2	3	814	1	Break	#3445470
5	344547 1	10 10 91	10 27 92			3	401	1	E. WALL	#3445471
6	344547 2	10 10 91	10 27 92			3	401	1	BATH ROOM	#3445472
7	344547 3	10 10 91	11 04 92			3	29[illegible]A	1	Copy Copier	#3445473
8	344547 4	10 16 91	10 26 92			3	703D	1	Mg. office	#3445474
9	344547 5	10 08 91	11 04 92			3	29D	1	112	#3445475
10	344547 6	10 08 91	11 04 92			3	68F	1	HALLWAY	#3445476
11	344547 7	10 09 91	10 26 92			3	201	1	Supply WAREHOUSE	#3445477
12	344547 8	10 07 91	11 09 92			3	18K	1		#3445478
13	344547 9	10 08 91	11 04 92			3	13T	1	HALLWAY	#3445479
14	344548 0	10 10 91	10 27 92			3	29A	1	112	#3445480
15	344548 1	10 10 91	11 04 92			3	29A	1	107	#3445481
16	344548 2	10 16 91	10 27 92			3	814	1	Break	#3445482
17	344548 3	10 08 91	11 04 92			3	29D	2	211	#3445483
18	344548 4	10 08 91	10 27 92			3	25T	1	W. HALL	#3445484
19	344548 5	10 10 91	10 29 92			3	709A	1	Break Area	#3445485
20	344548 6	10 10 91	10 29 92			3	723	1		#3445486

021673

14975

DETECTOR DEPLOYMENT DATA SHEET (for ATMs)

Army Installation:

LONGHORN ARMY AMMUNITION PLANT

Address: PO BOX 1149
MARSHALL TX
75671

CODES USED IN DETECTOR DEPLOYMENT DATA SHEET

***QA SAMPLE CODES**
S = Spike
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M = Missing

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Terradex
Radon Detection Products
Tech/Ops Landauer, Inc.
2 Science Road
Glenwood, Illinois 60425-1586
Telephone (312) 755-7911

	ATM Serial No.	Placement Date MO. DAY YR.	Removed Date MO. DAY YR.	QA Sample Type*	Serial No. of Adjacently Placed Duplicate	Building Use*	Bldg. No.	Floor*	Room No.	Further Location ID & Any Remarks
1	344528	10/4/91	11/02/92			3	103	1	WOMEN	#3445278
2	344529	10/09/91	11/02/92			3	102	1	HALL	#3445298
3	344530	10/09/91	10/27/92			3	207	1	BREAK	#3445307
4	344530	10/09/91	11/02/92			3	102	1	TIMECLOCK	#3445308
5	344530	10/07/91	11/02/92	F		4	720A	1	7	
6	344531	10/09/91	10/22/92			3	705	1	~~FAST WOOD~~ 137	#3445311
7	344531	10/4/91	11/09/92			3	33W	1		#3445318
8	344531	10/09/91	10/26/92			3	686	1	BREAKRM	#3445319
9	344532	10/09/91	10/27/92			3	705	1	ESP OFF 112	#3445320
10	344532	10/09/91	10/27/92			3	546	1		#3445321
11	344532	10/09/91		M		3	206	1		#3445322
12	344532	10/09/91	10/27/92	D	344532	3	546	1	CONTROL	#3445323
13	344532	10/09/91	11/09/92			3	725	1		#3445324
14	344532	10/09/91	10/27/92			3	813	1	E WALL	#3445325
15	344533	10/07/91	10/27/92	F		4	720A	1	7	
16	344533	10/07/91	10/27/92	F						
17	344533	10/09/91		M		3	206	1		#3445333
18	344533	10/09/91	10/27/92			3	722P	1		#3445335
19	344533	10/09/91	10/27/92			3	813	1	S WALL	#3445337
20	344533	10/09/91		M		3	206	1		#3445338

0216744

DETECTOR DEPLOYMENT [illegible] SHEET (for ATMs)

14976

Army Installation: LONGHORN ARMY AMMUNITION PLANT

Address: PO BOX 1149
MARSHALL TX 75671

CODES USED IN DETECTOR DEPLOYMENT DATA SHEET

***QA SAMPLE CODES**
S = Spike
D = Duplicate
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M = Missing

***BUILDING USE CODES**
1 = Day Care Center, School, or Hospital
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Terradex
Radon Detection Products
Tech/Ops Landauer, Inc.
2 Science Road
Glenwood, Illinois 60425-1586
Telephone (312) 755-7911

	ATM Serial No.	Placement Date MO. DAY YR.	Removed Date MO. DAY YR.	QA Sample Type*	Serial No. of Adjacently Placed Duplicate	Building Use*	Bldg. No.	Floor*	Room No.	Further Location ID & Any Remarks
1	3448745	10 10 91	10 27 92	D	3448747	3	206	1	office	#3448745
2	3448747	10 10 91	10 27 92			3	206	1	office	#3448747
3	3448748	10 14 91	11 04 92			3	266	1		#3448748
4	3448755	10 10 91	10 26 92			3	686	1	weight rm	#3448755
5	3448756	10 18 91	10 27 92			3	206	1	welder.	#3448756
6	3448757	10 10 91	10 27 92			3	813	1	E. wall	#3448757
7	3448759	10 10 91	10 27 92	F						
8	3448761	10 10 91	10 26 92			3	686	1	[illegible]	#3448761
9	3448764	10 16 91	11 09 92			3	813	1		#3448764
10	3448765	10 10 91	10 27 92	D	3445375	3	813	1	office	#3448765
11	3448766	10 14 91	11 04 92			3	26E	1	TOOL CRIB	#3448766
12	3448770	10 10 91	11 04 92			3	32H	1	W wall	#3448770
13	3448771	10 10 91	10 26 92			3	P9	1		#3448771
14	3448774	10 10 91		M		3	705	1		#3448774
15	3448776	10 10 91	11 04 92			3	41W	1	office	#3448776
16	3448778	10 10 91	11 04 92			3	316	1	Instr	#3448778
17	3448779	10 14 91	11 04 92			3	26E	1	108	#3448779
18	3448793	10 10 91	11 02 92	D	3445298	3	102	1	HALL	#3448793
19	3448796	10 10 91	10 27 92			3	705	1	112	#3448796
20	3448809	10 10 91	11 04 92			3	41W	1		#3448809

021675

14968

DETECTOR DEPLOYMENT .ΓA SHEET (for ATMs)

Army Installation:

LONGHORN Army Ammo PLANT

Address: PO BOX 1449

MARSHALL TX 75671

CODES USED IN DETECTOR DEPLOYMENT DATA SHEET

***QA SAMPLE CODES**
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Terradex
Radon Detection Products
Tech/Ops Landauer, Inc.
2 Science Road
Glenwood, Illinois 60425-1586
Telephone (312) 755-7911

	ATM Serial No.	Placement Date MO. DAY YR.	Removed Date MO. DAY YR.	QA Sample Type*	Serial No. of Adjacently Placed Duplicate	Building Use*	Bldg. No.	Floor*	Room No.	Further Location ID & Any Remarks
1	3445266	10 08 91	11 04 92		3445314	3	29D	1	R 1 10	#3445266
2	3445267	10 08 91	11 04 92	D	3445466	3	8T	1	H.W. Post	#3445267
3	3445268	10 10 91	10 27 92			3	814	1	S Corner	#3445268
4	3445269	10 10 91	10 27 92	D	3445277	3	506	1	NE CORNE	#3445269
5	3445270	10 08 91	11 04 92	D		3	68F	1	OFFICE	#3445270
6	3445271	10 09 91	10 29 92	D	3445279	3	720A	1	~~FH~~ 7	#3445271
7	3445272	10 10 91	10 27 92			3	814	1	SE WALL	#3445272
8	3445273	10 10 91	10 29 92			3	720A	1	15	
9	3445274	10 08 91		M		3	29D	2	202	#3445274
10	3445275	10 07 91	10 29 92	S		4	720A	1	7	
11	3445276	10 08 91	10 27 92			3	34Y	1	10H	#3445276
12	3445277	10 10 91	10 27 92			3	506	1	NE CORNE	#3445277
13	3445279	10 10 91	10 29 92	D		3	720A	1	7	#3445279
14	~~3445278~~	10 91								
15	3445280	10 10 91	10 27 92			3	401	1	S. Wall	#3445280
16	3445281	10 08 91	11 04 92			3	68F	1	R 108	#3445281
17	3445282	10 08 91	10 27 92			3	25T	1	CONTROL RM	#3445282
18	3445283	10 10 91	11 04 92			3	702	1		#3445283
19	3445284	10 07 91	11 02 92			3	B7	1	RAMP	#3445284
20	3445286	10 08 91	10 27 92			3	25T	1	OFFICE	#3445285

0216/6

14970

DETECTOR DEPLOYMENT DATA SHEET (for ATMs)

Army Installation:
LONGHORN ARMY AMMO PLANT
Address: PO BOX 9149
MARSHALL TX 75671

CODES USED IN DETECTOR DEPLOYMENT DATA SHEET

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Tech/Ops Landauer

Terradex
Radon Detection Products
Tech/Ops Landauer, Inc.
2 Science Road
Glenwood, Illinois 60425-1586
Telephone (312) 755-7911

	ATM Serial No.	Placement Date MO. DAY YR.	Removed Date MO. DAY YR.	QA Sample Type*	Serial No. of Adjacently Placed Duplicate	Building Use*	Bldg. No.	Floor*	Room No.	Further Location ID & Any Remarks
1	3445312	10 07 91	11 04 92			3	82A	1	R104A	#3445312
2	3445313	10 10 91	11 09 92			3	736A	1	MTG	#3445313
3	3445314	10 08 91	11 04 92	D	3445266	3	29D	1	R110	#3445314
4	3445315	10 10 91	10 29 92				709A	1	Control Room	#3445315
5	3445316	10 10 91	10 27 92			3	401	1	N. Wall	#3445316
6	3445317	10 10 91	10 27 92			3	814	1	OFFICE	#3445317
7	3445326	10 09 91	11 04 92			3	POST1	1		#3445326
8	3445327	10 07 91	10 26 92			4	LR1	1	S Wall	#3445327
9	3445328	10 08 91	11 04 92			3	68F	1	R118	#3445328
10	3445329	10 08 91	11 09 92			3	34T	1	CONTROL ROOM	#3445329
11	3445331	10 07 91	11 04 92			3	SHEDC	1		#3445331
12	3445334	10 08 91	10 27 92			3	25T	1	E. HALL	#3445334
13	3445336	10 07 91	11 04 92			3	22A	1	R106A	#3445336
14	3445342	10 07 91	10 27 92			4	MZ	1	BREAK	#3445342
15	3445419	10 10 91		M		3	814	1	S CORNER	#3445419
16	3445425	10 10 91	10 27 92			3	29A	1	116	#3445425
17	3445426	10 10 91	10 27 92			3	814	1	W Wall	#3445426
18	3445431	10 10 91	10 26 92			3	7040	1	114	#3445431
19	3445433	10 07 91	11 04 92			3	22A		R109B	#3445433
20	3445435	10 10 91	10 27 92			3	401	1	Command	#3445435

02167?

DETECTOR DEPLOYMENT DATA SHEET

14973

DETECTOR DEPLOYMENT DATA SHEET (for ATMs)

Army Installation:
LONGHORN ARMY AMMO PLANT
Address: PO BOX 1149
MARSHALL TX
75671

CODES USED IN DETECTOR DEPLOYMENT DATA SHEET

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Tech/Ops Landauer

Terradex
Radon Detection Products
Tech/Ops Landauer, Inc.
2 Science Road
Glenwood, Illinois 60425-1586
Telephone (312) 755-7911

	ATM Serial No.	Placement Date MO. DAY YR.	Removed Date MO. DAY YR.	QA Sample Type*	Serial No. of Adjacently Placed Duplicate	Building Use*	Bldg. No.	Floor*	Room No.	Further Location ID & Any Remarks
1	3445487	10 10 91	11 04 92			3	401	1	Wall	#3445487
2										
3										
4										
5										
6										
7										
8										
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15										
16										
17										
18										
19										
20										

0216678

Ra[illegible] Monitoring Report

TRANSPORTATION OFFICER
LONGHORN ARMY AMMUNITION PLANT
ATTN: THIOKOL CORP.
BJ HAMILTON
KARNACK, TX 75661

Acct. No. 040e694

LANDAUER
Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
Telephone: (708) 755-7911 Facsimile: (708) 755-7016

PROGRAM NAME: 079191

Detector Number	Detector Type	Starting Date	Ending Date	Field Data / Comments	Exposure pCi/l-days	Avg. Radon Conc. pCi/l	
3445206	DRNA	03-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445207	DRNA	03-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445268	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445269	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445270	DRNA	03-NOV-91	04-NOV-92	* - LESS THAN INDICATED VALUE DATE DISCREPANCY	* 30.0	* 0.1	
3445271	DRNA	10-OCT-91	22-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445272	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445273	DRNA	10-OCT-91	22-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445275	DRNA	07-OCT-91	22-OCT-92		29e.1	0.8	
3445276	DRNA	03-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445277	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445278	DRNA	14-OCT-91	02-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445279	DRNA	10-OCT-91	22-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445280	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
①	②	③	④	⑤	⑥	⑦	⑧

Q.C. Release	Process No.	Report Date	Date Received
DLB	A15770	02-APR-93	16-MAR-93

021679

F ion Monitoring Report

TRANSPORTATION OFFICER
LONGHORN ARMY AMMUNITION PLANT
ATTN: THIOKOL CORP,
BJ HAMILTON
KARNACK, TX 75661

Acct. No. 040694

LANDAUER
Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
Telephone: (708) 755-7911 Facsimile: (708) 755-7016

PROGRAM NAME: 079191

Detector Number	Detector Type	Starting Date	Ending Date	Field Data / Comments	Exposure pCi/l-days	Avg. Radon Conc. pCi/l	
3445281	DRNA	03-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445282	DRNA	03-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445283	DRNA	10-OCT-91	04-NOV-92		75.4	0.2	
3445284	DRNA	07-OCT-91	02-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445285	DRNA	03-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445286	DRNA	07-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445287	DRNA	03-OCT-92	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 1.6	
3445288	DRNA	10-OCT-91	28-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445289	DRNA	10-OCT-91	29-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445290	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445291	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445293	DRNA	10-OCT-91	22-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445294	DRNA	10-OCT-91	28-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445295	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445296	DRNA	09-OCT-91	28-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
①	②	③	④	⑤	⑥	⑦	⑧

Q.C. Release	Process No.	Report Date	Date Received
DLB	A15770	02-APR-93	16-MAR-93

021680

Radon Monitoring Report

TRANSPORTATION OFFICER
LONGHORN ARMY AMMUNITION PLANT
ATTN: THIOKOL CORP,
BJ HAMILTON
KARNACK, TX 75661

LANDAUER

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
Telephone: (708) 755-7911 Facsimile: (708) 755-7016

Acct. No. 040694

PROGRAM NAME: 079191

Detector Number	Detector Type	Starting Date	Ending Date	Field Data / Comments	Exposure pCi/l-days	Avg. Radon Conc. pCi/l	
3445297	DRNA	09-OCT-91	28-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445298	DRNA	10-OCT-91	02-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445299	DRNA	10-NOV-91	01-NOV-92	* - LESS THAN INDICATED VALUE DATE DISCREPANCY	* 30.0	* 0.1	
3445300	DRNA	10-OCT-91	29-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445301	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445303	DRNA	10-OCT-91	22-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445304	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445305	DRNA	03-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE 3445330	* 30.0	* 0.1	
3445306	DRNA	09-OCT-91	28-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445307	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445308	DRNA	10-OCT-91	02-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445309	DRNA	07-OCT-91	02-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445310	DRNA	07-OCT-91	28-OCT-92		085.2	1.8	
3445311	DRNA	10-OCT-91	22-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
①	②	③	④	⑤	⑥	⑦	⑧

Q.C. Release	Process No.	Report Date	Date Received
JLB	A15770	02-APR-93	16-MAR-93

0216811

Radon Monitoring Report

TRANSPORTATION OFFICER
LONGHORN ARMY AMMUNITION PLANT
ATTN: THIOKOL CORP.
BJ HAMILTON
KARNACK, TX 75661

LANDAU

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
Telephone: (708) 755-7911 Facsimile: (708) 755-7016

Acct. No. 040094

PROGRAM NAME: 079191

Detector Number	Detector Type	Starting Date	Ending Date	Field Data / Comments	Exposure pCi/l-days	Avg. Radon Conc. pCi/l	
3445312	DRNA	07-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445313	DRNA	10-OCT-91	13-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445314	DRNA	08-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445315	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445316	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445317	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445318	DRNA	14-OCT-91	09-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445319	DRNA	10-OCT-91	28-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445320	DRNA	10-OCT-91	22-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445321	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445323	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445324	DRNA	10-OCT-91	09-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445325	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445326	DRNA	09-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445327	DRNA	07-OCT-91	28-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
①	②	③	④	⑤	⑥	⑦	⑧

Q.C. Release	Process No.	Report Date	Date Received
JLB	A15770	02-APR-93	16-MAR-93

0.21682

Radon Monitoring Report

TRANSPORTATION OFFICER
LONGHORN ARMY AMMUNITION PLANT
ATTN: THIOKOL CORP.
BJ HAMILTON
KARNACK, TX 75661

Acct. No. 040a694

LANDAUER

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
Telephone: (708) 755-7911 Facsimile: (708) 755-7016

PROGRAM NAME: 079191

Detector Number	Detector Type	Starting Date	Ending Date	Field Data / Comments	Exposure pCi/l-days	Avg. Radon Conc. pCi/l	
3445328	DRNA	03-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445329	DRNA	03-OCT-91	09-NOV-92		186.3	0.5	
3445330	DRNA	07-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445331	DRNA	07-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445332	DRNA	07-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445334	DRNA	03-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445335	DRNA	10-OCT-91	29-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445336	DRNA	07-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445337	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445340	DRNA	14-OCT-91	09-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445341	DRNA	07-OCT-91	10-OCT-92		751.7	2.0	
3445342	DRNA	07-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445344	DRNA	07-OCT-91	10-OCT-92		1454.4	4.0	
3445345	DRNA	14-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445346	DRNA	14-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
①	②	③	④	⑤	⑥	⑦	⑧

Q.C. Release	Process No.	Report Date	Date Received
DLB	A15770	02-APR-93	16-MAR-93

021683

Radon Monitoring Report

TRANSPORTATION OFFICER
LONGHORN ARMY AMMUNITION PLANT
ATTN: THIOKOL CORP.
BJ HAMILTON
KARNACK, TX 75661

LANDAU

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
Telephone: (708) 755-7911 Facsimile: (708) 755-7016

Acct. No. 040o694

PROGRAM NAME: 079191

Detector Number	Detector Type	Starting Date	Ending Date	Field Data / Comments	Exposure pCi/l-days	Avg. Radon Conc. pCi/l	
3445347	DRNA	10-OCT-91	28-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445348	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445349	DRNA	14-OCT-91	22-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445350	DRNA	14-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445352	DRNA	14-OCT-91	22-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445353	DRNA	10-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE BROKEN CHIP	* 30.0	* 0.1	
3445354	DRNA	10-OCT-91	28-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445355	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445356	DRNA	14-OCT-91	02-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445357	DRNA	14-OCT-91	02-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445358	DRNA	10-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445359	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445362	DRNA	10-OCT-91	28-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445364	DRNA	10-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

Q.C. Release	Process No.	Report Date	Date Received
DLB	A15770	02-APR-93	16-MAR-93

0216844

Radon Monitoring Report

TRANSPORTATION OFFICER
LONGHORN ARMY AMMUNITION PLANT
ATTN: THIOKOL CORP.
BJ HAMILTON
KARNACK, TX 75661

LANDAUER

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
Telephone: (708) 755-7911 Facsimile: (708) 755-7016

Acct. No. 040694

PROGRAM NAME: 079191

Detector Number	Detector Type	Starting Date	Ending Date	Field Data / Comments	Exposure pCi/l-days	Avg. Radon Conc. pCi/l	
3445305	ORNA	14-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445306	ORNA	10-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445307	ORNA	07-OCT-91	04-NOV-92		270.9	0.7	
3445308	ORNA	10-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445309	ORNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE DATE DISCREPANCY	* 30.0	* 0.1	
3445370	ORNA	14-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445371	ORNA	10-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445372	ORNA	14-OCT-91	26-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445373	ORNA	10-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445374	ORNA	14-OCT-91	09-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445375	ORNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445425	ORNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445428	ORNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445431	ORNA	10-OCT-91	26-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
①	②	③	④	⑤	⑥	⑦	⑧

Q.C. Release	Process No.	Report Date	Date Received
DLB	A15770	02-APR-93	16-MAR-93

0216851

Rac Monitoring Report

LANDAUER

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
Telephone: (708) 755-7911 Facsimile: (708) 755-7016

TRANSPORTATION OFFICER
LONGHORN ARMY AMMUNITION PLANT
ATTN: THIOKOL CORP.
BJ HAMILTON
KARNACK, TX 75661

Acct. No. 040o694

PROGRAM NAME: 079191

Detector Number	Detector Type	Starting Date	Ending Date	Field Data / Comments	Exposure pCi/l-days	Avg. Radon Conc. pCi/l	
3445433	DRNA	07-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445435	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445436	DRNA	10-OCT-91	26-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445437	DRNA	09-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445443	DRNA	07-OCT-91	27-OCT-92		346.7	0.9	
3445445	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445446	DRNA	07-OCT-91	26-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445449	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445450	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445451	DRNA	08-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445452	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445454	DRNA	07-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445455	DRNA	08-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445456	DRNA	08-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445457	DRNA	07-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
①	②	③	④	⑤	⑥	⑦	⑧

Q.C. Release	Process No.	Report Date	Date Received
DLB	A15770	02-APR-93	16-MAR-93

0216866

Rad Monitoring Report

TRANSPORTATION OFFICER
LONGHORN ARMY AMMUNITION PLANT
ATTN: THIOKOL CORP.
BJ HAMILTON
KARNACK, TX 75661

LANDAUER

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
Telephone: (708) 755-7911 Facsimile: (708) 755-7016

Acct. No. 040o694

PROGRAM NAME: C79191

Detector Number	Detector Type	Starting Date	Ending Date	Field Data / Comments	Exposure pCi/l-days	Avg. Radon Conc. pCi/l	
3445458	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445459	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445462	DRNA	10-OCT-91	26-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445463	DRNA	07-OCT-91	11-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445464	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445465	DRNA	10-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445466	DRNA	08-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445467	DRNA	08-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445468	DRNA	10-OCT-91	29-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445469	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445470	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445471	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445473	DRNA	10-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445474	DRNA	10-OCT-91	26-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445475	DRNA	08-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
①	②	③	④	⑤	⑥	⑦	⑧

Q.C. Release	Process No.	Report Date	Date Received
DLB	A15770	02-APR-93	16-MAR-93

0216871

Rad[illegible] Monitoring Report

TRANSPORTATION OFFICER
LONGHORN ARMY AMMUNITION PLANT
ATTN: THIOKOL CORP.
BJ HAMILTON
KARNACK, TX 75661

LANDAUER

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
Telephone: (708) 755-7911 Facsimile: (708) 755-7016

Acct. No. 040e694

PROGRAM NAME: 079191

Detector Number	Detector Type	Starting Date	Ending Date	Field Data / Comments	Exposure pCi/l-days	Avg. Radon Conc. pCi/l	
3445476	DRNA	0e-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445477	DRNA	09-OCT-91	2e-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445478	DRNA	07-OCT-91	09-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445479	DRNA	03-NOV-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445480	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445482	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445483	DRNA	0e-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445484	DRNA	03-OCT-92	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 1.6	
3445485	DRNA	1e-OCT-91	29-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445486	DRNA	10-OCT-91	29-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3445487	DRNA	10-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3448738	DRNA	10-OCT-91	2e-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3448739	DRNA	10-OCT-91	2e-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3448740	DRNA	10-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3448741	DRNA	10-OCT-91	02-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
①	②	③	④	⑤	⑥	⑦	⑧

Q.C. Release	Process No.	Report Date	Date Received
DLB	A15770	02-APR-93	16-MAR-93

021683

Radc Monitoring Report

TRANSPORTATION OFFICE
LONGHORN ARMY AMMUNITION PLANT
ATTN: THIOKOL CORP.
BJ HAMILTON
KARNACK, TX 75661

LANDAUER

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
Telephone: (708) 755-7911 Facsimile: (708) 755-7016

Acct. No. 040694

PROGRAM NAME: C791-1

Detector Number	Detector Type	Starting Date	Ending Date	Field Data / Comments	Exposure pCi/l-days	Avg. Radon Conc. pCi/l	
3448742	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3448743	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3448744	DRNA	10-OCT-91	02-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3448745	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3448747	DRNA	10-OCT-91	27-OCT-92		59.9	0.1	
3448748	DRNA	14-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3448755	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3448756	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3448757	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3448759	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3448761	DRNA	10-OCT-91	28-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3448764	DRNA	10-OCT-91	09-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3448765	DRNA	10-OCT-91	27-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3448766	DRNA	14-OCT-92	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 1.4	
3448770	DRNA	10-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
①	②	③	④	⑤	⑥	⑦	⑧

Q.C. Release	Process No.	Report Date	Date Received
DLB	A15770	02-APR-93	16-MAR-93

021689

TRANSPORTATION OFFICER
LONGHORN ARMY AMMUNITION PLANT
ATTN: THIOKOL CORP.
BJ HAMILTON
KARNACK, TX 75661

LANDAUER

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
Telephone: (708) 755-7911 Facsimile: (708) 755-7016

Acct. No. 04C0694

PROGRAM NAME: C79161

Detector Number	Detector Type	Starting Date	Ending Date	Field Data / Comments	Exposure pCi/l-days	Avg. Radon Conc. pCi/l	
3448771	DRNA	10-OCT-91	28-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3448776	DRNA	10-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3448778	DRNA	10-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3448779	DRNA	14-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3448793	DRNA	10-OCT-91	22-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3448796	DRNA	10-OCT-91	22-OCT-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	
3448809	DRNA	10-OCT-91	04-NOV-92	* - LESS THAN INDICATED VALUE	* 30.0	* 0.1	

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

Q.C. Release	Process No.	Report Date	Date Received
DLB	A15770	02-APR-93	16-MAR-93

021690

APPENDIX VII

Sump Status Tables

021692

SUMP CLOSURE PROJECT
SUMP STATUS

ACTIVE SUMPS				
SUMP NO.	BUILDING NO.	FILL-IN-PLACE	NON HAZARDOUS LANDFILL	HAZ-WASTE LANDFILL
1	P-1	YES		
2	P-3	YES		
3	P-3	YES		
7	P-118	YES		
10	P-118	YES		
11	P-118	YES		
12	P-118	YES		
20	B-11			YES
22	B-13			YES
24	B-15	YES		
27	P-9			YES
32	212-14	YES		
34	212-16		YES	
35	212-18		YES	
41	212-35			YES
42	212-37			YES
65	45-E		YES	
66	45-E	YES		
72	54-F			YES
73	54-G			YES
75	54-G	YES		
76	54-H			YES
77	54-H	YES		
111	722-P*	NA	NA	NA
112	722-P		YES	
114	25-X			YES
122	401-C	YES		
800	23-T	YES		

722P* (decontaminated and recycled)

Table 2

021693

SUMP CLOSURE PROJECT
SUMP STATUS

TRANSITION SUMPS				
SUMP NO.	BUILDING NO.	FILL-IN-PLACE	NON HAZARDOUS LANDFILL	HAZ-WASTE LANDFILL
38	212-32	YES		
40	212-33	YES		
44	25-C	YES		
45	25-C		YES	
47	25-D			YES
48	26-E			YES
51	26-E	YES		
53	29-D	YES		
55	31-G		YES	
61	42-H			YES
70	50-G			YES

Table 2-A

021694

TA[illegible]LE 2-2
SUMP C[illegible]RE REPORT
GROU[illegible]RA SUMPS
SUMP STATUS: FINAL

LHAAP SUMP ID	BLDG NO	TNRCC ID	WATER REMOVAL HAZ	WATER REMOVAL CLEAN	SLUDGE REMOVAL HAZ	CLAY/(SAND) REMOVAL HAZ	CLAY/(SAND) REMOVAL CLEAN	SUMP REMOVAL CONCRETE	SUMP REMOVAL BACKFILL	SUMP REMOVAL GROUT	SOIL REMOVAL
004	P-3	033		LANDFILL 12	TREATMENT ONE/EQ			LANDFILL 16	YES	YES	REPLACED IN LHS004
005	P-3	034				TREATMENT ONE/EQ		LANDFILL 16	YES		REPLACED IN LHS005
006	P-116	035		LANDFILL 12				LANDFILL 16	YES	YES	REPLACED IN LHS006
008	P-117	037		LANDFILL 12	TREATMENT ONE/EQ			LANDFILL 16	YES	YES	REPLACED IN LHS008
009	P-117	038	EMPAK		ENSCO			LANDFILL 16	YES	YES	REPLACED IN LHS009
013	P-118	042		LANDFILL 12	TREATMENT ONE/EQ			LANDFILL 16	YES	YES	REPLACED IN LHS013
014	B-5	043					LANDFILL 12	LANDFILL 16	YES	YES	REPLACED IN LHS014
015	B-7	044	EMPAK		TREATMENT ONE/EQ			LANDFILL 16	YES	YES	REPLACED IN LHS015
016	B-7	045	EMPAK		TREATMENT ONE/EQ			LANDFILL 16	YES	YES	REPLACED IN LHS016
017	B-9	046		LANDFILL 12				LANDFILL 16	YES	YES	REPLACED IN LHS017
018	B-9	047					LANDFILL 12	LANDFILL 16	YES		REPLACED IN LHS018
019	B-10	048		LANDFILL 12	TREATMENT ONE/EQ			LANDFILL 16	YES	YES	REPLACED IN LHS019
021	B-12	050	EMPAK		ENSCO			LANDFILL 16	YES	YES	REPLACED IN LHS021
023	B-14	052	EMPAK		ENSCO			LANDFILL 16	YES	YES	REPLACED IN LHS023
025	B-16	054		LANDFILL 12	TREATMENT ONE/EQ			LANDFILL 16	YES	YES	REPLACED IN LHS025
026	SHED C	055		LANDFILL 12	TREATMENT ONE/EQ			LANDFILL 16	YES		REPLACED IN LHS026
028	P-122	057		LANDFILL 12				LANDFILL 16	YES		REPLACED IN LHS028
029	P-123	058		LANDFILL 12	TREATMENT ONE/EQ			LANDFILL 16	YES	YES	REPLACED IN LHS029
030	212-12	059		LANDFILL 12	TREATMENT ONE/EQ			LANDFILL 16	YES		REPLACED IN LHS030
031	212-12	060		LANDFILL 12	TREATMENT ONE/EQ			LANDFILL 16	YES		REPLACED IN LHS031
033	212-14	062		LANDFILL 12				LANDFILL 16	YES	YES	REPLACED IN LHS033
037	212-29	066					LANDFILL 12	LANDFILL 16	YES		REPLACED IN LHS037
039	212-33	068					LANDFILL 12	LANDFILL 16	YES		REPLACED IN LHS039
043	212-38	072		LANDFILL 12	TREATMENT ONE/EQ			LANDFILL 16	YES	YES	REPLACED IN LHS043
049	26-E	078	EMPAK					LANDFILL 16	YES	YES	REPLACED IN LHS049
050	26-E	079	EMPAK		TREATMENT ONE/EQ			LANDFILL 16	YES	YES	REPLACED IN LHS050
052	26-G	081				TREATMENT ONE/EQ		LANDFILL 16	YES	YES	REPLACED IN LHS052
054	31-G	083	EMPAK		TREATMENT ONE/EQ			LANDFILL 16	YES	YES	REPLACED IN LHS054
056	32-H	085	EMPAK		TREATMENT ONE/EQ			LANDFILL 16	YES	YES	REPLACED IN LHS056
057	33-G	086					LANDFILL 12	LANDFILL 16	YES		REPLACED IN LHS057
059	41-E	088				TREATMENT ONE/EQ		LANDFILL 16	YES	YES	REPLACED IN LHS059
060	42-E	089	EMPAK		TREATMENT ONE/EQ			LANDFILL 16	YES	YES	REPLACED IN LHS060
062	45-E	091					LANDFILL 12	LANDFILL 16	YES	YES	REPLACED IN LHS062
063	45-E	092					LANDFILL 12	LANDFILL 16	YES	YES	TREATMENT ONE/EQ
064	45-E	093	EMPAK		TREATMENT ONE/EQ			LANDFILL 16	YES	YES	REPLACED IN LHS064
067	45-E	096					LANDFILL 12	LANDFILL 16	YES	YES	REPLACED IN LHS067
068	46-A	097		LANDFILL 12				LANDFILL 16	YES	YES	REPLACED IN LHS068
069	46-B	098	EMPAK		TREATMENT ONE/EQ			LANDFILL 16	YES		REPLACED IN LHS069
071	54-F	100		LANDFILL 12	TREATMENT ONE/EQ			LANDFILL 16	YES	YES	REPLACED IN LHS071
074	54-G	103		LANDFILL 12				LANDFILL 16	YES	YES	REPLACED IN LHS074
078	68-C	107		LANDFILL 12	TREATMENT ONE/EQ			LANDFILL 16	YES		REPLACED IN LHS078
079	68-C	108		LANDFILL 12	TREATMENT ONE/EQ			LANDFILL 16	YES		REPLACED IN LHS079
080	68-C	109					LANDFILL 12	LANDFILL 16	YES		REPLACED IN LHS080

LHAAP SUN ID	BLDG NO	YNRCC ID	WATER REMOVAL HAZ	WATER REMOVAL CLEAN	SLUDGE REMOVAL HAZ	CLAY/(SAND) REMOVAL HAZ	CLAY/(SAND) REMOVAL CLEAN	SUMP REMOVAL CONCRETE	SUMP REMOVAL BACKFILL	SUMP REMOVAL GROUT	REMOVAL
081/081T	68-F	110	EMPAK		ENSCO/TREATMENT ONE/EQ			LANDFILL 16	YES		REPLACED IN LHS081
082	68-F	111	EMPAK		TREATMENT ONE/EQ			LANDFILL 16	YES		REPLACED IN LHS082
083	68-F	112	EMPAK		TREATMENT ONE/EQ			LANDFILL 16	YES		REPLACED IN LHS083
084	68-G	113					LANDFILL 12	LANDFILL 16	YES		REPLACED IN LHS084
085	68-G	114					LANDFILL 12	LANDFILL 16	YES		REPLACED IN LHS085
086	68-G	115		LANDFILL 12		TREATMENT ONE/EQ		LANDFILL 16	YES		REPLACED IN LHS086
087	68-G	116		LANDFILL 12	TREATMENT ONE/EQ			LANDFILL 16	YES		REPLACED IN LHS087
088	68-G	117		LANDFILL 12				LANDFILL 16	YES		REPLACED IN LHS088
089	68-G	118					TREATMENT ONE/EQ	LANDFILL 16	YES		REPLACED IN LHS089
090	68-G	119		LANDFILL 12	TREATMENT ONE/EQ			LANDFILL 16	YES		REPLACED IN LHS090
091	75-I	120		LANDFILL 12	TREATMENT ONE/EQ			LANDFILL 16	YES		REPLACED IN LHS091
092	75-I	121		LANDFILL 12	TREATMENT ONE/EQ			LANDFILL 16	YES		REPLACED IN LHS09
093	75-I	122		LANDFILL 12	TREATMENT ONE/EQ			LANDFILL 16	YES		REPLACED IN LHS093
094	16-Y	123					LANDFILL 12	LANDFILL 16	YES		REPLACED IN LHS094
095	34-Y	124		LANDFILL 12	TREATMENT ONE/EQ			LANDFILL 16	YES		REPLACED IN LHS095
096	34-Y	125					LANDFILL 12	LANDFILL 16	YES		REPLACED IN LHS096
097	38-Y	126		LANDFILL 12	TREATMENT ONE/EQ			LANDFILL 16	YES		REPLACED IN LHS097
098	38-Y	127					LANDFILL 12	LANDFILL 16	YES		REPLACED IN LHS098
099	38-Y	128	EMPAK		TREATMENT ONE/EQ			LANDFILL 16	YES		TREATMENT ONE/EQ
100	45-Y	129					LANDFILL 12	LANDFILL 16	YES		REPLACED IN LHS100
101	45-Y	130		LANDFILL 12				LANDFILL 16	YES		REPLACED IN LHS101
102	16-T	131					LANDFILL 12	LANDFILL 16	YES	YES	REPLACED IN LHS102
103	16-T	132					LANDFILL 12	LANDFILL 16	YES	YES	REPLACED IN LHS103
104	16-T	133				TREATMENT ONE/EQ		LANDFILL 16	YES	YES	REPLACED IN LHS104
105	16-T	134					LANDFILL 12	LANDFILL 16	YES	YES	REPLACED IN LHS105
106	401	135	EMPAK					METAL/OFF-SITE *			NONE REQUIRED
107	403	136					LANDFILL 12	LANDFILL 16	YES		REPLACED IN LHS107
108	406	137					LANDFILL 12	LANDFILL 16	YES		REPLACED IN LHS108
109	408	138					LANDFILL 12	LANDFILL 16	YES		REPLACED IN LHS109
110	207	139	EMPAK		TREATMENT ONE/EQ			LANDFILL 16	YES		REPLACED IN LHS110
113	744	142	EMPAK		TREATMENT ONE/EQ			LANDFILL 16	YES		REPLACED IN LHS113
115	33-X	144		LANDFILL 12	TREATMENT ONE/EQ			LANDFILL 16	YES		REPLACED IN LHS115
116	37-X	145		LANDFILL 12	TREATMENT ONE/EQ			LANDFILL 16	YES		REPLACED IN LHS116
117	744-A	146		LANDFILL 12	TREATMENT ONE/EQ			LANDFILL 16	YES		REPLACED IN LHS117
118	813	147		LANDFILL 12	TREATMENT ONE/EQ			LANDFILL 16	YES		REPLACED IN LHS118
119	725	148					LANDFILL 12	LANDFILL 16	YES	YES	REPLACED IN LHS119
120	725	149					LANDFILL 12	LANDFILL 16	YES		REPLACED IN LHS120
121	32-H	150	EMPAK		TREATMENT ONE/EQ			LANDFILL 16	YES		REPLACED IN LHS121
123	16-Y	152				TREATMENT ONE/EQ		METAL/OFF-SITE *			NONE REQUIRED

* Above Ground Metal Sump Requiring No Backfill

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

October 9, 1997

CERTIFIED MAIL
Z 746 032 977
RETURN RECEIPT REQUESTED

James A. McPherson, Commander's Representative
Longhorn/Louisiana Army Ammunition Plant
Attn: SIOLH-CR
P.O. Box 658
Doyline, LA 71023

Re: **Longhorn Army Ammunition Plant (LHAAP)**
Group 4 - Goose Prairie Creek Sampling 1995-1996:
Health Assessment by the United States Army Center for Health Promotion and Preventive Medicine (USACHPPM) and the Corps of Engineers Data Summary Package

Dear Mr. McPherson:

The Texas Natural Resource Conservation Commission (TNRCC) staff has completed its review of the above referenced documents regarding surface water and sediment sampling of Goose Prairie Creek from 1995 to 1996. The USACHPPM's assessment consisted of an inter-Army memorandum (not dated), which we received at the monthly manager's meeting held on August 7, 1997, and a data summary package the Corps of Engineers sent to USACHPPM, which we received on September 5, 1997. Our comments are enclosed. The TNRCC would like to meet with the Army to further discuss the DQO process for Goose Prairie Creek after the manager's meeting on October 21, 1997 at 1:00 p.m at the TNRCC. If you have any further questions regarding this matter, please call me at (512) 239-2502.

Sincerely,

Diane R. Poteet

Diane R. Poteet
Project Manager (MC-143), RI/FS II Unit
Superfund Investigation Section
Pollution Cleanup Division

Enclosure

cc: Chris Villarreal, EPA Region 6 (6SF-AP)
Yolane Hartsfeld, COE Tulsa District (CESWT-PP-EA)
Oscar Linebaugh, COE Eastern Area Office (CESWF-AD-E)

Longhorn Army Ammunition Plant
Group 4 - Goose Prairie Creek Sampling 1995-1996
TNRCC COMMENTS (October 9, 1997)

No.	Subject	Comment
1	Metals in sediment samples	1) Metals results are required to be reported even though there are no background data; and 2) What does the Army intend to do about the lack of sediment background data? If the Army decides to use soil background data as a replacement, the physical and chemical attributes of the soil, sediment and contaminants would need to be described and compared.
2	Data tables	We require that the Army include in one table the following: sample location, maximum detection of constituent, and the pre-remedial goal or applicable or relevant and appropriate requirement for a constituent, along with the sampling date for all media and constituents (including metals). Again, the state refers the Army to the data quality objective (DQO) process recommended by the U.S. Environmental Protection Agency.
3	Human health risk evaluation	We do not agree that a human exposure pathway does not potentially exist for the creek for the organic constituents presented in the referenced data package because on-site workers have access to the creek and boaters can reach the mouth of the creek from the lake. In addition, institutional controls are not to be considered in the risk assessment. We do agree that it is important to continue the monitoring program to determine the source(s) of the contamination and to continue limiting access to the creek area. We remind the Army that in accordance with 30 Texas Administrative Code Chapter 307 and the Texas Water Code Section 26.121, unregulated discharges of pollutants are not allowed in Texas.
4	Ecological risk evaluation	We cannot concur with the Army that ecological impacts are not a concern for the creek based on the following reasons: 1) Before a reliable conclusion can be made on creek impacts, analytical data for all contaminants of concern will need to be gathered from both surface water and sediment samples, and then compared to ecological benchmarks (e.g., water quality criteria, sediment quality guidelines); and 2) We disagree that the creek does not support "many" receptors due to naturally-occurring stagnant conditions. These conditions may render the creek a lower quality aquatic habitat periodically, but the creek will continue to provide an ecological service, particularly if there are any perennial pools. No surveys of aquatic organisms in the creek have been conducted and therefore statements regarding the lack of receptors are unfounded.

021698

Longhorn Army Ammunition Plant
Group 4 - Goose Prairie Creek Sampling 1995-1996
TNRCC Comments 10/9/97 (continued) :

No.	Subject	Comment
5	Detected constituents in the creek migrating towards the bay	In regards to the discussion of the July 1997 data, we disagree that migration is not supported by the data. Dilution would be expected as the contaminates moved down stream and a reduction of constituents being detected in samples would be expected. The significance fact is that they are being detected in the bay.
6	Caddo Lake Institute/Turtle Study	Will this information be necessary for the ecological risk assessment of Goose Prairie Creek and other drainages on the plant?

021699

COE/Contractor/LHAAP Meeting Minutes
Longhorn AAP
15 October 1997

1. The participants were:

David Tolbert, LHAAP
Dudley Beene, EAO
Oscar Linebaugh, EAO
Bryan Smith, Radian
Bill Corrigan, Radian
Chris Edgmon, Radian
Cliff Murray, Tulsa District
Yolane Hartsfield, Tulsa District

2. New carbon units installed and running. Older units have been removed from service, waste carbon analyzed and awaiting results to disposed properly, with units being returned to vendor.

3. The schedule for the ICT wells is being maintained. The last ICT well has been developed. The wells are scheduled to go on-line in January/February 1998. Under miscellaneous electrical contract for collection system, Radian is relocating and reusing LAAP power poles, transformers, and wiring. Cost savings to be calculated and reported at later date.

4. Drums. Radian responded that they continue work to process all remaining drums and their contents. Have about 400 drums remaining of liquid IDW and 545 drums of Sverdrup's IDW (both liquids and solids). Awaiting toxicity testing at GWTP prior to treating containerized water.

5. Have sent cap from MW-11 to National Well Supply to enable them to match thread configuration to build 7' extension for current well head. Well integrity being maintained during interim. Expected delivery week of 20 October.

6. The LTTDs have processed about 28,627 cy of soil (of which 1030 is ICT soils material). Soils are wetter due to recent rains causing a slight decrease in treatment rates.

7. Roads at Site 16 are operational. Still need to add gravel to some road surfaces. Large storage tank installed with painters expected this date. Also pumps arrived and electrical work is underway. When contractors' off site, Radian will install fabric on-hand and cover with iron ore gravel Expect to use 5 or 6 loads of gravel.

8. There was general discussion and preplanning about the biotesting of effluent from the GWTP. Test underway, sample collected Thursday 16 October. As of today the fish live.

9. Awaiting the TNRCC okay use and/or disposal of treated waters and soils/sludges at the landfills. Awaiting their verbal response. If affirmative, we will submit a letter requesting TNRCC concurrence to proceed.

10. Mr. Linebaugh noted that Radian had been given technical direction to work at the WTP to

correct deficiencies resulting in an NOV. Three items have a 26 October compliance date. EAO will write letter to TNRCC about compliance efforts that are expected to extend beyond 26 October date.

11. Mr. Smith noted that Radian will be going to 2 shifts for technicians and heavy equipment operators. There was general discussion about labor issues.

12. The tents at the LTTDs will be released to vendor when soils' treatment is completed.

13. Radian tasked to provide costs for potable water treatment plant operation.

14. The next meeting is scheduled for 15 October at 1300. Monthly managers' meeting in Austin on 21 October at 1000 at the TNRCC.

15. There being no further business, the meeting was adjourned.

Yolane Hartsfield, Project Manager