FINAL

ENVIRONMENTAL ASSESSMENT

FOR

ENVIRONMENTAL SAFETY AND HEALTH ANALYTICAL LABORATORY

PROJECT NO. 94-AA-01

PANTEX PLANT

AMARILLO, TEXAS

June 1995

U.S. Department of Energy
Albuquerque Operations Office
Amarillo Area Office
Pantex Plant
P.O. Box 30030
Amarillo, Texas 79120

DOE/EA--0970

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

EXECUTIVE SUMMARY

Pantex Plant is operated by Mason & Hanger-Silas Mason Co., Inc. under contract to the U.S. Department of Energy (DOE). Pantex Plant is located 27 kilometers (17 miles) northeast of downtown Amarillo, Texas (Figure 1) and employs approximately 3,600 people (approximately 3,300 through Battelle and Manson & Hanger and approximately 300 through other organizations). The mission of Pantex Plant is assembly and disassembly of nuclear weapons, the production of high explosive components for nuclear weapons modification, maintenance of the nuclear weapons stockpile and performance of quality evaluations of nuclear weapons. Pantex Plant also conducts research and development on conventional high explosives in support of weapons design and development for the Department of Energy (DOE, 1983).

The population within an 8-kilometer (5-mile) radius of Pantex Plant is approximately 2,050 people. The majority of the population in the vicinity of the Plant is located to the west-southwest in the Amarillo metropolitan area (Figure 2). The metropolitan Amarillo Statistical Area has had a population of 187,547 residents in 1991 (Slater and Hall, 1992). The second largest population concentration around Pantex Plant is Pampa, located about 57 kilometers (35 miles) northeast of the Plant, with about 19,959 people (Slater and Hall, 1992). The total population within an 80-kilometer (50-mile) radius of Pantex Plant was approximately 274,000 people in 1990 (Burns & McDonald, 1991).

This environmental assessment (EA) identifies the need for additional analytical resources to support ongoing and projected activities at Pantex Plant and addresses potential environmental consequences associated with the Proposed Action and selected alternatives. The Proposed Action is the construction and operation of a new Environmental Safety and Health (ES&H) Analytical Laboratory at Pantex Plant and the demolition of the existing laboratory upon completion of the new facility. The Laboratory would support environmental monitoring; confirmation of material quality for the assembly of nuclear weapons; surveillance testing of the nuclear weapons stockpile; process capability and maintenance, analysis and surveillance for the dismantling of nuclear weapons; and analyses for general Plant support, such as the Vehicle Maintenance Facility and utility operations. Increased laboratory capability is necessary to analyze samples such as soil, wastewater, high explosives, mock explosives, and materials used during weapons assembly; to meet rapid analytical turnaround requirements; to utilize advanced laboratory analysis technology capabilities; to capitalize on the specialized expertise associated with explosives; and to support weapons activities. These functions are required by federal and state regulations and Department of Energy requirements.

This Environmental Assessment has been prepared in accordance with the Council on Environmental Quality regulations (40 CFR 1500-1508) that implement the procedural provisions of the National Environmental Policy Act (NEPA) of 1969 (42 USC 4321), the Department of Energy National Environmental Policy Act Implementing Procedures (10 CFR 1021), Department of Energy National Environmental Policy Act Compliance Program (DOE Order 5440.1E), and the Department of Energy "Recommendations for the Preparation of Environmental Assessments and Environmental Impact Statements" (DOE, 1993a).

The existing Analytical Chemistry Laboratory lacks sufficient space and environmental controls to support the current demand for analytical services. Specifically, lack of an adequate chemical staging area precludes the adequate chemical segregation recommended for laboratories. In recent years, a combination of new instrumentation and increased workload has reduced the available work space by more than 70 percent. This reduction has forced crowded bench space working conditions.

The proposed ES&H Analytical Laboratory would be a single-story structure of approximately 1,524 gross square meters (16,400 gross square feet). It would be located northeast of, and adjacent to, the Weapons Material Analytical Laboratory in Zone 11. It would be sited to avoid Solid Waste Management Unit 13, located approximately 12 meters (40 feet) southeast of Building 11-51. Projected construction would be scheduled to start in late 1995, and the construction time is estimated to be 19 months. Design features would meet all applicable regulatory standards and Department of Energy orders. The estimated cost for construction of the proposed ES&H Analytical Laboratory is $3,950,000 (M&H, 1991a).

On May 18, 1994, a Noticẽ of Intent (NOI) to prepare a sitewide Environmental Impact Statement (EIS) for the Pantex Plant was issued by the Department of Energy. The proposed laboratory is a small scale project that would not influence or be influenced by the sitewide decision to be made following completion of the EIS.

Conceptual design plans call for the facility to include offices; laboratories with laboratory benches, equipment, storage cabinets, and fume hoods; separate chemical staging areas; a high-explosive staging area; a hazardous waste staging area; and a hardened area for safe, secure staging of small quantities of explosive materials. Air-handling equipment would consist of full exhaust ventilation with no air recirculated except the administrative area. Fire protection would be by wet-pipe sprinkler systems installed throughout the ES&H Analytical Laboratory; hoods would have dry chemical fire-protection systems, except perchloric acid hoods, which would have wash-down systems. Mitigating features would include hoods designed to contain explosions, reinforced or shielded concrete walls, "propagating-resistant" staging containers, and shielded glove boxes. Depending on the final design features of the facility, interlocking doors could be incorporated to minimize consequences on human health and the environment in the event of an explosion or other event in an ES&H Analytical Laboratory room.

Construction of the ES&H Analytical Laboratory would involve approximately 0.4 hectare (1 acre) of disturbed grassland adjacent to other facilities. Consequences would primarily involve transportation of construction equipment, materials, and workers, as well as generation of construction waste. These consequences would be minor.

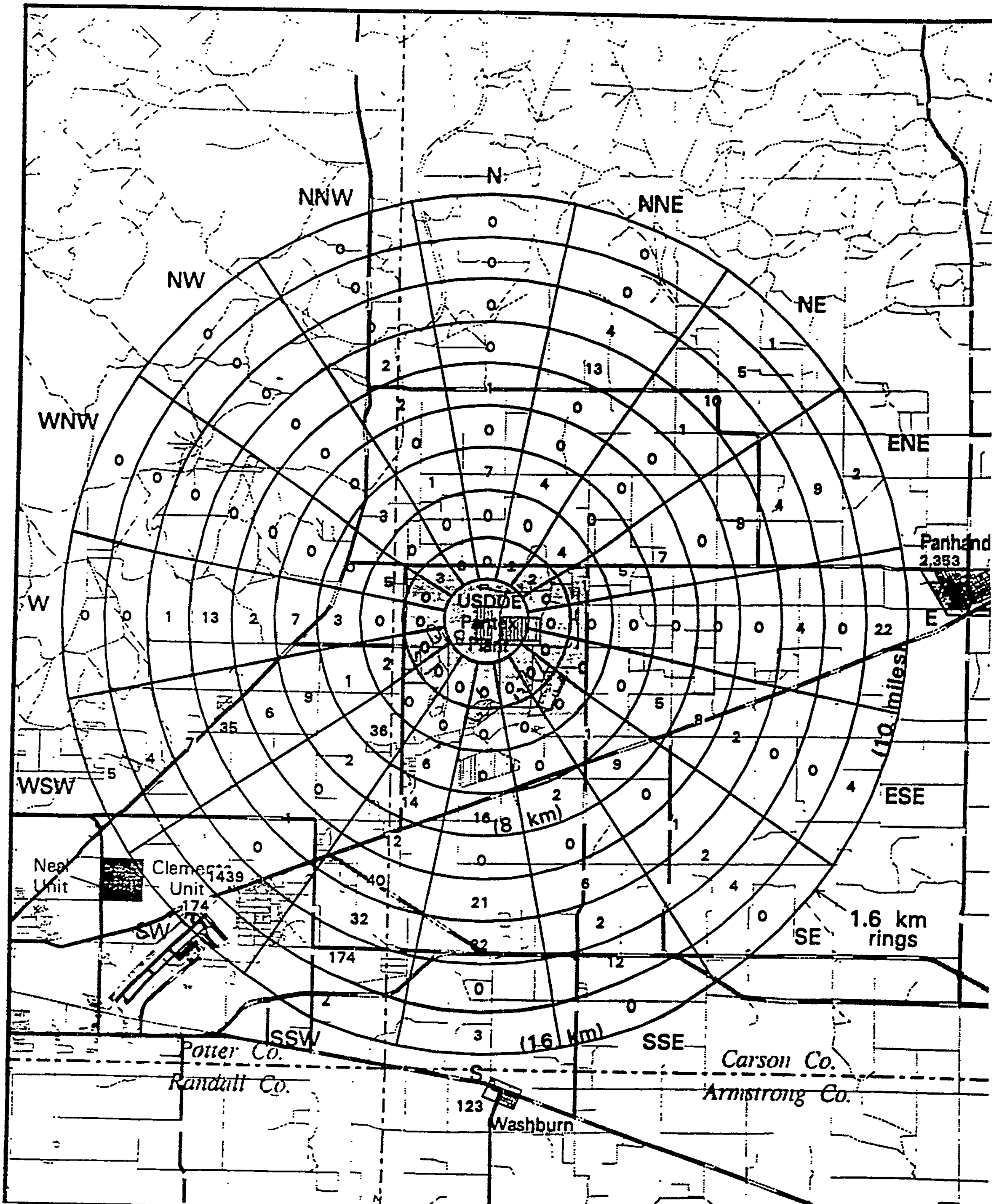
Operation of the ES&H Analytical Laboratory would result in air emissions from fume hoods and the generation of hazardous waste such as solvents and ash from disposal of explosives. Quantities would be similar to, but slightly greater than, those of the existing Analytical Chemistry Laboratory and handled in the same manner and no new waste types would be generated.

Demolition of the existing Analytical Chemistry Laboratory and adjacent support structures, would be expected to cost approximately $410,000 would occur following occupancy of the ES&H Analytical Laboratory. An estimated 943 cubic meters (1,233 cubic yards) of waste material would be disposed of in appropriate landfills. This includes 125 cubic meters (163 cubic yards) of concrete and 7.5 cubic meters (10 cubic yards) of asbestos/asbestos contaminated waste. An estimated 7.5 cubic meters (10 cubic yards) of hazardous waste would also be generated.

Several alternatives to the construction and operation of the ES&H Analytical Laboratory were considered in this document. These alternatives include the (1) No-Action alternative (that is, continuing to use the existing Analytical Chemistry Laboratory in its current condition), (2) expanding and remodeling the existing laboratory, (3) relocating the laboratory to an existing facility onsite, (4) relocating the laboratory to a temporary facility (for example, prefabricated), and (5) using outside contractors to perform the analytical services.

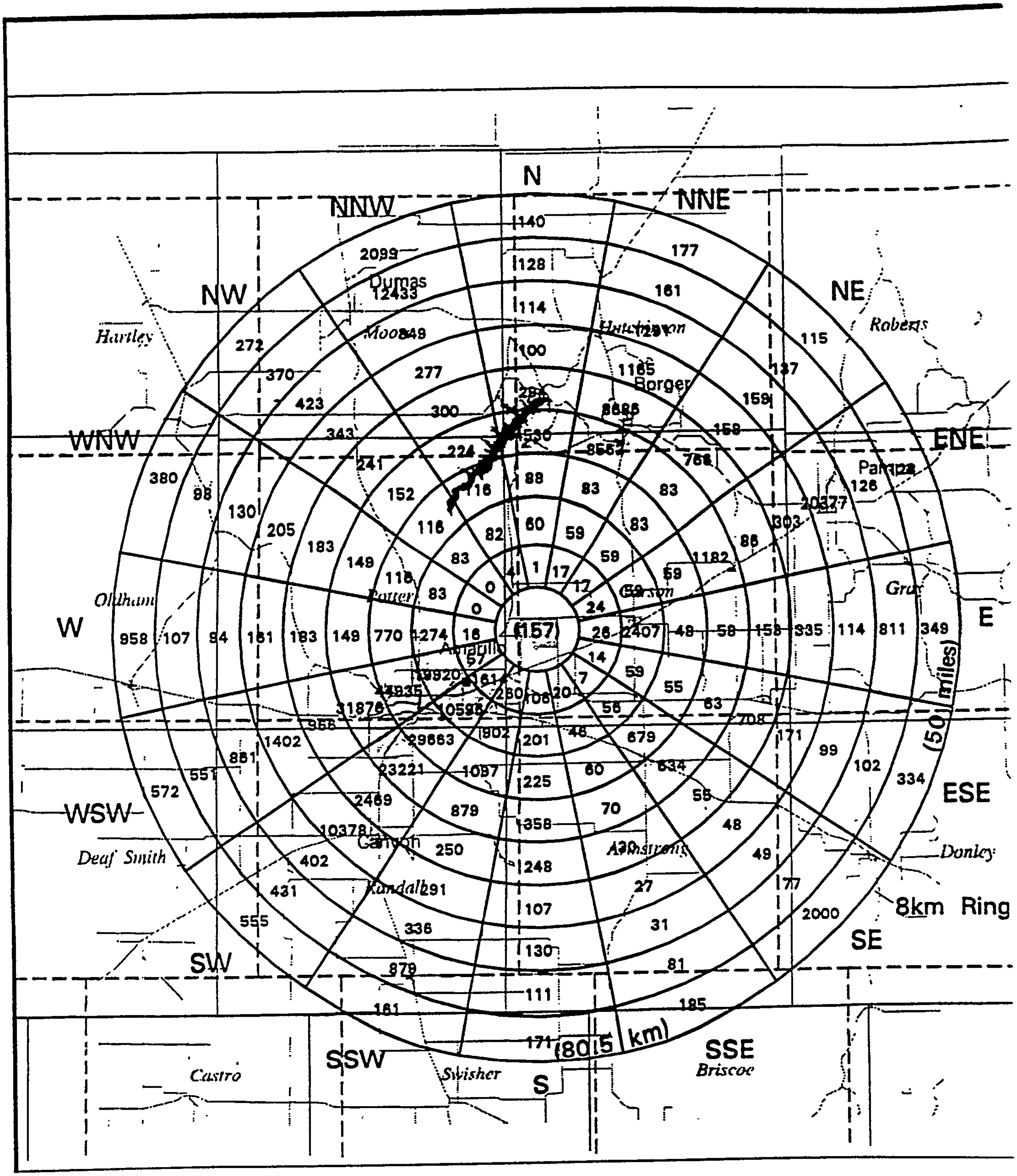
The No-Action Alternative would be a continuation of current laboratory analysis activities in the present facility, with independent laboratories analyzing samples in excess of the current Plant capacity. No upgrades would be accomplished to support the Laboratory operations.

The consequences of the other alternatives would be similar to the Proposed Action. However, these alternatives are limited by space and available facilities. The Outside Contractor Alternative would not meet the need for rapid sample analysis and Plant oversight, but would have less onsite consequences than the other alternatives.



(These numbers are based on a 1995 door-to-door survey)

Figure 2. Population Within 10-Mile Radius of Pantex Plant



(These numbers are based on the 1990 Census; the 10-Mile radius is based on a 1995 door-to-door survey)

Figure 3. Population Within 50-Mile Radius of Pantex Plant

1.0 PURPOSE AND NEED FOR AGENCY ACTION

An analytical laboratory is necessary to meet the Department of Energy's current and projected needs for testing and analysis of materials associated with operation of Pantex Plant. The laboratory would support the following activities: environmental monitoring; confirmation of material quality for the assembly of nuclear weapons; surveillance testing of the nuclear weapons stockpile; process development, analysis and surveillance for the dismantling of nuclear weapons; and analyses for general Plant support such as the Vehicle Maintenance Facility and utility operations. Increased laboratory capability is necessary to analyze samples such as soil, wastewater, high explosives, mock explosives, and materials used during weapons assembly; to meet rapid analytical turnaround requirements; to utilize advanced laboratory analysis technology capabilities; to capitalize on the specialized expertise associated with explosives; and to support weapons activities. These functions are required by federal and state regulations and Department of Energy requirements such as the Pantex Plant Hazardous Waste Permit issued by the State of Texas; the Resource Conservation and Recovery Act; Department of Energy Albuquerque Operations Office QC1 Engineering Procedures—Quality Evidence Procedures, EP 401015; Department of Energy Amarillo Area Office Notice AAO-93-1; Nuclear Weapon Design Specifications, and requirements for continuous Plant support.

1.1 Background

The existing Pantex Plant Analytical Chemistry Laboratory is located in Building 12-59 and lacks sufficient space and environmental controls to support the current demand for analytical services. Specifically, lack of an adequate chemical staging area precludes the adequate chemical segregation recommended for laboratories. In recent years, a combination of new instrumentation and increased workload has reduced the available work space by more than 70 percent. This reduction has forced crowded bench space working conditions. Pantex Plant has had to increasingly rely on various independent offsite laboratories for analyses of environmental samples because of insufficient onsite resources. The necessity to use outside laboratories sometimes prevents the Plant's analytical requirements from being met.

The environmental controls within the existing laboratory are not adequate to maintain the operating conditions for equipment and instrumentation required for state-of-the-art analytical capabilities. Air handling and environmental control problems will arise in the existing Analytical Chemistry Laboratory. The chemical staging area of the existing laboratory is not sufficiently large enough for storing chemicals having the potential of reacting if a spill were to occur. This creates a potential safety concern for laboratory personnel. Other concerns include deteriorating laboratory flooring, ceilings, roof, and outdated ventilation systems. The capability to utilize new technologies for sample preparation and analysis in the existing facility is limited, and opportunities to expand laboratory capabilities by adding new equipment, sample preparation areas, chemical staging areas, and new staff are not available.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 The Proposed Action

The proposed action is to construct and operate a new analytical laboratory at Pantex Plant that would meet the need for increased testing and analytical capability, and upon completion of the new laboratory, to demolish the existing laboratory facility.

The proposed ES&H Analytical Laboratory would be designed and constructed to meet the following criteria:

- The Chemical Staging Area would comply with applicable regulations for proper segregation of chemicals (29 CFR 1910.1450).
- The facility would have sufficient room for current and foreseeable advanced analytical equipment needs and have sufficient bench space for sample preparation and analysis.
- The facility would have adequate bench space, fume hoods, and safety/emergency equipment to provide a safe working environment for laboratory technicians.
- The facility would include a specific staging area for waste contaminated with hazardous constituents which would comply fully with Resource Conservation and Recovery Act guidelines (40 CFR 260-266) and Department of Energy requirements.
- The facility would include a hardened area for the safe, secure staging and analysis of small quantities of explosive materials.

2.1.1 Construction of Environmental Safety and Health Analytical Laboratory

The proposed facility (Figures 3 and 4) would be a single-story structure of approximately 1,524 gross-square-meters (16,400 gross-square-feet) located northeast of, and adjacent to, Building 11-51, the Weapons Material Analytical Laboratory in Zone 11. It would be sited to avoid Solid Waste Management Unit 13, which is located approximately 12 meters (40 feet) southeast of Building 11-51. This area would be avoided to prevent dispersal of contaminated material into other parts of the environment. Projected construction would be scheduled to start in late 1995 and the total construction time is estimated to be 19 months (M&H, 1991a). Design features would meet all applicable regulatory standards and Department of Energy orders. The estimated cost for construction of the proposed ES&H Analytical Laboratory is $3,950,000 (M&H, 1991a).

Site preparation activities would begin with stripping the topsoil, followed by excavation and compaction of the soil. The site would be graded so that storm water runoff would flow southeasterly to an existing drainage swale which would eventually flow to playa 4. Site work would include roadwork and mechanical, electrical, and fire protection utilities located both above and below ground. A paved access road and parking area for approximately four service vehicles would be provided for the proposed facility; no parking area would be required for staff working in the laboratory as they would use existing nearby parking areas. The laboratory parking area and the paved access road would extend around the north, south and east sides of the proposed facility. Approximately 0.4 hectare (one acre) would be involved for construction and site work (M&H, 1991a).

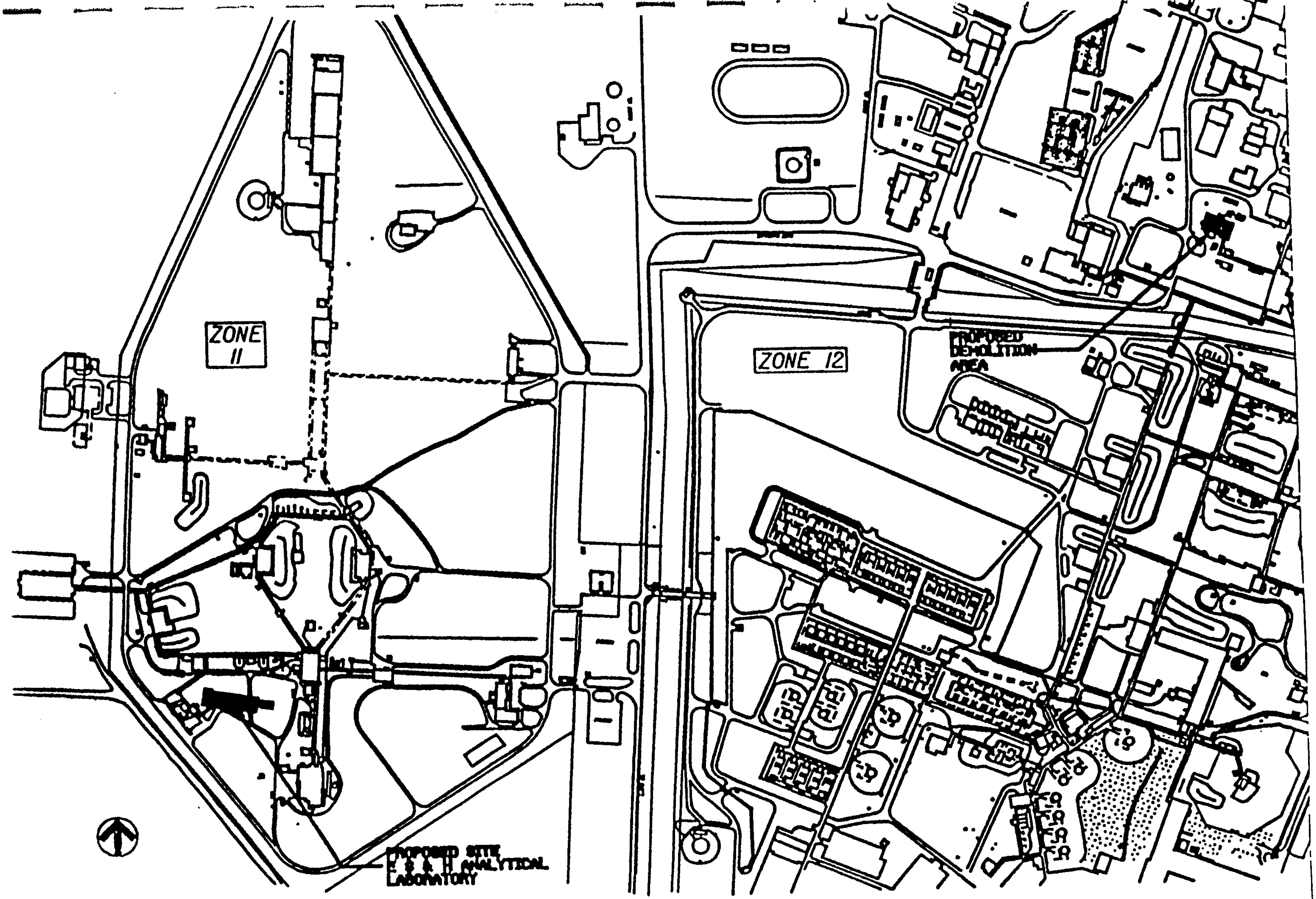


Figure 4. Site Location Map for Proposed Action

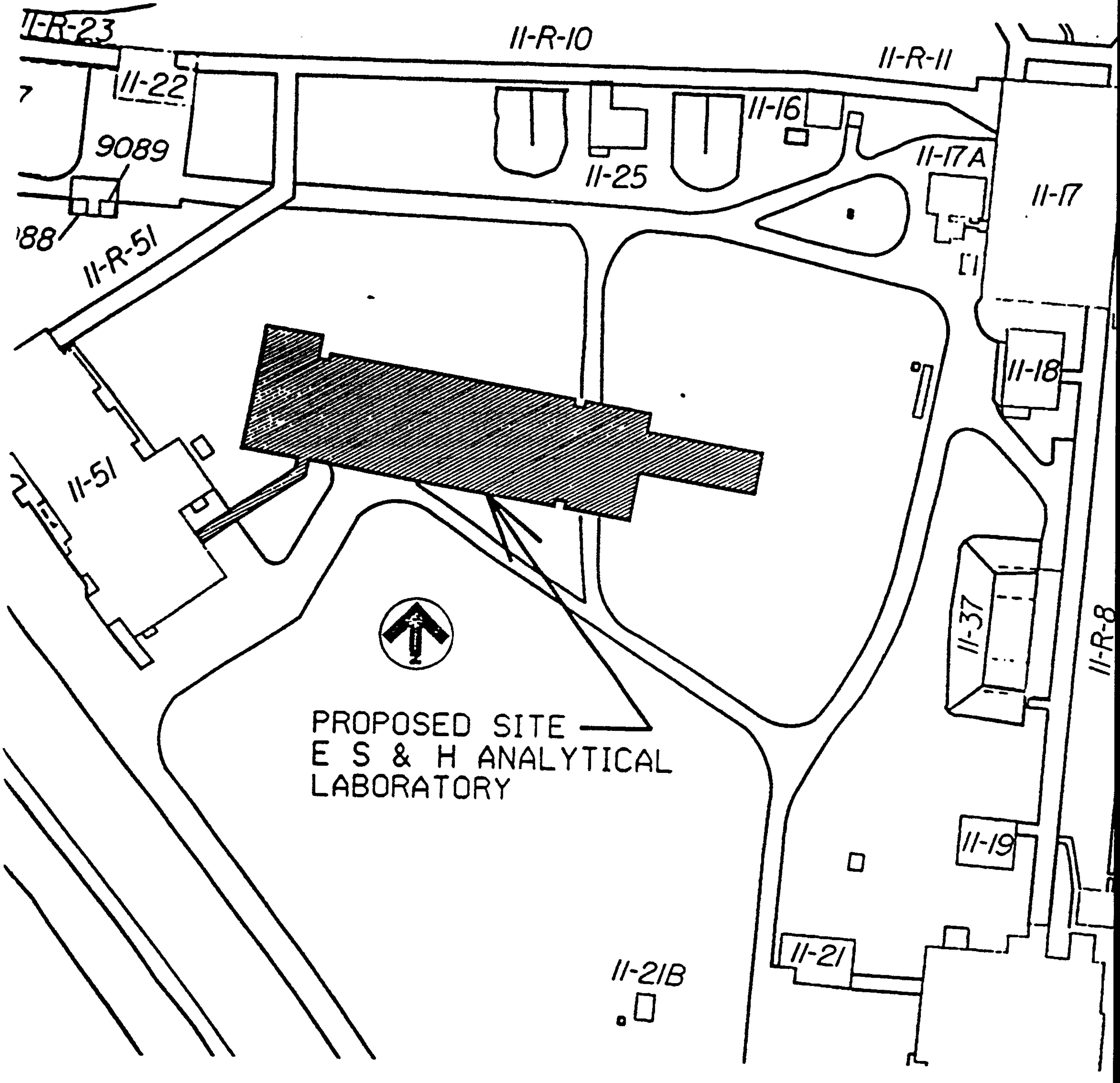


Figure 5. Location of Proposed ES&H Analytical Laboratory

The finished laboratory (Figure 5) would be connected to Building 11-51 by an enclosed ramp to allow shared access to some analytical equipment and use of common areas, such as shower/change rooms. Conceptual design plans call for the facility to have a net usable area of approximately 1,210 square meters (13,000 square feet) and would include offices; a breakroom; laboratories with laboratory benches, equipment, storage cabinets, fume hoods; separate chemical staging areas; a high explosive staging area; a hazardous waste staging area; and rest room/change facilities. Air-handling equipment would consist of full exhaust ventilation with no air recirculated except the administrative area. Exhaust vents would be located so that exhaust air would not re-enter the ES&H Analytical Laboratory or adjacent buildings. All makeup air would be passed through appropriate filters, depending on the work involved for a particular laboratory, which may require high-efficiency particulate air filters. Fire protection would be by wet-pipe sprinkler systems installed throughout the ES&H Analytical Laboratory; hoods would have dry chemical fire-protection systems, except perchloric acid hoods, which would have wash-down systems. Emergency showers and eye washes would be present in each area as required by the Occupational Safety and Health Administration, and the Department of Energy. Laboratory structures and equipment where high explosives would be present would be designed to mitigate the effects of an explosion. Mitigating features would include hoods designed to contain explosions, reinforced or shielded concrete walls, "propagating-resistant" staging containers, shielded glove boxes, and administrative controls (M&H, 1991a). If required, interlocking doors would be designed to minimize consequences on human health and the environment in the event of an explosion or other event in an ES&H Analytical Laboratory room.

2.1.2 Operation of Environmental Safety and Health Analytical Laboratory

The new laboratory would have sufficient analytical and bench space to meet the current and projected needs of Pantex Plant for analytical services. Preparation and analyses of samples, for example, high explosives, mock high explosives, material used during weapons assembly, and environmental samples such as soil and wastewater, would occur in 11 operational areas. Additional areas within the facility would be provided for support functions. Occupancy and operation of the ES&H Analytical Laboratory is estimated to occur in the latter part of 1997. Projected staffing of the laboratory is 20 individuals this includes the work force of 10 individuals in the existing Analytical Chemistry Laboratory and 10 additional persons). Administrative controls to minimize exposure to potential hazards to laboratory workers would include training, surveillance, and monitoring.

Operational Areas. This section describes the proposed operational areas that would be present within the proposed ES&H Analytical Laboratory and includes special facilities and capabilities required for work with high explosives.

Explosives processing within the explosives-protected area of the facility would allow for specialized testing of small quantities of explosives. Operations, such as chopping and grinding of explosive material, would occur. There would be no requirement for hazardous chemicals, other than high explosives, or compressed gases in this room. Samples would be tested in fume hoods, which are currently being used for this operation in the existing facility. These hoods are designed to contain in excess of a designated sample size of approximately 1 gram (0.035 ounce).

Activities in the Explosive Operations Room would include the preparation of explosives such as weighing or analyzing, particle size separation, and the blending of explosives. A maximum of 500

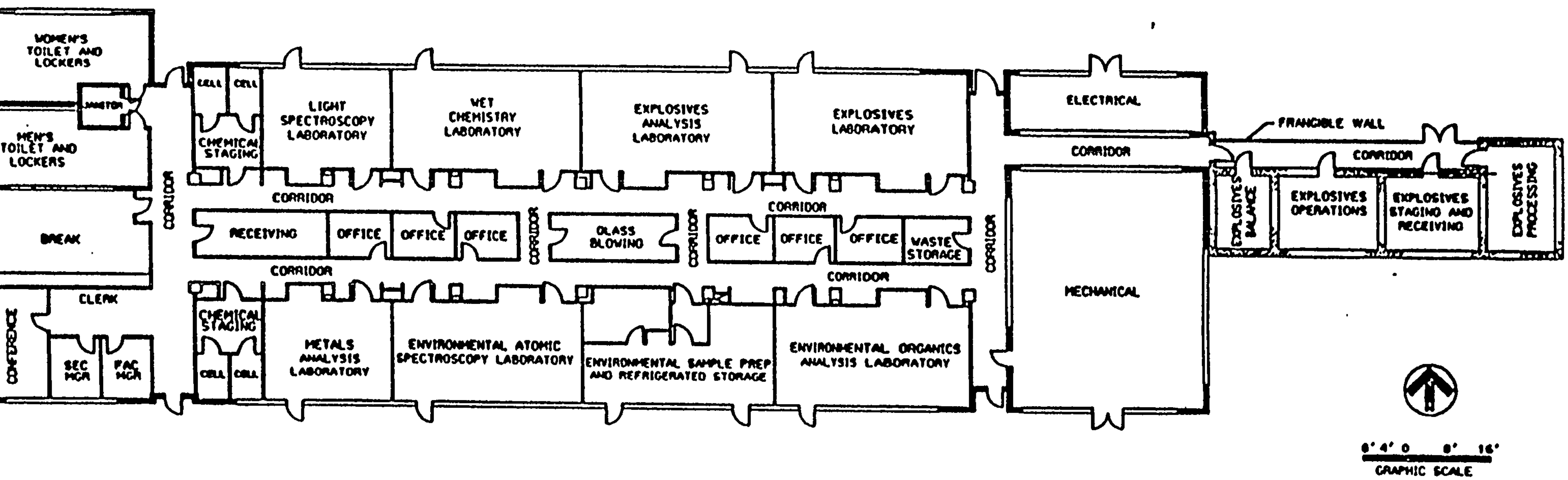


Figure 6. Floor Plan for Proposed ES&H Analytical Laboratory

grams (1.1 pounds) of explosives would be present. A filtration system would be installed on the fume hood exhaust to remove vapors.

Samples of explosives would be weighed in the Explosives Balance Room. A maximum of 500 grams (1.1 pounds) of explosives would be present at any one time. No hazardous chemicals or compressed gases would be permitted in this room. An air-purging system for the explosion-proof balances would be present.

Wet Chemistry analyses would be used for supporting plant operations such as, the testing of commercially procured direct materials (that is, those in direct contact with the weapon) used during assembly of nuclear weapons (35-Account materials). Samples brought to the facility would be staged in locked cabinets. Operations, such as titrations, distillation, moisture analyses, and viscometry would occur. After the analyses, approximately 50 percent of all samples would be returned to the staging cabinet. The remaining samples would be disposed of as waste after characterization using process knowledge and analytical data. A wide variety of chemicals and solvents would be present. Vacuum, compressed air, and nitrogen lines would be present in the room. A maximum of 15 grams (0.5 ounce) of explosives could be present only if a situation arose requiring unique instrumentation or equipment that is found only in this laboratory.

Light Spectroscopy would also be used for supporting plant operations such as, the testing of 35-Account materials. Operations, such as titration and infrared spectroscopy would occur. Samples would be brought to the facility and staged in locked cabinets. After testing, approximately 50 percent of all samples would be returned to the staging cabinets to await transportation from the facility. The remaining samples would be disposed of as waste following characterization to determine the appropriate treatability group. A wide variety of chemicals and solvents would be present. A maximum of 15 grams (0.5 ounce) of explosives could be present only if a situation arose requiring unique instrumentation or equipment that is found only in this laboratory.

The function of the Glass Blowing Room would be to provide glass blowing capabilities for the various laboratories. No explosives or hazardous chemicals would be present. Oxygen and nitrogen would be piped into the room, and bottled acetylene and oxygen (10.4-kilogram [22.8-pound] and 9.4-kilogram [20.6-pound] cylinders, respectively) for the glass-blowing process would be present.

Testing and analysis of explosives would occur in the Explosives Analysis Laboratory. Operations would include Liquid Chromatography, Liquid Chromatography-Mass Spectrometry, Gel Permeation Chromatography, and sample preparation. Samples of explosive-contaminated waste would be treated at the Burning Ground to deactivate the explosive characteristic. Ash generated from this treatment would be characterized to determine additional required treatment and/or appropriate disposal. Explosives would be limited to 50 grams (1.75 ounces). Less than 5 liters (1.3 gallons) of solvents and less than 4 liters (1 gallon) of acids would be present in the laboratory. Helium, nitrogen, and compressed air would be piped into the room.

The Explosives Laboratory would be used for the elemental analysis of explosives. Operations would include techniques, such as microphotography of foreign matter in the explosives, elemental analysis of explosives and other organic compounds, and sample preparation. Explosives would be limited to 50 grams (1.75 ounces). Solvents, acids, helium, nitrogen, oxygen, and compressed air would be present. After analysis, samples would be treated for their reactive characteristic by burning at the Pantex Plant Burning Ground. After characterization, the resulting ash would then be shipped offsite for further treatment, and eventual disposition in a permitted hazardous waste landfill.

The primary function of Gas Chromatography/Chemical Reactivity Testing/CRT would be environmental testing and analysis, explosives analysis, testing of 35-Account materials, chemical reactivity testing, and determining unknowns. Operations to be performed in this area would include purge and trap, testing for volatile chemicals in water, pesticide analysis, chemical reactivity testing of explosives with other materials, and testing for evidence of explosives in water. Environmental samples (volatile and semi-volatile organics in water and soil) would be appropriately disposed of after the analysis. Waste would be characterized using process knowledge and test results from analyses to segregate the waste into appropriate treatability group(s). Explosives would be limited to 50 grams (1.75 ounces). Chemicals would include solvents and pesticides, and volatile standards would be stored at 4° Celsius (39° Fahrenheit). Gases piped into the laboratory would be hydrogen, helium, argon, and compressed air.

Atomic Spectroscopy would be used for the analysis of environmental samples while supporting other Plant operations. The necessary operations for this laboratory include fluoride analysis and testing for toxic metals in water. After analysis has been completed, the samples would be characterized to determine appropriate treatment and/or disposal options. Acids, bases, and solvents would be present along with nitrogen, compressed air, argon, nitrous oxide, acetylene, and vacuum lines.

Metals analysis would be used for the spectroscopy of elements in various types of samples. Operations might include analysis of certain commercially procured direct materials, explosives analysis, mock explosives analysis, and environmental samples analysis. This laboratory would also contain a small room for the preparation of samples. Explosives would come primarily from the Explosives Staging Room and would be limited to 15 grams (0.5 ounce). Elemental organic and inorganic standards and acids would be present along with nitrogen, nitrous oxide, acetylene, argon, compressed air, and vacuum lines.

Support Areas. This section describes the areas that would provide support functions such as chemical and waste staging, in accordance with applicable regulations.

The Explosives Receiving and Staging Room would receive and stage explosive material for future testing in the facility and would be enclosed by blast-resistant concrete walls, which would contain an explosion to the amount which they are designed. Also, storage bins within the staging rooms would be of the non-propagating type which would not allow an explosion from one bin to cause the contents of an adjacent bin to explode. Following analysis and/or testing, the samples would be transported to the Burning Ground for treatment of their reactive characteristic. Ash generated from the burning would be characterized using process knowledge and sampling and analysis to determine the appropriate disposal options. The Explosives Receiving Room would require an explosion-proof freezer; a solvent cabinet; and an aluminum, vermiculite-filled staging magazine capable of containing up to 11.4 kilograms (25 pounds) of explosives in 0.45 kilogram- (1 pound-) capacity cells.

The Chemical Staging areas would hold a variety of chemicals and solvents in separate and distinct spaces, or staging cells, for use in the facility's laboratories. There would be no explosives or gases present. Individual staging cells would be provided for incompatible chemicals. Each staging cell would have its own secondary containment basin and would have the capability of being locked for controlled access. Fire suppression would be provided by a combination of water or dry chemical overhead, based on the type of material in each space.

The Spill Control Materials Area would be a readily accessible space where supplies necessary for immediate cleanup of small spills (3.8 liters [1 gallon] or less) could be staged. This area would be located along the main corridor, central among all the laboratories in the facility. Spill control materials would be distributed in cabinets along the corridor.

The waste staging area would temporarily house hazardous waste material prior to disposal. Facilities would be available for separation of incompatible waste, and each staging area would have secondary containers to minimize the effects of spills and leaks.

An open receiving area, immediately outside the office area, would be designated to receive chemicals, commercially procured material, environmental samples, and general Plant samples. This area would not receive explosives material.

Other support areas in addition to those described above would exist. There would be offices/conference room, rest rooms/change areas for approximately 10 men and 10 women, janitor's closet, electrical room, mechanical room, and a connecting ramp between Building 11-51 and the ES&H Analytical Laboratory.

Post-operational requirements upon closure of the facility, which has a projected useful lifetime of 20 years, would include decontamination of the structure for high explosives, hazardous materials, waste, and site restoration. A separate NEPA review document or other type of environmental review could be required at that time.

2.1.3 Demolition of Existing Analytical Chemistry Laboratory

When the ES&H Analytical Laboratory is completed, occupied, and functional, the existing Analytical Chemistry Laboratory (Building 12-59) and the proximate support structures (Buildings 12-59E, a portion of 12-R-8, 12-R-59, 12-8, and 12-38) (Figure 6) would be demolished and removed. Demolition would be expected to occur in FY99. The demolition of the existing facility would be performed by outside contractors and administered by the Department of Energy, U.S. Army Corps of Engineers, Mason & Hanger, or a construction management firm under contract to the Department of Energy or Mason & Hanger. An estimated 943 cubic meters (1,233 cubic yards) of material would be disposed of in appropriate landfills. This includes 927 cubic meters (1,213 cubic yards) of concrete and 7.5 cubic meters (10 cubic yards) of asbestos/asbestos contaminated waste. An estimated 7.5 cubic meters (10 cubic yards) of hazardous waste would also be generated. Many of the pipes have asbestos-containing material for insulation; there are approximately 88 linear meters (290 linear feet) of steam line with 3.8-centimeter (1.5-inch) asbestos insulation (M&H, 1991a). A full Asbestos Assessment would be conducted and a report prepared to address the extent of asbestos-containing materials present and the procedures to be followed. Demolition work would be conducted in accordance with Department of Energy Orders 6430.1A, General Design Criteria (DOE, 1989), and 5480.4 Environmental Protection, Safety, and Health Protection Standards (DOE, 1993b), Pantex Plant Standard STD-3050 (M&H, 1993a) and other local, state, and other regulations for demolition, waste handling, and disposal of materials.

Building 12-59 has approximately 787 gross square meters (8,475 gross square feet) (M&H, 1976). It is a one-story structure with a flat built-up roof over a metal deck supported by steel beams and bar joists. It has asbestos-containing material in insulation, laboratory equipment, and counter tops.

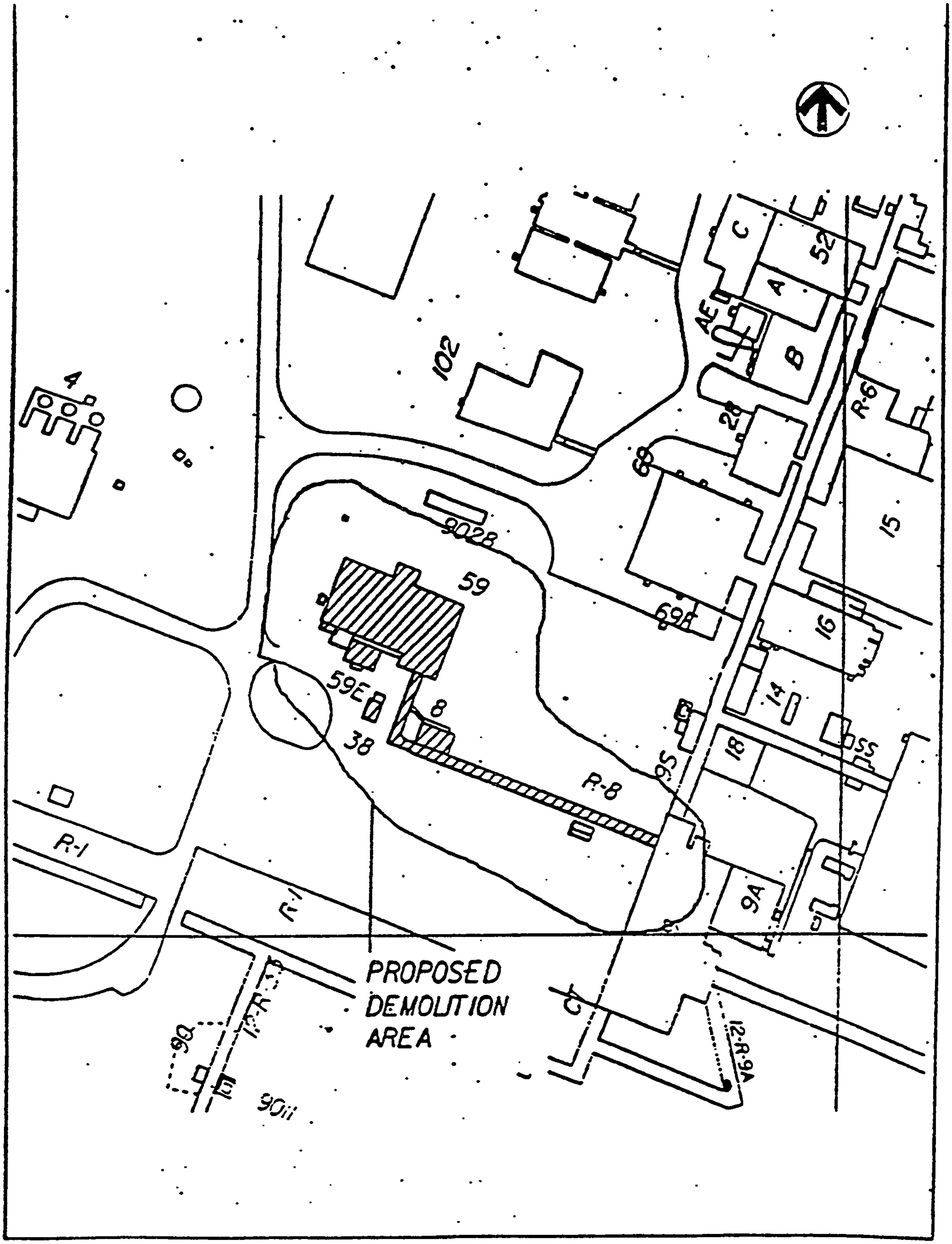


Figure 7. Existing Analytical Chemistry Laboratory Facilities

Walls, floors, and drains may be contaminated with hazardous waste or high explosives. All existing movable laboratory equipment would be relocated to the ES&H Analytical Laboratory prior to demolition (M&H, 1991a).

Building 12-59E is a small one-story mechanical equipment room approximately 56 square meters (600 square feet) in size. It is adjacent to, but detached from Building 12-59 and has a flat built-up roof and steel framing. The exterior walls are masonry units reinforced with structural steel and filled with approximately 20,685 kilopascal (3,000 pounds/square inch) concrete (M&H, 1991a).

Ramp 12-R-59 is an enclosed 2.7-meter- (9-foot-) wide walkway between Buildings 12-59 and 12-8 and covers approximately 56 gross square meters (600 gross square feet). It has a concrete floor, an exposed support structure, and a sloped roof. The side walls are steel-reinforced concrete masonry units filled with concrete (M&H, 1991a).

Building 12-8 serves as an annex to Building 12-59 and has two rooms. It is a one-story masonry structure of approximately 58 gross square meters (625 gross square feet) (M&H, 1976; 1991a).

Building 12-38 is a small one-story open storage shed with steel frame roof supports and chain-link closure on the open sides. It is approximately 24 gross square meters (260 gross square feet) (M&H, 1976; 1991a).

Ramp 12-R-8 is an enclosed walkway connecting Buildings 12-8 and 12-9. The ramp is an enclosed 2.7-meter- (9-foot-) wide walkway covering approximately 299 gross square meters (3,220 gross square feet), has a concrete floor, a steel-frame structure, and a built-up roof sloped to outside walls. The side walls are composed of "cemesto" board, which is known to contain asbestos (M&H, 1991a). Approximately 160 linear feet of this ramp would remain for access to a proposed Production Testing Facility which is earmarked to be constructed on the north side of the ramp.

2.2 ALTERNATIVES TO THE PROPOSED ACTION

Alternatives to the Proposed Action are described in the following subsections. None of the onsite alternatives have been shown to meet the goal of providing analytical capability in a structurally adequate facility. Alternatives include the (1) No-Action Alternative (that is, continuing to use the existing Analytical Chemistry Laboratory in its current condition), (2) expanding and remodeling the existing Analytical Chemistry Laboratory, (3) relocating the Analytical Chemistry Laboratory to an existing facility onsite, (4) relocating the Analytical Chemistry Laboratory to a temporary (that is, prefabricated) facility, and (5) using contractors to perform the analytical services offsite.

2.2.1 No Action

The No-Action Alternative entails continuation of performing laboratory analyses in the present Analytical Chemistry Laboratory and the use of independent laboratories to analyze samples in excess of the current Plant capacity. Increased maintenance would be required on the existing Analytical Chemistry Laboratory and the support facilities. No facility upgrades would be accomplished to support operations. A major portion of the sample analyses would continue to be conducted offsite by a subcontractor, and additional subcontracting of analyses would be likely.

2.2.2 Addition, Remodeling, and Continued Use of Existing Facilities

This alternative (Addition and Remodel Alternative) involves expanding and remodeling the Analytical Chemistry Laboratory to accommodate current and projected needs. The major difficulty with this alternative is that during the add-on construction and remodeling, the ongoing laboratory operations would have to be shut down or temporarily relocated to another facility. No laboratory facility currently exists to temporarily house the laboratory operations ongoing in the Analytical Chemistry Laboratory. Continued support to the Department of Energy mission would be seriously compromised by suspension of the laboratory operations for any extended period of time (M&H, 1991a). Additionally, Solid Waste Management Unit 136 is proximate to the existing Analytical Chemistry Laboratory and would have to be avoided; this would limit many options for expansion of the building.

2.2.3 Relocate Operations to Another Facility Onsite

This alternative (Relocation Alternative) entails moving the analytical chemistry operations to an existing facility on the Plant. Currently there are no available facilities onsite that could be used for laboratory operations, nor are there any facilities that could be reasonably renovated for this purpose (M&H, 1991a). Existing laboratories, including Laboratory Building 11-51 adjacent to the site of the proposed ES&H Analytical Laboratory, do not have available space to accommodate their current activities plus those scheduled for the ES&H Analytical Laboratory. In addition, other laboratory facilities are not structurally designed to accomplish some of the operations planned for the ES&H Analytical Laboratory. This alternative would include the destruction of the current laboratory.

2.2.4 Move Operations to a Temporary Facility

This alternative (Temporary Facility Alternative) consists of moving the analytical laboratory operations to a temporary facility onsite. Temporary facilities (for example, trailers or prefabricated buildings) lack functional integrity for housing some activities in a laboratory such as the staging of explosives, or do not have a solid foundation which is required by some analytical equipment. The staging of explosives and laboratory operations in a temporary facility would not meet the requirements in the Department of Energy Explosives Safety Manual (M&H, 1991a). This alternative would include the destruction of the current laboratory.

2.2.5 Use of Contractors for Analyses Offsite

This alternative (Outside Contractor Alternative) would use the services of independent analytical laboratories to perform required analyses offsite. Many samples have short holding times and must have expedited turnaround on analyses to meet U.S. Environmental Protection Agency and Department of Energy regulatory requirements and agreements. Outside contractors for Pantex Plant may not meet holding-time and quick turnaround requirements for environmental samples. There is also an inherent risk in shipping explosives samples offsite to a contractor. The use of outside contractors also reduces the Plant's control and oversight of samples and the analytical processes. This alternative would include the destruction of the current laboratory.

3.0 DESCRIPTION OF THE EXISTING ENVIRONMENT

The environmental conditions at the proposed ES&H Analytical Laboratory are representative of the general environmental conditions that prevail for the entire Pantex Plant, except where otherwise noted. The conditions at the Plant are described elsewhere (DOE, 1983; BPX and M&H, 1993) and are summarized here.

Pantex Plant covers 6,475 hectares (16,000 acres) and is approximately 27 kilometers (17 miles) northeast of downtown Amarillo and 16 kilometers (10 miles) west of downtown Panhandle. The proposed ES&H Analytical Laboratory would be located in Zone 11, in the southeast quadrant of Pantex Plant and on the northeast side of Laboratory Building 11-51. The existing Analytical Chemistry Laboratory (Building 12-59) and associated structures are located approximately 1525 meters (5,000 feet) east-northeast, in Zone 12, of the site of the proposed ES&H Analytical Laboratory.

A large number of potential issues pertaining to the Analytical Chemistry Laboratory were identified; only five warranted consideration. The others (that is, Soils; Flora and Fauna; Protected, Threatened, and Endangered Species; Archaeological/Historical Resources; Floodplains and Wetlands; Population and Employment; Worker Safety; Environmental Justice) were not considered because it was obvious, prior to this evaluation, that there was no potential for them to be effected by the actions involving the Proposed Action or alternatives. Those issues considered are as follows: Air Quality; Water Quality (both surface and ground water); Transportation; Waste; and Radiation Environment. The remaining issues identified but not considered, along with a brief explanation for the omission, can be found in the Appendix.

3.1 Air Quality

The high annual wind speed in the Texas Panhandle provides for very low air stagnation potentials. The annual average afternoon height of the mixing layer (the layer into which air pollutants would be mixed during the day) is 1,980 meters (6,500 feet) (Holzworth, 1972). This high value and the average wind speed (31 kilometers/hour [19 miles/hour]) in this layer provide good dilution for any pollutants emitted to the atmosphere. Pantex Plant has no operations that are major sources of air pollutants, as defined by the Clean Air Act Amendments of 1990 (42 USC 7609). The largest single source of primary air pollutants (those assigned a National Ambient Air Quality Standard) is from vehicles used by workers driving to and from work (DOE, 1983).

One source of air emissions at Pantex Plant is open burning of high explosives and high explosives-contaminated materials at the Burning Ground. A Grant of Authority has been obtained from the Texas Natural Resource Conservation Commission for these activities. One of the requirements of this Grant of Authority is that state and federal ambient air standards cannot be exceeded as a result of the burning (Radian, 1990).

3.2 Water Resources

3.2.1 Surface Water

The major surface water near Pantex Plant is the Canadian River. The Canadian River flows eastward into a man-made reservoir, Lake Meredith, approximately 40 kilometers (25 miles) north of the Plant (BPX and M&H, 1993) (M&H, 1991b). A unique feature of the High Plains area is the localized drainage into playas (natural land depressions) rather than feeding into streams and rivers. Surface runoff at Pantex Plant accumulates in four playas; three are onsite (Playas 1, 2, and 3) and one (Playa 4) about 1,220 meters (4,000 feet) south of the Plant boundary. Playa 1, located in the east central part of the Plant, is also used as a retention basin for effluent from the Pantex Plant Sewage Treatment Facility (M&H, 1991b). Playa 4, which is on land leased from Texas Tech University, receives runoff from the southernmost ends of Zones 11 and 12.

3.2.2 Groundwater

Two principal water-bearing units are beneath Pantex Plant and adjacent areas; the Ogallala aquifer and the Dockum Group aquifer. The unsaturated zone from the ground surface to the Ogallala aquifer consists of up to 140 meters (460 feet) of sediments. The Ogallala aquifer is one of the country's largest and most productive aquifers. The potential exists for this aquifer to be contaminated from activities at Pantex Plant, as well as from other industrial facilities in the area. Thus, this is a very sensitive issue. A Groundwater Protection Management Program is in place at Pantex Plant (BPX and M&H, 1993).

Two water-bearing units are within the Ogallala Formation under Pantex Plant. A perched water zone occurs discontinuously in approximately the middle of the Ogallala Formation, above the main zone of saturation, and has minor importance as a supply of domestic and stock water. The perched zone lies above a fine-grained zone that acts as a vertical barrier to migration. Recharge is probably from infiltration from the area encompassing the Plant. Pantex Plant has five production wells [completed at depths of 183 to 260 meters (600 to 850 feet) below ground level] in the northeast quadrant of the Plant for plant use. Amarillo has a municipal well field located approximately 1.6 kilometer (1 mile) north and northeast of Pantex Plant's well field.

The second major water-bearing unit beneath Pantex Plant and surrounding area is the Dockum Group aquifer. This aquifer lies under the Ogallala Formation and is believed to be semi-confined with respect to the overlying Ogallala aquifer. The aquifer supplies domestic and livestock wells south and southeast of Pantex Plant.

3.3 Transportation

Amarillo is served by Interstate Highway 40, Interstate 27, and other major highways, including U.S. 60, U.S. 66, U.S. 87, U.S. 287, and Texas 136. A number of motor freight companies, intercity bus lines, railroad companies, and airlines operate out of Amarillo (DOE, 1983). Access to Pantex Plant is from farm-to-market roads FM 683 and FM 2373, which connect to U.S. 60 east of Amarillo and by a rail spur from the Santa Fe Railway. These roads are used by approximately 3,300 Mason & Hanger and Battelle employees as well as approximately 300 additional persons from other organizations which include Sandia National Laboratories, Corps of Engineers, Department of Energy, various contractors, visitors, and freight shippers. Service roads within Pantex Plant provide access to all portions of the site.

3.4 Waste Management

Waste produced and managed at Pantex Plant includes Resource Conservation and Recovery Act (RCRA) hazardous waste, low-level radioactive waste, mixed waste, Toxic Substances Control Act waste, and sanitary/industrial waste. These types of waste are managed following federal and state laws and regulations and Department of Energy Orders. No high-level radioactive waste is generated at Pantex Plant. Some transuranic waste has been generated, but only as a result of an off-normal activity. The Plant uses a management strategy involving waste reduction/minimization, interim onsite storage, onsite or offsite treatment, and disposal onsite at the construction landfill and offsite at permitted facilities (BPX and M&H, 1993).

Pantex Plant generates waste containing high explosives, solvent-contaminated wastewater, high explosives-contaminated wastewater, high explosives-contaminated solid waste, spent and high explosives-contaminated organic solvents, and waste produced by investigation and cleanup activities of inactive waste sites. These wastes are managed through onsite staging facilities, limited onsite treatment options, and offsite treatment and disposal at RCRA-permitted facilities.

The Burning Ground is an onsite facility used to demilitarize and sanitize explosives components and treat materials contaminated with explosives. It operates under RCRA Interim Status for purpose of HE waste treatment, and the air emissions from the Burning Ground activities are authorized by a Written Grant of Authority from the state of Texas, which was reissued on May 29, 1991. One of the requirements of this Grant of Authority is that state and federal ambient air standards cannot be exceeded as a result of the burning. There is a pending Class 3 modification that would include the Burning Ground in the Pantex Plant RCRA Permit.

Small quantities of low-level radioactive waste are generated at Pantex Plant from assembly and disassembly of weapons. Approximately 178 cubic meters (233 cubic yards) of low-level radioactive waste were generated during 1992 and depleted uranium or tritium were the primary radioactive materials. The low-level waste is currently staged onsite, pending shipment offsite for disposal (BPX and M&H, 1993).

Small quantities of radioactive mixed waste are produced at Pantex Plant from assembly and disassembly of weapons. Approximately 50 cubic meters (65 cubic yards) of mixed waste were generated during 1992, and depleted uranium is the primary radioactive component of the mixed waste. These types of waste are primarily radioactively contaminated solvents (that is, xylene-based scintillation fluids) and wipes contaminated with solvents and radionuclides. These waste types are currently staged in onsite RCRA interim status permitted facilities awaiting the future availability of treatment and disposal options for mixed waste (BPX and M&H, 1993).

Construction debris is disposed of onsite at the construction landfill, which is intended for use by onsite construction contractors for disposal of inert construction-related materials. Waste asbestos is sent to an offsite landfill permitted for asbestos (BPX and M&H, 1993).

Liquid effluent discharging occurs as a result of water usage at Pantex Plant. Domestic sewage is channeled through a Waste Water Treatment Processing facility; after treatment this water is then discharged to Playa 1. Processes that use water for operations have water treatment and recycle capabilities. If this process water is unable to be treated and/or reused, it is containerized and handled appropriately. Some waters resulting from operations at the Plant (for example, steam condensate) are directly released into the environment. Storm water runoff and treated water effluent are channeled to the natural playas occurring on Plant site.

The Texas Natural Resource Conservation Commission has permitted Pantex Plant to discharge its wastewater into Playas 1 and 2 via Wastewater Discharge Permit Number 02296. The Department of Energy has filed a permit application to modify this to include Playa 4 as a receptor of both industrial wastewater and storm water runoff from the southern most ends of Zones 11 and 12.

Solid Waste Management Unit (SWMU) 13, so designated under RCRA, occurs in close proximity to the site affected by the proposed ES&H Analytical Laboratory. It is an inactive solar evaporation pond, located approximately 12 meters (40 feet) southeast of Building 11-51, which is adjacent to the proposed location for the ES&H Analytical Laboratory. This pond received discharges of liquid waste from sinks and drains in chemistry laboratories of the Weapons Materials Analytical Laboratory (Building 11-51) between 1980 to 1986 and was back-filled in 1986. A second SWMU (SWMU 136) has been identified in close proximity to the existing Analytical Chemistry Laboratory. SWMU 136, an inactive subsurface leaching bed, was used from 1968 to 1974 for liquid waste discharged from the chemistry laboratories located in Building 12-59. Records indicate that it is approximately 3 meters (10 feet) north and 1.5 meters (5 feet) west of the north door of Building 12-59.

3.5 Radiation Environment

Radiation at Pantex Plant consists of both natural background radiation and radiation from Plant operations. Pantex Plant has in place, a routine environmental monitoring program, which includes a radiological program, in accordance with Department of Energy Order 5400.1. Samples of air, surface water, groundwater, soil, vegetation, and fauna are collected and evaluated for the presence of radionuclides resulting from Plant operations. Analyses are conducted for plutonium-239/240, uranium-234/238, and hydrogen-3 (tritium) (BPX and M&H, 1993).

Pantex Plant produces no liquid effluent streams containing radioactivity; thus, air emissions are the only pathway from the Plant to offsite receptors. Normally, only small amounts of tritium (0.1 Ci) are released from Plant operations each year. Additionally, some uranium-238 particles have been emitted during high explosive testing of parts (BPX and M&H, 1993).

Uranium-238 is the most prevalent radionuclide present in the soils at Pantex Plant. The highest readings are present at Firing Sites 4 and 5 and can be attributed to past explosive test firings. The Burning Ground also has uranium concentrations in soil above background (BPX and M&H, 1993). The air sampling program employs a number of onsite and offsite sampling locations. The gross alpha/beta readings for 1992 remained about the same and were not elevated above the historical average or over the readings at the control station. Average counts for U-234, U-238, and Pu-239/240 were comparable to the historical average and to the control station readings. The tritium counts were slightly elevated with respect to historical averages but well below the Department of Energy-derived concentration guide for tritium in the air (BPX and M&H, 1993). Table 1 outlines the concentrations of uranium and plutonium and their respective locations. Multiple samples were obtained in various locations but Table 1 only includes the highest readings, the average readings of the samples obtained in a given location, and the historical average of the nuclide concentrations. More extensive information can be found in the "1993 Environment Report for Pantex Plant."

TABLE 1. CONCENTRATION OF RADIOACTIVE CONTAMINATION

Sample Location	Radionuclide	No. of Samples	Maximum Concentration (μCi/gram)	Average Concentration (μCi/gram)	Historical Average Concentration (μCi/gram)
Burning Ground	Uranium 234	12	0.79 ± 0.11	0.46 ± 0.07	0.66 ± 0.14
	Uranium 238	13	0.82 ± 0.09	0.42 ± 0.07	0.76 ± 0.14
	Plutonium 239/240	12	0.17 ± 0.05	0.03 ± 0.02	0.01 ± 0.02
Firing Site #4	Uranium 234	13	1.20 ± 0.10	0.83 ± 0.08	6.01 ± 0.64
	Uranium 238	13	5.49 ± 0.41	3.99 ± 0.22	44.0 ± 3.02
	Plutonium 239/240	13	0.04 ± 0.03	0.01 ± 0.01	0.01 ± 0.02
Firing Site #5	Uranium 234	13	67.0 ± 11.0	6.89 ± 1.06	2.10 ± 0.25
	Uranium 238	13	560 ± 30.0	54.1 ± 3.07	12.0 ± 0.80
	Plutonium 239/240	13	0.07 ± 0.05	0.02 ± 0.02	0.01 ± 0.02

4.0 EVALUATION OF ENVIRONMENTAL CONSEQUENCES

This section describes environmental consequences, both from routine operations and from abnormal events, associated with the proposed action and the alternatives. The discussion of routine consequences of the proposed action is divided into subsections for construction, operation, and demolition.

4.1 Routine Environmental Consequences of the Proposed Action

This section addresses the environmental consequences that would be associated with routine construction and operation of the proposed ES&H Analytical Laboratory and demolition of the existing Analytical Chemistry Laboratory.

4.1.1 Construction of the Proposed Facility

This section describes the potential environmental consequences from construction of the ES&H Analytical Laboratory. No discernible consequences from construction are anticipated on air quality, water resources, flora and fauna, floodplains and wetlands, archaeological/historical resources, population and employment, or the radiation environment.

Air. Small amounts of dust would be generated during the construction phase, primarily during site preparation which would include stripping the existing top soil and excavation. The consequence to air quality would be very minor and for a limited period of time.

Water Resources. The site would be graded so the flow of any storm water runoff would flow southeasterly to an existing drainage swale which would eventually flow to Playa 4. A slight increase in erosion could effect surface water until the affected area is revegetated; however, no effect on ground water would occur.

Transportation. There would be a minor, temporary increase in onsite traffic of approximately 10 vehicles per day due to construction workers, equipment and building materials arriving at Pantex Plant over 19 months. Workers, equipment, and materials would most likely arrive at the Plant via FM 2373/U.S. 60 and for the most part would be limited to the day shift with morning and afternoon drive times. Equipment and supplies would include graders and packers, concrete, wood, structural equipment, and office and laboratory equipment, casework material, and construction waste. The contractor would maintain adequate traffic control for construction vehicles, including the vehicles of suppliers and all subcontractors. All traffic, safety, and security regulations would be met. Due to the relatively low number of workers required and the current below-capacity traffic levels, no discernable consequences to the roadway network are expected.

Waste Management. Construction debris and trash would be generated during construction. The consequences would be minimized by contract requirements for a chain-link construction fence around the construction area and the requirement that the contractor be responsible for the control and removal of all construction debris on a periodic basis to the Class III onsite landfill (M&H, 1991a). Any hazardous, Class I, or Class II waste generated would be managed and deposed in accordance with applicable state and federal regulations. The contractor would also be responsible for providing temporary construction toilet facilities for contractor employees and would provide and maintain suitable facilities as specified in the contract document to minimize health hazards and control odors.

Radiation Environment. No radiation concerns would exist during the construction phase of the Proposed Action.

4.1.2 Operation of the Proposed Facility

This section describes the potential consequences to the environment from routine operation of the proposed ES&H Analytical Laboratory.

Air Quality. Many chemicals and small quantities of high explosives would be used in the facility. Small quantities of vapors from some toxic chemicals would be vented to the outside air through fume hoods. Atmospheric emissions from the new laboratory in Zone 11 could slightly exceed the 6.8 kilograms/year (15 pounds/year) emissions from the old laboratory in Zone 12 (Radian, 1990) because of increased laboratory activity. Laboratory emissions are exempt from air permitting requirements by Texas Natural Resource Conservation Commission (TNRCC) Exemption No. 34. The consequence of laboratory operations on air quality would be negligible.

Water Resources. The ES&H Analytical Laboratory would be connected to the Plant sewage system, and sanitary sewer discharges would increase slightly commensurate with the planned staff of 20. Administrative controls would be in place to prevent the disposal of any toxic or hazardous waste chemicals down the laboratory sink drains. All effluent from this facility would meet the requirements of the Clean Water Act and the TNRCC Permit for Pantex Plant. Any consequences on water resources would be negligible.

Transportation. A very slight decrease would occur from current operations as a result of fewer samples being sent offsite for analysis. Therefore, no adverse effect would be expected during the operation phase of the Proposed Action.

Waste Management. Waste generated by the ES&H Analytical Laboratory would be managed within the Pantex Plant waste management policies in accordance with federal, state and local regulations and Department of Energy Orders. Spent or hazardous waste chemicals generated during operation of the ES&H Analytical Laboratory would be packaged, staged, transported offsite, and disposed at an appropriate facility in compliance with applicable regulations. No consequences from the waste generated would be anticipated. Waste and/or spent materials would be recycled when possible.

Office trash and uncontaminated laboratory trash would be disposed in an offsite Class II/III waste landfill. Sanitary waste produced from the ES&H Analytical Laboratory would be conveyed to the Plant sanitary sewage system. No consequences from this waste would be anticipated except for a slight volume increase.

Following analysis or testing, the high explosive samples would be transported to the Pantex Plant Burning Ground for treatment of its reactive characteristic. Ash would be characterized to determine additional treatment and/or appropriate disposal. This is currently a routine operation for waste management operations, and no adverse consequences would be anticipated.

Waste would be managed within the Pantex Plant Waste Management Plan in accordance with federal, state and local regulations and Department of Energy Orders. A waste management plan would be prepared to detail waste streams to be generated by the proposed project and how this waste would be properly managed. The total amount of waste would be small in comparison to the total amount of waste generated at Pantex Plant, and it would not be anticipated that any new types of waste would be generated. No adverse consequences on the waste management operations would be expected.

Radiation Environment. Analyses on radioactive samples would continue to be performed offsite. However, the proposed ES&H Analytical Laboratory would, on occasion, conduct confirmatory analysis for contamination of trace amounts of low-level radioactive materials in samples. Radiological analyses would not be routinely conducted. No radiological hazards different than current activities would be expected to be encountered during the operation phase of the Proposed Action.

4.1.3 Demolition of Existing Analytical Chemistry Laboratory

The following subsections discuss consequences associated with demolition of the existing Analytical Chemistry Laboratory and proximate support facilities. No discernible environmental consequences from demolition of the Analytical Chemistry Laboratory would be expected on air quality, water quality, transportation, waste, or the radiation environment.

Air Quality. Dust levels may be increased temporarily by the demolition activities. Some of the buildings contain asbestos materials that would be removed according to methods prescribed for this type of operation, and asbestos is not expected to be an air pollution hazard. As with the construction of the new laboratory, the demolition of the old buildings would result in a slight increase of vehicular traffic and emissions from the construction workers' automobiles and trucks. These consequences would be expected to be minor.

Water Resources. No water resources would be expected to be affected during the demolition phase of the Proposed Action.

Transportation. The existing roads around the chemistry laboratory would be used to transport equipment and personnel to the site and to move the demolished structures to storage, treatment, and disposal locations both onsite and offsite. The demolition of the laboratory would cause only a slight increase in the local traffic. Waste materials would be packaged for transport to the disposal sites. Onsite transportation and shipments offsite would comply with all applicable Department of Energy and Department of Transportation (DOT) regulations and guidelines, which require any appropriate packaging, safeguards and security, and traceability documentation. Adverse transportation consequences would not be anticipated.

Waste Management. An estimated 943 cubic meters (1,233 cubic yards) of materials would be generated from demolition of the existing Analytical Chemistry Laboratory. This material would consist of approximately 928 cubic meters of Class III construction waste, 7.5 cubic meters of hazardous waste, and 7.5 cubic meters of contaminated materials. A waste management plan would be prepared, detailing waste streams to be generated by the proposed project and how this waste would be properly managed. The TNRCC would be notified regarding the closure of the existing chemistry laboratory because of the "less than 90-day" accumulation area for hazardous waste in that facility.

Approximately 928 cubic meters (1,213 cubic yards) of Class III construction waste (inert materials) would be generated from demolition of the existing facility. These wastes would be disposed of at the

Pantex Plant landfill, as specified under Zone 10 Landfill Permit requirements and Plant Standards. Disposition of demolition materials at the Pantex Plant landfill is subject to requirements contained in the Pantex Plant Internal Operating Procedure 3092, "Operation and Maintenance of the Sanitary Landfill" (M&H, 1991). An estimated 7.5 cubic meters (10 cubic yards) of various hazardous waste would also be generated; this would be disposed of using appropriate methods following characterization.

Asbestos is present in the existing facilities (Building 12-59, three small support buildings, and two ramps) to be demolished. Approximately 7.5 cubic meters (10 cubic yards) of asbestos-contaminated materials, including pipe insulation, wall and ceiling insulation, and laboratory counter tops would require removal. As part of the Title I Design phase, a full Asbestos Assessment and Report would be conducted and prepared to address the extent of asbestos-containing materials present and the procedures to follow during removal and demolition. Asbestos removal would be conducted by an outside contractor as part of the demolition process. The TNRCC would be notified before commencement of the asbestos abatement. Asbestos-containing material would be handled by the contractor in accordance with applicable TNRCC and Texas Department of Health regulations. No consequences on waste management activities would be expected from demolition actions.

Demolition activities would be conducted to avoid disturbing Solid Waste Management Unit 136. Remedial action for the Solid Waste Management Unit would be conducted separately from the demolition of the laboratory facilities.

Radiation Environment. No radiation hazards would be expected during the demolition phase of the Proposed Action.

4.2 Routine Environmental Consequences of the Alternative Actions

Environmental consequences associated with construction and operation of the alternative actions are described in the following subsections. A comparison of these consequences and the Proposed Action is presented in Table 2.

4.2.1 Alternatives Involving Construction

This section addresses consequences that would be associated with construction alternatives to the Proposed Action. No onsite construction would be associated with the No Action Alternative or with the Outside Contractor Alternative; therefore, there would be no construction consequences. Conversely stated, this section applies only to the Addition & Remodel, Relocation, and Temporary Facility Alternatives.

Air Quality. The Addition and Remodel Alternative would result in air emissions from construction activities similar to the Proposed Action for the addition portion, but of a smaller magnitude. The remodeling portion of this alternative would also pose potential asbestos emissions during renovation of the existing facilities. Temporary fugitive emissions would occur during construction resulting from increased traffic.

The Relocation Alternative could produce minor increases in air emissions depending on the selected site and the amount of remodeling required. Temporary fugitive emissions would occur during construction.

The Temporary Facility Alternative could result in surface grading for the installation of a temporary facility. This would produce a minor, temporary increase in air emissions during the construction phase. Temporary fugitive emissions would occur during construction resulting from increased traffic.

Water Resources. The Addition & Remodel Alternative would not be expected to result in adverse effects to water resources during construction.

The Relocation Alternative would not be expected to result in adverse effects to water resources during construction.

Depending on the location chosen for the Temporary Facility Alternative, construction could result in consequences to surface water resources from storm water runoff. Consequences to these resources would have to be evaluated site by site.

Transportation. Vehicular traffic would temporarily increase during the construction phase of the Addition and Remodel Alternative. This would be primarily due to construction activities, but also, to a lesser degree, from the increased requirement to ship samples offsite for analysis.

A temporary and very minor increase in traffic flow would increase during modifications of an onsite facility for the Relocation Alternative.

The Temporary Facility Alternative would result in an increase in traffic flow but to a lesser degree than the Addition & Remodel Alternative.

Waste Management. Construction waste generated by the Addition & Remodel Alternative would include asbestos waste from remodeling the existing laboratory.

There would be a small amount of construction waste resulting from the Relocation Alternative but much less than the Addition & Remodel Alternative.

The Temporary Facility Alternative would not be expected to generate any construction waste. Any consequences would be minor.

Radiation Environment. No radiation hazards would be expected during the construction phase of the applicable alternatives; however, this would have to be evaluated if a site is selected for the Relocation or the Temporary Facility Alternative.

4.2.2 Alternatives Involving Operations

Consequences of operations of the alternative actions are discussed below. All five of the alternatives can be considered in this section.

Air Quality. All the alternatives, except the Outside Contractor Alternative, would result in slight increases in air emissions, similar to the Proposed Action. The Outside Contractor Alternative would result in a decrease in emissions at Pantex Plant.

Water Resources. The Outside Contractor Alternative could increase the potential of an accidental release or spill and effect water quality. This potential is increased through additional handling and transporting of materials offsite. Also, depending on the site selected for the Temporary Facility Alternative, increased storm water runoff could occur. If a facility is selected for the Relocation Alternative the site would have to be evaluated to determine if it would be conducive to supporting mitigating measures for preventing accidental releases. The other alternatives would not be expected to result in consequences to surface water or groundwater.

Transportation. The Addition & Remodel Alternative, Relocation Alternative, and Temporary Facility Alternative would cause short-term increases in traffic in the area much like that of the Proposed Alternative. The Outside-Contractor Alternative would cause a slight increase in traffic on days of sample shipment and waste shipment. The No-Action Alternative would also lead to a slight increase in traffic on sample shipment dates since outside contractors would be used to support operations at the existing chemistry laboratory.

Waste Management. Selection of the Addition & Remodel Alternative, Relocation Alternative, or the Temporary Facility Alternative would result in similar waste management consequences as the Proposed Action. However, there could be an increase in potential for accidental discharge from the Relocation Alternative and the Temporary Facility Alternative, because the selected facility may be less conducive to establishing engineering controls to mitigate spills. Selection of the No Action Alternative would still result in the generation of hazardous waste chemicals and high explosive waste from operation of the laboratory. Selection of the Outside Contractor Alternative would shift the amount of operating waste produced from onsite to offsite.

Radiation Environment. Analyses of radioactive samples would continue to be performed offsite. Except for the Outside Consultants Contractor Alternative, confirmatory analysis, for contamination of trace amounts of low-level radioactive materials in samples, would be conducted. Radiological analyses would not be routinely conducted. No radiological hazards, different from the Proposed Action, would be expected to be encountered during the operation of the Alternatives.

4.2.3 Demolition of Existing Analytical Chemistry Laboratory

The environmental consequences of demolition of the existing laboratory would be the same under the Relocation Alternative and Temporary Facility Alternative as those outlined in the proposed action. The other alternatives do not call for the demolition of the existing facility. Please reference Section 2.1.3 of this document for a description of the environmental consequences associated with demolition activities.

TABLE 2. COMPARISON OF CONSEQUENCES OF THE ALTERNATIVES

ALTERNATIVES/ISSUE	AIR QUALITY	WATER QUALITY	TRANSPORTATION	WASTE MANAGEMENT	RADIATION
Proposed Action					
• Construction phase	Localized temporary increase in PM emissions	Temporary increase in runoff during construction	Temporary increase in traffic	Temporary increase in construction waste	No consequence
• Demolition phase	Localized temporary increase in particulate matter emissions	No consequence	Temporary increase in traffic	Temporary increase in construction waste	No consequence
• Operation phase	Laboratory hood exhaust emissions; no additional permitting required	Minor increase in domestic water effluent discharge	Decrease in traffic	Minor increase in Pantex Plant waste volume	Trace amounts of low-level radioactive materials present
No Action					
• Construction phase	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
• Demolition phase	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
• Operation phase	Laboratory hood exhaust emissions; no additional permitting required	Minor increase in domestic water effluent discharge	Increase in traffic for offsite sample analysis	No change from the present	Trace amounts of low-level radioactive materials present
Addition/Remodel of Existing Facilities					
• Construction phase	Localized temporary increase in particulate matter emissions	No consequences expected	Temporary increase in traffic	Temporary increase in construction waste	No consequence
• Demolition phase	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
• Operation phase	Laboratory hood exhaust emissions; no additional permitting required	Minor increase in domestic water effluent discharge	Overflow samples would continue to be sent offsite for analyzes	Minor increase on Pantex Plant waste volume	Trace amounts of low-level radioactive materials present
Relocate Operations to Another Facility Onsite					
• Construction phase	No consequence	No consequence	No consequences expected	No consequence expected	No consequence expected
• Demolition phase	Localized temporary increase in particulate matter emissions	No consequence	Temporary increase in traffic	Temporary increase in construction waste	No consequence expected
• Operation phase	Localized hood exhaust emissions; no additional permitting required	Minor increase in domestic water effluent discharge	Potential for increase in traffic for offsite analysis of overflow samples	Minor increase in Pantex Plant waste volume	Trace amounts of low-level radioactive material present

TABLE 2 (Continued)

ALTERNATIVES/ISSUE	AIR QUALITY	WATER QUALITY	TRANSPORTATION	WASTE MANAGEMENT	RADIATION
Move Operations to a Temporary Facility					
• Construction phase	Localized temporary increase in particulate matter emissions	Temporary increase in runoff during construction	Temporary increase in traffic	Temporary increase in construction waste	No consequences expected
• Demolition phase	Localized temporary increase in particulate matter emissions	No consequences expected	Temporary increase in traffic	Temporary increase in construction waste	No consequences expected
• Operation phase	Laboratory hood exhaust emissions; no additional permitting required	Minor increase in domestic water effluent discharge	Potential for decrease in traffic	Minor increase in Pantex Plant waste volume	Trace amounts of low-level radioactive materials present
Use of Offsite Contractors					
• Construction phase	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
• Demolition phase	Localized temporary increase in particulate matter emissions	No consequence expected	Temporary increase in traffic	Temporary increase in construction waste	No consequence expected
• Operation phase	No consequence at Pantex	No consequence at Pantex; however, transporting samples increases the potential for spills	Increased traffic flow for sample shipment	Decrease in waste volume generated at Pantex Plant	Trace amounts of low-level radioactive materials present

4.3 Consequences Caused by Abnormal Events

The greatest potential for major environmental consequences would result from the occurrence of abnormal events such as fire, spill of hazardous materials, explosion, earthquake, or tornado. The abnormal events, as discussed in this section, include only those considered to have a reasonable chance of occurring, for example if the annual probability is greater than one in 1 million. The probability of a plane crashing into the proposed laboratory, as determined by the computer code Aircraft Crash Probability Program (Howard, 1992), is 8.7×10^{-7}. Therefore, this event is not considered credible. The events included in this discussion are a fire within the facility, a spill of hazardous materials, an explosion, an earthquake, and a tornado.

4.3.1 Abnormal Event Consequences from the Proposed Action

Fire. A fire in one of the laboratories could result in air emissions containing materials and particulate matter originating from solvents and other chemicals used in the facility. The consequences of a postulated fire scenario were analyzed using the National Institute of Standards and Technology software package FPETOOL. The fire scenario postulates a three-foot-pool fire on a counter in the Wet Chemistry Laboratory involving methyl alcohol (a representative solvent). This laboratory was chosen for a worst case scenario because it would contain solvents and be the active laboratory with the highest potential to rapidly burn. The laboratory would be equipped with a sprinkler system designed to actuate at 71° Celsius (165° Fahrenheit). The fire growth rate was categorized "ultra-fast," indicating that the burn rate reaches 1,055,000 joules/second (1,000 Btu/second) in 75 seconds. The modeling indicates that the sprinkler system would activate approximately 80 seconds after initiation of the fire, controlling the fire well before complete combustion of the room and containing it within the room.

In the event of fire, water from the sprinkler system and from fire fighting equipment could potentially cause contamination of surrounding soils and surface waters. Due to limited quantities of hazardous or toxic materials in the laboratory, the potential contamination is expected to be minor. The Pantex Plant Spill Response Team would remediate the spill. The Spill Response Team has the proper training, equipment, and appropriate personal protection. The materials recovered during cleanup would be containerized and disposed of in appropriate, permitted disposal facilities.

Spills. Spills of hazardous or toxic materials inside the ES&H Analytical Laboratory would be confined to the premises due to the design of the facility; little, if any, should escape to the external environment. Spills of hazardous waste in the waste staging area would also be confined to the building by design of the staging area; the staging area is also designed to contain a 20-minute discharge from the sprinkler system. Persons involved in the cleanup activities could be exposed to hazardous or toxic materials if proper procedures are not followed. Spill containment and cleanup equipment of small spills (about 4 liters [slightly more than 1 gallon]) would be maintained in the ES&H Analytical Laboratory, and the ES&H Analytical Laboratory staff would be trained in the handling of hazardous and toxic materials. The Pantex Plant Spill Response Team would be responsible for remediating larger spills and has the necessary training, equipment, and personal protection to conduct such remediation activities. All materials recovered during cleanup would be containerized and disposed of in appropriate, permitted facilities. Response, containment, cleanup, notification, and personnel training requirements and procedures to handle spills are specified in the Pantex Plant Spill Prevention Control and Countermeasures and the Resource Conservation and Recovery Act (RCRA) Contingency Plan.

Explosion. An explosion in the ES&H Analytical Laboratory could result from the mishandling of high explosives or other initiating events. The proposed ES&H Analytical Laboratory would have Class I and II areas. Each area of the facility involving explosives would contain an event involving that area's explosive limit.

Two laboratories within the ES&H Analytical Laboratory, the Explosive Analysis Laboratory and the Explosives Laboratory would each be limited to 50 grams (1.8 ounces) of high explosives at any one time. Release of hazardous or toxic materials to the environment would not occur, as laboratories involving explosives are required by the DOE Explosive Safety Manual (Rev 7) to protect the personnel in adjacent rooms. Each room would be designed to contain an over-pressure effect caused by an explosion and the laboratory equipment would contain the actual blast; no contents of the that room would be dispersed to the surrounding environment in the event of an explosion.

The ES&H Analytical Laboratory would be located outside the minimum building distance (121 ft) from other buildings housing explosives operations in accordance with DOE Explosives Safety Manual (DOE, 1991) and with Department of Defense Ammunition and Explosives Safety Standards (DOD, 1986). However, Building 11-25, an explosive storage magazine, is 140 ft from the proposed facility. An explosion from Building 11-25 could be expected to result in damages of up to about 50 percent of the replacement cost of the ES&H Analytical Laboratory. Personnel in the open in the immediate vicinity of the ES&H Analytical Laboratory would be expected to suffer serious injury, and some injuries could result from airborne fragments and debris. However, the potential for an explosion to occur is unlikely.

The Pantex Plant Spill Response Team would be responsible for remediating spills both inside and outside the ES&H Analytical Laboratory. The Team has the necessary training, equipment, and personal protection to conduct such remediation activities. All materials recovered during cleanup would be containerized and disposed of in appropriate, permitted facilities.

Earthquake. Pantex Plant is located in an area where earthquakes occur very infrequently. Since 1882 only four earthquakes have occurred in the vicinity of the Plant; the most recent earthquake was approximately 20 years ago. The annual probability for the Plant experiencing an earthquake of major consequence was deemed to be no more than one chance in 10,000 (Blume, 1976). The following earthquake scenario was analyzed to estimate the effects on the public of chemical emissions from the proposed ES&H Analytical Laboratory. Structural damage would result in the collapse of part or all of the building, and containers of chemicals would break open, releasing their contents. The mixing of incompatible chemicals and the presence of flammable gas could result in fire.

Chemicals included in this analysis were identified from the chemical inventory for the existing Analytical Chemistry Laboratory (Building 12-59) based on the maximum amount stored (Radian, 1991) and their combustion products (Table 3). The earthquake scenario was modeled using Hazard Screening Application Guide CSET-2 prepared for the Department of Energy (MMES, 1990). All combustion products are assumed to be released to the atmosphere under stable wind conditions, that is, very little dispersion. The nearest receptor would be 2,590 meters (8,500 feet) from the laboratory at the Plant boundary. The results are expressed as a ratio of the time-weighted average of concentration at the receptor location to the Immediately Dangerous to Life and Health (NIOSH, 1990). Immediately dangerous to life and health is the concentration that allows a person 30 minutes to leave the affected area with no ill effects. If this ratio equals 1.0, it is assumed the receptor will experience symptoms of acute exposure. The results indicate that the composite ratio for the chemicals included equals 0.0502, or two orders of magnitude below the composite immediately dangerous to life and health. Thus, no ill effects to the general public would be anticipated from releases caused by earthquakes.

One of the chemicals included in the analysis was chloroform, a suspected carcinogen. An analysis, using the same analytical technique, was performed to estimate the effects to the general public if exposed to chloroform. The concentration of chloroform at the nearest receptor, again assuming stable atmospheric conditions, was 0.447 mg/m^3 (Table 4). The ratio of this concentration to the Threshold Limit Value/time-weight average is 0.0457. This indicates that the postulated short-term exposure is approximately 5 percent of permitted long-term worker exposure level, and it would not be expected to cause increased incidence of cancer to the general public.

Small quantities of radioactive materials, predominantly environmental samples, would be in the laboratory. The potential effects of release of this radioactive material was determined using the same methodology (Table 5). The radiation dose rate was modeled using a maximum quantity of <1.0 μCi of depleted uranium-238 and 1 μCi of thorium-232. The results of this calculation show that the nearest receptor could receive a maximum of 3 mrem exposure as a 50-year cumulative effective dose equivalent.

Department of Energy Order 5400.5 "Radiation Protection of the Public and the Environment" (DOE, 1990), states, "To the extent required by the Clean Air Act, the exposure of members of the public to radioactive materials released to the atmosphere as a consequence of routine Department of Energy activities shall not cause members of the public to receive, in a year, an effective dose equivalent greater than 10 mrem." The 50-year cumulative effective dose equivalent of 3 mrem from the postulated earthquake is well below this Department of Energy limit and would not result in any ill effects to the public.

The Pantex Plant Spill Response Team would be responsible for remediating spills of toxic, hazardous or low-level radioactive material that may be released during an earthquake. The team has the necessary training, equipment, and personal protection to conduct such remediation activities. All materials recovered during cleanup would be containerized and disposed of in appropriate facilities.

Tornado. Pantex Plant is located in an area with a relatively high frequency of tornadoes. Tornado winds can range from 65 to 485 kilometers/hour (40 to 300 miles/hour). Winds exceeding 120 kilometers/hour (75 miles/hour) can remove roofs, and wind speeds over 320 kilometers/hour (200 miles/hour) can actually level buildings. The probability of winds over 320 kilometers/hour (200 miles/hour) hitting a Pantex Plant building is 2×10^{-6} per year (M&H, 1991b). The ES&H Analytical Laboratory would not be constructed to be tornado proof (M&H, 1991a); consequently, if the building were hit by a tornado, its contents could be scattered over several hundred yards or more. This would result in a wide dispersion of the chemical inventory in the laboratory. Due to the large dispersion, consequences from the chemicals released as a result of this event would be less than that associated with an earthquake. Staff in the building at the time of a tornado would probably be subjected to physical harm from airborne equipment, building materials, and broken glass. The physical harm associated with a tornado would probably be greater than that associated with an earthquake. Remediation of released hazardous and toxic material would be conducted, as feasible, by the Pantex Plant Spill Response Team.

4.3.2 Abnormal Event Consequences from the Alternative Actions

The risks from abnormal events for the alternatives would be very similar to those for the Proposed Action except for the Outside-Contractor Alternative. In that case, the laboratory would not be present at Pantex Plant and the risks would occur at the contractor's site(s). Risks might be slightly higher for the No-Action Alternative than for the Proposed Action because of the deteriorating condition of Building 12-59 and the insufficiency of working space for the staff. Also, the Temporary Facility Alternative could pose a greater risk because of the inherently weak design of the temporary facilities.

Table 3. OFFSITE CALCULATION TABLE FOR CHEMICALS STAGED IN ESHAL[(a)]

Method of Dispersal: Combustion
Effect evaluated: Toxicity
Distance to receptor: 8,500 ft

A_y = 92.36284
A_z = 23.32526
I = 1.23E-05*Q mg/t sec
C = $4.10 \times 10^{-8} \times Q$

Chemical Name	Quantity lb	Quantity g	MW	Combustion Product	IDLH mg/m³	Combustion Product MW	Combustion Product Eqv	Combustion Product g	C (TWA) mg/m³	C/IDLH
Acetonitrile	20.0	9,080.0	41.06	$CN^- NO_x$	50.00	26.0	1	5,749.6	0.235	4.72×10^{-3}
Chloroform	24.0	10,896.0	119.37	Cl^-	152.00	35.5	3	9,721.2	0.398	2.62×10^{-3}
Dibutylamine	20.0	9,080.0	129.28	NO_x	95.50	46.0	1	3,230.8	0.132	1.39×10^{-3}
Dimethylformamide	16.5	7,491.0	73.11	NO_x	266.00	46.0	1	4,713.3	0.193	2.03×10^{-3}
Dimethyl sulfoxide	233.0	105,782.0	78.14	SO_x	95.50	64.0	1	86,640.0	3.555	1.34×10^{-3}
Dinitrobenzene	64.0	29,056.0	168.12	NO_x	152.00	46.0	2	15,900.3	0.652	6.83×10^{-3}
Hydrochloric acid	63.9	14,505.3	36.46	Cl^-	24.90	35.5	1	14,123.4	0.579	3.81×10^{-3}
Hydrofluoric acid	14.0	3,178.0	20.01	F^-	95.50	19.0	1	3,017.6	0.123	4.97×10^{-3}
Nitric acid	75.0	17,025.0	63.02	NO_x	95.50	46.0	1	12,427.0	0.510	5.34×10^{-3}
N-methylpyrrolidone	10.0	4,540.0	99.15	NO_x	95.50	46.0	1	2,106.3	0.086	9.05×10^{-4}
Pyridine	25.0	11,350.0	79.11	NO_x	250.00	46.0	1	6,599.7	0.270	2.84×10^{-3}
Sodium hydroxide	18.0	8,172.0	40.00	Na_2O	266.00	62.0	0.5	6,333.3	0.259	1.04×10^{-3}
Sulfuric acid	15.0	3,405.0	98.08	SO_x		64.0	1	2,221.9	0.091	3.43×10^{-4}
									Total C/IDHL	0.0502

[(a)]Assumptions:

1. Quantities are same as stored in existing ACL, Building 12-59 (Radian. 1991).
2. Acid concentrations are 50%.
3. The combustion products to not react with air.
4. The combustion products are approximately the density of air.
5. Analysis includes chemicals from the inventory present only in quantities greater than 10 lb.
6. Simple Gaussian dispersion model, which results in a conservative estimate.

A_y: Cross-wind horizontal dispersion coefficient
A_z: Cross-wind vertical dispersion coefficient
MW: Molecular weight
IDLH: Immediately dangerous to life and health
Eqv: Equivalent

I: Concentration time integral, mg-sec/m³
C: Concentration received by the receptor, mg/m³
Q: Quantity of the chemical at the source, mg
TWA: Time weighted average

TABLE 4. OFFSITE CALCULATION TABLE FOR CHLOROFORM STAGED IN ESHAL*

CARCINOGENS	TLV mg/m^3	Quantity lb g	C mg/m^3	C/TLV
Chloroform	9.78	10,896	0.447188	0.0457

*Assumes same quantity as stored in existing ACL, Building 12-59 (Radian, 1991).

Distance to receptor: 8,500 ft

TLV: Threshold Limit Value
C: Concentration received by receptor, mg/m^3

TABLE 5. OFFSITE CALCULATION TABLE FOR RADIONUCLIDES IN ESHAL*

Radionuclide	CEDE Rem/μCi	Quantity Ci	Integral Ci sec/m 3	D50 Rem
Thorium-232	1,600.00	1.00×10^{-6}	1.5×10^{-5}	2.84×10^{-3}
Uranium-238	120.00	1.00×10^{-6}	1.5×10^{-5}	2.13×10^{-4}
				3.05×10^{-4}

*Assumes same quantity as present in existing ACL, Building 12-59.

Distance to receptor: 8,500 ft — $A_y = 92.36284$

Breathing rate: 0.012 ft^3/sec — $A_z = 23.32526$

$I = 1.48No^{-4}$

A_y: Cross-wind horizontal dispersion coefficient
A_z: Cross-wind vertical dispersion coefficient.
I: Concentration time integral, Ci sec/m^3.
CEDE: Cumulative effective dose equivalent.
D50: 50-yr dose equivalent

4.4 Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, states that Federal Programs and actions shall not disproportionately affect minority or low-income populations. None of the alternatives addressed in this EA would adversely affect any particular cultural or socioeconomic group of people more than the general population as a whole.

The Region(s) of Influence (ROI) surrounding the Pantex Plant, with respect to the alternatives discussed herein, are different for the various environmental media that might be effected. The following discusses each of these ROI separately.

Air Quality. The Air Quality ROI for construction activities and operations of an analytical laboratory at Pantex would be the Pantex Plant boundaries. No fugitive dust emissions from construction activities nor laboratory emissions would be expected to reach beyond Pantex Plant boundaries; therefore, for onsite operations involved with any of the alternatives, no adverse air quality effects on any offsite populations would be expected.

Water Quality. All surface water runoff at Pantex is contained in Playa Basins, either on DOE property and/or Texas Tech property leased by the DOE, and does not extend beyond the Plant boundaries. Ground water contamination has occurred at the Pantex Plant site; however, no contamination has been identified offsite. Accordingly, the ROI for onsite activities concerning water quality would be limited to the Pantex Plant boundaries, and no adverse water quality effects on any offsite populations would be expected.

Transportation. Transportation activities would increase slightly onsite due to construction and operation of the onsite replacement laboratory. Additionally, temporary offsite transportation activities would increase slightly during construction and during demolition of the existing Analytical Laboratory. Therefore, the ROI with respect to transportation activities would be primarily the Pantex Plant boundaries, except for a temporary slight increase of offsite transportation during construction of the replacement laboratory and the associated demolition of the existing analytical laboratory. Since offsite transportation associated with construction and demolition activities would involve sources of supply or disposition around the Amarillo area, and beyond, no disproportionate adverse effects on any offsite populations would be expected.

Waste Management. Waste Management activities onsite would comply with all applicable federal, state, and local regulations; the only waste disposal area onsite is a Class III Waste construction landfill. Waste from the demolition of the existing laboratory would consist of approximately 98% Class III waste which would be likely to be placed in the Pantex Plant onsite landfill. Any hazardous waste generated from the proposed laboratory activities, which would constitute only a very small percentage of plant waste, would be sent offsite to licensed Treatment, Storage, and/or Disposal (TSD) facilities. The target TSD facilities would be evaluated for compliance with applicable regulations prior to shipment of waste and periodic evaluation throughout the time that Pantex would be using the site. Pantex Plant currently uses several approved TSD facilities, which have been evaluated for compliance with the applicable regulations, for ongoing activities at Pantex and it would be expected that they would be similarly used for all the waste that does not meet the Waste Acceptance Criteria of the onsite Class III Waste construction landfill. Therefore, no adverse effects on any offsite populations would be expected from waste management activities with the proposed new Analytical Laboratory.

Radiation Environment. At present, analyses on radioactive samples generally occur offsite, and it is expected they would continue to be performed offsite. However, on occasion, Pantex Plant would conduct confirmatory analysis for contamination of trace amounts of low-level radioactive materials in samples. Radiological analyses would not be routinely conducted onsite, and radiation hazards would not be expected for demolition activities. Therefore, the ROI for the onsite radiation environment would be the Pantex Plant boundaries, and no adverse radiation to any offsite populations would be expected.

5.0 AGENCIES, ORGANIZATIONS, AND PERSONS CONTACTED

No issues were identified requiring contact with non-Department of Energy agencies or individuals during preparation of this Environmental Assessment.

6.0 REFERENCES

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40 CFR 1507. 1991. Agency Compliance.

40 CFR 1508. 1991. Terminology and Index.

40 CFR 1500-1508. Council on Environmental Quality Regulations for Implementing the Procedural

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APPENDIX
ISSUES IDENTIFIED BUT NOT ADDRESSED

Soils

The soils in the vicinity of Pantex Plant are primarily of the Pullman series. These soils are dark grayish-brown in color, have low permeability (0.1–1.27 centimeters/hour [0.05–0.5 inch/hour]), and are finely textured, easily eroded, and loamy. They are extremely fertile and deep, and have little or no relief (that is, slope) except where they surround the playa basins (DOE, 1987). Soil disturbances would be expected to be minor.

Flora and Fauna

Pantex Plant is in the Llano Estacado (staked plains) area of the Western High Plains ecoregion (a region containing similar characteristics) (Omernik and Gallant, 1987). This region is relatively level, characterized by rolling grassy plains and numerous playa basins (BPX and M&H, 1993). The area is classified as mixed prairie, which was originally vegetated with bluestem, wild rye, and other bunch grasses, including buffalo grass and grama grasses (Bailey, 1976; Omernik and Gallant, 1987; Johnston and Williams, 1993). Biota (plant and animal life of a region) of Pantex Plant has been described previously (DOE, 1983).

The area around the proposed location for the ES&H Analytical Laboratory has been disturbed from construction of the existing facilities and other Plant activities in the area. Few vertebrates occur in the highly disturbed areas surrounding existing facilities but are more common in the less disturbed areas of the Plant. Playas provide resting, feeding, and nesting habitats for migratory waterfowl and shorebirds (DOE, 1983). The proposed facility is not near a playa. It is unlikely that a consequence would occur, related to any of the alternatives.

Protected, Threatened and Endangered Species

A review by the U.S. Fish and Wildlife Service indicated the presence of the endangered bald eagle residing in Carson County during the winter (Short, 1989). Adult bald eagles have been observed during the winter at Playa 4 (personal communication, Pam Allison, Battelle Pantex Plant Environmental Protection Department, August 8, 1993). Other threatened or endangered species may migrate through or reside in the region. Seven species, other than the Bald Eagle, which are either on or are candidates for listing as threatened or endangered under federal and/or state endangered species acts have been identified on the Pantex Plant site. These are the Ferruginous Hawk, White-Faced Ibis, Texas Horned Lizard, Swift Fox, Whooping Crane, Black Tern, and the Loggerhead Shrike (Burr, 1992). These species are not anticipated at the proposed ES&H Analytical Laboratory site; however, the Texas horned lizard has been found in Zones 10, 11, and 12 and has the potential to be found at other areas of the Plant. The proposed site is highly disturbed and no species of concern would be expected; however, a survey would be performed before any construction would begin.

Archaeological/Historical Resources

Forty-two prehistoric archaeological sites and three historic (pre-World War II) farmstead sites have been identified on land currently occupied by Pantex Plant. With the exception of one historic site located in an upland area, all of these sites are associated with Pantex Plant's playa basins. An additional historic farmstead is believed to have been established in the western part of Zone 12, but it may have been previously destroyed by construction activities (Hughes and Speer, 1981). No prehistoric archaeological site is known to be located in the area affected by the Proposed Action. An intensive survey of all the historic World War II buildings, sites, and structures in Zones 4, 10, 11, and 12 was initiated in 1992 and submitted to the State Historic Preservation Office (SHPO) as "Packet 1." The SHPO has determined that 45 structures in Zones 11 and 12 are eligible for the National Register of Historic Places (NRHP). Of the buildings surrounding the proposed construction site, only one, Building 11-22, was determined to be eligible for the NRHP. Because the undertaking involves constructing a new building in close proximity to Building 11-22, the SHPO would need to be consulted. It is likely that through proper procedures, the question of historical context for Building 11-22 could be effectively and efficiently mitigated to the satisfaction of the SHPO.

There are a number of facilities having the potential of Cold War-era significance. The Pantex Plant Cultural Resources Management (CRM) Group is currently developing a management plan to conduct a site-wide intensive survey of all historic Cold War-era properties. It is likely that those properties located in Zones 11 and 12 would lie at the heart of the Plant's Cold War-era significance. Until this survey can be completed and evaluated by the SHPO, all proposed demolition and major modification projects are being handled on a case-by-case basis. It is a recommendation of the CRM that those buildings, sites, and structures currently in use or proposed for abandonment, which do not pose safety or health hazard due to deterioration or for any other reason, be left intact and unmodified until a determination can be made as to their potential eligibility for the National Register of Historic Places.

Floodplains and Wetlands

There are floodplains within the property owned by the DOE. These floodplains, 10, 25, 50, 100, and 500 year floodplains have been defined by the COE.

Surface water runoff at Pantex Plant drains into playa basins that are classified as jurisdictional wetlands by the Corps of Engineers (COE, 1991). Three playas are located on the main portion of the Pantex Plant site, and one is south of the Pantex Plant boundary on Texas Tech University property (Figure 7). The playa nearest to the proposed ES&H Analytical Laboratory site is about 1,220 meters (4,000 feet) south of the Plant boundary on land leased from Texas Tech University. Runoff from the location of the proposed ES&H Analytical Laboratory and the surrounding area is directed to an onsite playa. No consequences, relative to any of the alternatives, would be expected to the Floodplains or Wetlands.

Population and Employment

The population within an 8-kilometer (5-mile) radius of Pantex Plant is approximately 2,050 people. The majority of the population in the vicinity of the Plant is located to the west-southwest in the Amarillo metropolitan area (Figure 2). The metropolitan Amarillo Statistical Area has had a population of 187,547 residents in 1991 (Slater and Hall, 1992). The second largest population concentration around Pantex Plant is Pampa, located about 57 kilometers (35 miles) northeast of the Plant, with about 19,959 people (Slater and Hall, 1992). The total population within an 80-kilometer (50-mile) radius of Pantex Plant was approximately 274,000 people in 1990 (Burns & McDonald, 1991).

Pantex Plant (M&H and Battelle) employs approximately 3,300 employees. In addition, approximately 300 others are employed at Pantex Plant by Sandia National Laboratories, the Department of Energy, the Corps of Engineers, and various contractors totalling approximately 3,600. No consequence would be expected from the proposed action or alternatives.

Worker Safety

The safety of laboratory personnel was considered to be a minor issue; therefore it was not examined through this document. There is some potential for an accident to occur but the likelihood of injury to the employee is minimal. The Pantex Plant has administrative controls, such as operating procedures, and engineering controls, such as personal protective equipment, to minimize the potential for employee injury.

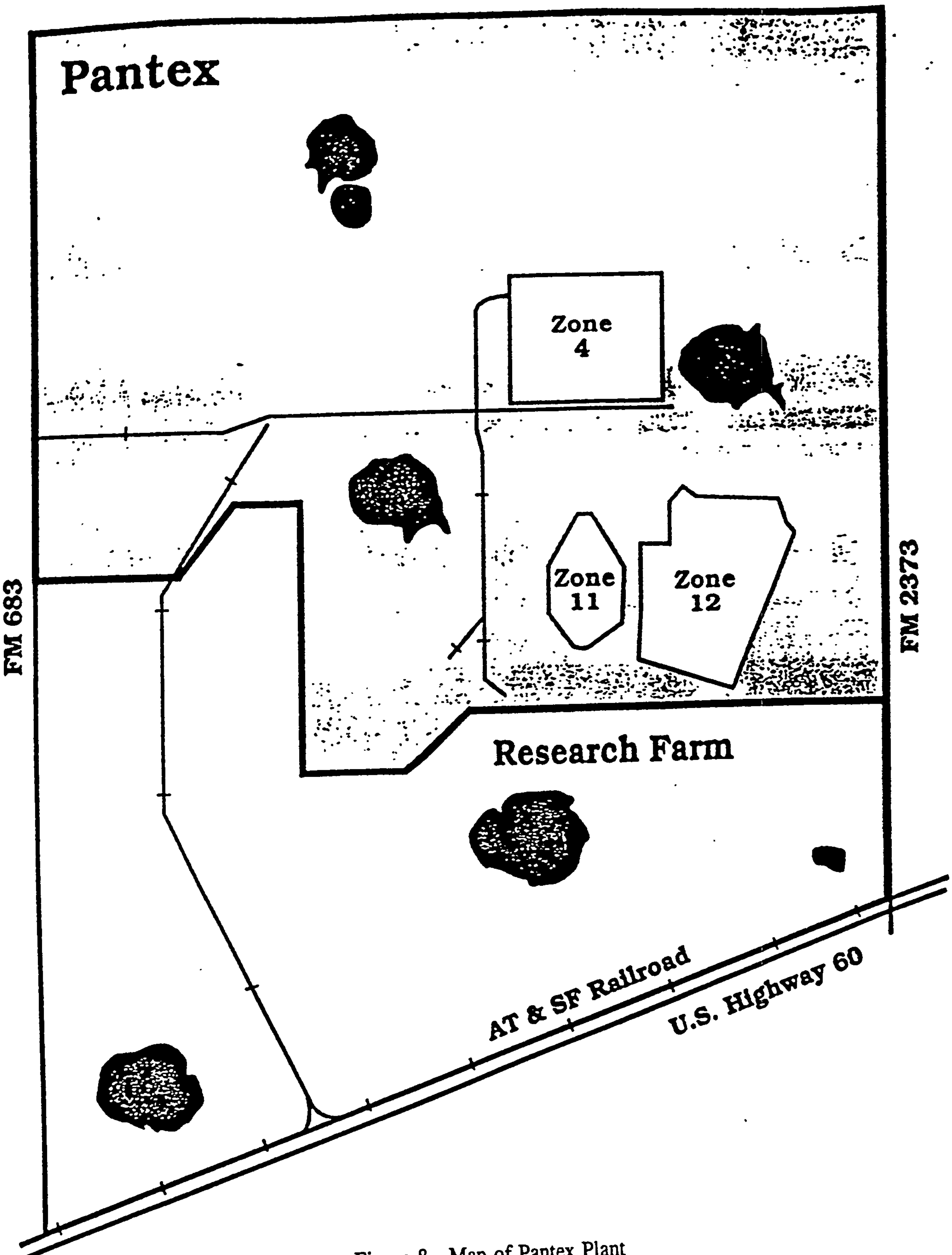

Figure 8. Map of Pantex Plant