U.S. Department of Energy

National Nuclear Security Administration

DOE/EIS-0225/SA-04
October 2008

# Supplement Analysis for the Final Environmental Impact Statement for the Continued Operation of the Pantex Plant and Associated Storage of Nuclear Weapon Components

B&W Pantex

Amarillo, Texas

# Table of Contents

# List of Figures



# List of Tables

# List of Acronyms

| | |
|---|---|
| CDNL | C-weighted Day/Night Sound Level |
| CFR | *Code of Federal Regulations* |
| CMS EA | *Environmental Assessment for Proposed Perched Groundwater Corrective Measures* |
| CRP | Conservation Reserve Program |
| DOE | U.S. Department of Energy |
| EA | environmental assessment |
| EIS | environmental impact statement |
| ESL | Effect Screening Level |
| FM | Farm-to-Market Road |
| FR | *Federal Register* |
| FRR SNF EIS | *Final Environmental Impact Statement on Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel* |
| HEPA | high-efficiency particulate air |
| HWTPF | Hazardous Waste Treatment and Processing Facility |
| NAAQS | National Ambient Air Quality Standards |
| NAPS | Noise Assessment Prediction System |
| NEPA | National Environmental Policy Act |
| NEW | net explosive weight |
| NNSA | National Nuclear Security Administration |
| PCB | polychlorinated biphenyl |
| RCRA | Resource Conservation and Recovery Act |
| ROD | Record of Decision |
| S&D PEIS | *Storage and Disposition of Weapons-Usable Fissile Materials Final Programmatic Environmental Impact Statement* |
| SA | supplement analysis |
| SSM PEIS | *Final Programmatic Environmental Impact Statement for Stockpile Stewardship and Management* |
| SWEIS | *Final Environmental Impact Statement for the Continued Operation of the Pantex Plant and Associated Storage of Nuclear Weapon Components* (referred to as the *Pantex Site-Wide Environmental Impact Statement)* |
| TAC | Texas Administrative Code |
| TNT | trinitrotoluene |
| TSCA | Toxic Substances Control Act |
| TTU | Texas Tech University |

# Metric Conversion Chart

| English To Metric | | | Metric to English | | |
|---|---|---|---|---|---|
| **Multiply** | **by** | **To get** | **Multiply** | **by** | **To get** |
| **Length** | | | **Length** | | |
| inches | 2.54 | centimeters | centimeters | 0.3937 | inches |
| feet | 30.48 | centimeters | centimeters | 0.0328 | feet |
| feet | 0.3048 | meters | meters | 3.281 | feet |
| yards | 0.9144 | meters | meters | 1.0936 | yards |
| miles | 1.60934 | kilometers | kilometers | 0.6214 | miles |
| **Area** | | | **Area** | | |
| square inches | 6.4516 | square centimeters | square centimeters | 0.155 | square inches |
| square feet | 0.092903 | square meters | square meters | 10.7639 | square feet |
| square yards | 0.8361 | square meters | square meters | 1.196 | square yards |
| acres | 0.40469 | hectares | hectares | 2.471 | acres |
| square miles | 2.58999 | square kilometers | square kilometers | 0.3861 | square miles |
| **Volume** | | | **Volume** | | |
| fluid ounces | 29.574 | milliliters | milliliters | 0.0338 | fluid ounces |
| gallons | 3.7854 | liters | liters | 0.26417 | gallons |
| cubic feet | 0.028317 | cubic meters | cubic meters | 35.315 | cubic feet |
| cubic yards | 0.76455 | cubic meters | cubic meters | 1.308 | cubic yards |
| **Weight** | | | **Weight** | | |
| ounces | 28.3495 | grams | grams | 0.03527 | ounces |
| pounds | 0.45360 | kilograms | kilograms | 2.2046 | pounds |
| short tons | 0.90718 | metric tons | metric tons | 1.1023 | short tons |
| **Temperature** | | | **Temperature** | | |
| Fahrenheit | Subtract 32, then multiply by 0.55556 | Celsius | Celsius | Multiply by 1.8, then add 32 | Fahrenheit |
| **Dose** | | | **Dose** | | |
| rem | 0.01 | seivert | seivert | 100 | rem |

# Chapter 1
# Introduction

The U.S. Department of Energy's (DOE's) National Environmental Policy Act (NEPA) Implementing Procedures at Title 10 *Code of Federal Regulations* Section 1021.330(d) (10 CFR 1021.330(d)) require evaluation of a site-wide environmental impact statement (EIS) at least every 5 years through preparation of a supplement analysis (SA) as provided in 10 CFR 1021.314. Based on the SA, a determination is made as to whether the existing EIS remains adequate, or whether preparation of a new site-wide EIS or a supplement to the existing EIS is appropriate. This SA is prepared in accordance with these requirements.

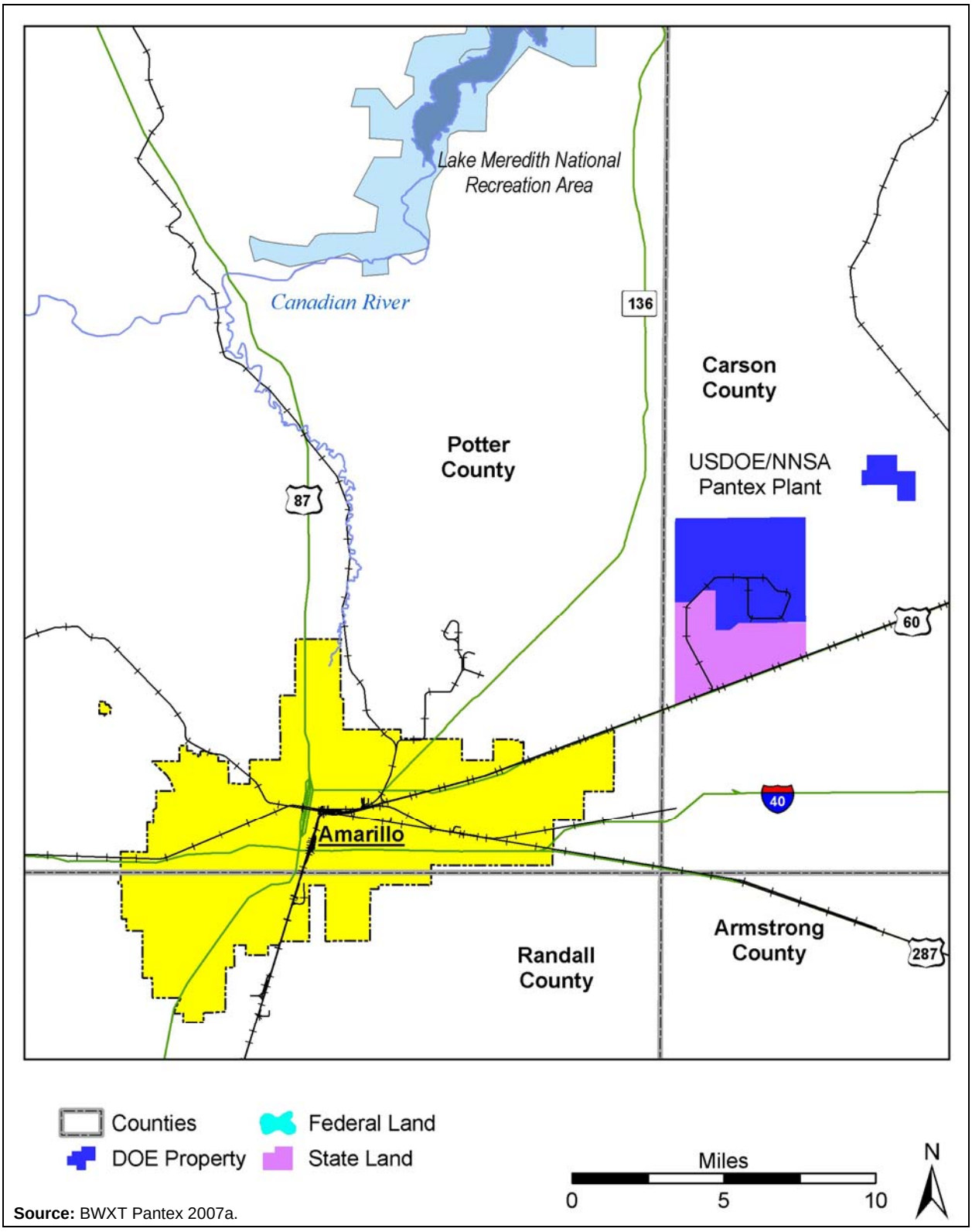
## 1.1 Background

The Pantex Plant is located in the Texas Panhandle, approximately 27 kilometers (17 miles) northeast of Amarillo, Texas. Figure 1–1 shows the location of the Pantex Plant. Key onsite and offsite areas relevant to analyses in this SA are shown on Figure 1–2. The Pantex Plant was originally built during the early days of World War II to produce conventional munitions, bombs, and artillery projectiles for the U.S. Army. After the war, the plant was deactivated and remained vacant until 1949, when Texas Technological College (now Texas Tech University [TTU]) purchased the site for $1.00. In 1951, the main plant and surrounding land were reclaimed under the recapture clause of the sales agreement with the Atomic Energy Commission (DOE's predecessor) and used for nuclear weapons assembly operations. Since that time, nuclear weapons assembly and disassembly operations in the United States have been transferred to, and occur at, the Pantex Plant (DOE 1996a:1-1, 1-4).

DOE issued the *Final Environmental Impact Statement for the Continued Operation of the Pantex Plant and Associated Storage of Nuclear Weapon Components* (referred to as the *Pantex Site-Wide Environmental Impact Statement* [SWEIS]) in November 1996 (DOE 1996a). The SWEIS assessed impacts on areas of the human and natural environment potentially affected by operations performed at the Pantex Plant. The SWEIS evaluated activities associated with ongoing operations, including onsite pit storage, transportation of pits to an alternate site for interim storage, and transportation of classified components between the Pantex Plant and other sites occurring over a period of approximately 10 years, from 1996 through 2006. The analysis assumed that production (the combined activities of assembly, disassembly, and modifications) would not exceed 2,000 weapons per year and assessed the impacts of activity levels required to produce 2,000, 1,000, and 500 weapons per year. These activity levels were considered a reasonable, but conservative, estimate of the work that could be required based on policy directives at that time.

The Record of Decision (ROD), published in the *Federal Register* (FR) on January 27, 1997 (62 FR 3880), announced DOE's decision to implement the Preferred Alternative evaluated in the SWEIS by (1) continuing operations involving assembly and disassembly of nuclear weapons at the Pantex Plant; (2) implementing facility projects, including upgrades and construction consistent with conducting these operations; and (3) continuing to provide interim pit[1] storage at the Pantex Plant and increasing the storage level from 12,000 to 20,000 pits.

[1] A pit is the central core of a primary assembly in a nuclear weapon. A pit is typically composed of plutonium-239 or highly enriched uranium and other materials.




**Source:** BWXT Pantex 2007a.

**Figure 1–1. Pantex Plant Site Location**

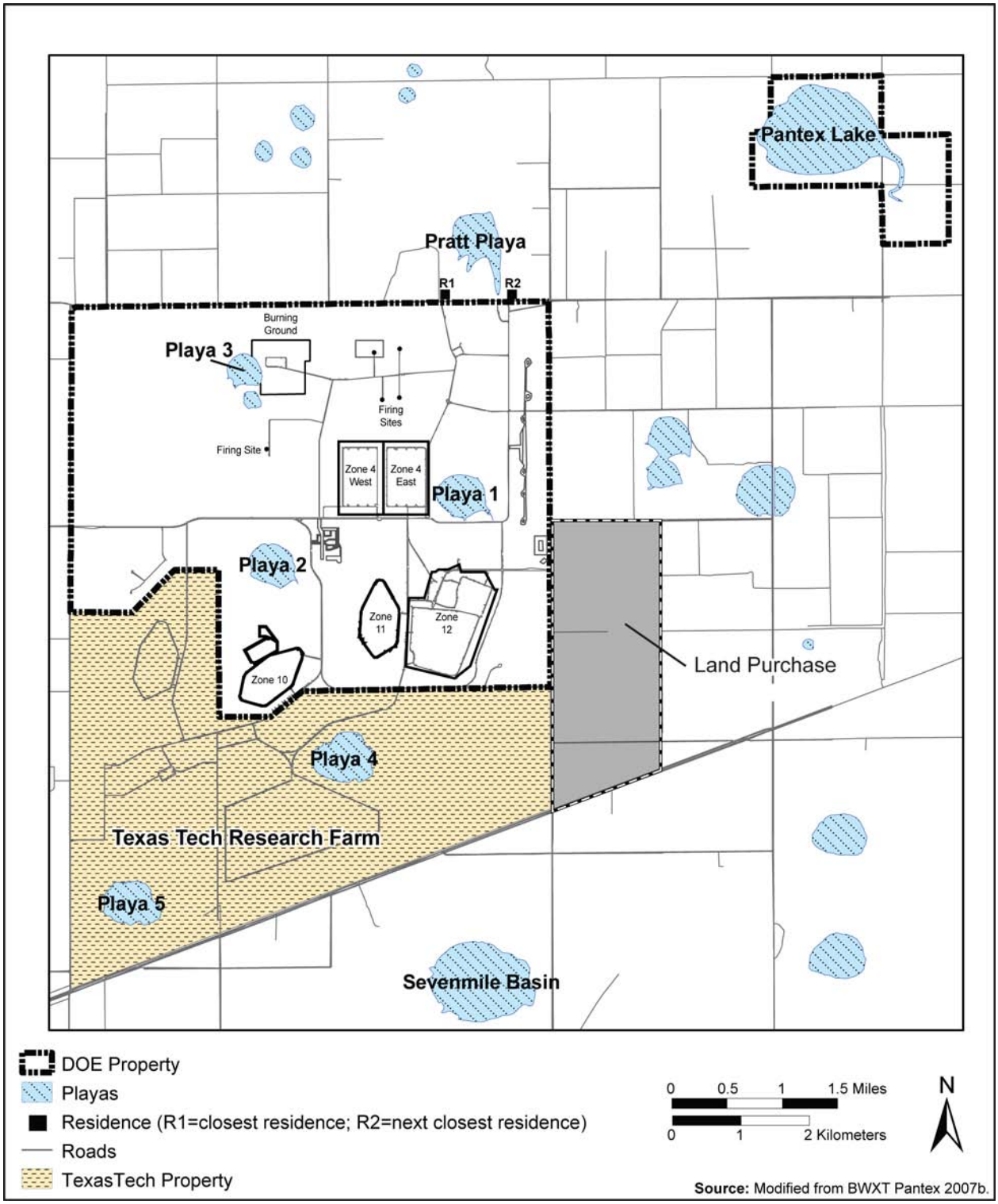



**Figure 1–2. Location of Key Areas at Pantex Plant**

## 1.2 Purpose of and Need for the Supplement Analysis

In February 2003, DOE/National Nuclear Security Administration (NNSA) issued the *Supplement Analysis for the Final Environmental Impact Statement for the Continued Operation of the Pantex Plant and Associated Storage of Nuclear Weapon Components* (2003 SA), the first 5-year update of the SWEIS, to address activities at the Pantex Plant through 2006 (DOE/NNSA 2003). The 2003 SA evaluated the impacts of plant activities through 2001 and projected potential impacts from 2002 through 2006. The analyses in the 2003 SA indicated that, for the time period evaluated, the identified and projected impacts for all resource areas, including cumulative impacts, were not substantially changed from those identified in the SWEIS and ROD, nor did they represent significant new circumstances or information relative to environmental concerns. Therefore, DOE/NNSA issued a determination that there was no need either to supplement the SWEIS or to prepare a new SWEIS for the Pantex Plant. This second 5-Year update SA fulfills DOE's requirement to review the SWEIS at least every 5 years as required by 10 CFR 1021.330(d). This SA accomplishes that requirement by comparing the information presented in the SWEIS with changes and proposed changes, through 2011, in the environment and Pantex Plant missions, activities, programs, and impacts.

## 1.3 Changes Since Preparation of the SWEIS

This section describes the mission, programmatic, operational, and environmental changes and projects that have occurred since the SWEIS was issued in 1996, as well as those anticipated through 2011. These changes and projects provide the basis for the analyses in this SA.

### 1.3.1 Pantex Site Mission and Programmatic Changes

No major changes in primary missions have been identified for the next 5 years. The primary missions of the Pantex Plant described in the *Programmatic Information Document* (BWXT Pantex 2006a) are consistent with those identified in the SWEIS**:**

- Fabricate chemical high-explosive components for nuclear weapons
- Assemble nuclear weapons for the Nation's stockpile
- Maintain and evaluate nuclear weapons in the stockpile
- Disassemble nuclear weapons being retired from the stockpile
- Store plutonium pits from dismantled weapons on an interim basis

Individual operations conducted at the Pantex Plant to support these programmatic missions and analyzed within the scope of the SWEIS include assembly and disassembly of nuclear weapons, nuclear weapons stockpile maintenance and modification activities, stockpile evaluation, quality assurance testing of weapon components, and research and production of high-explosive components for nuclear weapons. Related activities include certain quality assurance evaluations of weapons; research and development

activities supporting nuclear weapons; demilitarization and sanitization of weapon parts, equipment, and related materials;[2] waste management; environmental restoration; and onsite transportation.

The SWEIS also identified areas of the Pantex Plant that support these missions. These areas, shown in Figure 1–2 of this SA, are:

- Zone 12, where assembly, disassembly, and surveillance operations are performed and nonnuclear components are staged
- Zone 11, where high-explosives research and production occur and nonnuclear components are staged
- Zone 4 West, where nuclear weapons and classified components are staged and pits are stored on an interim basis
- Zone 4 East, where high explosives are stored and nonnuclear components are staged
- The Burning Ground, where high-explosive material is thermally treated

The firing sites also support the Pantex Plant mission. These areas, identified in Figure 1-2, are used for testing high-explosive material.

Six proposed projects were at a sufficient stage of development in 1996 to be included in the SWEIS analysis: the Hazardous Waste Treatment and Processing Facility (HWTPF), the Pit Reuse Facility, the Gas Analysis Laboratory, the Materials Compatibility Assurance Facility, the Nondestructive Evaluation Facility, and the Metrology and Health Physics Calibration and Acceptance Facility. These projects were proposed for locations in or near Zones 11 and 12 to meet explosives, safety, seismic, or tornado criteria; streamline the efficiency of continued operations; maximize worker safety; reduce existing facility footprints; or meet regulatory requirements (DOE/NNSA 2003). Appendix A, Table A–1 presents information about these projects, including their current status.

Appendix A, Table A–2 identifies selected projects initiated since issuance of the SWEIS. Appendix A, Table A–3 includes selected projects that are not yet underway, but are expected to be initiated through 2011. Projects selected for inclusion in these tables were determined to warrant (either individually or collectively) specific citation and consideration in this SA. Factors that influenced this determination include projected cost, NEPA coverage, and the potential for the project to result in a major change to the Pantex Plant footprint (for example, construction of new facilities or demolition of existing facilities). In some cases, a number of individually small but related projects were grouped. Projects such as electrical or fire safety system upgrades were not included in Appendix A, Tables A–2 and A–3 if they involve replacement of similar equipment or modifications to existing facilities or infrastructure but not major changes to the plant footprint. Other, generally smaller projects, such as those to improve plant infrastructure, are implemented each year. These projects normally do not result in significant environmental impacts and as such may be initiated after completion of NEPA review in accordance with DOE NEPA Implementing Procedures at 10 CFR 1021.410 and Pantex Plant Work Instruction 02.01.04.02.01.

[2] Demilitarization and sanitization are manufacturing activities used to remove classified and other nuclear proliferation-sensitive information. These activities include thermal shock, thermal treatment, machining, granulation, melting, mechanical crushing, fluid jet machining, chemical dissolution, grinding, cutting, or chipping and actuation (DOE 1996a).

### 1.3.2 Operations Changes

Operational changes evaluated in this SA include changes in mission-related and non-mission-related activities at the Pantex Plant that may result in environmental impacts or may indicate variances in the parameters that were assumed in the SWEIS analyses. These changes mainly involve the weapons workload level and associated activities; explosives fabrication, detonation, and disposition activities (including sanitization); and the overall square footage of facilities. In addition, changes in staffing levels may result from changes in mission- and non-mission-related activities.

### 1.3.3 Environmental Changes

Environmental changes pertain to changes in the environmental resources that provide the baseline for evaluating environmental impacts or to changes in the parameters and assumptions used for the environmental impacts analyses. This section summarizes information from the Pantex Plant *Environmental Information Document in Support of National Environmental Policy Act Documents for the Pantex Plant* (BWXT Pantex 2007c), that demonstrates that the natural environment depicted in the SWEIS has not changed appreciably.

#### 1.3.3.1 Land Resources

There have been no changes to land resources at Pantex Plant. The Pantex Plant is located in Carson County in the Texas Panhandle, north of U. S. Highway 60 and 17 miles (27 kilometers) northeast of downtown Amarillo. The Pantex Plant consists of 4,119 hectares (10,177 acres) of land, including 3,683 hectares (9,100 acres) in the main plant area and 436 hectares (1,077 acres) approximately 4 kilometers (2.4 miles) to the northeast, at Pantex Lake. Additionally, 2,347 hectares (5,800 acres) of land south of the main plant area are leased from TTU for use as a safety and buffer zone. Several soil types that according to the Natural Resources Conservation Service are classified as prime farmland cover the majority of Pantex Plant.

#### 1.3.3.2 Water Resources

**Surface Water, Floodplains, and Playas.** There has been no change to surface water, floodplains, or playas at Pantex Plant since the SWEIS was issued. Surface waters, for the most part, discharge into onsite playas. Storm water from agricultural areas at the periphery of the Plant drains into offsite playas. From the various playas, water either evaporates or infiltrates the soil. Two principal subsurface water-bearing units exist beneath Pantex Plant and adjacent areas: the Ogallala Aquifer and the underlying Dockum Group Aquifer. The vadose, or unsaturated zone, above the Ogallala Aquifer consists of as much as 140 meters (460 feet) of sediments that lie between the land surface and the Ogallala Aquifer. The Tulsa District of the United States Army Corps of Engineers delineated floodplains on the Pantex Plant site. Floodplain boundaries were delineated for Playas 1, 2, 3, and 4, Pantex Lake, and Pratt Lake (north of Pantex).

**Groundwater.** Perched groundwater is present beneath Pantex Plant at approximately 61 to 91 meters (200 to 300 feet) below ground surface, where it rests upon a relatively low permeability zone, referred to as the fine-grained zone. The fine-grained zone consists of silt and clay that slows vertical movement of water in the subsurface soil to the extent that it moves laterally. Perched groundwater is associated with natural recharge from several playas and historic industrial releases to the ditches draining Zones 11 and 12. Beneath Pantex Plant, the groundwater initially flows outward in a radial manner away from the playa lakes, and then is influenced by the regional south-to-southeast gradient. The perched groundwater ranges in saturated thickness from less than 0.31 meter (1 foot) to approximately 21 meters (70 feet) in the area of Playa 1. Perched groundwater beneath the Plant contains contaminants associated with

historic industrial releases and is unsuitable for use without prior treatment. Early remedial actions have been implemented to begin cleaning up perched groundwater contaminants associated with Pantex Plant legacy releases.

The second water-bearing zone below the fine-grained zone is the Ogallala Aquifer. The groundwater surface beneath the Plant is approximately 122 meters (400 feet) below ground surface and is approximately less than 0.31 meter to 30 meters (1 foot to 100 feet) thick in the southern regions of the Plant and approximately 76 to 122 meters (250 to 400 feet) thick in the northern regions. In the vicinity of Pantex Plant, the primary flow direction of the Ogallala Aquifer is north to northeast due to the influence of the City of Amarillo's well field north of the Plant. Sampling results for the Ogallala Aquifer in the vicinity of Pantex Plant indicate that the water continues to be suitable for drinking; as well as industrial, agricultural, and other domestic uses.

#### 1.3.3.3 Air Quality

There have been no changes to the air quality of Pantex Plant since the SWEIS was issued. Modeling results of concentrations for criteria and toxic pollutants using plant emissions for ongoing operations indicated that none of the National Ambient Air Quality Standards (NAAQS) would be exceeded at the Pantex Plant boundary. All of the toxic air pollutants were estimated to be below their respective Effect Screening Levels (ESLs) at the Plant boundary. Modeling performed during the period 1996 through 2001 indicated that no NAAQS or ESLs were exceeded during that time. Similarly, based on projected emissions for continued operations during the period 2002 through 2006, concentrations at the Pantex Plant boundary are estimated to continue to remain within all NAAQSs and ESLs.

#### 1.3.3.4 Acoustics

There have been no changes to acoustics at Pantex Plant since the SWEIS was issued. Sources of environmental noise off the Plant site consist of background sounds from vehicular traffic on Highway 60, Farm-to-Market (FM) roads, county roads, airport traffic, railroad traffic on a major east-west corridor with two tracks, and the operation of heavy equipment during agricultural activities. Sources of environmental noise on Pantex Plant consist of background sounds from industrial processes, vehicular traffic, routine operations, occasional high-explosives testing, firearms training for security police officers, ongoing construction and demolition of infrastructure, and the operation of heavy equipment during agricultural activities by TTU Research Farm personnel on lands leased from DOE/NNSA.

#### 1.3.3.5 Biotic Resources

**Vegetation.** Pantex Plant is located within the Southern High Plains region. Vegetation is characterized as shortgrass prairie. The land ranges from unvegetated in the south-central industrial area of the Plant to a variety of shortgrass prairie species elsewhere on the site. Pantex Plant incorporates three different land uses: cultivated ground, native grass or pastureland, and land in the Conservation Reserve Program (CRP). Cultivated ground consists of both dry land and irrigated properties. The dry land areas are typically planted to winter wheat or grain sorghum. Irrigated land may be planted to winter wheat, grain sorghum, corn, or alfalfa. The native grass areas primarily consist of blue grama *(Bouteloua gracilis)* and buffalograss *(Buchloe dactyloides).* Established cover on the CRP is blue grama, buffalograss, and side oats grama *(Bouteloua curtipendula).* Land in the CRP on TTU property has old world blue stem *(Bothriochloa ischaemum)* established as the required cover.

**Habitat.** There have been no changes in habitat at Pantex Plant since the SWEIS was issued. Shortgrass prairie, consisting of buffalograss, blue grama, and western wheatgrass (*Agrophyron smithii*), in drainage

ditches and low lying areas, represents the primary habitat for species of concern in the area, for example, the Texas horned lizard (*Phrynosoma cornutum*), ferruginous hawk (*Buteo regalis*), western burrowing owl (*Athene cunicularia hypugaea*), and song birds.

**Wildlife.** There have been no changes to wildlife at Pantex Plant since the SWEIS was issued. Wildlife recorded at Pantex Plant includes 40 species of mammals, 180 species of birds, 12 species of reptiles, and 10 species of amphibians. The majority of these species are associated with the playas and surrounding upland areas. Management initiatives have been instituted to maintain biodiversity, including revegetation of formally cultivated areas, especially around playas, and to manage prairie dogs as part of the short-grass prairie ecosystem.

**Threatened and Endangered Species.** There have been no changes to threatened and endangered species at Pantex Plant since the SWEIS was issued although there have been changes in species designations based on re-evaluation and reclassification of a number of species by the U.S. Fish and Wildlife Service and the Texas Parks and Wildlife Department. Black-tailed prairie dog (*Cynomys ludovicianus*) colonies are found in the area. They provide habitat for some special status species such as the ferruginous hawk, bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), western burrowing owl, and some songbirds.

The Texas horned lizard is the only threatened or endangered species that is a year-round resident in the area. The American and Arctic peregrine falcons (*Valco peregrinus anatum* and *Falso peregrinus tundruis*), as well as the bald eagle and whooping crane (*Grus America*), are migratory, and may be observed along the project route during the fall through spring migrational and wintering periods.

## 1.4 Intentional Destructive Acts

In the aftermath of September 11, 2001, DOE/NNSA has implemented measures to minimize the risk and consequences of potential terrorist attacks on its facilities. The safeguards applied to protecting the Pantex Plant involve a dynamic process of enhancement to meet threats; these safeguards will evolve over time. It is not possible to predict whether intentional attacks would occur at any site, or the nature or types of such attacks. Nevertheless, DOE/NNSA has re-evaluated security scenarios involving malevolent, terrorist, or intentionally destructive acts to assess potential vulnerabilities and identify improvements to security procedures and response measures (Brooks 2004). Security at its facilities is a critical priority for DOE/NNSA. Therefore, DOE/NNSA continues to identify and implement measures to defend and deter attacks. DOE/NNSA maintains a system of regulations, orders, programs, guidance, and training that form the basis for maintaining, updating, and testing site security to preclude and mitigate any postulated terrorist actions (Brooks 2004). The conservative assumptions inherent in the accidents analyzed for the Pantex Plant assume initiation by natural events, equipment failure, or inadvertent worker actions. These same events could be caused by intentional malevolent acts by one or more saboteurs or terrorists. For example, a criticality could be purposefully created, or high explosives could be used to damage buildings in the same way as an earthquake. However, the resulting radiological release and consequences to workers and the public would be similar, regardless of the nature of the initiating event.

The Pantex Plant physical security protection strategy is based on a graded and layered approach supported by an armed guard force that is trained to detect, deter, and neutralize adversary activities and is backed up by local, state, and Federal law enforcement agencies. Both staffed and automated access-control systems are used to limit entry into areas or facilities to authorized individuals. Automated access-control systems include controlled booths, turnstiles, doors, and gates. Escort requirements provide access controls for visitors. Barriers, electronic surveillance systems, and intrusion detection systems form a comprehensive site-wide network of monitored alarms. Various types of barriers would

delay, channel personnel, or deny access to classified matter, protected materials, and vital areas. Barriers direct the flow of vehicles and deter or prevent penetration by motorized vehicles where they could significantly increase the likelihood of a successful malevolent act. Some barriers are passive and would require the use of special tools and high explosives to penetrate them. Other barriers have an active component designed to dispense an obscuration agent, viscous barrier, or sensory irritant. Tamper-protected surveillance, intrusion detection, and alarm systems designed to detect adversary action or anomalous behavior inside and outside the facilities are paired with assessment systems that evaluate the nature of the adversary action. Random patrols and visual observation are also used to deter and detect intrusions. Penetration-resistant, alarmed vaults and vault-type rooms are used to protect classified materials.

There is also a potential for attempted sabotage or terrorist attack during transport. As such, transportation activities would incorporate existing physical safeguards aimed at protecting the public from harm, including SST/SafeGuards Transport for inter-site transport of special nuclear materials. The safety features of the transportation casks that provide containment, shielding, and thermal protection also protect against sabotage. Although it is not possible to predict the occurrence of sabotage or terrorism or the exact nature of such events if they were to occur, DOE/NNSA has previously examined several transportation accident scenarios that would have the types of consequences that could result from such acts in the *Final Environmental Impact Statement on Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel* (FRR SNF EIS*)* (DOE 1996b). However, because the materials being considered for transport under this SA would have substantially less total radioactivity than those analyzed in the FRR SNF EIS, the corresponding impacts resulting from such events would be much lower.

## 1.5 National Environmental Policy Act Activities

New projects and modifications to existing projects that have been initiated since issuance of the SWEIS have been described and evaluated in environmental assessments (EAs), SAs, and NEPA review forms in accordance with Pantex Plant Work Instruction 02.01.04.02.01, "How to Prepare NEPA Documents." Appendix A, Tables A–1 and A–2 indicate the NEPA status for included projects. Appendix A, Table A-3 describes NEPA actions expected to be initiated from 2007 through 2011. In addition, NEPA checklists, documents, or review forms have been completed for many smaller projects. Currently planned projects are listed in Appendix B of the *Programmatic Information Document* (BWXT Pantex 2006a) and in the *Pantex FY2008–FY2017 Ten-Year Site Plan* (BWXT Pantex 2007d). NEPA reviews will be conducted prior to implementation of future projects, whether new construction, modifications, or demolitions, in accordance with DOE NEPA Implementing Procedures (10 CFR 1021) and Pantex Plant Work Instruction 02.01.04.02.01.

### 1.5.1 NEPA Actions Related to Pantex Plant

***Draft Environmental Impact Statement for the Proposed Consolidation of Nuclear Operations Related to the Production of Radioisotope Power Systems* (DOE/EIS-0373D) (DOE 2005).** This draft EIS evaluates the environmental impacts of the proposed action and alternatives for consolidating radioisotope power system nuclear operations at a single site to reduce the security threat in a cost-effective manner, improve program flexibility, and reduce interstate transportation of special nuclear material. Under the proposed action, milliwatt radioisotope thermoelectric generator heat sources currently stored at the Pantex Plant would be transported to the Idaho National Laboratory for storage and processing. The potential impacts of this transportation activity are evaluated in the draft EIS. The final EIS has not been issued. Since there is no decision at this time, potential impacts of this proposed activity are not included in this SA.

***Draft Complex Transformation Supplemental Programmatic Environmental Impact Statement* (DOE/EIS 0236-S4) (DOE/NNSA 2007b).** In December 2007, DOE/NNSA issued the *Draft Complex Transformation Supplemental Programmatic Environmental Impact Statement (Complex Transformation SEIS)*. The *Complex Transformation SEIS* evaluates future missions of the Stockpile Stewardship and Management Program and the nuclear weapons complex. Under the preferred alternative, Pantex Plant would remain the Assembly/Disassembly/High Explosives production and manufacturing center, and nondestructive surveillance operations would be consolidated at Pantex Plant. In addition, Pantex Plant would remain the HE production and machining center and would conduct experiments with up to 22 kilograms (48 pounds) of HE (DOE/NNSA 2007b:S-66). Because any decisions involving major new facilities would be accompanied by appropriate NEPA documentation and would not be implemented before 2011, proposed activities associated with the *Complex Transformation SEIS* are not considered to be within the scope of this SA.

# Chapter 2
# Comparison of Impacts

## 2.1 Introduction

Figure 2–1 illustrates the impact assessment process used in this SA. As this figure indicates, an initial screening review was conducted of new, modified, or proposed projects and missions; new regulations; and updated environmental and operating basis information. This review identified whether associated levels of activity or potential for impact on a particular resource area, either individually or collectively, warranted additional analysis. No further analysis was conducted for those resource areas where it was evident from the initial screening of impact indicators that associated impacts would be minimal and within the impacts identified in the SWEIS.

Other resource areas required further analysis to determine (1) whether potential impacts on the areas are outside the envelope of environmental consequences established in the SWEIS, and (2) if so, whether the impacts could be considered significant within the context of NEPA (40 CFR 1508.27), which would require preparation of a new or supplemental EIS. The "sliding-scale" approach was used such that analyses for the resource areas are in proportion to their significance.

The *Programmatic Information Document* (BWXT Pantex 2006a), the *Pantex Plant FY2006–FY2015 Ten-Year Comprehensive Site Plan* (BWXT Pantex 2005) and the *Pantex Plant FY2007–2016 Ten–Year Site Plan* (BWXT Pantex 2006b) describe ongoing, planned, and proposed activities. These documents, as well as information provided in the 2003 SA (DOE/NNSA 2003) and other DOE/NNSA and Pantex Plant documents, were reviewed to identify potential new missions and specific project activities for analysis in this SA.

Table 2–1 presents a comparison of changes in environmental impacts that have occurred in the 10 years (November 1996 through December 2006) since the SWEIS was published and those that are expected to occur during the following 5-year interval (2007–2011). These changes include those resulting from the activities described in Section 1.3 and the projects listed in Appendix A, Tables A–1, A–2, and A–3 of this SA.[3]

The columns in Table 2–1 present SWEIS values for the 2,000-weapons level of the Preferred Alternative, current values, and projected future values (2007–2011) of selected impact indicators for each resource area. For each resource area, the last row in the table provides a brief comparison of the impacts to those evaluated in the SWEIS. Section 2.2 provides more detailed analyses for those resource areas that required further analysis to determine the significance of identified impacts relative to the impacts identified in the SWEIS.

[3] The projects described in these tables are in various stages of implementation, from early proposal to being complete. Projects that have progressed to the stage that design, environmental, or safety documentation has been prepared were evaluated more thoroughly than less developed projects.

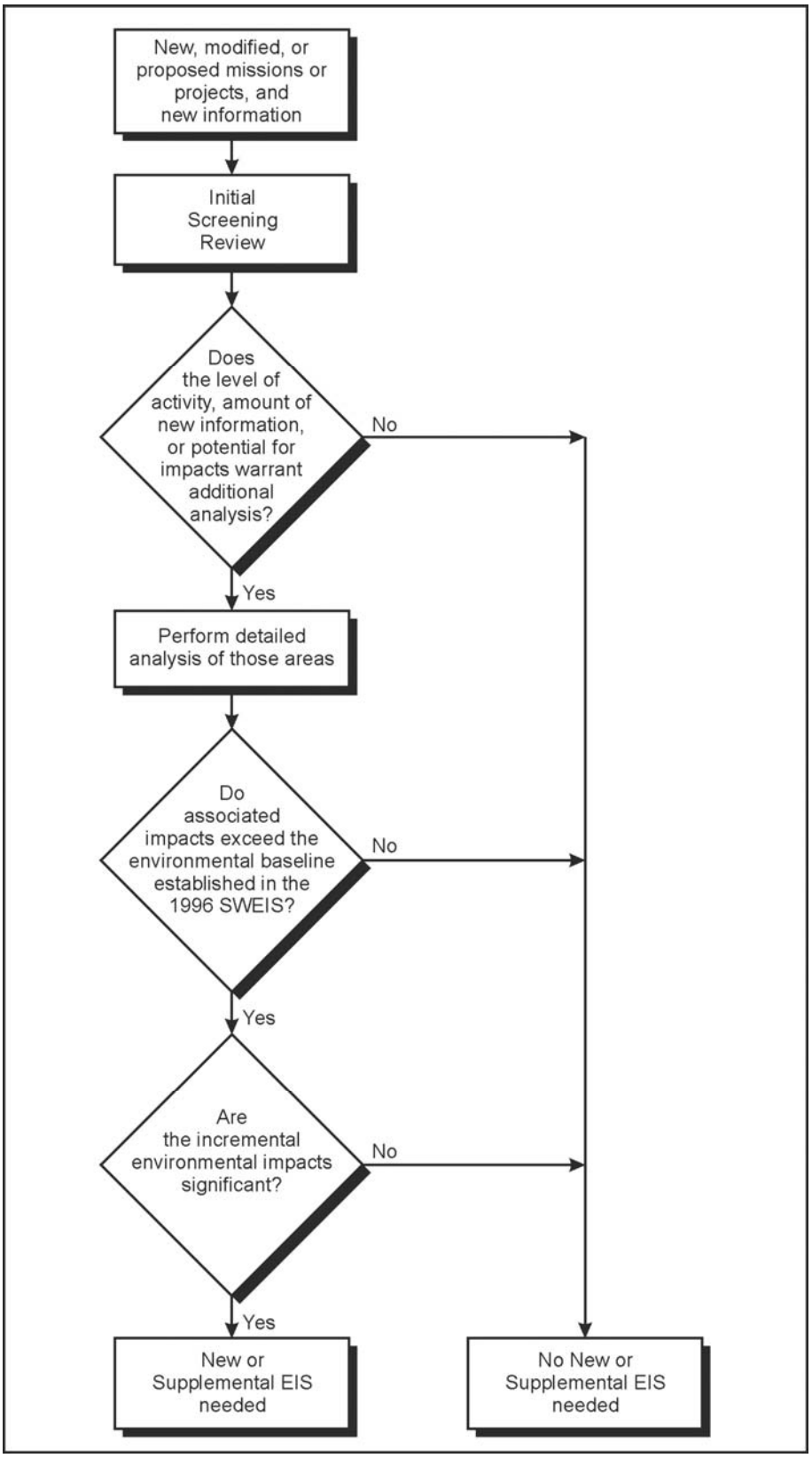



**Figure 2–1. Impact Assessment Process Used in this Supplement Analysis**

**Table 2–1. Summary Comparison of Impacts Indicators**

| Resource Area | Impacts Indicators from the SWEIS (Based on 2,000-Weapons Level) | Impacts Indicators in this SA | |
|---|---|---|---|
| | | Current Values | 5-Year Future Projection (2007 to 2011) |
| **Facilities Infrastructure** | | | |
| Total floor space, square meters (square feet) | 286,502 (3,083,960) | 284,823 (3,065,809) | 289,534 (3,116,515) |
| Roads, kilometers (miles) | 76 (47) | 88 (55) | Any additional roads would be constructed in developed areas. |
| **Comparison to the SWEIS:** The net increase in floor space over the next 5 years is expected to exceed the projection in the SWEIS by about 1 percent. | | | |
| **Utilities Infrastructure** | | | |
| Electricity, megawatt-hours per year | 90,400 | 70,029 | 71,430 |
| Steam, M kilograms (M pounds) per year | 181 (398) | 120 (264) | 122 (269) |
| Natural gas, M cubic meters (M cubic feet) per year | 16.2 (573) | 10.4 (367) | 10.6 (374) |
| Water, M liters (M gallons) per year | 1,011 (267) | 496 (131) | 521 (138) |
| Wastewater treatment/discharge, M liters (M gallons) per year | 647 (171) | 318 (84) | 334 (88) |
| **Comparison to the SWEIS:** Impacts on utility infrastructure would continue to be bounded by the analyses presented in the SWEIS. | | | |
| **Land Resources** | | | |
| Main plant area[a] hectares (acres) | 3,683 (9,100) | 3,683 (9,100) | 4,302 (10,630) |
| | | hectares (acres), percent of main plant area[b] | |
| Operations | The SWEIS does not include a breakdown by land use category. | 947 (2,339) 26 | 947 (2,339) 22 |
| Mixed Use | | 504 (1,246) 14 | 504 (1,246) 12 |
| Cultivation | | 1,189 (2,939) 33 | 1,440 (3,558) 34 |
| Grazing | | 535 (1,322) 15 | 904 (2,233) 21 |
| Undeveloped | | 466 (1,152) 13 | 466 (1,152) 11 |
| **Comparison to the SWEIS:** The changes in land use that have occurred or are planned to occur over the next 5 years would not fundamentally change land use at the Pantex Plant. Therefore, the impacts on land resources would not be substantially different from the analyses presented in the SWEIS. | | | |
| **Visual Resources** | | | |
| Landscape appearance | Pantex Plant appears as a cluster of low buildings on a flat landscape.[c] | Negligible changes. | Negligible changes. |
| **Comparison to the SWEIS:** This resource area was not evaluated in the SWEIS. It is expected that the viewshed would not change substantially from when the SWEIS was issued. | | | |

**Table 2–1. Summary Comparison of Impacts Indicators (continued)**

| Resource Area | Impacts Indicators from the SWEIS (Based on 2,000-Weapons Level) | Impacts Indicators in this SA | |
|---|---|---|---|
| | | Current Values | 5-Year Future Projection (2007 to 2011) |
| **Geology and Soils** | | | |
| Temporary soil disturbance from construction, square meters (square feet) | 31,800 (342,000) | 94,680[d] (1,019,000) | 56,820 (611,605) |
| **Comparison to the SWEIS:** The analysis presented in the SWEIS continues to bound the potential for geologic hazards to affect existing or proposed facilities at the Pantex Plant. Temporary soil disturbance for new and completed projects is substantially greater than analyzed in the SWEIS. However, application of best management practices to minimize soil erosion, including measures to limit the amount of time soils are exposed until revegetated or otherwise covered would greatly reduce the impacts of soil loss. Recent assessments of site geology, including geologic hazards remain consistent with and bounded by the assessment summarized in the SWEIS. | | | |
| **Water Resources** | | | |
| Volume of wastewater treated, M liters (M gallons) per year | 647 (171) Treated wastewater discharged to Playa 1. | 318 (84) Routine effluent discharges to Playa 1 ceased in April 2005. (Playa 1 remains the back-up release location.) | 334 (88) |
| **Comparison to the SWEIS:** The impacts on water resources would continue to be bounded by the analysis presented in the SWEIS. The annual volume of wastewater produced over the next 5 years is expected to remain within estimates made in the SWEIS. Although new facilities would increase stormwater runoff because additional impervious surface area would be created, the net increase in developed area would constitute only about 0.01 percent of the developed land at the Pantex Plant. Construction and operation of the projects proposed over the next 5 years are not expected to require large volumes of water that would substantially increase Pantex Plant groundwater withdrawals. Activities proposed to occur over the next 5 years are not expected to further degrade groundwater quality or impact remediation efforts. Remediation efforts continue to remove contaminants from perched groundwater. | | | |
| **Air Quality** | | | |
| Construction emissions | Less than 3 metric tons per year of $PM_{10}$ in peak construction year. | Not estimated, but expected to be similar to the SWEIS. | Not estimated, but expected to be similar to the SWEIS. |
| Stationary source operation emissions, metric tons/year[e, f] | CO – 20.3<br>$NO_x$ – 78.95<br>$PM_{10}$ – 8.44<br>$SO_2$ – 0.0001[g]<br>Lead – 0.19<br>VOC – 2.81<br>HAP – 17.93 | CO – 4.72<br>$NO_x$ – 22.88<br>TSP – 10.24<br>$SO_2$ – 0.34<br>Lead – 0.0<br>VOC – 1.32<br>HAP – 3.44 | CO – 4.72<br>$NO_x$ – 22.88<br>TSP – 10.24<br>$SO_2$ – 0.34<br>Lead – 0.0<br>VOC – 1.32<br>HAP – 3.44 |

**Table 2–1. Summary Comparison of Impacts Indicators (continued)**

| Resource Area | Impacts Indicators from the SWEIS (Based on 2,000-Weapons Level) | Impacts Indicators in this SA | |
|---|---|---|---|
| | | Current Values | 5-Year Future Projection (2007 to 2011) |
| **Air Quality (continued)** | | | |
| Emissions from firing sites,<br>pounds per hour/<br>tons per year | Included in operation emissions in previous row. | Emissions from firing sites may increase, but would remain within the following current permit limits:<br>VOC – 131/0.76<br>PM – 97.6/0.51<br>$NH_3$ – 1.0/0.02<br>CO – 716/3.65<br>$Cl_2$ – 12.0/0.40<br>HCl – 24.0/0.80<br>HCN – 1.0/0.20<br>HF – 23.7/0.20<br>Nitrous oxide – 1.0/0.02<br>$NO_x$ – 50.1/0.38<br>HAP – 76.8/1.59 | Emissions from firing sites may increase, but would remain within the following current permit limits:<br>VOC – 131/0.76<br>PM – 97.6/0.51<br>$NH_3$ – 1.0/0.02<br>CO – 716/3.65<br>$Cl_2$ – 12.0/0.40<br>HCl – 24.0/0.80<br>HCN – 1.0/0.20<br>HF – 23.7/0.20<br>Nitrous oxide – 1.0/0.02<br>$NO_x$ – 50.1/0.38<br>HAP – 76.8/1.59 |
| **Comparison to the SWEIS:** The impacts on air quality would not be substantially different from the analyses presented in the SWEIS. The SWEIS estimated that construction air emissions from 1996 through 2006 would increase 8 to 13 percent during the peak construction year. Construction emissions over the next 5 years are expected to be similar to those predicted in the SWEIS. Emissions data for 2006 show actual emissions of CO, $NO_x$, lead, VOCs, and HAPs are substantially less than the levels analyzed in the SWEIS. Emissions from Pantex Plant operations are well below permitted limits. Raising the size limit for explosive charges detonated in open air would increase actual hourly emissions from the firing sites. Depending on the amount of explosives detonated during each 12-month period, emissions for CO, $NO_x$, and $PM_{10}$ could exceed estimated emissions levels presented in the SWEIS. However, those emissions would be less than authorized in the permit for the firing sites. | | | |
| **Acoustics (Sound)** | | | |
| Construction and non-firing site operations | Minimal offsite noise. | Minimal offsite noise. | Minimal offsite noise. |
| Firing site operation, net explosive weight, kilograms (pounds) | 25 (55)<br>At all firing sites. | 25 (55)<br>At all firing sites. | 70 (154)<br>at FS-4 and FS-10<br>140 (308)<br>at FS-21 and FS-22 |
| Firing site operation – sound level (dBP)[h] at closest residence (feet) | 140 dB (3,608)<br>133 dB (7,218)<br>128 dB (14,436) | FS-4: 132.1 (3,166)<br>FS-10: 129.2 (4,003)<br>FS-21: 117.0 (10,839)<br>FS-22: 125.2 (5,566) | FS-4: 135.5 (3,166)<br>FS-10: 132.6 (4,003)<br>FS-21: 122.6 (10,839)<br>FS-22: 130.8 (5,566) |
| **Comparison to the SWEIS:** Analysis of increased size of explosive detonations from 25 kilograms (55 pounds) evaluated in the SWEIS to 70 kilograms (154 pounds) for Firing Sites 4 and 10, and 140 kilograms (308 pounds) for Firing Sites 21 and 22 shows that sound levels would remain below 140 dBP at the closest residence, which would also be below the value calculated in the SWEIS for the closest residence (distances are not exactly the same). For additional comparison, applying the same method used to analyze the increased detonation sizes for this SA to the 25 kilograms (55 pounds) evaluated in the SWEIS shows that the increases in explosives quantity result in only small increases in sound levels at the closest residence. | | | |

**Table 2–1. Summary Comparison of Impacts Indicators (continued)**

| Resource Area | Impacts Indicators from the SWEIS (Based on 2,000-Weapons Level) | Impacts Indicators in this SA | |
|---|---|---|---|
| | | Current Values | 5-Year Future Projection (2007 to 2011) |
| **Biotic Resources** | | | |
| Wildlife habitat within the main plant area, hectares (acres) | | | |
| Operations areas | The SWEIS does not include a breakdown by land use category. | 947 (2,339) | 947 (2,339) |
| Grasslands[i] | | 960 (2,371) | 1,328 (3,282) |
| Cultivation | | 1,189 (2,939) | 1,440 (3,558) |
| Undeveloped | | 466 (1,152) | 466 (1,152) |
| Wetlands | | 80 (197) | 80 (197) |
| Threatened and Endangered Species (Federal/State) | | | |
| Plants | | | |
| Of Concern | 0/0 | 1/0 | 1/0 |
| Animals | | | |
| Endangered | 4/5 | 2/3 | 2/3 |
| Threatened | 1/3 | 1/4 | 1/4 |
| Candidate | 2/Not designated. | 1/0 | 1/0 |
| Of Concern | 15/Not designated. | 16/Not designated. | Not applicable. |
| **Comparison to the SWEIS:** The impacts on biotic resources would not be substantially different from the analyses presented in the SWEIS. Since issuance of the SWEIS, Grassland habitat and Operations areas have increased, and cultivated land has decreased. Although annual changes in agricultural practices alter the proportion of grasslands and cultivated land, there has been no meaningful change in wildlife habitat or agricultural land. During the next 5 years, nearly all projects would be located within areas designated as Operations. Impacts on wildlife from new construction or demolition are expected to be minor and of short duration and primarily associated with increased noise and human presence. Fourteen endangered, threatened, candidate, and species of concern are known to occur on the Pantex Plant. Changes in the numbers of species in each category are unrelated to operation of the Pantex Plant. | | | |
| **Cultural Resources** | | | |
| Prehistoric | No impact. | 57/2[j] Two sites determined to be potentially eligible for listing on the NRHP. No impact from ongoing activities. | No impact on the 2 sites determined to be potentially eligible for listing on the NRHP. |
| Pre-World War II | No impact. | 12/0[j] No change of NRHP status. No impact from ongoing activities. | No NRHP-eligible sites present. |
| World War II | No impact. | 118/0[j] No change of NRHP status. No impact from ongoing activities. | No NRHP-eligible sites present. |
| Cold War | Surveys of Cold War-era structures had not been conducted when the SWEIS was published. | 661/173[j] No impact from ongoing activities. | Two structures determined to be potentially eligible for listing on the NRHP (Buildings 12-17 and 12-63) could be affected. |
| Native American | No sites identified. | No sites identified | No impacts expected. |
| Paleontological | No impact. | 1 No impact from ongoing activities. | No impacts expected. |

**Table 2–1. Summary Comparison of Impacts Indicators (continued)**

| Resource Area | Impacts Indicators from the SWEIS (Based on 2,000-Weapons Level) | Impacts Indicators in this SA | |
|---|---|---|---|
| | | Current Values | 5-Year Future Projection (2007 to 2011) |
| **Cultural Resources (continued)** | | | |
| **Comparison to the SWEIS:** The impacts on cultural resources would not be substantially different from the analyses presented in the SWEIS. No impacts on prehistoric, pre-World War II, World War II, Native American, and paleontological resources are expected over the next 5 years. | | | |
| **Socioeconomic Resources** | | | |
| Total Pantex Plant employees | 3,800 | 4,194 | About 4,000 |
| M&O Contractor Only | 3,310 | 3,316 | 3,320 |
| Region of Influence population | 4 counties<br>209,762 persons | 6 counties<br>275,600 persons | 6 counties<br>349,862 persons |
| **Comparison to the SWEIS:** The impacts on socioeconomic resources would not be substantially different from the analyses presented in the SWEIS. The 2007 Pantex Plant M&O contractor employment level of 3,316 full-time equivalent workers is consistent with the expected 3,320 worker staffing level for the next 5 years and the 3,310 employees evaluated in the SWEIS. Although the current total employment of 4,194 and expected future employment of approximately 4,000 are outside the bounds of the 3,800 employees analyzed in the SWEIS, this 5 to 10 percent increase is not a major change. | | | |
| **Waste Management**, cubic meters (cubic yards) per year | | | |
| Low-level radioactive | 249 (326) | 66.1 (86.4) | 85.2 (111.5) |
| Low-level mixed | 183.2 (239.6) | 0.2 (0.3) | 1.64 (2.2) |
| Hazardous | 192.3 (251.4) | 701.7 (917.8) | 601.2 (786.4) |
| Nonhazardous | 1,388.1 (1,815.5) | 9,786.2 (12,800.4) | 10,425.7 (13,636.8) |
| **Comparison to the SWEIS:** Hazardous waste and nonhazardous waste generation are expected to exceed the SWEIS projections. | | | |
| **Transportation** | | | |
| Annual weapons transports | 2,000 | 807 | 1,005 |
| **Comparison to the SWEIS:** Transportation impacts would continue to be bounded by the analyses presented in the SWEIS: the annual weapons transports over the next 5 years are expected to remain within estimates made in the SWEIS. | | | |
| **Human Health** | | | |
| Annual dose to maximally exposed offsite individual, millirem[k] | $5.8\times10^{-5}$ | $4.28\times10^{-9}$ to $5.02\times10^{-3}$ (1996 to 2006) | $1.85\times10^{-5}$ |
| Annual dose to the general population, person-rem | $1.33\times10^{-4}$ | $2.56\times10^{-8}$ to $1.14\times10^{-2}$ (1996 to 2006) | $4.94\times10^{-6}$ |
| Average worker dose, rem | 0.10 | 0.012 | 0.012 |
| **Comparison to the SWEIS:** Impacts on human health are expected to remain very small. Because activities over the next 5 years are expected to be similar to past activities, doses to the public are expected to remain very small and similar to or less than indicated in the SWEIS. The historic measured and projected worker doses are essentially the same as indicated in the SWEIS. | | | |

**Table 2–1. Summary Comparison of Impacts Indicators (continued)**

| Resource Area | Impacts Indicators from the SWEIS (Based on 2,000-Weapons Level) | Impacts Indicators in this SA | |
|---|---|---|---|
| | | Current Values | 5-Year Future Projection (2007 to 2011) |
| **Facility Accidents** | | | |
| Accident scenarios | 11 accident scenarios | Accident scenarios have remained the same as the SWEIS, except that the frequency for 3 accidents has increased. | Accident scenarios have remained the same as the SWEIS, except that the frequency for 3 accidents has increased. |
| Population within 80-kilometer (50-mile) radius | 267,107 | 295,911 | 327,602 |
| Distance to maximally exposed offsite individual | Varies by onsite release location. | Varies by onsite release location. | Varies by onsite release location. |
| Dose to latent cancer fatality conversion factor | 0.0004 for workers 0.0005 for public | 0.0006 for both | 0.0006 for both |
| **Comparison to the SWEIS:** The consequences and risks from facility accidents remain very small, and would not be substantially different from those presented in the SWEIS. | | | |
| **Environmental Justice** | | | |
| ROI minority population | 50,750 | 62,141 | 68,796 |
| ROI low-income population | 40,066 | 41,427 | 45,864 |
| **Comparison to the SWEIS:** The projected human health risks from normal operations and facility accidents over the next 5 years are expected to remain very small. Therefore, no disproportionate, adverse impacts on minority or low-income populations are expected. | | | |

[a] The 3,683 hectares (9,100 acres) total for the main plant area used in the SWEIS is the legal description that was surveyed to include the land to the center of all public roadways surrounding the site. This value differs from the area derived from the sum of the different land use categories that do not measure to the center of the roadways.

[b] Total may not equal 100 percent due to rounding.

[c] This description is based on DOE 1996c:3-148, 3-149.

[d] Reflects temporary soil disturbance from new facility construction from 1996 through 2007.

[e] DOE 1996a:4-147 (Table 4.7.2.1-3 for 2,000-weapons level, nonmobile sources).

[f] BWXT Pantex 2007b.

[g] The SWEIS presents $SO_2$ emissions from the Burning Ground upgrade.

[h] A sound pressure level of 130 dBP is the level at which persons may begin to voice serious complaints concerning noise events (CHABA 1981).

[i] Grasslands include areas designated Grazing and Mixed Use on Figures 2–2 and 2–3.

[j] Total sites identified/number of sites determined to be potentially eligible for listing on the NHRP.

[k] Maximum exposed offsite individual distance varies depending on operations occurring during a calendar year and may range from 1,083 meters (3,553 feet) to 4,412 meters (14,476 feet) (BWXT Pantex 2007b).

**Note:** Totals may not equal the sum of the contributions due to rounding.

**Key:** CO=carbon monoxide; CRMP=Cultural Resource Management Plan; dBP=decibels, peak sound level; FS=firing site; HAP=hazardous air pollutant(s); HCl=hydrogen chloride; HCN=hydrogen cyanide; HF=hydrogen fluoride; M=million; M&O=management and operations; NH=ammonia; $NO_x$=nitrogen oxides; NRHP=National Register of Historic Places; PM=particulate matter, suspended in the atmosphere; $PM_{10}$=particulate matter with an aerodynamic diameter less than or equal to 10 microns; ROI=region of influence; $SO_2$=sulfur dioxide; SWEIS=*Pantex Plant Site-Wide Environmental Impact Statement*; TSP=total suspended particulates; VOC=volatile organic compound(s).

## 2.2 Comparison of Impacts

This section provides more detailed analyses for those resource areas requiring further analysis to determine the significance of identified impacts relative to the impacts identified in the SWEIS.

### 2.2.1 Facilities Infrastructure

As presented in the SWEIS, the 1996 facilities infrastructure comprised 476 buildings that housed major missions and had a collective footprint of 230,674 square meters (2,483,020 square feet), as well as an additional 144 support structures with a footprint of 39,928 square meters (429,780 square feet) (DOE 1996a:4-9). These components total 620 structures with a total floor space of 270,602 square meters (2,912,800 square feet). The SWEIS also noted there were 76 kilometers (47 miles) of roads within the Pantex Plant boundary (DOE 1996a:4-10); however, no projections were included for future roadway construction.

The SWEIS projected construction of an additional 15,900 square meters (171,160 square feet) of facilities to support proposed projects (DOE 1996a:4-35). If implemented, those projects would have increased the total Pantex Plant footprint to 626 buildings and structures with a floor space of 286,502 square meters (3,083,960 square feet). However, only the HWTPF and Pit Reuse Facility were constructed. The HWTPF added about 2,650 square meters (28,500 square feet) of floor space, equal to a 1-percent increase in facility area. The Pit Reuse Facility added only about 464.5 square meters (5,000 square feet) of new floor space.

In June 2005, the Pantex Facilities Information Management System reported 641 buildings with a total floor space of 269,897 square meters (2,905,147 square feet) (BWXT Pantex 2005:2-2, 4-12). Subsequently, DOE/NNSA instituted a program to validate the square footage of all buildings at the Pantex Plant. The fiscal year 2006 survey reported fewer buildings (638) on site, with more facility floor space (284,823 square meters [3,065,809 square feet]) (BWXT Pantex 2007d:2-2).

After taking credit for excess facilities that have been or will be demolished, total net floor space at the Pantex Plant is projected to grow to 289,534 square meters (3,116,515 square feet), including 8,145 square meters (87,670 square feet) of leased space, or by about 4,711 square meters overall (50,706 square feet) by the end of fiscal year 2011 (BWXT Pantex 2007d:E-15). Areas disturbed by facility demolition would either be reused for new facility construction or remain in a relatively disturbed condition (a facility may be demolished down to its slab, but not completely removed). Using this accounting method, the net increase in floor space by 2011 would exceed the projection in the SWEIS by about 1 percent.

Based on fiscal year 2006 data (BWXT Pantex 2007d:2-2), there are approximately 88 linear kilometers (55 miles) of paved roads, an increase of about 17 percent in roadway infrastructure. Because new facilities would be located in existing developed areas of the site, only minimal additional road construction would be expected, and associated impacts between 2007 and 2011 would be negligible.

### 2.2.2 Land Resources

The Pantex Plant consists of 4,119 hectares (10,177 acres) of land, including 3,683 hectares (9,100 acres) in the main plant area and 436 hectares (1,077 acres) approximately 4 kilometers (2.4 miles) to the northeast, at Pantex Lake. Additionally, 2,347 hectares (5,800 acres) of land south of the main plant area are leased from TTU for use as a safety and buffer zone. This buffer zone includes the Texas Tech Research Farm, of which 405 hectares (1,000 acres) are farmland. About 3,270 hectares (8,070 acres) of agricultural land within the main plant area and Pantex Lake are owned by DOE but managed by TTU

through a service agreement. The most recent estimates of area used for agriculture on the Pantex Plant, including Pantex Lake, are: pasture/grasslands (including playas), 1,352 hectares (3,341 acres); fallow, 797 hectares (1,970 acres); and winter wheat, 440 hectares (1,087 acres) (BWXT Pantex 2007c:10-13).

The SWEIS predicted that land resources would remain constant at the Pantex Plant, with continued leasing of land from TTU for security and safety reasons. The SWEIS also noted that management plans for the playas and surrounding areas were being implemented as a best management plan to protect cultural and natural resources (DOE 1996a:4-24). Such plans have been developed and implemented (BWXT Pantex 2002).

In accordance with DOE Policy 430.1, "Land and Facility Use Planning," DOE/NNSA has prepared land use classification maps for both the Pantex Plant and Pantex Lake, Figures 2–2 and 2–3 of this SA, respectively. Land use at the site is categorized as Operations, Mixed Use, Cultivation, Grazing, and Undeveloped. Operations areas include those areas that are actively used to support the site mission. Mixed Use includes land that is used for operational purposes during some portion of the year but is otherwise available for grazing. The playas are included within the Grazing classification. Undeveloped land is land that is not otherwise classified.

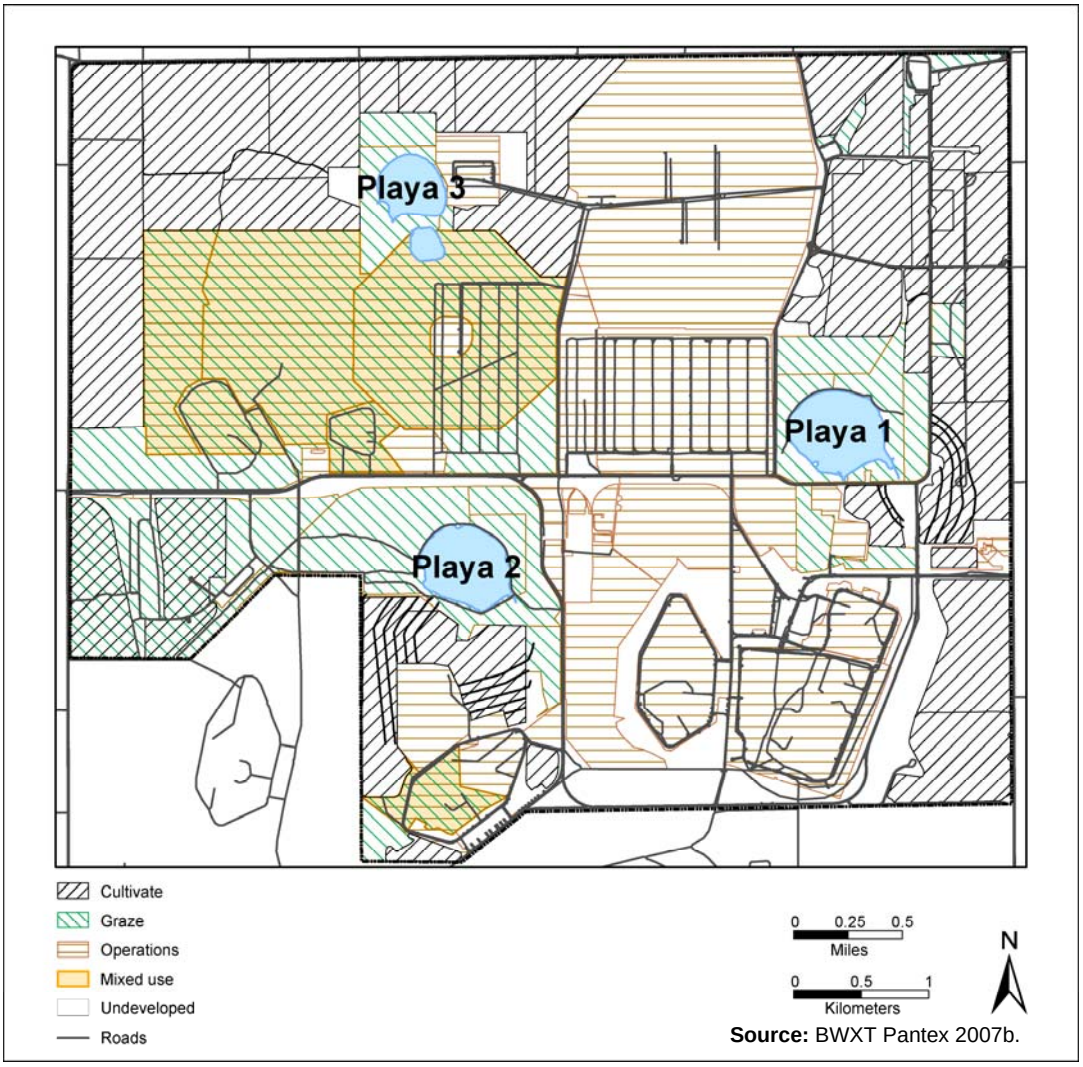



**Figure 2–2. Land Use Classification Map for Pantex Plant**

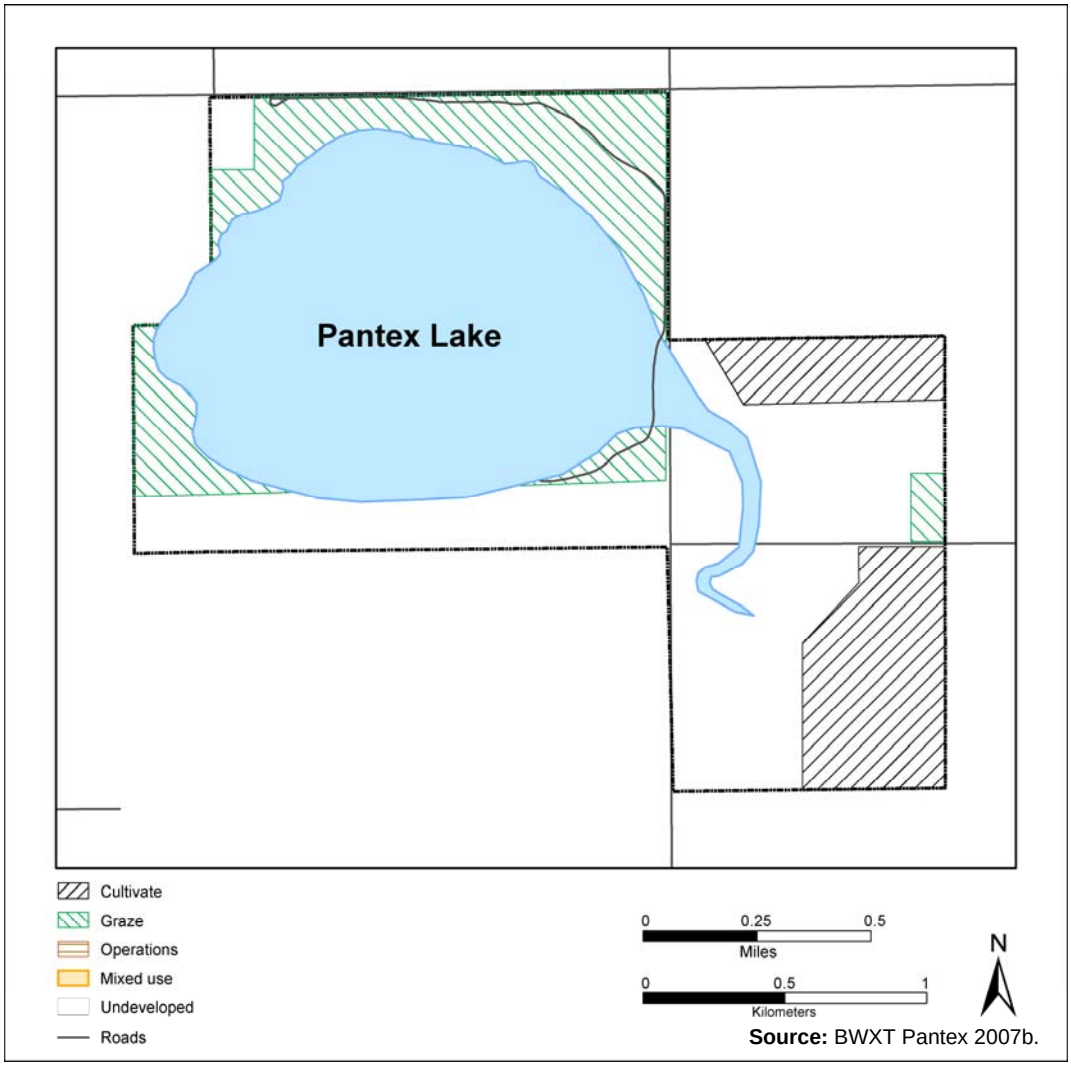



**Figure 2–3. Land Use Classification Map for Pantex Lake**

Table 2–2 presents a comparison of current and future land use with that evaluated in the SWEIS. Current conditions within the main plant area reflect changes in land use that have occurred since publication of the SWEIS, including conversion of 3.2 hectares (8 acres) from Grazing to Operations as a result of construction of the Wastewater Treatment Facility Upgrade (DOE/NNSA 2003a:3-4). Also, the designation of 222.6 hectares (550 acres) has been changed from Cultivation to Mixed Use to provide more flexibility for site operations. However, this area is used for operational purposes only part of the year and is available for grazing the rest of the year (BWXT Pantex 2007b). Other projects initiated within the main plant area since publication of the SWEIS have been located primarily within areas designated as Operations.

**Table 2–2. Comparison of Current and Future Land Use with the SWEIS**

| Land Use Category | SWEIS (Based on 2,000 Weapons Level) hectares (acres) | | Current Area | | 5-Year Future Projection (2007 to 2011) | |
|---|---|---|---|---|---|---|
| | | | hectares (acres) | percent of total area[a] | hectares (acres) | percent of total area |
| Total main plant area | 3,683 | (9,100)[b] | 3,683 (9,100)[b] | N/A | 4,302 (10,630)[c] | N/A |
| Operations | The SWEIS does not include a breakdown by land use category. | | 947 (2,339) | 26 | 947 (2,339) | 22 |
| Mixed Use[d] | | | 504 (1,246) | 14 | 504 (1,246) | 12 |
| Cultivation | | | 1,189 (2,939) | 33 | 1,440 (3,558) | 34 |
| Grazing[e] | | | 535 (1,322) | 15 | 904 (2,233) | 21 |
| Undeveloped | | | 466 (1,152) | 13 | 466 (1,152) | 11 |

[a] Total may not equal 100 percent due to rounding.

[b] The 3,683-hectare (9,100-acre) total for the main plant area used in the SWEIS is based on the legal description that was surveyed to include the land to the center of all public roadways surrounding the site. This value differs from the area derived from the sum of the different land use categories that do not measure to the center of the roadways.

[c] Total includes 619 hectares (1,530 acres) purchased in 2008.

[d] Mixed Use areas are used for operations and grazing.

[e] Playas and land in the Conservation Reserve Program are included within the Grazing designation.

**Key:** N/A=not available; SWEIS=*Pantex Plant Site-Wide Environmental Impact Statement*.

During the next 5 years, new facilities planned for the Pantex Plant are proposed to be built within areas designated as Operations. However, the Perched Groundwater Corrective Measures Project would be built within areas adjacent to the playa designated Grazing and Agricultural. This project would permanently impact less than 0.4 hectares (1 acre) of land (BWXT Pantex 2007e:5, 7, 8). Another project, the Gas Main and Distribution System Upgrade, would temporarily impact agricultural land both on and off the site. Although this project would disturb 10.6 hectares (26.2 acres) of land off the plant site, 1.9 hectares (4.7 acres) on land leased from TTU, and 7.7 hectares (19.1 acres) within the main plant area, these areas would be restored to their original condition after construction (DOE/NNSA 2005a:10, 11).

In 2008, DOE/NNSA acquired 619 hectares (1,530 acres) of land east of the current site boundary (see Figure 1–2), 251 hectares (619 acres) of which are presently under cultivation. Most of the remainder of this land is set aside under the U.S. Department of Agriculture Conservation Reserve Program. Under the Conservation Reserve Program, enrolled landowners agree to approved conserving uses for their land for 10 to 15 years in exchange for monetary compensation. The land would be used as a safety and security buffer and may also be used for groundwater remediation activities as discussed in the CMS EA. Groundwater monitoring and treatment wells, and center-pivot irrigation systems may be installed on the property (DOE/NNSA 2007c). The acquisition would represent a 17-percent increase in the size of the main plant area. In addition, several options are under consideration for the beneficial use of the property; however, none is expected to appreciably change the current land use.

Additionally, 67 hectares (166 acres) of cultivated land within the main plant area could be converted to grassland within the next 5 years because these areas now are within the recently extended boundaries of solid waste management units. This would result in a 5.6 percent decrease in land under cultivation and a 12.6 percent increase in grazing land.

Land use within 80 kilometers (50 miles) of the Pantex Plant is predominantly agricultural; however, the city of Amarillo is located about 24 kilometers (15 miles) southwest of the site. Although residences are dispersed through much of the area within a 16-kilometer (10-mile) radius around the Pantex Plant, nearly half are located east of the plant in the city of Panhandle. Lake Meredith National Recreation Area is about 40 kilometers (25 miles) northwest of the site (BWXT Pantex 2007c:10-2, 10-21, 10-41).

Land use within an 80-kilometer (50-mile) radius around the Pantex Plant is expected to remain relatively unchanged over the next 5 years. That is, the area is expected to remain rural in character, with agriculture the primary land use.

### 2.2.3 Visual Resources

Because the SWEIS did not address visual resources, the following description of Pantex Plant visual resources is taken from the *Storage and Disposition of Weapons-Usable Fissile Materials Final Environmental Impact Statement* (S&D PEIS) (DOE 1996c), which was prepared at approximately the same time as the SWEIS.

The Pantex Plant is located in the treeless Southern High Plains of Texas where the landscape typically consists of cultivated land and rangeland. The main plant area is made up of operational and inactive facilities surrounded by cropland and rangeland that blend into the offsite viewscape. The most visible and sensitive vantage point for the Pantex Plant facilities is located 2.4 kilometers (1.5 miles) southeast of the main plant area at the intersection of U.S. Route 60 and FM 2373. U.S. Route 60 is part of the Texas Plains Trail, a scenic road on which the Pantex Plant is a designated point of interest. From this road, parts of the plant are visible as a cluster of low buildings on a flat landscape. The most visible structure is the 20-meter (65-foot) water tower located in Zone 11. The tallest structure on the site is the 60-meter (197-foot) meteorological tower located in the northeast part of the site. It is not visible from the intersection of U.S. Route 60 and FM 2373. The Pantex Plant is well defined at night by security lights. When viewed from a rest area located 10 kilometers (6.2 miles) to the south along Interstate 40, Pantex Plant facilities make up a minor part of the landscape (DOE 1996c:3-148, 3-149).

Changes in the viewscape since publication of the SWEIS have been negligible. Although a number of new structures have been constructed, they are similar in size and appearance to existing facilities and therefore are consistent with the existing visual character of the site. Additionally, the demolition of a number of buildings has not changed the overall appearance of the Pantex Plant.

During the next 5 years, several new facilities are expected to be constructed at the Pantex Plant (see Appendix A, Table A–3 of this SA). These new facilities would be similar in size and appearance to existing structures. Removal of older buildings is expected to continue during the next several years, but would have only a negligible impact on the viewscape. Upgrades to the gas main and distribution system would cause temporary visual impacts during placement of new pipelines; however, the disturbed areas would be restored to their present condition after construction. Also, the Perched Groundwater Corrective Measures Project would cause temporary visual impacts during well drilling operations and the placement of new pipelines and access roads. The new treatment facility for this project would have minimum visual impact due to its small size. Thus, even with the construction of new facilities and the removal of older structures, there would be little overall change in the visual character of the site.

### 2.2.4 Acoustics (Sound)

The SWEIS indicates that traffic is the primary source of noise at the Pantex Plant boundary and at residences near roads. Average sound levels (energy equivalent sound levels) on the site are in the range of 40 to 60 decibels A-weighted (dBA). The target range and high-explosive detonations result in impulse noise. As discussed in this section and in the SWEIS, modeling of overpressures from the largest high-explosive detonations at the Pantex Plant indicates that these detonations could be audible at considerable distances off site. Except for airblast noise from high-explosive detonation, noise levels at the site boundary from continued operations would be below the day/night average sound level guideline of 65 dBA for compatibility with residential land uses as defined by the Federal Aviation Administration and the Federal Interagency Committee on Urban Noise. The SWEIS concludes that noise impacts on

nearby noise-sensitive areas (residences) from the usual noise sources at the Pantex Plant are negligible (DOE 1996a:4-157–4-168).

Although there have been temporary increases in noise levels and traffic from construction and demolition of facilities at the Pantex Plant, these activities and operation of facilities result in noise levels similar to those analyzed in the SWEIS and would not cause sufficient change in noise levels to result in annoyance to the public. Similarly, construction activities proposed for the period 2007 to 2011 would result in some temporary increase in noise levels and construction traffic, but these activities are expected to be similar to other construction activities at the Pantex Plant and would not be expected to cause sufficient change in noise levels to result in annoyance to the public. Operation of these new or modified facilities is expected to result in minimal change in offsite noise impacts.

The SWEIS considers the acoustic effects of detonations in open air of explosive charges of up to 24.9 kilograms (55 pounds). Open-air explosives testing occurs on the Pantex Plant site in areas referred to as firing sites. Currently four firing sites are in use, Firing Sites 4, 10, 21, and 22. Figure 1–2 is a site map that identifies the location of key areas of the Pantex Plant, including the firing sites and the two closest residences.

To allow for more operational flexibility and to be able to perform a wider range of tests, an increase in the size of explosive charges has been proposed. An analysis of the acoustic effects of the proposed explosives charges of 70 kilograms (154 pounds) net explosive weight (NEW[4]) for Firing Sites 4 and 10, and 140 kilograms (308 pounds) NEW for Firing Sites 21 and 22 has been performed to assess the noise impacts associated with the detonation of high explosives at the Pantex Plant (SAIC 2008). Acoustic impacts were assessed using the Noise Assessment Prediction System (NAPS) model for both individual events and the effect of multiple events over the course of a year under normal atmospheric conditions. This analysis finds that the controlling offsite receptor is a single residence located northeast of the firing sites. The next closest residence has been included in the analysis to track the sound levels at a more distant but potentially affected receptor as a second point of reference. Table 2–3 shows the distances from each of the firing sites to these residences.

**Table 2–3. Distance to Closest Residences**

| Firing Site | Distance to Closest Residence meters (feet) | Distance to Next Closest Residence meters (feet) |
|---|---|---|
| FS-4 | 965 (3,166) | 1,766 (5,799) |
| FS-10 | 1,220 (4,003) | 2,123 (6,964) |
| FS-21 | 3,304 (10,839) | 3,306 (10,848) |
| FS-22 | 1,697 (5,566) | 2,385 (7,825) |

**Key:** FS=firing site.

Sound level impacts may be characterized by both societal and physiological effects. A peak sound pressure level of 130 dBP is associated with the generation of structural vibration audible to a residential occupant. The 140 dBP peak sound pressure level is the upper limit of environmental characterization where transient annoyance is the driving consideration into the realm of safety where hearing protection may be called for. Table 2–4 depicts the quantities of NEW that can be detonated at each firing site without exceeding 130 and 140 dBP at the two closest residences under normal atmospheric conditions. With respect to the closest residence, it should be noted that the higher weights are associated with lower

[4] Net explosive weight (NEW) is a term used to provide a common basis to enable comparison of various types of explosives; for example, 0.45 kilograms (1 pound) of NEW represents 0.59 kilograms (1.3 pounds) of trinitrotoluene (TNT). Sound level calculations in this SA are based on NEW values.

peak sound pressure levels because Firing Sites 21 and 22 are farther from that residence than are Firing Sites 4 and 10.

**Table 2–4. Detonations Resulting in 130 dBP and 140 dBP Peak Sound Levels**

| Firing Site | Closest Residence | | Next Closest Residence | |
|---|---|---|---|---|
| | 130 dBP kilograms (pounds) | 140 dBP kilograms (pounds) | 130 dBP kilograms (pounds) | 140 dPB kilograms (pounds) |
| FS-4 | 13 (28) | 296 (651) | 131 (288) | 3,020 (6,644) |
| FS-10 | 32 (70) | 736 (1,619) | 261 (575) | 6,021 (13,247) |
| FS-21 | 1,472 (3,238) | 33,909 (74,601) | 1,472 (3,239) | 33,909 (74,601) |
| FS-22 | 112 (247) | 2,589 (5,696) | 407 (895) | 9,370 (20,614) |

**Key:** dBP=decibels, peak sound level; FS=firing site.

Unlike the peak sound pressure level metric, the C-weighted noise level (CDNL) considers the effect of multiple noise events over the course of a year, rather than a single event lasting less than 1 second. The CDNL more accurately assesses the perceived loudness of each event, reflecting human sensitivity to individual low-frequency noise events and is an attempt to account for the cumulative effect of noise in a community based on level and prevalence of annoyance. The CDNL 62 decibel-C-weighted sound level (dBC) is the average daily sound level at which 15 percent of residents are likely to be "highly annoyed" by multiple noise events like explosive detonations or gunnery (ANSI 1986). More importantly, the Federal Interagency Committee on Urban Noise (FICON 1980) recommends that residential land use at or above CDNL 62 dBC be evaluated for treatment with acoustical insulation.

Table 2–5 identifies for each firing site the proposed NEW limits, calculated (single-event) peak sound pressure levels (using the NAPS noise model), and the maximum number of detonations that could occur without exceeding the CDNL 62 limit. The indicated peak sound pressure levels are calculated for favorable weather conditions: light winds without temperature inversion. It should be noted that detonations of maximum size at all the firing sites except Firing Site 21 would generate sound levels in excess of 130 dBP at the closest residence, a level that may elicit some complaints. However, Pantex Plant procedures require telephone notification of potentially affected offsite residents, as well as the use of warning sirens and lights prior to detonations greater than 0.45 kilogram (1 pound). Firing Site 21, farther from the residences than the other firing sites, would generate only 122.6 dBP at the closest residence, the threshold at which moderate complaints are possible but unlikely.

**Table 2–5. Prospective Sound Levels at Closest Residences with CDNL 62 Activity Limits**

| Firing Site | Net Explosive Weight kilograms (pounds) | Percent of Acoustic Energy | Closest Residence | | Next Closest Residence | |
|---|---|---|---|---|---|---|
| | | | Single-Event Sound Level (dBP) | CDNL 62 Limit (Shots/Year) | Single-Event Sound Level (dBP) | CDNL 62 Limit (Shots/Year) |
| FS-4 | 70 (154) | 10 | 135.5 | 45 | 128.0 | 252 |
| FS-10 | 70 (154) | 10 | 132.6 | 87 | 125.8 | 417 |
| FS-21 | 140 (308) | 40 | 122.6 | 3,473 | 122.5 | 3,548 |
| FS-22 | 140 (308) | 40 | 130.8 | 529 | 126.6 | 1,380 |

**Key:** CDNL=C-weighted noise level; dBP=decibels, peak sound pressure level; FS=firing site.

The fifth and seventh columns of Table 2–5 identify the number of maximum weight shots that may be fired each year at each firing site without exceeding the CDNL 62 dBC at either residence based on the distribution of emitted acoustic energy specified in the table. In other words, if the sound emitted from all four firing sites over the course of a year is added together, the combined effect will not exceed the 62-dBC criterion at either residence. A total of 4,134 tests a year may be conducted without exceeding the CDNL 62 limit at the closest residence (5,597 tests may be conducted if only the second residence is considered). This represents 29 percent more tests at much higher charge weights than the

3,200 detonation events involving a total quantity of approximately 250 kilograms (550 pounds) NEW performed at Pantex Plant in 2006. The indicated acoustic capacity is valid only under conditions where all shots are at the maximum weight proposed. Lighter charges would use less capacity, but a higher number of lower weight charges should not be substituted for the weights assessed without additional analysis—the relationships between the number of blast events, charge weight, and sound level are logarithmic. Simple trading of weights for shots is arithmetic, and therefore, would not provide the correct result.

Figure 2–4 depicts the relationship between the size of explosive charges proposed to be detonated at the Pantex Plant firing sites and the estimated sound levels at the closest residence. The figure illustrates that large increases in NEW result in only small increases in sound level once a threshold value exceeds about 11.4 kilograms (25 pounds) NEW.

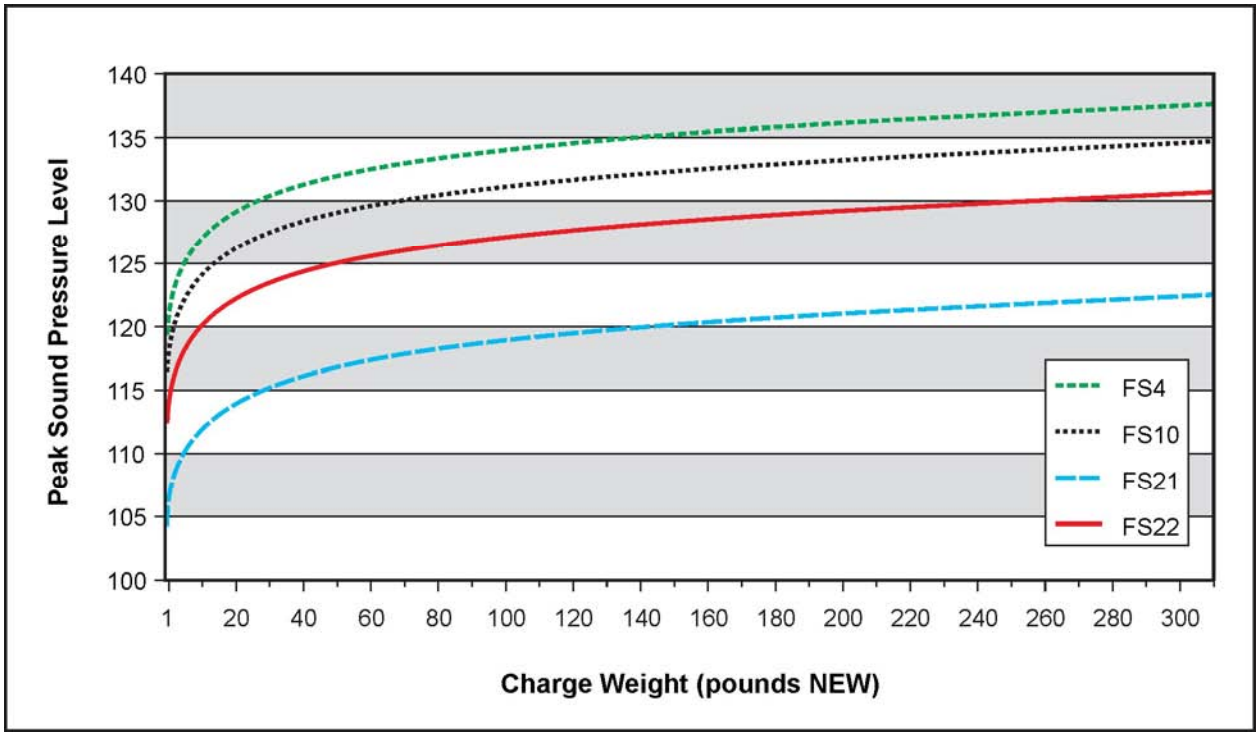



**Figure 2–4. Noise Level at Closest Residence as a Function of Charge Weight**

The aforementioned noise levels and shot capacities reflect the normal to favorable weather conditions that prevail over 90 percent of the time during daylight hours. (As previously indicated, explosives are not detonated in open air at night at Pantex Plant.). There is a possibility that rare wind and temperature could result in adverse weather conditions that could affect the predicted noise levels. If wind is blowing directly from a firing site toward a residence, predicted sound levels would tend to increase; when blowing away from the residence, predicted sound levels would decrease. To a lesser degree, when air temperature rises with altitude above the surface (inversion), predicted sound levels would also tend to increase at the residence. The combined influence of both temperature inversion and wind could increase predicted levels by as much as 7 to 10 dBP, indicating the potential for levels to exceed 140 dBP on the rare occasions when weather conditions favor the refraction of sound waves back to the ground.

It is recommended that detonations that would cause peak sound pressure levels to exceed 140 dBP be avoided, if possible, because hearing protection is prescribed by the Occupational Safety and Health Administration for workplace exposures at or above this level. In accordance with Pantex Plant Facility Procedure F6-5700, current local meteorological data is used to evaluate conditions prior to commencing

detonations. Should conditions be acceptable for a given detonation except for the potential for adverse sound propagation, one of the following two conservative actions could be taken to ensure that resultant sound levels at the closest residences would be within acceptable levels:

(1) Limit shots for Firing Sites 4, 10, and 22 to not more than 40 percent of the maximum proposed weight, when both temperature inversion and adverse wind direction are indicated (no restrictions are required for Firing Site 21), or

(2) For wind speeds less than 40 kilometers (25 miles) per hour, if there is no temperature inversion, detonations up to the proposed limits may be conducted irrespective of wind direction.

### 2.2.5 Waste Management

As indicated in the SWEIS, waste is primarily generated from ongoing assembly and dismantlement of nuclear weapons and high-explosives production. Waste is also generated from support operations such as medical services, laboratory operations, and maintenance, administration, construction, and environmental monitoring and restoration activities (DOE 1996a:4-229). Types of wastes generated at the Pantex Plant include low-level radioactive waste, low-level mixed waste, hazardous waste, and nonhazardous waste. Other solid wastes identified in the SWEIS include polychlorinated biphenyls (PCB), asbestos, and medical wastes. Transuranic and mixed transuranic wastes are not normally generated at the Pantex Plant, and no high-level radioactive wastes have been or are expected to be generated (DOE 1996a:4-232).

Low-level radioactive waste and low-level mixed waste are stored at the Pantex Plant until they are either treated on site, shipped off site for treatment at a permitted treatment facility, or disposed of at the Nevada Test Site or other permitted disposal facility. Low-level mixed waste is managed in accordance with the Agreed Order and Site Treatment Plan and Compliance Plan (DOE 1995a) and the applicable portions of State Regulation 30 Texas Administrative Code (TAC) 335, and Pantex Plant Hazardous Waste Permit No. 50284 (DOE 1996a:4-233, 4-235; TCEQ 2005).

Hazardous waste is managed in accordance with the applicable portions of 30 TAC 335, and Pantex Plant Hazardous Waste Permit No. 50284 (TCEQ 2005). Hazardous waste may be stored on site, treated both on and off site, and disposed of off site. Commercial facilities are used for offsite treatment and disposal. Nonhazardous waste, which includes both sanitary and industrial solid wastes, is accumulated and stored on site and treated both on and off site. Certain construction debris is disposed of in an onsite landfill. All other nonhazardous waste is recycled or disposed of off site at permitted disposal facilities. Nonhazardous waste is managed in accordance with State Regulation 30 TAC 335 and is divided into three classes (DOE 1996a:4-236, 4-238). Class 1 wastes do not meet the definition of hazardous waste under the Resource Conservation and Recovery Act (RCRA), but do exceed state-specified levels for hazardous contaminants. Examples of Class 1 waste include wastes subject to the Toxic Substances Control Act (TSCA) (15 U.S.C. 2601) such as asbestos, PCBs with a concentration greater than 50 parts per million, and petroleum products with a total petroleum hydrocarbon concentration greater than 1,500 parts per million. Class 3 waste is inert, essentially insoluble, and poses no threat to human health and/or the environment. Examples of Class 3 waste include bricks, concrete, glass, dirt, and certain plastics and rubber items that are not readily degradable. Class 2 wastes are defined by the state as nonhazardous waste that are not Class 1 or Class 3 wastes. Class 2 wastes do not exceed state-specified levels of hazardous contaminants, but may not be inert or insoluble (BWXT Pantex 2007c:14-11, 14-13).

Table 2–6 shows SWEIS projections for annual waste generation for the environmental restoration program and for the 2,000-weapons level. The SWEIS also estimates that pit storage activities would generate less than 1 cubic meter (1.3 cubic yards) each of low-level radioactive waste, low-level mixed

waste, hazardous waste, and nonhazardous waste annually and indicates that the amount of waste generated would not affect waste management activities (DOE 1996a:4-240).

**Table 2–6. SWEIS Annual Waste Projections for Environmental Restoration and Weapon-Related Activities[a, b, c]**

| Waste Type | Environmental Restoration Annual Waste Generation[d, e] | 2,000-Weapons Level Annual Waste Generation | Total Waste Generation |
|---|---|---|---|
| Low-level radioactive | 0 (0) | 249 (326) | 249 (326) |
| Low-level mixed | 0 (0) | 183.2 (239.6) | 183.2 (239.6) |
| Hazardous | 0.7 (0.9) | 191.6 (250.5) | 192.3 (251.4) |
| Nonhazardous | 72.5 (94.8) | 1,315.6 (1,720.7) | 1,388.1 (1,815.5) |

[a] Waste volumes are reported in cubic meters (cubic yards).

[b] Table excludes polychlorinated biphenyl, asbestos, and medical waste.

[c] Table includes a 10 percent margin to provide conservative estimates.

[d] The SWEIS assumed that nonhazardous liquid waste and hazardous liquid waste would continue to be produced at this level beyond fiscal year 2000. No solid waste from environmental restoration activities was projected.

[e] Assumes 1,000 liters equals 1 cubic meter.

**Key:** SWEIS=*Pantex Plant Site-Wide Environmental Impact Statement*.
**Source:** DOE 1996a:Tables 4.13.1.2-2 and 4.13.1.2-3.

The SWEIS analyzed various planned improvements to waste management operations, as well as construction and operation of six new facilities. The proposed new facilities were expected to generate the same types and quantities of waste as the existing facilities that would be replaced; therefore, their operational impacts would not change and the waste generated would not affect the Pantex Plant waste management infrastructure (DOE 1996a:4-241).

If no offsite disposal were provided for the estimated generation of low-level mixed waste at the 2,000-weapons level, the SWEIS predicted that additional waste storage capacity would be required in 2004. However, future offsite disposal was predicted to reduce low-level mixed waste inventories, and thus, impacts on waste operations. It was assumed in the SWEIS that low-level radioactive waste would continue to be shipped routinely throughout the year and that no additional storage capacity would be required. The SWEIS estimated that treatment and processing of low-level mixed waste, low-level radioactive waste, and hazardous waste at the HWTPF would begin in 2001. Depending on the treatment and processing techniques chosen, the volume of waste could either increase or decrease, which would affect the number of shipments to offsite facilities. However, minimal impacts were expected because treatment and processing capacities were greater than the expected generation rates. The SWEIS estimated minimal impacts on nonhazardous waste management because the amount of nonhazardous waste projected would be below historic generation rates. No additional waste management facilities or modification of existing waste management facilities were planned to support environmental restoration wastes; current facilities were planned to be used. Minimal impacts from projected environmental restoration wastes were expected because they represent less than 3.8 percent of waste generated from operations after 1999 (DOE 1996a:4-241, 4-242). The Pantex Plant has an active pollution prevention program that includes using process information flows and pollution prevention opportunity assessments to determine cost-effective means to reduce or eliminate wastes (BWXT Pantex 2007c:14-2).

Table 2–7 compares the projected waste generation rates shown in Table 2–6 with waste generation rates for 2003 through 2006. The volumes of both low-level radioactive waste and low-level mixed waste currently and projected to be generated are well below the levels projected in the SWEIS. These small volumes of low-level radioactive waste and low-level mixed waste primarily result from weapon-related activities (BWXT Pantex 2006c:2-15). Low-level radioactive waste includes compactable materials such as wipes, personal protective equipment, filters, and similar materials, as well as noncompactible materials such as high-efficiency particulate air (HEPA) filters and various packing materials. By the end

of 2006, approximately 54 cubic meters (70 cubic yards) of low-level radioactive waste were in onsite storage awaiting shipment for disposal. This is 88 percent less than the amount of low-level radioactive waste in storage in 1995. Most low-level radioactive waste is shipped to the Nevada Test Site for disposal, although low-level radioactive waste also may be shipped to commercial disposal facilities (BWXT Pantex 2007c:14-4 to14-5; DOE 1996a:4-233).

**Table 2–7. Comparison of 2003 to 2006 Waste Generation Rates with the SWEIS**[a, b]

| Waste Type | 2,000-Weapons Level and Environmental Restoration Annual Waste Generation from the SWEIS | Actual Waste Generation | | | | Change in 2006 Waste Generation versus the SWEIS |
|---|---|---|---|---|---|---|
| | | 2003 | 2004 | 2005 | 2006 | |
| Low-level radioactive | 249 (326) | 58.0 (75.9) | 73.1 (95.6) | 74.0 (96.8) | 66.1 (86.4) | −73 percent |
| Low-level mixed | 183.2 (239.6) | 0.62 (0.8) | 2.5 (3.3) | 1.4 (1.8) | 0.2 (0.3) | −100 percent |
| Hazardous | 192.3 (251.4) | 6,725 (8,796) | 258.1 (337.6) | 543.6 (711) | 701.7 (917.8) | +264 percent |
| Nonhazardous | 1,388.1 (1,815.5) | 10,863 (14,210) | 4,625.6 (6,049) | 4,873.6 (6,374.4) | 9,786.2 (12,800.4) | +605 percent |
| Toxic Substance Control Act[c] | Not estimated | 415.1 (542.9) | 1,132.9 (1,481.8) | 1,556.7 (2,036.1) | 112.5 (147.2) | Not applicable |

[a] Waste volumes are reported in cubic meters (cubic yards).

[b] Table excludes medical waste, but includes waste from environmental restoration activities.

[c] The SWEIS excluded Toxic Substance Control Act waste from its projections.

**Key:** SWEIS=*Pantex Plant Site-Wide Environmental Impact Statement*.

**Sources:** BWXT Pantex 2006c:Table 2–6; DOE 1996a:Tables 4.13.1.2-2 and 4.13.1.2-3.

Most low-level mixed waste generated at the Pantex Plant consists of inorganic debris contaminated with solvents, heavy metals, and low levels of radionuclides. Currently, all low-level mixed waste generated at the Pantex Plant has identified treatment and disposal paths. The volume of low-level mixed waste in inventory at the Pantex Plant at the end of 2006 was 0.21 cubic meters (0.28 cubic yards), 99 percent less than the amount in storage in 1995 (BWXT Pantex 2007c:14-5; DOE 1996a:4-233).

Hazardous waste includes compactable materials (such as contaminated personal protective equipment, wipes, and absorbent pads); heterogeneous material (such as waste from sanitized weapons components and other miscellaneous solids); and liquids (such as liquids contaminated with solvents, high explosives, or heavy metals) (BWXT Pantex 2007c:14-9). Hazardous waste generation rates since issuance of the SWEIS, including universal waste as defined by the Texas Commission of Environmental Quality, have been consistently higher than the estimates in the SWEIS. In particular, the amount of hazardous waste generated in 2003 was 35 times higher than projected in the SWEIS. Typically, hazardous waste generated at the Pantex Plant includes explosives-contaminated solids, spent organic solvents, solids contaminated with spent organic solvents, and/or metals. Some hazardous waste, such as explosives, is processed on site before the process residue is shipped off site for treatment and disposal. Construction projects, environmental restoration projects, and deactivation and decommissioning of excess facilities contribute to variability in the hazardous waste generation rate from year to year (BWXT Pantex 2006c:2-14). Much of the hazardous waste is recycled by commercial vendors and is not sent for treatment and disposal. For example, in 2006, of the 701 cubic meters (917 cubic yards) of hazardous waste generated, 638 cubic meters (829 cubic yards), 91 percent, was recycled, leaving only 63 cubic meters (82 cubic yards) requiring treatment and disposal, which is well below the SWEIS projection (BWXT Pantex 2007f). The amount of hazardous waste in onsite storage can be expected to fluctuate due to construction and deactivation and decommissioning activities.

As shown in Table 2–7, nonhazardous waste generation rates have exceeded the rates projected in the SWEIS. Waste from construction activities, environmental restoration projects, and deactivation and decommissioning of excess facilities comprise a major portion of the nonhazardous waste generated. Approximately 20 percent of the nonhazardous waste generated in 2006 was recycled (BWXT Pantex 2007f).

Asbestos materials are the primary constituents of TSCA waste generated at the Pantex Plant. Abatement activities associated with building repair, modification, or deactivation and decommissioning activities result in the short-term accumulation of such wastes. Only small amounts of PCB-contaminated waste are generated (BWXT Pantex 2007c:14-14). This waste is disposed of off site.

Medical waste is generated at the Pantex Plant, but waste projections for this waste category were not provided in the SWEIS. Medical waste is a special waste as defined in 30 TAC 330 that is generated by health-care-related activities. The Pantex Plant currently generates approximately two boxes of medical waste per week, each with a capacity of 0.142 cubic meters (5 cubic feet), for total annual generation of approximately 14.7 cubic meters (520 cubic feet). Medical waste is disposed of off site at a permitted commercial facility (BWXT Pantex 2007c:14-14).

Several changes to waste management facilities and operations have occurred since the publication of the SWEIS. The HWTPF, which was in the planning stages at the time of the SWEIS, was constructed and is operational. Functional elements of the HWTPF include waste processing areas and disintegrators/shredders for processing sensitive and classified paper, weapons components, and computer-related equipment and storage media. Treatment technologies may include size reduction, compaction, solidification, micro-encapsulation, neutralization, carbon filtration, and amalgamation. In addition, sorting, surveying, repackaging, and other processing activities may be used. Also within the HWTPF is a water evaporator used for distillation of process water that contains tritium above detection limits, but below the drinking water standard. A separate liquid processing facility is used to treat scintillation fluids and for miscellaneous waste accumulation (BWXT Pantex 2007c:14-19).

The Burning Ground Upgrade involved design and construction of a new open-air burner called the Flash Chamber. Completed in 1997 and fully operational in 1998, it replaced burning pits and cages that had no provision for rainwater protection (BWXT Pantex 2007c:14-18). Building 11-9N, previously used for storage of hazardous waste, low-level mixed waste, and low-level radioactive waste, was removed from service and underwent RCRA closure (BWXT Pantex 2007f; DOE/NNSA 2003:2-32). Storage and operations activities were moved to Building 16-16, the Hazardous Waste Staging Facility, and the HWTPF. Magazines 4-46 and 4-74, previously permitted to store hazardous waste, and Conex boxes, previously permitted to store low-level radioactive waste and hazardous waste have undergone RCRA closure (DOE/NNSA 2003:2-32). Two prefabricated steel buildings designed for hazardous material storage, identified as Buildings 9-121 and 9-122, have been installed and are authorized for container storage of wastes. Building 10-40 Pad, which was used as a less than 90-day waste accumulation site and for storing scrap metal, was removed from service and underwent closure. The 10-3 Pad is now used for management of scrap metal and other waste management functions.

Generation rates for the next 5 years for low-level radioactive waste and low-level mixed waste are expected to remain similar to the 2003 through 2006 generation rates presented in Table 2–7. Relatively large fluctuations in hazardous waste, nonhazardous waste, and TSCA waste are expected to continue within the range identified in Table 2–7 for 2003 through 2006 due to continued construction, environmental restoration, and deactivation and decommissioning activities.

Low-level radioactive waste and low-level mixed waste generation rates are expected to remain well below volumes predicted for the 2,000-weapons level identified in the SWEIS. While hazardous waste and nonhazardous waste generation are expected to continue to exceed the SWEIS projections, hazardous waste and nonhazardous waste storage and disposal practices are adequate to manage these waste streams. Recycling and other pollution prevention techniques are expected to continue to minimize waste. Because treatment and disposal options are available for all of the waste streams and increases in current waste generation rates are expected to be manageable, no major impacts on the waste management infrastructure are expected. Likewise, there would be only negligible impacts on disposal sites or related to transportation of wastes.

# Chapter 3
# Cumulative Impacts

Council on Environmental Quality regulations (40 CFR 1508.7) define cumulative impacts as "the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." This section reviews the cumulative impact analysis presented in the SWEIS relative to subsequent programmatic decisions and the updated resource area impacts identified in this SA.

## 3.1 Cumulative Impacts Analysis in the SWEIS

The cumulative impacts analysis in the SWEIS considered the impacts of continued Pantex Plant operations at the 2,000-weapons level and the storage of 20,000 pits when added to the impacts at the Pantex Plant from the activities proposed in the *Final Programmatic Environmental Impact Statement for Stockpile Stewardship and Management* (SSM PEIS) (DOE 1996d), S&D PEIS, and the *Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste* (*Waste Management PEIS*) (DOE 1995b). Each of these programmatic documents addresses activities that were planned or under way at the Pantex Plant when the SWEIS was issued. As the following discussion indicates, the cumulative impacts from these activities are expected to remain within the bounds of the cumulative impacts analysis presented in the SWEIS.

**SSM PEIS.** The SWEIS considered the potential impacts associated with three SSM PEIS alternatives involving the Pantex Plant: No Action, Downsize Existing Capability, and Relocate Capability. The SWEIS indicates there would be no significant cumulative impacts at the Pantex Plant associated with the alternative to Downsize Existing Capability (DOE 1996a:4-355), the alternative subsequently selected in the SSM PEIS ROD (61 FR 68014).

**S&D PEIS.** The SWEIS considered the potential siting, construction, and operation of new collocated fissile material (plutonium and highly enriched uranium) storage and plutonium disposition facilities at the Pantex Plant as bounding alternatives that are associated with potential S&D PEIS activities. The SWEIS identified potential contributions to cumulative impacts from activities analyzed in the S&D PEIS for the following resource areas: onsite utilities, land resources, water resources, air quality, biotic resources, cultural resources, socioeconomic resources, and waste management.

The S&D PEIS ROD (62 FR 3014) selected the Pantex Plant as the site for consolidated storage of plutonium pits, but did not select Pantex Plant for any other facilities or activities. Likewise, the ROD for the tiered *Surplus Plutonium Disposition Environmental Impact Statement* (65 FR 1608) did not select Pantex Plant for any other surplus plutonium disposition facilities or activities. Therefore, the potential cumulative impacts associated with S&D PEIS activities at the Pantex Plant would be expected to be less than those presented in the SWEIS analysis.

***Waste Management PEIS*.** The SWEIS identified that the most adverse impact at the Pantex Plant from proposed *Waste Management PEIS* activities would occur in association with the Decentralized Alternative for treatment and disposal of low-level waste and low-level mixed waste and analyzed the impacts of this bounding case (DOE 1996a:4-356). A combination of decentralized and regionalized alternatives was ultimately selected by DOE in the *Waste Management PEIS* ROD (65 FR 10061). The potential impacts of this decision fall within the conditions evaluated in the SWEIS.

## 3.2 New Activities Considered for Cumulative Impacts

Activities that could contribute to cumulative impacts include those conducted by government agencies, businesses, or individuals in the region around the Pantex Plant. Examples of past and present activities that could contribute to cumulative impacts include new residential development; new industrial or commercial ventures; water control and diversion projects, new utility or infrastructure construction and operation; and new waste treatment and disposal activities**.** Table 3–1 presents the reasonably foreseeable activities included in this cumulative impacts analysis.

**Table 3–1. Reasonably Foreseeable Activities in the Region Around Pantex Plant**

| Resource Area | Impact by Activity | | | |
|---|---|---|---|---|
| | **New Overpass Construction at FM 2373 and Highway 60** | **Wind Power Generation** | **Increased Burlington Northern Santa Fe Trains** | **Gas Main and Distribution System Construction** |
| Utilities | Not available. | Will have positive impact on electricity grid. | Not applicable. | Emergency maintenance activities in future years will be reduced or eliminated by replacing the old pipeline. |
| Land | Approximately 36 hectares (90 acres) will be temporarily impacted during construction. | Approximately 2 hectares (5 acres) will be temporarily impacted during construction. | Not applicable. | Agricultural terraces will be restored to original condition. Disturbed land will be reseeded. CRP land will be restored to CRP status. |
| Water | Total water use during construction phase is approximately 8.3 million liters (2.2 million gallons). | Not available. | Not applicable. | Not available. |
| Air quality | Temporary dust and emissions from machinery during construction.<br><br>Positive long-term impact from fewer vehicle emissions from waiting on trains. | Temporary dust and emissions from machinery during construction. | Additional emissions from train engines. | Temporary dust from trenching and moving vehicles during construction. Emissions from construction vehicle exhaust. |
| Acoustics | Temporary construction noise. | Temporary construction noise and noise from operation. | Additional noise from trains. | Temporary increases in noise levels associated with construction activities. |
| Waste | Waste from construction. | Waste from construction. | Not applicable. | Waste from construction. |
| Traffic | Temporary impacts to routes FM 683 and FM 293. Upon completion, safer traffic conditions will result from overpass going over rail road tracks. | Not applicable. | After completion of new overpass, traffic will no longer back up for rail road crossing. | Temporary increases in traffic associated with construction activities. |

**Key:** CRP=Conservation Reserve Program.
**Source:** BWXT Pantex 2007b.

A new overpass is being constructed at the intersection of FM 2373 and U.S. Highway 60 to provide a safer access route to the Pantex Plant. The overpass will span the railroad tracks, which average 73 trains a day. The rights to approximately 28 hectares (70 acres) of farmland southeast and 8.1 hectares (20 acres) northeast of the intersection of U.S. 60 and FM 2373 were acquired for construction of the overpass and access ramps. Of the 36 hectares (90 acres) impacted during construction, approximately 12 hectares (30 acres) would be permanently impacted. The permanent impacts would include a 6.1-hectare (15-acre) borrow pit on the land south of U.S. Highway 60, and a 2-hectare (5-acre) borrow pit north of U.S. Highway 60. The remaining 4 hectares (10 acres) would comprise the new access roads and ramps. To accommodate traffic diversions, FM 683 and FM 293 will carry more traffic during the construction period. The overpass is currently scheduled to be completed around September 2008.

Eight wind turbines are being installed by the owner on private land southeast of the intersection of FM 293 and FM 2373. During construction, approximately 2 hectares (5 acres) of land would be disturbed. Approximately 1.2 hectares (3 acres) of land would be permanently occupied for the turbine tower bases and access roads. Construction is scheduled for completion in 2008. After construction, it is anticipated that farming activities would resume on this tract of land. This new wind farm will be connected to the Xcel energy grid. There is some concern about the rotors striking migratory birds (birds of prey, primarily) and loss of habitat, although this land was previously a grain field.

The Burlington Northern Santa Fe Railroad has increased the number of trains passing near the Pantex Plant to approximately 73 trains per day, increasing total emissions from train traffic. The rail road tracks are far enough away that noise levels are not affected.

A new Gas Main and Distribution System is under construction. This project, with components both on and off Pantex Plant property, will upgrade the distribution system in portions of Zone 12 North, and in outlying areas. Approximately 14,000 meters (47,000 feet) of 25-centimeter (10-inch) gas main will also be installed off site, from the western boundary of the Pantex Plant to the north side of Highway 60. Disturbed land both on and off the site will be restored. Noncultivated land will be reseeded and cultivated land will be brought back to the original grade. DOE/NNSA will be responsible for the reestablishment of native grasses in the noncultivated areas, which will require approximately 2 years to complete. The project is scheduled to be completed by early fiscal year 2009. This project was evaluated in the *Gas Main and Distribution System Environmental Assessment* (DOE/EA-1533) (DOE/NNSA 2005a). A Finding of No Significant Impact was issued on September 1, 2005 (DOE/NNSA 2005b).

## 3.3 Cumulative Impacts

This SA evaluates potential impacts associated with new information, new and proposed projects, and modifications to existing projects since the SWEIS was issued. As described in Chapter 2 of this SA, these analyses demonstrate that little or no additional impacts are expected for these resource areas.

No new missions have been identified for the Pantex Plant. Although more facilities than evaluated in the SWEIS are expected to be constructed between 1996 and 2011, some of this new construction would be offset by demolition of excess facilities. In addition, instead of building new facilities, in some cases existing facilities are being remodeled. Overall, this has limited new construction activities at the Pantex Plant.

Future land use requirements have been calculated for the city of Amarillo. According to the City of Amarillo Comprehensive Plan, approximately 2,429 hectares (6,000 acres) of additional land are needed to accommodate a population of 200,000 persons. However, the Plan only speculates about the location of this new development and forecasts that about two-thirds of the development would occur within the existing city limits and about one-third would occur on land annexed into the city at some future time. No

planning agency has projected any future land use within an 80-kilometer (50-mile) radius of the Pantex Plant (BWXT Pantex 2007c:10-29).

As described in Section 3.2, activities identified in the region around the Pantex Plant would generally result in minor short-term construction impacts, and minor to beneficial long-term impacts. Because of the distance from Pantex Plant; the routine nature of the activities; and the zoning, permitting, environmental review, and construction requirements imposed on these activities, these other activities are not expected to interact with Pantex Plant activities to produce cumulative impacts.

Because some activities evaluated in the SWEIS cumulative impacts analysis have not occurred (for example, construction and operation of plutonium disposition facilities and a decentralized waste management infrastructure), the analysis overestimated the cumulative impacts for activities at the Pantex Plant. Therefore, although some current and projected (2007 to 2011) impacts exceed the levels estimated in the SWEIS on an individual basis, the cumulative impacts analysis in the SWEIS remains valid.

# Chapter 4
# Conclusions

The SWEIS evaluated the potential impacts of continued operation of the Pantex Plant between 1996 and 2006. This SA compares current conditions to those predicted by the SWEIS during this period and evaluates potential impacts between 2007 and 2011 to determine whether the impacts identified in the SWEIS remain valid.

DOE regulations (10 CFR 1021.314) require a supplemental EIS to be issued when "there are substantial changes to the proposal" or there are "significant new circumstances or information relevant to environmental concerns." In accordance with DOE regulations, this SA provides sufficient information to assist DOE in determining whether the existing SWEIS should be supplemented, a new SWEIS should be prepared, or no further NEPA documentation is required.

These analyses indicate that for the period evaluated in this SA (1996 to 2011), most identified and projected impacts, including cumulative impacts, have been and would continue to be within the bounds of those identified in the SWEIS. Those few impacts that exceed the bounds of the SWEIS do not result in substantial changes from the Pantex Plant SWEIS or ROD, nor do they present significant new circumstances or information relative to environmental concerns. In addition, there have been no changes to Pantex Plant operations or mission, and only very small changes to the environment. Therefore, there is no need either to supplement the SWEIS or to prepare a new SWEIS.

# Chapter 5
# References


ANSI (American National Standards Institute), 1986, *American National Standard Method for Assessment of High-Energy Impulsive Sounds with Respect to Residential Communities*, S12.4.

Brooks, L.F. (Under Secretary for Nuclear Security and Administrator, National Nuclear Security Administration) testimony to the Committee on Government Reform, Subcommittee on National Security, Emerging Threats, and International Relations, "Hearing on Nuclear Security: Can DOE Meet Physical Facility Security Requirements," April 27.

BWXT Pantex (BWXT Pantex, LLC), 2002, *Integrated Plan for Playa Management at Pantex Plant*, Amarillo, Texas, May 10.

BWXT Pantex (BWXT Pantex, LLC), 2005, *Pantex Plant FY2006–FY2015 Ten-Year Comprehensive Site Plan*, Amarillo, Texas, September 30. [Official Use Only]

BWXT Pantex (BWXT Pantex, LLC), 2006a, *Programmatic Information Document in Support of the National Environmental Policy Act Documents for Pantex Plant*, Amarillo, Texas, June. [Official Use Only]

BWXT Pantex (BWXT Pantex, LLC), 2006b, *Pantex FY 2007–2016 Ten-Year Site Plan*, Amarillo, Texas, March 24. [Official Use Only]

BWXT Pantex (BWXT Pantex, LLC), 2006c, *2005 Site Environmental Report for Pantex Plan*t, Amarillo, Texas, September.

BWXT Pantex (BWXT Pantex, LLC), 2007a, *2006 Site Environmental Report for Pantex Plant*, Amarillo, Texas, September.

BWXT Pantex (BWXT Pantex, LLC), 2007b, "2007 SWEIS Supplement Analysis Data I," Amarillo, Texas, October.

BWXT Pantex (BWXT Pantex, LLC), 2007c, *Environmental Information Document in Support of the National Environmental Policy Act Documents for Pantex Plant*, Amarillo, Texas, January. [Official Use Only]

BWXT Pantex (BWXT Pantex, LLC), 2007d, *Pantex FY2008–FY2017 Ten-Year Site Plan*, Amarillo, Texas, Rev. 1, March 16. [Official Use Only]

BWXT Pantex (BWXT Pantex, LLC), 2007e, "Playa 1 Perched Aquifer Dewatering Corrective Measures Construction," ESH-07-019-N, Amarillo, Texas, June 15.

BWXT Pantex (BWXT Pantex, LLC), 2007f, "2007 SWEIS Supplement Analysis Data II," Amarillo, Texas, October. [Official Use Only]

CHABA (Committee on Hearing, Bioacoustics, and Biomechanics), 1981, *Assessment of Community Noise Response to High-Energy Impulsive Sound*s, Report of Working Group 84, Committee on Hearing, Bioacoustics and Biomechanics, Assembly of Behavioral and Social Sciences, National Research Council, National Academy of Sciences, Washington, D.C.

DOE (U.S. Department of Energy), 1995a, *Pantex Plant Federal Facility Compliance Act Compliance Plan,* September.

DOE (U.S. Department of Energy), 1995b, *Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement*, DOE/EIS-0203, Office of Environmental Management, Idaho Operations Office, Idaho Falls, Idaho, April.

DOE (U.S. Department of Energy), 1996a, *Final Environmental Impact Statement for the Continued Operation of the Pantex Plant and Associated Storage of Nuclear Weapon Components*, DOE/EIS-0225, Albuquerque Operations Office, Albuquerque, New Mexico, November.

DOE (U.S. Department of Energy), 1996b, *Final Environmental Impact Statement on Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel*, DOE/EIS-0218F, Office of Environmental Management, Washington, D.C., February.

DOE (U.S. Department of Energy), 1996c, *Storage and Disposition of Weapons-Usable Fissile Materials Final Environmental Impact Statement,* DOE/EIS-0229, Office of Fissile Materials Disposition, Washington, D.C., December.

DOE (U.S. Department of Energy), 1996d, *Final Programmatic Environmental Impact Statement for Stockpile Stewardship and Management,* DOE/EIS-0236, Office of Defense Programs, Washington, D.C., September.

DOE (U.S. Department of Energy), 2005, *Draft Environmental Impact Statement for the Proposed Consolidation of Nuclear Operations Related to the Production of Radioisotope Power Systems,* DOE/EIS-0373D, Office of Nuclear Energy, Science and Technology, Washington, D.C., June

DOE/NNSA (U.S. Department of Energy/National Nuclear Safety Administration), 2003, *Supplement Analysis for the Final Environmental Impact Statement for the Continued Operation of the Pantex Plant and Associated Storage of Nuclear Weapon Components,* DOE-EIS-0225/SA-03, February.

DOE/NNSA (U.S. Department of Energy/National Nuclear Safety Administration), 2005a, *Environmental Assessment for the Proposed Gas Main and Distribution System Upgrade*, DOE/EA-1533, Pantex Plant, Amarillo, Texas, August.

DOE/NNSA (U.S. Department of Energy/National Nuclear Safety Administration), 2005b, *Finding of No Significant Impact for Proposed Gas Main and Distribution System Upgrade*, Amarillo, Texas, September 1.

DOE/NNSA (U.S. Department of Energy/National Nuclear Safety Administration), 2007a, "National Environmental Policy Act (NEPA) Determination for the Proposed Water Conveyance Pipeline to Xcel Energy," ESH-07-022-C, Amarillo, Texas, August 10.

DOE/NNSA (U.S. Department of Energy/National Nuclear Safety Administration), 2007b, *Draft Complex Transformation Supplemental Programmatic Environmental Impact Statement*, DOE/EIS-0236-S4, Washington, D.C., December.

DOE/NNSA (U.S. Department of Energy/National Nuclear Safety Administration), 2007c, *Environmental Assessment for Proposed Perched Groundwater Corrective Measures,* DOE/EA-1579, Pantex Plant, Amarillo, Texas, May.

FICON (Federal Interagency Committee on Urban Noise), 1980, *Guidelines for Considering Noise in Land Use Planning and Control*, June.

SAIC (Science Applications International Corporation, Inc.), 2008, "Acoustic Analysis for Increased Explosives Detonation Limits at the Pantex Plant," September.

TCEQ (Texas Commission of Environmental Quality), 2005, Permit Alteration, Permit Number: 21233, Pantex Plant – Buildings 11-55, 12-19, and Firing Sites, September 12.

***Code of Federal Regulations***

10 CFR 1021, U.S. Department of Energy, "National Environmental Policy Act Implementing Procedures," Washington, D.C.

40 CFR 1508, Council on Environmental Quality, "Terminology and Index," Washington, D.C.

***Federal Register***

61 FR 68014, U.S. Department of Energy, "Record of Decision for the Programmatic Environmental Impact Statement for Stockpile Stewardship and Management," Washington, D.C., December 26, 1996.

62 FR 3014, U.S. Department of Energy, "Record of Decision for the Storage and Disposition of Weapons-Usable Fissile Materials Final Programmatic Environmental Impact Statement," Washington, D.C., January 14, 1997.

62 FR 3880, U.S. Department of Energy, "Record of Decision: Environmental Impact Statement for the Continued Operation of the Pantex Plant and Associated Storage of Nuclear Weapon Components," Washington, D.C., January 27, 1997.

65 FR 1608, U.S. Department of Energy, Record of Decision for the Surplus Plutonium Disposition Environmental Impact Statement," Washington, D.C., January 11, 2000.

65 FR 10061, U.S. Department of Energy, "Record of Decision for the Department of Energy's Waste Management Program: Treatment and Disposal of Low-Level Waste and Mixed Low-Level Waste; Amendment of the Record of Decision for the Nevada Test Site," Washington, D.C., February 25, 2000.

**U.S. Department of Energy Policy**

DOE Policy 430.1, "Land and Facility Use Planning," July 9, 1996.

# Appendix A

## Projects Considered in this Supplement Analysis

# Appendix A
# Projects Considered in this Supplement Analysis

**Table A–1. Projects Evaluated in this SWEIS[a]**

| Title of Project/Activity | Project/NEPA Status | Discussion |
|---|---|---|
| Hazardous Waste Treatment and Processing Facility | Construction completed in 1999.<br><br>Startup completed in 2001.<br><br>SA determination signed in February 2000. | This project was initiated in 1992 and was included as one of the six specific projects addressed in the SWEIS. The SA, completed in 2000, addressed changes in the design from that analyzed in the SWEIS and determined the impacts to be negligible. |
| Special Nuclear Material Component Requalification Facility | Modified project completed in 2005.<br><br>NEPA review approved in May 2002; amended in August, November, and December 2003 (BWXT Pantex 2002a, 2003a–2003c). | This project's predecessor (the Pit Reuse Facility) was one of the six specific projects addressed in the SWEIS and involved modification to an existing building and addition of 464 square meters (5,000 square feet) of new space. A new project called the Special Nuclear Material Component Requalification Facility did not require construction of new space, but did require modification of approximately 1,394 square meters (15,000 square feet) of space in Building 12-86. |
| Nondestructive Evaluation/Gas Laboratory | Construction was expected in 2008–2012, but is now expected to be approved in 2015. | This project combines three of the six specific projects addressed in the SWEIS (the Gas Analysis Laboratory, the Nondestructive Evaluation Facility, and the Materials Compatibility Assurance Facility) into a single 4,459-square-meter (48,000-square-foot) facility in Zone 12 South.<br><br>Because of the implementation schedule, this project is not considered in this SA. |
| Metrology/Maintenance Relocation/Consolidation | Original project has been modified and renamed several times. There is currently no schedule for implementation of any components. | This project has been divided into multiple projects, none of which is currently funded. Therefore, this project is not considered in this SA. |

[a] These projects were originally addressed under the specific facility and construction upgrades included in the SWEIS Proposed Action.

**Key:** NEPA=National Environmental Policy Act; SA=supplement analysis; SWEIS=*Pantex Plant Site-Wide Environmental Impact Statement*.

**Sources:** BWXT Pantex 2005a, 2006a; DOE/NNSA 2003a.

**Table A–2. NEPA Actions Initiated Since Issuance of the SWEIS**

| Title of Project/Activity[a] | Project/NEPA Status | Discussion |
|---|---|---|
| Wastewater Treatment Facility Upgrade | This project is complete. Use and possession occurred in 2002.<br><br>An EA was issued in April 1999 (DOE 1999a). The associated FONSI was issued in May 1999 (DOE 1999b). | The existing Wastewater Treatment Facility was upgraded by constructing and operating two new lagoons on 3.2 hectares (8 acres) of land and adding an interconnected drip irrigation system to beneficially irrigate approximately 121 hectares (300 acres) of agricultural land on the Pantex Plant site. |
| Pit Repackaging in the AL-R8 Sealed Insert Container | This project is complete.<br><br>An SA determination was signed in August 1998 (DOE 1998). | The SWEIS evaluated storage of pits using the AT-400A container. An SA was completed to evaluate the potential impacts of using the AL-R8 Sealed Insert container, and the pits were repackaged accordingly. |
| Stockpile Management Restructuring Initiative | Three activities (two of which are complete and the third cancelled) were included under the Stockpile Management Restructuring Initiative:<br><br>*35 Account Relocation*–Construction was completed in 2002.<br><br>*Mass Properties Equipment Installation* was completed in 2003. Use and possession occurred in 2004.<br><br>*Relocation of High-Explosive Formulation Activities* was cancelled.<br><br>Activities were categorically excluded under 10 CFR 1021, Subpart D, Appendix B, Section 1.31. | *35 Account Relocation*–35 Account activities, warehousing of supplies for weapons production, were relocated and consolidated.<br><br>*Mass Properties Equipment Installation*–Outdated equipment using vacuum tube technology no longer supported by the manufacturer was replaced with equipment using solid-state technology.<br><br>*Relocation of High-Explosive Formulation Activities*–This cancelled project would have relocated high-explosive operations currently performed in World War II-vintage buildings to a newer, blast-resistant building designed to support High-Explosive Class I and II operations. |
| Environmental, Safety and Health Analytical Laboratory | This project is complete. Use and possession occurred in August 2002.<br><br>The original EA was approved in July 1995 (DOE 1995a).<br><br>The modified project was categorically excluded under 10 CFR 1021, Subpart D, Appendix B, Section B3.6. | A new 1,524-square-meter (16,400-square-foot) facility was evaluated in an EA (DOE 1995a) prior to issuance of the SWEIS. Instead, a 771-square-meter (8,300-square-foot) addition to an existing analytical laboratory building was constructed adjacent to Building 11-51. |
| Continued Storage of Pits in Zone 4 | An amended Record of Decision was issued on April 19, 2002 (67 FR 19432). | The Amended Record of Decision for the *Storage and Disposition of Weapons-Usable Fissile Materials Final Programmatic EIS* and *Surplus Plutonium Disposition EIS* states DOE's decision to continue storing pits indefinitely in both Zone 4 and Zone 12. |

**Table A–2. Projects Initiated Since Issuance of the SWEIS (continued)**

| Title of Project/Activity[a] | Project/NEPA Status | Discussion |
|---|---|---|
| Stage Right Automated Guided Vehicle Pit Storage System | This project was originally evaluated in the *Final Programmatic Environmental Impact Statement for Stockpile Stewardship and Management* (DOE 1996).<br><br>The revised project was categorically excluded under 10 CFR 1021, Subpart D, Appendix B. The last NEPA Review (for Phase III) was approved in April 2005 (BWXT Pantex 2005b). | The revised project provides an automated system for storage and retrieval of weapons pallets in both Zones 4 and 12.<br><br>The project was implemented in phases. Phases I and II are complete. Phase III, which extended automated guide vehicle operation into two additional rooms in Building 12-116, is also complete. |
| Relocation of Weapons Evaluation Test Laboratory Facility | This project is complete. Construction occurred between 2002 and 2004. Use and possession occurred in 2005.<br><br>The project was categorically excluded under 10 CFR 1021, Subpart D, Appendix B, Section B3.6. | This project includes construction and operation of a new 2,787-square-meter (30,000-square-foot) facility in Zone 11 and relocation of existing equipment. Sandia National Laboratories operates this facility. |
| Building 12-44 Production Cells Upgrade | Construction started in 2005.<br><br>Work on Cells 2 through 4 is complete. Use and possession occurred in 2007.<br><br>Activities were evaluated under *Routine Administrative and Operating Activities Planned at Pantex Plant for FY2001 and FY2002*, which was approved in August 2000 (DOE 2000). | Modifications include installation of task exhaust, contaminated waste isolation, and dehumidifiers. |
| Nuclear Weapons Complex Roofing Program Support | This project started in 2002 and is expected to continue through 2010.<br><br>Activities were originally evaluated under *Routine Administrative and Operating Activities Planned at Pantex Plant for FY2001 and FY2002*, which was approved in August 2000 (DOE 2000).<br><br>Annual NEPA reviews have been completed, amended as needed, and approved each year since activities began (BWXT Pantex 2003d, 2003e, 2004a, 2004b, 2005c, 2005d, and 2007a). | The project involves the replacement or repair of roofs on buildings in Areas 11, 12, and 16. |
| Records Storage Facility | This project was completed in 2006.<br><br>The project was categorically excluded under 10 CFR 1021, Subpart D, Appendix B1.15. The NEPA review was approved in August 2003 (DOE/NNSA 2003b). | A new 914-square-meter (9,837-square-foot) Records Storage Facility was constructed in Zone 12. |

**Table A–2. Projects Initiated Since Issuance of the SWEIS (continued)**

| Title of Project/Activity[a] | Project/NEPA Status | Discussion |
|---|---|---|
| New Administration Building – Replacement of Office Buildings | This project was completed in 2006.<br><br>This project was categorically excluded under 10 CFR 1021, Subpart D, Appendix B1.15. The NEPA review was approved in August 2003 (DOE/NNSA 2003c). | A freestanding two-story office building approximately 1,858 square meters (20,000 square feet) in size was constructed in Zone 12 to house plant personnel. |
| Tester Design Facility | This project was completed in 2006. Use and possession occurred in 2007.<br><br>The project was categorically excluded under 10 CFR 1021, Subpart D, Appendix B1.15. The NEPA review for construction was approved in September 2004 (DOE/NNSA 2004a).<br><br>The NEPA review for demolition of Building 12-9 was completed in July 2007 (BWXT Pantex 2007b). | A single-story, metal office building for Tester Design was constructed to consolidate existing tester design activities and personnel located in Buildings 12-9, 12-9A, and 12-102 in a single facility. The approximately 1,300-square-meter (14,000-square-foot) office building was constructed in conjunction with the new Technical Support Facility.<br><br>Building 12-9 and 12-9A are scheduled to be demolished by the end of fiscal year 2008 (BWXT Pantex 2007c). |
| Technical Support Facility – Replacement of Office Buildings | Use and possession occurred in 2006.<br><br>This project was categorically excluded under 10 CFR 1021, Subpart D, Appendix B1.15. The NEPA review was approved in September 2004 (DOE/NNSA 2004b). | A single-story office building approximately 1,208 square meters (13,000 square feet) in size, a parking area, and sidewalk were constructed in Zone 12. This new office building replaces Buildings 12-97 and 9-002. Building 9-002 was demolished in fiscal year 2006; Building 12-97 is scheduled to be demolished in fiscal year 2007. |
| Gas Main and Distribution System Upgrade | Project is under construction.<br><br>An EA was issued in August 2005 (DOE/NNSA 2005a). The associated FONSI was issued in September 2005 (DOE/NNSA 2005b). | This project involves installation of a new gas distribution system and associated components, and upgrades to existing portions of the system on and off the Pantex Plant site. |
| Process Container Storage Facility | The project was completed in 2005 (BWXT Pantex 2007d).<br><br>This project was categorically excluded under 10 CFR 1021, Subpart D, Appendix B1.15. The NEPA review was approved in August 2004 (DOE/NNSA 2004c). | This project originally involved construction of a new warehouse on the concrete slab of demolished warehouse Building 11-9. Instead, the Process Container Storage Facility, a 1,486-square-meter (16,000-square-foot) prefabricated, half-cylinder structure was erected. |

**Table A–2. Projects Initiated Since Issuance of the SWEIS (continued)**

| Title of Project/Activity[a] | Project/NEPA Status | Discussion |
|---|---|---|
| Security Infrastructure Projects | Use and possession of the Security Operations Facility occurred in 2008.<br><br>Use and possession of the Security Locker Facility occurred in 2008.<br><br>Use and possession of the Security Training Facility is expected in 2010.<br><br>This project was categorically excluded under 10 CFR 1021, Subpart D, Appendix B1.15. The NEPA review was approved in April 2006 (DOE/NNSA 2006). | The increased size of the Protective Force has necessitated upgrading, expansion, or replacement of several facilities. These projects include:<br><br>The Security Operations Facility (formerly called the Protective Force Muster Room/Armory and Training Facility), provides a muster room, an armory, and offices in a Zone 12 facility approximately 1,022 square meters (11,000 square feet) in size.<br><br>The Security Locker Facility is a 1,188-square-meter (12,780-square-foot) locker room facility adjacent to the Security Operations Facility.<br><br>A new Training and Firearms Cleaning Facility in Zone 16 North approximately 1,187 square meters (12,780 square feet) in size. |
| Building Demolition Projects | Buildings were demolished each year from fiscal year 2002 through fiscal year 2006. NEPA evaluations were completed as appropriate for individual projects. | Demolition to remove approximately 16,742 square meters (180,216 square feet) of aging facilities that are no longer useful. Demolition also counts toward maintaining the total facility footprint. |

[a] Projects were selected for listing in this table because of projected cost, NEPA coverage, or the potential for effecting a major change to the Pantex footprint. In addition, several other projects have been initiated including line-item projects, readiness in technical base and facilities projects, facilities and infrastructure recapitalization projects, and in-kind replacement projects (BWXT Pantex 2005a, 2006a, 2006b, 2007e).

**Key:** CFR=*Code of Federal Regulations*; EA=environmental assessment; FONSI=Finding of No Significant Impact; FR=*Federal Register*; FY=fiscal year; HVAC=heating, ventilating, and air conditioning; NEPA=National Environmental Policy Act; SA=supplement analysis; SWEIS=*Pantex Plant Site-Wide Environmental Impact Statement*.

**Sources:** BWXT Pantex 2006b, 2007e; DOE/NNSA 2003a.

**Table A–3. NEPA Actions Expected to be Initiated 2007 through 2011**

| Title of Project/Activity[a] | Project/NEPA Status[b] | Discussion |
|---|---|---|
| Central Command Federal Agent Facility | Use and possession occurred in 2008.<br><br>The NEPA review was approved in 2006 (DOE 2006). | This project involves construction of a facility of approximately 2,357 square meters (25,375 square feet) for the Office of Secure Transportation. Facility space would include offices and briefing rooms; storage areas; mechanical, electrical, and data rooms; and a vehicle canopy. |
| Administrative Support Complex | Construction is expected to begin in 2011. | This project would replace many outdated administrative facilities located throughout Zone 12 with a centralized facility approximately 21,400 to 25,000 square meters (230,000 to 270,000 square feet) in size. |
| Applied Technology Facility | Use and possession is expected in 2009. | This project involves construction of a new facility in Zone 11 approximately 930 square meters (10,000 square feet) in size. The resulting consolidation of office space would facilitate disposition of Buildings 11-27, 11-29, 11-54, and 11-54A. |
| High-Explosive Pressing Facility | Project is under construction. Use and possession is expected in 2013.<br><br>An EA and FONSI were issued in June 2008 (DOE/NNSA 2008a, 2008b).<br><br>A NEPA review was approved in November 2003 (DOE/NNSA 2003d). | This project would provide a new 4,180-square-meter (45,000-square-foot) facility in Zone 11 to consolidate current high-explosive pressing activities into a single facility and relocate existing operations from Buildings 12-17 and 12-63. The facility would include a main pressing facility, a magazine storage area, and a ramp. |
| Weapon Surveillance Facility (formerly called the Component Evaluation Facility) | Construction is expected to start in 2011. Use and possession is expected in 2016.<br><br>The NEPA review was approved in April 2004 (DOE/NNSA 2004d). | This project involves construction of a new facility to consolidate and increase the capability and capacity of existing technologies and to provide space for new technologies required for surveillance and requalification of weapons and components. Consolidation of these activities into this new facility would allow bays currently used for evaluation to be returned to weapon assembly/disassembly operations. The facility would consist of an approximately 7,181-square-meter (77,300 square-foot), seven-bay complex and a 400-square-meter (4,300-square-foot) ramp to house weapon and component testing and analytical equipment. The facility would be located in Zone 12. |

**Table A–3. NEPA Actions Expected to be Initiated 2007 through 2011 (continued)**

| Title of Project/Activity[a] | Project /NEPA Status[b] | Discussion |
|---|---|---|
| Perched Groundwater Corrective Measures | Construction is expected to start in fiscal year 2007.<br>The Corrective Measure Study/Feasibility Study was issued in June 2006 (BWXT Pantex/SAIC 2006).<br>An EA was issued in May 2007 (DOE/NNSA 2007a). The Associated FONSI was issued in June 2007 (DOE/NNSA 2007b).<br>A NEPA document for installation of 12 extraction wells and a treatment facility in the vicinity of Playa 1 was approved in June 2007 (BWXT Pantex 2007f). | The specific scope of this environmental restoration project will depend on regulatory decisions made by the State of Texas and could include construction and operation of systems for in situ and ex situ treatment of perched groundwater, including installation of monitoring and treatment wells, irrigation systems, and retention ponds.<br>Well installation is complete. The treatment facility is expected be constructed in fiscal year 2008 (BWXT Pantex 2007c). |
| Security Upgrade Projects | Several projects are proposed for fiscal year 2008 funding. | Several projects are proposed to support new DOE orders and enhancements of the design basis threat posture, including renovating or expanding buildings and training facilities, upgrading guard towers, upgrading security booths, and enhancing and expanding facilities for storage of Range Facility equipment and ammunition. |
| Building Demolition Projects | Building demolition is proposed each year from fiscal year 2007 through fiscal year 2011. A NEPA document for routine deactivation and decommissioning projects for fiscal years 2007 through 2010 was approved in January 2007 (DOE/NNSA 2007c). | Demolition will be conducted to remove aging facilities that are no longer useful. It is estimated that these demolitions would reduce the facility footprint by approximately 8,300 square meters (89,300 square feet). Demolition will also count toward maintaining the total facility footprint. |

[a] Projects were selected for listing in this table because of projected cost, NEPA coverage, or the potential for effecting a major change to the Pantex footprint. In addition, several other projects have been initiated including line-item projects, readiness in technical base and facilities projects, facilities and infrastructure recapitalization projects, and in-kind replacement projects (BWXT Pantex 2005a, 2006a, 2006b, 2007e).

[b] NEPA evaluations have not been performed for all projects on this table because some have not been defined in sufficient detail to do so. NEPA evaluations will be completed as appropriate prior to implementation.

**Key:** EA=environmental assessment; NEPA=National Environmental Policy Act; SA=supplement analysis.
**Source:** BWXT Pantex 2006b.

# Appendix A
# References


67 FR 19432, Amended the Records of Decision for the *Storage and Disposition of Weapons-Usable Fissile Materials Final Programmatic Environmental Impact Statement (Storage and Disposition PEIS) and Surplus Plutonium Disposition Environmental Impact Statement (SPD EIS)*.

BWXT Pantex (BWXT Pantex, LLC), 2002a, Pantex NEPA Review Form for Special Nuclear Material Component Requalification Facility, Amarillo, Texas, May 28. [Official Use Only]

BWXT Pantex (BWXT Pantex, LLC), 2003a, "Special Nuclear Material Component Requalification Facility (SNMCRF)," Amendment 03-009, Amarillo, Texas, August 1. [Official Use Only]

BWXT Pantex (BWXT Pantex, LLC), 2003b, "Special Nuclear Material Component Requalification Facility (SNMCRF), Amendment 2," Amendment 04-002, Amarillo, Texas, November 25. [Official Use Only]

BWXT Pantex (BWXT Pantex, LLC), 2003c, "Building 12-86 Preparation for SNMCRF," EXP 04-002-N, Amarillo, Texas, December 5. [Official Use Only]

BWXT Pantex (BWXT Pantex, LLC), 2003d, "Roofing Activities for FY03-04, Including Roofing Asset Management Program," EXP-03-008-N, Amarillo, Texas, June 10.

BWXT Pantex (BWXT Pantex LLC), 2003e, "Roofing Activities for FY03-04, Including Roof Asset Management Program, Amendment 1," Amendment 03-011, Amarillo, Texas, August 4.

BWXT Pantex (BWXT Pantex, LLC), 2004a, "Roofing Activities for FY03 & FY04 Including Roof Asset Management Program," Amendment 2, 04-010, Amarillo, Texas, March 31.

BWXT Pantex (BWXT Pantex, LLC), 2004b, "Roofing Activities for FY03 & FY04 Including Roof Asset Management Program," Amendment 3, 04-012, Amarillo, Texas, July 23.

BWXT Pantex (BWXT Pantex, LLC), 2005a, *Pantex Plant FY2006–FY2015 Ten-Year Comprehensive Site Plan*, Amarillo, Texas, September 30. [Official Use Only]

BWXT Pantex (BWXT Pantex, LLC), 2005b, "Building 12-116 Automated Guidance Vehicle (AGV) Installation Update," GPP-05-003-N, Amarillo, Texas, April 27. [Official Use Only]

BWXT Pantex (BWXT Pantex, LLC), 2005c, "Roofing Activities for FY05, Including Roof Asset Management Program (RAMP)," EXP-05-001-N, Amarillo, Texas, January 20.

BWXT Pantex (BWXT Pantex, LLC), 2005d, "Roofing Activities Planned for FY06," EXP-05-007-N, Amarillo, Texas, September 29.

BWXT Pantex (BWXT Pantex, LLC), 2006a, *Programmatic Information Document in Support of the National Environmental Policy Act Documents for Pantex Plant*, Amarillo, Texas, June. [Official Use Only]

BWXT Pantex (BWXT Pantex, LLC), 2006b, *Pantex FY 2007–2016 Ten-Year Site Plan*, Amarillo, Texas, March 24. [Official Use Only]

BWXT Pantex (BWXT Pantex, LLC), 2007a, *2006 Site Environmental Report for Pantex Plant*, Amarillo, Texas, September.

BWXT Pantex (BWXT Pantex, LLC), 2007b, "2007 SWEIS Supplement Analysis Data I," Amarillo, Texas, October.

BWXT Pantex (BWXT Pantex, LLC), 2007c, *Pantex FY2008–FY2017 Ten-Year Site Plan*, Amarillo, Texas, Rev. 1, March 16. [Official Use Only]

BWXT Pantex (BWXT Pantex, LLC), 2007d, "Roofing Activities Planned for FY07," EXP-07-001-N, January 2.

BWXT Pantex (BWXT Pantex, LLC), 2007e, "Demolition of Buildings 12-9 and 12-9e," D&D-07-005-N, Amarillo, Texas, July 11.

BWXT Pantex (BWXT Pantex, LLC), 2007f, "Playa 1 Perched Aquifer Dewatering Corrective Measures Construction," ESH-07-019-N, Amarillo, Texas, June 15.

BWXT Pantex/SAIC, 2006, *Corrective Measure Study/Feasibility Study for the Pantex Plant for the U.S. Department of Energy/National Nuclear Security Administration, Pantex Plant*, Amarillo, Texas, June.

DOE (U.S. Department of Energy), 1995a, *Environmental Assessment for Environmental Safety and Health Analytical Laboratory,* Project 94-AA-01, Amarillo Area Office, Amarillo, Texas.

DOE (U.S. Department of Energy), 1996b, *Final Programmatic Environmental Impact Statement for Stockpile Stewardship and Management*, DOE/EIS-0236, Office of Defense Programs, Washington, D.C., September.

DOE (U.S. Department of Energy), 1998, *Supplement Analysis for: Final Environmental Impact Statement for the Continued Operation of the Pantex Plant and Associated Storage of Nuclear Weapons Components – AL-R8 Sealed Insert Container*, DOE/EIS-0225/SA-01, Amarillo Area Office, Amarillo, Texas, August.

DOE (U.S. Department of Energy), 1999a, *Environmental Assessment for Wastewater Treatment Capability Upgrade, Project No. 96-D-122, Pantex Plant, Amarillo, Texas*, Amarillo Area Office, Amarillo, Texas, April.

DOE (U.S. Department of Energy), 1999b, *Finding of No Significant Impact Wastewater Treatment Facility Upgrade*, Pantex Plant, Amarillo Area Office, Amarillo, Texas, May 27.

DOE (U.S. Department of Energy), 2000, "Routine Administrative and Operating Activities Planned at Pantex Plant for FY2001 and FY2002," MWO-00-006-C, Amarillo Area Office, Amarillo, Texas, August 31.

DOE (U.S. Department of Energy), 2006, memorandum from J.S. Johnson, DOE Pantex Site Office, to L.A. Jones, BWXT Pantex LLC, "Review of NEPA Documentation for the Office of Secure Transportation (OST) Central Command Federal Agent Facility (CCFAF) at the Pantex Plant," with attachment, Amarillo, Texas, May 11. [Official Use Only]

DOE/NNSA (U.S. Department of Energy/National Nuclear Safety Administration), 2003a, *Supplement Analysis for the Final Environmental Impact Statement for the Continued Operation of the Pantex Plant and Associated Storage of Nuclear Weapon Components*, DOE-EIS-0225/SA-03, February.

DOE/NNSA (U.S. Department of Energy/National Nuclear Safety Administration), 2003b, "Construction of New Records Storage Facility," GPP-03-004-C, Pantex Site Office, Amarillo, Texas, August 14. [Official Use Only]

DOE/NNSA (U.S. Department of Energy/National Nuclear Safety Administration), 2003c, "New Administration Building," GPP-03-005-C, Pantex Site Office, Amarillo, Texas, August 6.

DOE/NNSA (U.S. Department of Energy/National Nuclear Safety Administration), 2003d, "High Explosive Pressing Facility Construction," LIN-03-005-C, Pantex Site Office, Amarillo, Texas, November 20. [Official Use Only]

DOE/NNSA (U.S. Department of Energy/National Nuclear Safety Administration), 2004a, "Tester Design Facility," GPP-04-004-C, PXP-04-0008, Pantex Site Office, Amarillo, Texas, September 21. [Official Use Only]

DOE/NNSA (U.S. Department of Energy/National Nuclear Safety Administration), 2004b, "Technical Support Facility Construction," GPP-04-006-C, Pantex Site Office, Amarillo, Texas, September 20. [Official Use Only]

DOE/NNSA (U.S. Department of Energy/National Nuclear Safety Administration), 2004c, "Process Container Storage Facility," GPP-04-002-C, Pantex Site Office, Amarillo, Texas, August 25.

DOE/NNSA (U.S. Department of Energy/National Nuclear Safety Administration), 2004d, "Component Evaluation Facility," LIN-04-001-C, Pantex Site, Amarillo, Texas, April 29. [Official Use Only]

DOE/NNSA (U.S. Department of Energy/National Nuclear Safety Administration), 2005a, *Environmental Assessment for the Proposed Gas Main and Distribution System Upgrade*, DOE/EA-1533, Amarillo, Texas, August.

DOE/NNSA (U.S. Department of Energy/National Nuclear Safety Administration), 2005b, *Finding of No Significant Impact for Proposed Gas Main and Distribution System Upgrade*, Amarillo, Texas, September 1.

DOE/NNSA (U.S. Department of Energy/National Nuclear Safety Administration), 2006, "Security Facilities: Change House, Muster/Armory, & Training Facility," GPP-06-002-C, Pantex Site Office, Amarillo, Texas, April 25. [Unclassified Nuclear Controlled Information]

DOE/NNSA (U.S. Department of Energy/National Nuclear Safety Administration), 2007a, *Environmental Assessment for Proposed Perched Groundwater Corrective Measures*, DOE/EA-1579, Amarillo, Texas, May.

DOE/NNSA (U.S. Department of Energy/National Nuclear Safety Administration), 2007b, *Finding of No Significant Impact for Proposed Perched Groundwater Corrective Measures*, Amarillo, Texas, June 15.

DOE/NNSA (U.S. Department of Energy/National Nuclear Safety Administration), 2007c, *Deactivation and Decommissioning Projects Planned for FY2007 through FY2010*, D&D-07-002-C, Pantex Site Office, Amarillo, Texas, January 11.

DOE/NNSA (U.S. Department of Energy/National Nuclear Safety Administration), 2008a, *Environmental Assessment for the Proposed High Explosive Pressing Facility*, DOE/EA-1613, Amarillo, Texas, June.

DOE/NNSA (U.S. Department of Energy/National Nuclear Safety Administration), 2008b, *Finding of No Significant Impact for High Explosive Pressing Facility*, Amarillo, Texas, June 11.