CHAPTER 1
INTRODUCTION

1.0 INTRODUCTION

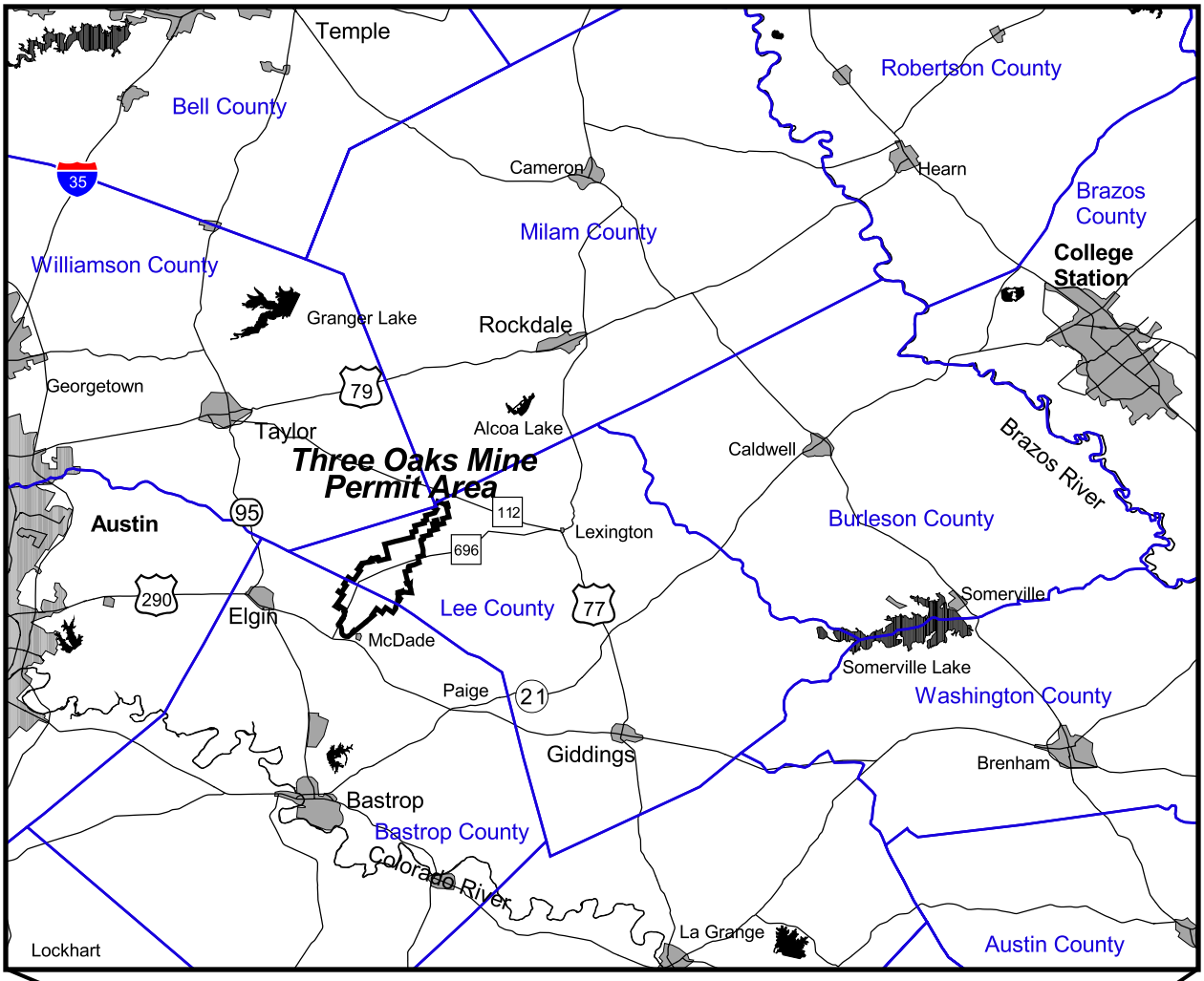
Alcoa Inc. (Alcoa) proposes to construct and operate the Three Oaks Mine (the Proposed Action), a surface lignite mine that would be located east of Austin in Lee and Bastrop Counties, Texas (**Figure 1-1**). The proposed project would include the development of sequential mine pits through the removal of soil and rock in order to reach and extract the lignite seams that occur at depths of 30 to 250 feet. An average of 7.0 million tons of lignite would be mined per year (Note: Short tons are used throughout this environmental impact statement [EIS]; a short ton equals 2,000 pounds). The lignite would be trucked to a central blending facility and subsequently transported via haul road or overland conveyor to four existing electrical power generating units located near Rockdale, in Milam County. The project also would include construction of sedimentation ponds, surface water diversions, power lines, a substation, maintenance facilities, offices, and the installation of wells. Up to approximately 12,000 acre-feet of groundwater would be pumped annually for mine dewatering and depressurization. Several existing county roads, state roads, and utility lines would be relocated.

The proposed project requires a permit from the Railroad Commission of Texas (RRC) under Title 16, Part 1, Chapter 12 of the Texas Administrative Code (TAC). The RRC permit area (**Figure 1-2**) for the proposed Three Oaks Mine consists of 16,062 acres; within the permit area, a total of 8,648 acres would be disturbed within the mine area and transportation and utility corridor (**Figure 1-2**) over the 25-year life of the mine for mining and ancillary facilities. Of this total, approximately 640 acres would be disturbed for surface mining at any one time, based on sequential backfilling and concurrent reclamation of the mine pits. A total of 6 acres would be disturbed for relocated roads outside of the RRC permit area. City Public Service (CPS), the City of San Antonio public utility, owns 9,911 acres of land within the RRC permit area and controls an additional 1,721 acres through leases. Alcoa controls these lands through their agreement with CPS. San Antonio Water System (SAWS), the City of San Antonio water utility, owns all of the groundwater pumped from the mine. In addition, Alcoa owns 2,855 acres within the permit area and controls an additional 548 acres through leases. Mining is proposed to begin in 2003. Section 2.5 contains a detailed description of the Proposed Action.

The proposed project requires a permit from the U.S. Army Corps of Engineers (USACE) for the discharge of dredged and fill material into waters of the United States (U.S.) under Section 404 of the Clean Water Act (CWA). As the permit decision is a major federal action with the potential to significantly affect the quality of the human environment, the USACE has determined that an EIS is necessary. The USACE is the federal agency preparing the EIS in compliance with the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of the NEPA (40 Code of Federal Regulations [CFR] 1500-1508), and the USACE Procedures for Implementing NEPA (33 CFR 230). The Section 404(b)(1) evaluation of alternatives is provided in Appendix A of this EIS.

The USACE's permit area for this EIS comprises the RRC permit area for the Three Oaks Mine (**Figure 1-2**) and the additional 6 acres of disturbance associated with proposed relocated roads outside of the RRC permit area.

This EIS describes the proposed construction, operation, and reclamation of the Three Oaks Mine, including Alcoa's proposed environmental protection measures; identifies alternatives to the Proposed Action; and



Three Oaks Mine

Figure 1-1

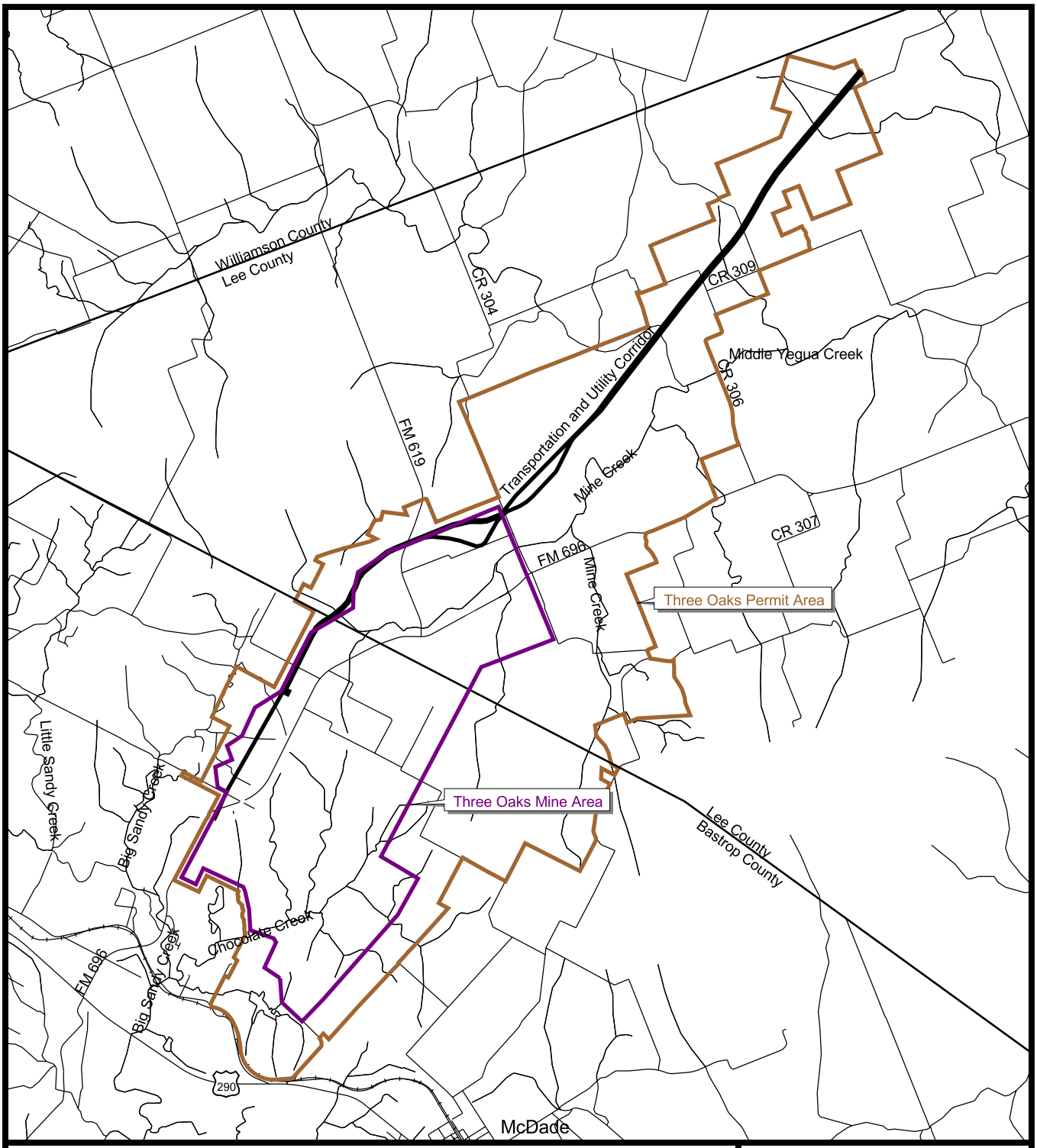
Location of Three Oaks Mine

N

0 10 20 Miles

Source: Texas General Land Office.

7/22/02



Note:
RRC and USACE permit areas coincide with minor deviations; see Chapter 1.0.

N

0 5000 10000 Feet

Source: Adapted from Alcoa 2001c.

Three Oaks Mine

Figure 1-2

Proposed Permit and Mine Areas

7/12/02

describes the environmental consequences of implementing the Proposed Action and the No Action Alternative.

1.1 Project Setting

1.1.1 Project Location

The proposed Three Oaks Mine would be located approximately 5 miles east of Elgin, Texas, and 11 miles southwest of Lexington, Texas (**Figure 1-1**). The permit area would be southwest of and adjacent to Alcoa's existing Sandow Mine permit area and located approximately 17.5 miles southwest of existing industrial facilities at Rockdale (i.e., the Alcoa/Texas Utilities [TXU] Rockdale power generating station and the Alcoa Rockdale aluminum smelter).

1.1.2 Existing Rockdale Facilities

The existing facilities near Rockdale include the Sandow Mine, Rockdale power generating station, and Alcoa's Rockdale aluminum smelter (**Figure 1-3**). All of these existing facilities currently operate, and can continue to operate, under their existing regulatory approvals.

1.1.2.1 Sandow Mine

Alcoa's Sandow Mine is located northeast of the proposed Three Oaks Mine; the Sandow Mine has been in operation since the 1950s. The Sandow Mine currently supplies fuel for the Rockdale power generating station, with approximately 6.2 million tons of lignite mined each year. The total permitted surface disturbance at the Sandow site is 15,103 acres, including 178.4 acres of waters of the U.S., composed of approximately 471,000 linear feet of streams, 71.3 acres of ponds, and 60.6 acres of wetlands. Of the total disturbance, approximately 500 acres are disturbed at any one time based on sequential pit backfill and concurrent reclamation.

The Sandow Mine currently employs 210 full-time workers. Based on the remaining economic lignite reserves, active mining is anticipated to continue through 2004. A work force of approximately 25 contractors will oversee mine closure and intensive reclamation through 2007. It is estimated that an additional 10 years will be required for final reclamation and bond release, using approximately 10 contractors.

In 2000, an average of 19,083 gallons per minute (gpm) was pumped from the Sandow Mine Area for dewatering and depressurization. Of this pumpage, 4,443 gpm were utilized for industrial use at the power generating facility, 9,056 gpm were discharged into East Yegua Creek, and 5,584 gpm were discharged into Walleye Creek. Following mine closure, 4,443 gpm will continue to be pumped from the mine site to provide for ongoing industrial use.

Rockdale
Rockdale West
Alcoa Lake
Power Plant
Smelter
Sandow Permit Area
Lexington
Middle Yegua Creek
Three Oaks Permit Area
Three Oaks Mine Area
West Yegua Creek
Sandow Transportation and Utility Corridor
Three Oaks Transportation and Utility Corridor
Turkey Creek
Thorndale
Bushy Creek
Thrall
McDade
Big Sandy Creek
Little Sandy Creek
Cedar Hills
0 1 2 Miles
N
Source: Adapted from Alcoa 2001c.

Three Oaks Mine

Figure 1-3

Existing Sandow Mine and Proposed Three Oaks Mine

6/18/02

1.1.2.2 Rockdale Power Generating Station

The existing Rockdale power generating station is located approximately 7 miles southwest of Rockdale, adjacent to the Sandow Mine. The power plant consists of three 120-megawatt (MW) units owned by Alcoa and one 595-MW unit owned by TXU. The power generating station, which occupies an approximately 100-acre site, currently provides electrical power for Alcoa's existing Rockdale aluminum smelter, located adjacent to the power generating station, and the TXU electrical grid system. Alcoa Lake, with a surface area of approximately 895 acres, provides cooling water for the Rockdale power generating station. The Alcoa and TXU stations currently employ 130 and 100 workers, respectively.

At full capacity, the power generating units could use approximately 6 million tons of crushed lignite per year. Approximately 875,000 tons of ash are produced per year, comprising 350,000 tons of bottom ash and 525,000 tons of fly ash. Since 1998, approximately 30 percent of the fly ash and 100 percent of the bottom ash has been recycled; a portion of the bottom ash is currently used for road surfacing and ramp construction at the Sandow Mine. Fly and bottom ash to be recycled is transported offsite by dump truck. All non-recycled fly ash is transported by dump truck to a Texas Natural Resource Conservation Commission (TNRCC)-approved landfill adjacent to the generating station and the Sandow Mine.

Alcoa has applied for air permits for its three 120-MW units under the Texas Voluntary Emission Reduction Permit (VERP) process. The VERP process applies to grandfathered emission sources, (i.e., sources that existed prior to the current air quality permit requirements). Control measures required to obtain a VERP can be 10-year-old best available control technology (BACT) or deferral of emission reductions with significant reductions of another pollutant. Alcoa submitted a VERP application for its three power plant boilers on July 6, 2001. The TXU power generation station is separately owned and permitted; thus, it is not part of Alcoa's VERP application. TNRCC notified Alcoa that the VERP application was administratively complete on August 10, 2001. In a September 7, 2001, letter to the TNRCC, Alcoa demonstrated the required VERP application public notice requirements. Alcoa anticipates receiving a final VERP in mid-2002.

The permit application includes a 50 percent reduction in nitrogen oxide (NO_x) emissions by 2002 and a 90 percent reduction in sulfur dioxide (SO_2) emissions by 2006; these reductions are from the 1997 power plant emission inventory levels. Alcoa is currently evaluating technologies to achieve these emissions reductions. Alcoa's selection of emissions reduction technologies and schedule for implementing such modifications may be affected by recent U.S. Environmental Protection Agency (USEPA) and TNRCC reviews of the facility and associated findings of emissions violations. It is not possible to predict the consequences of these enforcement actions in relation to the proposed project at this time.

The technology selected to reduce these air emissions could have an impact on the production requirements of the Three Oaks Mine. Historically, the Sandow Mine has produced an average of 6.2 million tons per year to fuel the power plant. If flue gas scrubbers were selected to reduce emissions, the fuel requirements would continue to be 6.2 million tons per year. If fluidized bed boiler technology were selected, 7.0 million tons of production would be required. This EIS is written assuming production could be either 6.2 or 7.0 million tons per year. Alcoa's mine plan has been prepared to address either scenario. Fluidized beds allow for the combustion of higher ash lignites, which allow for the mining of some lignite seams that

would be considered spoil with the scrubber technology. Thus, the aerial extent of mining would not differ significantly whether 6.2 or 7.0 million tons per year were mined. It should be noted that mining is not an exact science. Coal tonnage and overburden volumes are calculated from information obtained from drill holes spaced 500 to 1,000 feet apart. The actual quantity and quality of both the lignite and the overburden can vary somewhat from the projected values. This geologic variability combined with unexpected weather conditions and uncertain equipment availabilities make precise predictions regarding mine plans impossible.

1.1.2.3 Rockdale Aluminum Smelter

Alcoa's existing aluminum smelter, which has a smelting capacity of 330,000 tons per year, was located at Rockdale in the early 1950s. The 275-acre facility is located immediately adjacent to the Rockdale power generating station, from which the smelter obtains its electrical power. The smelter currently employs 1,100 workers. Alcoa applied for a VERP for the smelter in 1999; the VERP application is pending with TNRCC.

1.2 Purpose of and Need for Action

The USACE believes its decision to issue, issue with conditions, or deny Alcoa's Section 404 permit is considered a major federal action with the potential to significantly affect the quality of the human environment; therefore, the USACE is preparing this EIS to analyze the impacts of Alcoa's proposed project and reasonable alternatives.

The purpose of the proposed Three Oaks Mine is to provide a long-term, economically stable fuel supply for the existing Rockdale power generating station, which supplies power for Alcoa's Rockdale aluminum smelter. This need is currently being met by lignite mined from the existing Sandow Mine. However, mining at the Sandow Mine is approaching the limits of safe operation and economic viability, as mine pits have advanced to depths where additional long-term production is too costly (based largely on overburden depths to be excavated and volume of groundwater to be handled) to sustain the generating station. As a result, Alcoa must secure a new economically viable fuel source.

The Rockdale power generating station consists of three 120-MW units owned by Alcoa and one 595-MW unit owned by TXU, which provide power for Alcoa's existing Rockdale aluminum smelter as well as providing power to the TXU electrical grid system. Under Alcoa's current contractual agreement with TXU (extending through year end 2013), Alcoa supplies 4 million tons per year of lignite or the equivalent in western coal for the TXU generating unit at Rockdale. In the absence of a local lignite source, Alcoa would be obligated to install the required facilities to deliver western coal to this unit. If Alcoa did not provide the required coal, Alcoa would be in default on the Alcoa-TXU contract. Alcoa would have to provide the revenue (estimated at $14 million per year) in lieu of providing the fuel source for TXU's allocated 95 MW of power production per year for the remainder of the contract. Alcoa also would be responsible for the balance of the cost of capital (estimated at $12 million per year) on the TXU unit through the remainder of the contract (Hodges 2001). Based on the anticipated end of the economic life of the Sandow Mine (approximately 2004), failure to develop an alternate local lignite source likely would require major capital expenditures for fuel conversion of the generating units at Rockdale in order for these units to continue producing electricity; see Section 2.4 for additional information on alternative fuel sources.

Alcoa's aluminum smelter is a very large power consumer with an average usage of approximately 500 MW and a maximum demand of up to 700 MW. Due to the high energy requirements in primary aluminum production, power costs constitute one of the largest single factors affecting the cost of the raw aluminum product. Evans (1995) estimates that about one-third of the total cost of primary aluminum production is for the energy required in the process. As a result, aluminum smelters typically are located near sources of low-cost electrical power. Alcoa's smelter, which is currently the largest active aluminum smelter in the country, was located at Rockdale in the early 1950s due to the local abundance of an economical fuel source (lignite) at the Sandow Mine, which has resulted in a stable low-cost power supply. In order to continue producing aluminum at a cost that is competitive in the world market, Alcoa must secure a new economical fuel source to maintain its production of low-cost electrical power. Based on the current costs of producing lignite at the Sandow Mine, Alcoa projects that it needs to have an economically viable alternate fuel source developed and available to feed the power generating facilities by late 2003 or terminate operations at the Rockdale aluminum smelter (Hodges 2001). Alcoa's proposed Three Oaks Mine and other alternatives for meeting this need for continued low-cost power are discussed in Chapter 2.0.

1.3 Authorizing Actions

Alcoa submitted an application to the USACE on October 20, 2000, for a permit under Section 404 of the CWA and for water quality certification under Section 401 of the CWA. These permits would authorize Alcoa to discharge dredged and fill material into waters of the U.S. in association with the construction and operation of the proposed Three Oaks Mine. The USACE's Section 404(b)(1) alternatives evaluation is provided in Appendix A; Alcoa's application to the TNRCC for a Section 401 water quality certification is provided in Appendix B. Alcoa also submitted an application to the RRC, Surface Mining and Reclamation Division, on September 14, 2000, for a Coal Mining Operations Permit. The application provides information on the construction, operation, and reclamation procedures that would be implemented for the proposed project. Federal, state, and local permits and approvals required for Alcoa to conduct mining operations at the proposed Three Oaks Mine are shown in **Tables 1-1** and **1-2**.

No federal, state, or local land use policies, plans, or programs regulating development of the proposed permit area have been identified.

1.4 Organization of the EIS

This EIS complies with the CEQ EIS requirements (40 CFR 1502.10) and the USACE's requirements (33 CFR 325 Appendix B). Chapter 1.0 provides descriptions of the purpose of and need for the actions, the role of the USACE in the EIS process, and the required regulatory actions for the proposed project. Chapter 2.0 describes the alternatives, including the Proposed Action and the No Action Alternative. Chapter 3.0 describes the affected environment and the direct, indirect, and cumulative impacts associated with the project alternatives; possible mitigation to minimize or compensate for impacts; and any residual adverse effects following the implementation of mitigation. Chapter 4.0 summarizes public participation and the scoping process, and the consultation and coordination undertaken to prepare the EIS. Chapter 5.0 presents the list of EIS preparers and reviewers. Chapter 6.0 provides the list of references. Chapter 7.0

contains the glossary. Chapter 8.0 contains the index. Copies of supporting documents are available for public review at the USACE Fort Worth District Office in Fort Worth, Texas.

Table 1-1
Other Environmental Permits

Federal	
U.S. Army Corps of Engineers	Clean Water Act Section 404 Permit
State of Texas	
Railroad Commission of Texas	Surface Coal Mining and Reclamation Permit
Texas Natural Resource Conservation Commission	Clean Water Act Section 401 (Surface Water Quality) Certification Texas Pollutant Discharge Elimination System Permit Air Quality Permit (for coal crushing and conveyer facilities) Solid Waste Registration

Table 1-2
Other Requirements and Approvals

Federal	
U.S. Environmental Protection Agency	EIS Review
U.S. Fish and Wildlife Service	Endangered Species Act Section 7 Consultation, Fish and Wildlife Coordination Act
Mine Safety and Health Administration (MSHA)	MSHA Identity Report Training Plan
Federal Communications Commission	Radio Station Authorization
State of Texas	
Texas Department of Health	Radioactive Material License
Texas Department of Transportation	Approval for Farm-to-Market Road Realignments
Texas Historical Commission	Compliance with National Historic Preservation Act Section 106 Consultation, Native American Graves Protection and Repatriation Act, American Indian Religious Freedom Act, and Archaeological Resource Protection Act
Texas Natural Resource Conservation Commission	Notification of Open Burning
Local	
Bastrop and Lee County Sheriffs	Notification of Open Burning
Bastrop County Commissioners Court	Approval for Bastrop County Road Realignments
Lee County Commissioners Court	Approval for Lee County Road Realignments
Lee County	Approval for Stream Channel Modifications Under National Flood Insurance Program