DRAFT
ENVIRONMENTAL ASSESSMENT

Tar Creek Superfund Site
Property Buy-Out and Relocations in Picher, Cardin, and Hockerville,
Ottawa County, Oklahoma

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
…for a clean, attractive, prosperous Oklahoma

US Army Corps of Engineers
Tulsa District

January 2008

DRAFT
Environmental Assessment for Tar Creek Superfund Site: Property Buy-Out and Relocations, Picher, Cardin, and Hockerville, Ottawa County, Oklahoma

Prepared by:

U.S. Army Corps of Engineers
Southwestern Division
Tulsa District

January 2008

DRAFT
FINDING OF NO SIGNIFICANT IMPACT

In accordance with the National Environmental Policy Act of 1969, including guidelines in 33 Code of Federal Regulations, Part 230, the Tulsa District has assessed the environmental impacts of a transfer of Federal funds to the Oklahoma Department of Environmental Quality (DEQ) for activities associated with the buy-out of properties and permanent relocation of residents and businesses in Ottawa County, Oklahoma. The Corps of Engineers (USACE) has been given the authority under Section 111, Energy and Water Development Appropriations Act of 2004 (PL 108-137) to fund demolition of structures (homes, businesses, and public use facilities), necessary road and utility relocations, and NEPA compliance documentation. The Water Resources Development Act of 2007, Public Law 110-114 (121 Stat. 1041), provided further authorization for use of Section 111 as well as future appropriated funds up to $30,000,000 for use in property buy-out and permanent relocation of residents and businesses within the Tar Creek Relocation Zone including the communities of Picher, Cardin, and Hockerville, Ottawa County, Oklahoma. Actions taken under these authorizations will be consistent with the relocation program in the State of Oklahoma under 27A O.S. Supp. 2006, sections 2201 et seq. and impacts were assessed accordingly. Evaluated impacts included those associated with a full-scale buy-out and relocation program using all current and potential future appropriated Federal funds for these activities. The enclosed environmental assessment, which is incorporated by reference, indicates the above activities would have no significant adverse effects on the natural or human environment. Therefore, an environmental impact statement will not be prepared.

_____ _____

Date

Anthony C. Funkhouser
Colonel, U.S. Army
District Engineer

Enclosure
Draft Environmental Assessment

ENVIRONMENTAL ASSESSMENT ORGANIZATION

This Environmental Assessment (EA) evaluates the effects of activities associated with property buy-out and permanent relocation of residents and businesses in the Relocation Assistance Zone of the Tar Creek Superfund Site, Ottawa County, Oklahoma.

SECTION 1 *AUTHORITY, PURPOSE, AND SCOPE* provides the authority for the proposed action, summarizes the project purpose, provides relevant background information, and describes the scope of the EA.

SECTION 2 *ALTERNATIVES* examines alternatives for implementing the proposed action

SECTION 3 *PROPOSED ACTION* describes the recommended action.

SECTION 4 *AFFECTED ENVIRONMENT* describes the existing environmental and socioeconomic setting.

SECTION 5 *ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION* identifies the potential environmental and socioeconomic effects of implementing the proposed action and alternatives.

SECTION 6 *RESTORATION PLAN* summarizes mitigation actions required for the proposed alternative.

SECTION 7 *FEDERAL, STATE, AND LOCAL AGENCY COORDINATION* provides a listing of individuals and agencies consulted.

SECTION 8 *REFERENCES* provides bibliographical information for cited sources.

SECTION 9 *APPLICABLE ENVIRONMENTAL LAWS AND REGULATIONS* provides a listing of environmental protection statutes and other environmental requirements.

SECTION 10 *LIST OF PREPARERS* identifies persons who prepared the document and their areas of expertise.

APPENDICIES
- *A* *Relocation Assistance Zone Map*
- *B* *Cultural Resources (Section 106) Coordination*
- *C* *Endangered Species Coordination*
- *D* *Mailing List*

TABLE OF CONTENTS

SECTION 1.0 AUTHORITY, PURPOSE, AND SCOPE 1
SECTION 2.0 ALTERNATIVES 2
2.1 No Action Alternative 2
2.2 Action Alternative 3
SECTION 3.0 PROPOSED ACTION 3
SECTION 4.0 AFFECTED ENVIRONMENT 5
4.1 Current Social and Economic Conditions 5
4.1.1 Social Conditions 6
4.1.2 Economic Conditions 10
4.2 Executive Order 12898 13
4.3 Executive Order 13045 14
4.4 Natural Resources 14
4.4.1 Terrestrial 14
4.4.2 Soils 15
4.4.3 Prime Farmland 16
4.4.4 Wild and Scenic Rivers 16
4.4.5 Fish and Wildlife 16
4.5 Wetlands 17
4.6 Threatened and Endangered Species 17
4.7 Cultural Resources 19
4.8 Water Quality 19
4.9 Air Quality 20
4.10 Hazardous, Toxic, and Radiological Waste 20
SECTION 5.0 ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION 20
5.1 Social and Economic Impacts 20
5.1.1 Evaluation Methods and Criteria for Social and Economic Conditions 20
5.1.2 Population 21
5.1.3 Age and Gender Characteristics of the Population 22
5.1.4 Ethnic and Race Identification 23
5.1.5 Educational Attainment 23
5.1.6 Housing 23
5.1.7 Safety and Public Health 23
5.1.8 Social Institutions 24
5.1.9 Public Controversy and Community Cohesion 25
5.1.10 Economic Conditions 25
5.2 Executive Order 12898 26
5.3 Executive Order 13045 27
5.4 Natural Resource Impacts 27
5.4.1 Terrestrial 27
5.4.2 Prime Farmland 27
5.4.3 Wildlife 27
5.4.4 Wetlands and Water Quality Permits 28
5.4.5 Threatened and Endangered Species 28
5.5 Cultural Resources 28
5.6 Water Quality 30
5.7 Air Quality 30
5.8 Hazardous, Toxic, and Radiological Waste 30
5.9 Noise 30
5.10 Cumulative Impacts 30
SECTION 6.0 RESTORATION PLAN 31
SECTION 7.0 FEDERAL, STATE, AND LOCAL AGENCY COORDINATION 31
SECTION 8.0 REFERENCES 33

SECTION 9.0 APPLICABLE ENVIRONMENTAL LAWS AND REGULATIONS 37
SECTION 10.0 LIST OF PREPARERS.....38

LIST OF TABLES

Table Page

Table 1: Population by Age 6
Table 2: Population by Sex.....7
Table 3: Population by Race.....7
Table 4: Educational Attainment 8
Table 5: Housing Occupancy.....8
Table 6: Employment 10
Table 7: Employment by Industry 11
Table 8: Household Income in 1999 12
Table 9: Family Income in 1999.....12
Table 10: Poverty Status 12
Table 11: Relationship of Plans to Environmental Protection Statutes and Other Environmental Requirements 38

LIST OF APPENDICES

A Relocation Assistance Zone Map
B Cultural Resources (Section 106) Coordination
C Endangered Species Act Coordination
D Mailing List

DRAFT
Environmental Assessment (EA) for
Tar Creek Superfund Site:
Property Buy-Out and Relocations,
Picher, Cardin, and Hockerville, Ottawa County, Oklahoma

SECTION 1.0 AUTHORITY, PURPOSE, AND SCOPE

Existing funding for this project was derived under authority of Section 111 of the Energy and Water Development Appropriations Act of 2004 (Public Law 108-137). The Corps of Engineers was given authority and funding under this Act to implement demonstration projects determined by the Secretary of the Army to be necessary to address lead exposure and other environmental problems related to historical mining activities in Ottawa County, Oklahoma. The project was initially limited to demolition of structures (homes, businesses, and public use facilities), necessary road and utility relocations, and NEPA compliance documentation on a reimbursement basis within the geographic boundary shown in Appendix A. Federal funds were transferred, via grant, to the Oklahoma Department of Environmental Quality (DEQ) on a reimbursable basis for these activities. An environmental assessment under the National Environmental Policy Act (NEPA) of 1969 was prepared in May of 2007 for this action and a finding of no significant impact (FONSI) was signed by the Tulsa District Commander on 14 May 2007 (Tulsa District 2007). This EA and FONSI are available at http://www.swt.usace.army.mil/library/libraryDetail.cfm?ID=275 and are incorporated by reference.

The Water Resources Development Act of 2007, Public Law 110-114 (121 Stat. 1041), provided further authorization for use of Section 111 funds, as well as any future appropriated funds up to $30,000,000, for use in property buy-out and permanent relocation of residents and businesses within the Tar Creek Relocation Zone including the communities of Picher, Cardin, and Hockerville, Ottawa County, Oklahoma (area shown in Appendix A). Impacts associated with the transfer and use of Federal funds for these expanded activities were not addressed in the previous NEPA document (Tulsa District 2007) for actions within the project area.

The National Environmental Policy Act (NEPA) of 1969 (Public Law 91-190) requires all Federal agencies to address the environmental impacts of any major Federal action on the natural and human environment. Guidance for complying with NEPA is contained in Title 40 of the Code of Federal Regulations (CFR), Parts 1500 through 1508, and the U.S. Army Corps of Engineers NEPA guidelines at 33 CFR Part 230. The EA was also prepared in accordance with the USACE Engineering Regulation (ER) 200-2-2, *Procedures for Implementing NEPA*. The intent of NEPA is to ensure that applicable environmental information is made available to public officials and citizens regarding major actions undertaken by Federal agencies. The purpose of this EA is to evaluate the environmental impacts and consequences of transfer and use of Federal funds for property buy-out, permanent relocation of residents and businesses, and demolitions within the Tar Creek Relocation Zone. The Corps of Engineers proposes to amend the existing grant to DEQ to include buy-out and permanent relocation of residents and

businesses within the Tar Creek Relocation Zone as additional uses of the Federal funding, in accordance with the authorization of WRDA 2007, and to provide additional funds for the purposes specified in the grant should such funds be appropriated. The action is needed to assist the State of Oklahoma in addressing lead exposure and other environmental problems by relocating residences and businesses located in the Tar Creek Relocation Zone out of an area experiencing negative health and environmental effects associated with past mining operations.

In an effort to provide for a comprehensive assessment of all potential future impact scenarios, this evaluation was prepared to address impacts associated with use of both existing Section 111 funds (approximately $3.5 million) via a modified grant to the DEQ as well as those associated with future appropriations as authorized by WRDA 2007. Accordingly, this EA provides for a full assessment of impacts for use of current (Section 111) and future appropriated Federal funds.

SECTION 2.0 ALTERNATIVES

Alternatives include a No Action plan and a Proposed Action plan. The No Action plan would retain existing conditions and Federal funds under Section 111 would not be provided for property buy-out and relocation activities. In addition, any future appropriated Federal funds would not be used for these activities under the No Action Plan. The action alternative would involve modification of the existing grant to DEQ to allow use of Section 111 funds for property buy-out and permanent relocation of residents and businesses in the Tar Creek area. In addition, the action alternative would involve use of future appropriated funds (should they be made available) in the Tar Creek area as described in authorization language of WRDA 2007.

2.1 No Action Alternative

The No Action plan would retain existing conditions. Accordingly, Federal funds under Section 111 would not be provided for buy-out and relocation activities described in this assessment. Such project activities would not be conducted using Section 111 funds or future appropriated Federal funds (should they become available) as authorized by WRDA 2007. Under this alternative, Section 111 funds previously granted by USACE to the DEQ would continue to be available for demolition of structures, road and utility relocations, and NEPA documentation only. However, many buy-outs have already occurred in the area and given the overall level of effort at the Tar Creek Site, it is probable that some additional level of these future activities will be conducted using an alternate source of funding.

The Council on Environmental Quality (CEQ) regulations implementing the provisions of NEPA require Federal agencies to consider a "no action" alternative. These regulations define the "no action" alternative as the continuation of existing conditions and their effects on the environment, without implementation of, or in lieu of, a proposed action. This alternative represents the existing condition and serves as the baseline against which to compare the effects of the proposed alternative. The no action alternative would retain the existing condition and would not result in any additional project-related environmental impacts. The negative health and environmental effects characteristic of the area would remain as would physical hazards associated with potential areas of land subsidence. The site is hazardous and health and safety would continue to be of concern including the potential for exposure of human populations to

lead dust, other chemical-related health hazards, and physical hazards associated with subsidence.

2.2 Action Alternative

Only one alternative to the No Action Plan was considered and proposed under this project. The action alternative would be consistent with authorizing language of WRDA 2007 and would involve the transfer of Federal funds to DEQ, through an amended or future grant, for purposes to include buy-out and relocation activities in the Tar Creek area. The current grant for use of existing Section 111 funds would be amended to allow, on a reimbursable basis, these expanded activities as described in Sec. 3135(h) of WRDA 2007. The action alternative would likewise include the use of further appropriated funds, should they become available through future appropriations, for use in these activities. Depending upon the amount of future appropriations (if any), a number of action alternatives involving varying degrees of buy-out and numbers of affected properties would be plausible Given the uncertainty of any future appropriations, the number and range of these alternatives would be impossible to quantify. In an effort to provide a comprehensive assessment, impacts were assessed assuming the action alternative of complete buy-out as defined by the State of Oklahoma. The action alternative would be consistent with the relocation program in the State of Oklahoma under 27A O.S. Supp. 2006, sections 2201 et seq. and would likewise include activities involving demolition of structures, necessary road and utility relocations, and NEPA compliance as previously addressed in the EA for these activities (Tulsa District 2007).

SECTION 3.0 PROPOSED ACTION

The proposed action would be the transfer of Federal funds to the DEQ via a grant process to be used for activities consistent with the relocation program in the State of Oklahoma under 27A O.S. Supp. 2006, sections 2201 et seq. This would include the buy-out of residential and commercial properties, churches, city properties, and parks/sports complexes/public meeting lodges. Based on most current information provided by the Lead Impacted Communities Relocation Assistance (LICRA) trust, an estimated 901 total properties would be included in a total buy-out within geographic boundaries shown in Appendix A. Of these 901 properties, estimated numbers and property categories include 60 businesses, 22 churches, 2 parks/sport complexes/public meeting lodges, 3 city properties, and 814 individual residences. Following buy-out and relocations, structures would be demolished to decrease the liability associated with empty homes, businesses, and public facilities in the area. During demolition best management practices would be employed to protect the surrounding environment and remaining citizens in the area. All structures would be inspected for lead based paint and asbestos prior to demolition. Mitigation of any asbestos or lead hazards would be completed prior to demolition. Demolition activities may include: removal and disposal of all construction and demolition debris, septic systems closure, utilities relocation, grading of each site to allow for appropriate drainage, and final restoration of the disturbed areas. Work would be accomplished according to all local, State, and Federal regulations. Adequate and appropriate safety measures would be a major consideration during all phases of the project.

During the demolition phase of the project:

- Best Management Practices would be followed to ensure that any activity taken in close proximity to waters of the United States would be protected from incidental pollution from demolition debris or runoff.

- Actions would be taken to avoid take of species protected under the Endangered Species Act.

- Demolition debris would be disposed of in a manner consistent with State of Oklahoma regulations.

- Debris would go to a licensed sanitary landfill or other State-approved location and copies of dump receipts would be provided to the owner to document proper disposal.

- No major road relocations would occur that span streams in the area.

Fugitive dusts contributed from the site during demolition activities and after demolition is complete shall not exceed the EPA national primary and secondary ambient air quality standards for PM 10 and particulate matter and lead. The contractor will follow a fugitive dust control plan and provide for self monitoring of fugitive dusts during the demolition phase of the project.

As a means of avoiding adverse impacts to the American burying beetle (*Nicrophorus americanus*) (ABB), a Federally-listed endangered species, standardized evaluation, survey, and other techniques prescribed by the U.S. Fish and Wildlife Service (USFWS) will be employed by the DEQ and will accompany all activities involving excavation or soil disturbance. Accordingly, use of established protocol (Appendix D of USACE 2007) and activities for ABB protection to be employed by the LICRA Trust in coordination with the DEQ are included as a component of the proposed action.

Under the proposed action, the degree to which buy-outs would occur and number of properties involved would be dependent upon available Federal funding. At a minimum, buy-outs would occur to the extent possible using remaining Section 111 funds (approximately $3.5 million). Should future appropriations be provided, buy-outs would occur to the extent possible with these appropriations, up to the $30,000,000 authorized by WRDA 2007. Based on extent and timing of future appropriations (if any) buy-outs could occur in phases or stages concurrent with funding.

In order to assure proper notification and compensation of property owners prior to demolition of structures, the grant transferring Federal funds to the DEQ would include specific language stating that the Grantee must ensure all such coordination would be completed with all property owners in accordance with State and Federal law prior to demolition activities.

There are currently no plans for future land use in the area following buy-outs, relocations, and demolition of structures. It is anticipated that the area would be characterized by a more natural, undeveloped state with an increase in wildlife habitat and areas available for public recreation.

SECTION 4.0 AFFECTED ENVIRONMENT

The project area is located on approximately 20 square miles of land that includes the City of Picher, Town of Cardin, and Town of Hockerville, Oklahoma (see Appendix A for map). The project area is within the 40 square mile Tar Creek site which encompasses the Oklahoma portion of the Tri-State Mining District of northeastern Oklahoma, southeastern Kansas, and southwestern Missouri (EPA, 2005).

Ottawa County has a temperate, continental climate characteristic of the southern prairie plains where they merge with the southwestern extension of the Ozark Plateau (USDA, 1964). The elevation in the Picher area is around 800 feet National Geodetic Vertical Datum (Luza, 1986).

Changes between the seasons are gradual, but the characteristics of the seasons are fairly well defined. The winter season ranges from cold to moderate; there are many sunny days between storms. Snow rarely covers the ground for more than 3 or 4 days at a time. Spring is the season when the weather is most variable and when the largest amount of rainfall of high intensity occurs. Summers are generally hot, but the nights are cool. In the fall there are long periods of pleasant days interspersed with spells of moderate to heavy rains. Tornadoes are infrequent but can occur in the area (USDA, 1964).

The average annual temperature is 57.3 ^{o} F. Temperatures range on the average from 33° in January to 79.4^{o} in July. The average annual precipitation is 44.6 inches. About 31 percent of the precipitation comes in spring; 29 percent in summer; 26 percent in fall; and 14 percent in winter. Winds are generally from the south, but in midwinter northerly winds predominate. The average annual snowfall is about 12 inches and covers the ground with at least two inches, an average of 13 days per year (USDA, 1964).

4.1 Current Social and Economic Conditions

Lead and zinc mining came to northeastern Oklahoma near Peoria, Ottawa County, in 1891 (Luza, 1986). At one time the Tri-State Mining District, which includes the Picher Mining Field, was the leading United States producer of lead and zinc, supplying nearly 27 percent of the nations lead and zinc products. During the peak mining years of 1907 through 1946, almost two million tons of lead and zinc were mined in the area at a value of more than $202 million. By the time the last mining company closed in 1970, the Picher Mining Field had produced 1.7 million tons of lead and 8.8 million tons of zinc (Keating, 2000).

What once brought economic prosperity to the far northeastern corner of Oklahoma soon led to a legacy of human health and environmental calamity. The mining and milling of lead and zinc ore left approximately 300 miles of underground tunnels, 165 million tons of tailings (chat), over 1,320 mine shafts, and thousands of drill holes in the Oklahoma portion of the Tri-State Mining District alone. Tangible natural resource threats were first realized in 1979 when metals-laden mine water began discharging to surface streams in the Tar Creek watershed. The 40 square-

mile site was added to the first National Priorities List when Congress created the Superfund program in 1983, and remediation efforts followed primarily to address the surface water and groundwater (Keating, 2000).

4.1.1 Social Conditions

4.1.1.1. Population

U.S. Census Bureau data from the 2000 Census indicates that an estimated 1,790 persons live in Picher and Cardin, Oklahoma. Population data specific to Hockerville is unavailable. An estimated 33,194 persons live in Ottawa County, Oklahoma, with a large majority of that population living in the City of Miami.

4.1.1.2. Age and Gender Characteristics of the Population

The population of Picher and Cardin was distributed relatively evenly across age groups according to data available from the U.S. Census Bureau 2000 Census. The most populous age groups are 25-34, 35-44, and 45-54. It is expected that this distribution has remained similar over the past 7 years. However, the age groups with children is expected to be less than that reported during the last Census due to previous buy-outs and efforts to minimize exposure by children to lead and other metals present in the area. Table 1 shows the population distribution by age.

Table 1: Population by Age
Picher and Cardin Oklahoma
2000 Census

	Number	Percent
Under 5 years	127	7%
5 to 9 years	138	8%
10 to 14 years	136	8%
15 to 19 years	139	8%
20 to 24 years	102	6%
25 to 34 years	208	12%
35 to 44 years	225	13%
45 to 54 years	235	13%
55 to 59 years	100	6%
60 to 64 years	83	5%
65 to 74 years	168	9%
75 to 84 years	102	6%
85 years and over	27	2%

More women than men were reported in the 2000 Census to be living in Picher and Cardin. Table 2 breaks down the population by sex.

Table 2: Population by Sex Picher and Cardin, Oklahoma 2000 Census		
	Number	**Percent**
Male	878	49%
Female	912	51%

4.1.1.3. Ethnic and Race Identification

Ninety-one percent of the persons who responded to the 2000 Census reported being one race, while the remaining 9 percent are two or more races. Seventy-eight percent of the population reports being White, while 13 percent are American Indian.

Of the total population, approximately 1 percent reports being Hispanic or Latino of any race. Persons who identify themselves as "Hispanic" or "Latino" are those who classify themselves in one of the specific Hispanic or Latino categories listed on the Census. Those categories are "Mexican," Puerto Rican," "Cuban," or "other Spanish, Hispanic or Latino," and they can be of any race listed.

The compete breakdown of population by race is shown in Table 3.

Table 3: Population by Race Picher and Cardin, Oklahoma 2000 Census		
	Totals	**Percent**
One Race	1,631	91.1
White	1,390	77.7
Black or African American	0	0.0
American Indian and Alaska Native	235	13.1
Asian	2	0.1
Native Hawaiian and Other Pacific Islander	3	0.2
Some other race	1	0.1
Two or more races	159	8.9
Hispanic or Latino (of any race)	23	1.3

4.1.1.4. Education Attainment

Sixty-one percent of the population aged 25 and older in Picher and Cardin have a minimum educational attainment of a high school diploma (or equivalent). The remaining almost 39 percent have less than a high school diploma. Almost 5 percent of the population aged 25 and older have earned a Bachelor's Degree or higher.

Table 4 shows the educational attainment of the population of Picher and Cardin. Those who have earned a Bachelor's Degree or higher are included in the High School Graduate or higher category as well as the Bachelor's Degree or higher. As such, the percentages on Table 4 do not add up to 100 percent.

Table 4: Education Picher and Cardin, Oklahoma 2000 Census		
	Number	**Percent**
Population 25 years and over	1,152	
Less than a high school diploma	447	38.8
High school graduate or higher	705	61.2
Bachelor's degree or higher	53	4.6

4.1.1.5. Housing

Picher and Cardin have approximately 679 occupied housing units. Of those, approximately 73 percent are owner-occupied.

Table 5: Housing Occupancy Picher and Cardin, Oklahoma 2000 Census		
	Number	**Percent**
Occupied housing units	679	
Owner-occupied housing units	495	72.9
Renter-occupied housing units	184	27.1
	0	
Average household size of owner-occupied unit (persons)	2.65	(X)
Average household size of renter-occupied unit (persons)	2.25	(X)

Housing units in Hockerville and other areas outside of Picher and Cardin make up the additional units to be demolished. According to the LICRA Trust, a total of 814 residences in Picher, Cardin, and Hockerville will be offered in the buyout.

4.1.1.6. Safety and Public Health

The bulk of the mining operations occurred in the towns of Picher, Cardin, Hockerville, and Zincville. These towns were built near chat piles, mill ponds, mineshafts, boreholes, and mine workings which pose threats to human health and the environment. Chat piles are large piles of mining waste that, along with mill ponds, have been found to contain residual amounts of lead and other heavy metals (Gerberding, 2004). This is a concern to the citizens living in the Tar Creek site, due to exposure to heavy metals including lead.

Due to the widespread nature of mining waste, exposure to lead and other heavy metals is a concern for children living in the Superfund site. In 1993 blood lead testing conducted by the Indian Health Service (IHS) indicated that 35% of the children tested at the IHS in Ottawa County had elevated blood lead levels. (Elevated blood lead levels are defined as being at or above 10 micrograms per deciliter). Since that time blood lead levels in children have declined, but remain above the national average (Gerberding, 2004). The decline is due to increased awareness and yard remediation conducted by the U.S. Environmental Protection Agency (EPA). However, the threat of lead exposure still remains for residents living in Picher and Cardin due to

the presence of mine waste, mill ponds, and flotation ponds in close proximity to homes and businesses (ATSDR, 2004).

Lead exposure is of concern in children and adults. Children age six and under are most susceptible to lead poisoning, because their central nervous system is still forming. At this stage of life even exposure to low levels of lead can cause reduced IQ, behavioral problems, stunted growth, learning disabilities, attention deficit disorders, impaired hearing, and kidney damage. High levels of lead exposure in children can lead to mental retardation, coma, and death. Pregnant women are also sensitive to lead exposure. During pregnancy lead that is stored in the bones is re-released into the blood stream and can be transferred to the developing fetus. This can lead to elevated blood lead levels when the baby is born. Adults on the other hand require a much greater level of lead exposure to show health effects. If adults are exposed to high levels of lead, then they may experience fertility problems, muscle and joint pain, memory and concentration difficulty, increase in blood pressure, and irritability (NSC, 2004).

Subsidence is another concern at the Tar Creek Superfund site. Subsidence has been occurring within the Superfund site since the time of mining and continues to pose a threat (USACE, 2006). Subsidence occurs for a number of reasons the main reasons being improper mine room support and deteriorating mine shafts. The mines at the Tar Creek site were mined using the room and pillar method. The room and pillar method consisted of leaving irregularly spaced pillars to support a given room size. Pillars were later partially or completely removed when ore bodies became scarce (Luza, 1986). This practice coupled with the appropriate geologic features created a greater potential for collapse. There are approximately 2,540 acres of underground mine workings in northeastern Oklahoma with depths ranging from 180 to 270 feet. These underground mine workings are located in 51 sections north of Miami with the greatest concentration in the Picher area (Luza and Keheley, 2006).

In 2006, the Oklahoma Geological Survey released an open file report that showed that at least 1,193 mine shafts exist within the Picher Field in Oklahoma. Of these, 511 mine shafts were open and/or in some stage of collapse. In addition, 104 non-shaft related collapses were discovered with half of these being located west of Commerce and Cardin, Oklahoma (Luza and Keheley, 2006). Mine shaft related collapses have been associated with decaying mine shaft cribbing and/or collapse of the mine workings at depth within the shaft. Non-shaft related collapses tend to occur where mine rooms have tall ceilings and where mining extended upward into the limestone. In some cases the limestone was completely removed leaving shale roof rock, which tends to weaken the mine roof (USACE, 2006).

4.1.1.7. Social Institutions

4.1.1.7.1. Education and Child Care

Picher and Cardin have their own combined school district with a total enrollment of approximately 365 in 2003. However, after the first round of voluntary buyouts, the school district saw its enrollment drop to approximately 150 students. The local community voted in 2007 to keep the school open rather than sending children to neighboring schools in Quapaw and Commerce (Tulsa World, 2007). The Picher-Cardin school district does not sponsor athletics, band or arts programs.

Childcare in Picher and Cardin is limited. According to City-Data.com, the Picher zip code has two child-daycare services.

4.1.1.7.2. Religious Institutions

There are approximately 22 churches currently listed for buyout. Some of the population travel to neighboring towns to have their religious needs met. The churches provide services to the local community and add to the sense of community within these two towns.

4.1.1.7.3. Culturally Traditional Lands and Tribal Ties.

DEQ is aware of 49 Bureau of Indian Affairs properties on the buyout list. The area of the buyout includes lands used for traditional American Indian celebrations and activities, including pow-wows, hunting and fishing. These lands hold tribal significance.

4.1.1.7.4. Health Care Delivery

Health care is currently not available in Picher or Cardin. Residents seek health care in neighboring towns.

One nursing care facility was located in the Picher and Cardin zip code (City-Data, 2007). This facility was closed in 2007.

4.1.1.7.5. Public Safety and Other Services

Picher provides local emergency services including police, fire and ambulance. The police department is staffed by three part-time employees (City-Data.com, 2007).

4.1.2 Economic Conditions

4.1.1.8. Employment

According to the 2000 Census, approximately 668 of 1,371 persons age 16 and older participate in the labor force in Picher and Cardin. All of those persons participate in the civilian labor force, and none of the eligible labor force participants are from the Armed Forces. This is illustrated in Table 6.

Table 6: Employment
Picher and Cardin, Oklahoma
2000 Census

	Number	**Percent**
Population 16 years and over	1371	100
In labor force	668	48.7
Civilian labor force	668	48.7
Employed	581	42.4
Unemployed	87	6.3
Percent of civilian labor force	13	(X)
Armed Forces	0	0
Not in labor force	703	51.3

Almost half the workforce of Picher and Cardin is employed in either the manufacturing industry or in the educational, health, and social services industry. Both industries employ approximately

20 percent of the population (40 percent combined). An additional almost 11 percent of the population is employed in retail trade. A complete breakdown by industry is shown in Table 7.

Table 7: Employment by Industry Picher and Cardin, Oklahoma 2000 Census		
	Number	**Percent**
Agriculture, forestry, fishing and hunting, and mining	25	3.7
Construction	49	7.3
Manufacturing	138	20.7
Wholesale trade	17	2.5
Retail trade	72	10.8
Transportation and warehousing, and utilities	39	5.8
Information	6	0.9
Finance, insurance, real estate, and rental and leasing	11	1.6
Professional, scientific, management, administrative, and waste management services	7	1.0
Educational, health and social services	130	19.5
Arts, entertainment, recreation, accommodation and food services	38	5.7
Other services (except public administration)	31	4.6
Public administration	18	2.7

4.1.1.9. Income and Earnings

Most households in Picher and Cardin earn less than $25,000 per year. Table 8 shows the household income distribution for Picher and Cardin based on 1999 incomes.

Table 8: Household Income in 1999 Picher and Cardin, Oklahoma 2000 Census		
	Number	**Percent**
Households	688	
Less than $10,000	164	23.8
$10,000 to $14,999	89	12.9
$15,000 to $24,999	162	23.5
$25,000 to $34,999	98	14.2
$35,000 to $49,999	81	11.8
$50,000 to $74,999	66	9.6
$75,000 to $99,999	20	2.9
$100,000 to $149,999	5	0.7
$150,000 to $199,999	0	0
$200,000 or more	3	0.4

Table 9 shows the family income for Picher and Cardin, Oklahoma based on the 2000 Census. Over 50 percent of the families earned less than $35,000 in 1999.

Table 9: Family Income Picher and Cardin, Oklahoma 2000 Census		
	Number	**Percent**
Families	478	
Less than $10,000	64	13.4
$10,000 to $14,999	40	8.4
$15,000 to $24,999	125	26.2
$25,000 to $34,999	88	18.4
$35,000 to $49,999	71	14.9
$50,000 to $74,999	65	13.6
$75,000 to $99,999	20	4.2
$100,000 to $149,999	3	0.6
$150,000 to $199,999	0	0.0
$200,000 or more	2	0.4

Over 21 percent of the families of Picher and Cardin live in poverty.

Table 10: Poverty Status Picher and Cardin, Oklahoma 2000 Census		
	Number	**Percent**
Below Poverty Level		
Families	101	(X)
Percent below poverty level	(X)	21.1
With related children under 18 years	54	(X)
With related children under 5 years	24	(X)

4.2 Executive Order 12898

Executive Order 12898 requires each Federal agency to make environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations.

Under NEPA, the identification of a disproportionately high and adverse human health or environmental effect on a low-income population, minority population, or Indian tribe does not preclude a proposed agency action from going forward, nor does it necessarily compel a conclusion that a proposed action is environmentally unsatisfactory. Rather, the identification of such an effect serves to heighten agency attention to alternatives (including alternative sites), mitigation strategies, monitoring needs, and preferences expressed by the affected community or population.

Low-income populations in an affected area are identified with the annual statistical poverty thresholds from the Bureau of the Census Reports on Income and Poverty. In identifying low-income populations, agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect.

Minorities are comprised of individual(s) who are members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic.

Minority populations are identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis. In identifying minority communities, agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a geographically dispersed/transient set of individuals (such as migrant workers or Native American), where either type of group experiences common conditions of environmental exposure or effect. The selection of the appropriate unit of geographic analysis may be a governing body's jurisdiction, a neighborhood, census tract, or other similar unit that is to be chosen so as to not artificially dilute or inflate the affected minority population. A minority population also exists if there is more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds.

When determining whether environmental effects are disproportionately high and adverse, agencies are to consider the following three factors to the extent practicable: (a) whether there is or will be an impact on the natural or physical environment that significantly and adversely affects a minority population, low-income population, or Indian tribe. Such effects may include ecological, cultural, human health, economic, or social impacts on minority communities, low-

income communities, or Indian tribes when those impacts are interrelated to impacts on the natural or physical environment; and (b) whether environmental effects are significant or may have an adverse impact on minority populations, low income populations, or Indian tribes that appreciably exceeds or is likely to appreciably exceed those on the general population or other appropriate comparison group; and (c) whether the environmental effects occur or would occur in a minority population, low-income population, or Indian tribe affected by cumulative or multiple adverse exposures from environmental hazards.

4.3 Executive Order 13045

On 21 April 1997, President Clinton issued Executive Order 13045 (EO 13045), Protection of Children From Environmental Health Risks and Safety Risks, which notes that children often suffer disproportionately from environmental health and safety risks, due in part to a child's size and maturing bodily systems. The executive order defines environmental health and safety risks as risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest (such as the air we breath, the food we eat, the water we drink or use for recreation, the soil we live on, and the products we use or are exposed to). E.O. 13045 requires Federal agencies, to the extent permitted by law and mission, to identify and assess environmental health and safety risks that may affect children disproportionately. The Executive Order further requires Federal agencies to ensure that its policies, programs, activities, and standards address these disproportionate risks. E.O. 13045 is addressed in this EA to examine the effects this action will have on children.

4.4 Natural Resources

4.4.1 Terrestrial

The eastern part of the Oklahoma portion of the Picher Field is situated on the west edge of the Ozark Plateau Physiographic Province. The Ozark Plateau is a broad, low structural dome lying mainly in southern Missouri and northern Arkansas. However, the main part of the Picher Field is within the Central Lowland Physiographic Province. This province is characterized by a nearly flat, treeless prairie underlain by Pennsylvanian shale (Luza, 1986).

The rock formations exposed at the surface in the mining field include Mississippian and Pennsylvanian units that are nearly flat, with a low regional northwestward dip of about 20-25 feet per mile. Cambrian and Ordovician formations, primarily dolomite and chert with some sandstone and minor shale, are encountered only in deep drill holes and water wells in this area (Luza, 1986).

Mississippian rock units, principally the Boone Formation, are the host for most of the ore deposits. The Boone Formation is composed of fossiliferous limestone and thick beds of nodular chert. Significant quantities of mill-waste material were generated by milling of the lead-zinc ores. The discarded mill-waste material, chiefly composed of chert fragments 0.75 inches or less in diameter is referred to as chat. An inventory of tailings piles, former tailings piles, and former tailings ponds indicates there are 146 former chat-pile sites and 119 existing chat piles that

occupy about 1,200 acres. Approximately 900 acres are overlain by chat piles. There is approximately 75 million tons of chat piled throughout the Tar Creek Superfund Site (Luza, 1986).

In 2006 the Oklahoma Geological Survey released an open file report that showed that at least 1,193 mine shafts exist within the Picher Field in Oklahoma. Of these 511 mine shafts were open and/or in some stage of collapse. In addition, 104 non-shaft related collapses were discovered with half of these being located west of Commerce and Cardin, Oklahoma (Luza and Keheley, 2006). Mine shaft related collapses have been associated with decaying mine shaft cribbing and/or collapse of the mine workings at depth within the shaft. Non-shaft related collapses tend to occur where mine rooms have tall ceilings and where mining extended upward into the limestone. In some cases the limestone was completely removed leaving shale roof rock, which tends to weaken the mine roof (USACE, 2006).

The streams that traverse the mining field, which are only slightly incised below prairie level, flow southward to the Neosho River. Elm Creek, on the western edge of the field, and Tar Creek are the principal streams in the main productive part of the field (Luza, 1986).

Topographic relief in the area is relatively small. The lowest point, south of Commerce, is about 780 feet National Geodetic Vertical Datum (NGVD). The average elevation is around 830 feet NGVD, and the highest point is about 900 feet NGVD (Luza, 1986).

Tar Creek is located within the Prairie Parkland Province (Bailey, 1980). Vegetation in this province is characterized by intermingled tall grass prairie, with groves and strips of deciduous trees. This province covers an extensive area of about 218,200 square miles from Canada to Oklahoma, with alternating prairie and deciduous forests. Trees are commonly found near streams. Tall grass prairie species are the dominant prairie vegetation. Most are moderately tall and usually grow in bunches. The dominant species include big bluestem, little bluestem, switch grass, and Indian grass, along with many species of wildflowers and legumes. In many places where grazing and fire are controlled, deciduous forest is encroaching on the prairies. The upland forest in this area is dominated by oak and hickory. On floodplains and moist hillsides it includes eastern cottonwood, black willow, and American elm.

Prior to lead and zinc mining the project area was mainly upland timber and native grassland. Extensive ground coverage of chat left behind from mining operations resulted in the topsoil in the area being in very poor condition. The chat material is essentially devoid of organic content and will not support vegetation. As a result vegetation in areas with chat piles and bases is absent or of poor quality.

4.4.2 Soils

According to the U.S. Department of Agriculture (USDA) Soil Survey for Ottawa County, Oklahoma, most of the project area lies within the Dennis-Taloka association with a small portion within the Dennis-Parsons-Bates association. The Dennis-Taloka association is nearly level to moderately sloping upland soils formed in material from sandstone and shale or in old alluvium. The Dennis-Parsons-Bates association is nearly level to moderately sloping upland

soils formed in material from sandstone and shale (USDA, 1964).

Areas throughout the soil maps with an Mp indicate that the land type consists of piles of rock and chat from zinc and lead mines. The larger piles cover 40 acres or more, and some are over 200 feet tall and can be seen for miles. In some areas there is only a thin covering of rock and chat. In many places drainage ways are blocked by rock and chat and nearby areas are ponded or made swampy. Seepage from these areas makes nearby soils, which are otherwise well drained, wet in many places. Most areas of the Mp soil type are without vegetation. This miscellaneous land type has little value for agriculture. In some areas it has minor value for wildlife (USDA, 1964).

4.4.3 Prime Farmland

Soil that is prime or unique farmland as defined in the Farmland Protection Policy Act is classified as prime farmland. According to the USDA, it is soil that is best suited for producing food, feed, forage, fiber, and oilseed crops. The Mine pits and dumps (Mp) classified soils are not classified as prime farmland. Farmland within a city or town is not considered prime farmland, because it has been taken out of production. None of the affected area is considered prime farmland, therefore the Farmland Protection Policy Act is not applicable to this proposed action.

4.4.4 Wild and Scenic Rivers

There are no streams within the project area that are classified as wild and scenic pursuant to the Federal Wild and Scenic Rivers Act, Public Law 90-542 (see letter from Chuck Potts with the Oklahoma Water Resources Board dated February 22, 2007 in Appendix B of USACE 2007).

4.4.5 Fish and Wildlife

Fish habitat within the Tar Creek Superfund site is limited to mill ponds, ponds, streams, and rivers. Many of these bodies of water contain mine waste and metals originating from historic lead and zinc mining operations. Species that have been collected from streams, millponds, and local ponds in the area for contaminants analysis include carp, channel catfish, spotted bass, largemouth bass, bluegill sunfish, and smallmouth buffalo. Fish caught locally in these waters are a common part of the diet of persons in the area. The consumption of fish containing elevated levels of metals is a concern because chronic exposure to heavy metals can cause health problems. In comparison to fish collected in the National Contaminant Biomonitoring Program, the fish collected in this area had lead concentrations higher than normal. The elevated levels of lead in the fish were correlated positively to the concentration of lead in the sediments of the waters. The consumption of whole-eviscerated or whole-uneviscerated fish from these waters is discouraged. However, the consumption of fillets from fish in this area is safe at rates at least as high as six 8-ounce meals per month according to the Oklahoma Department of Environmental Quality (DEQ, 2003).

On July 17, 2003, the Oklahoma DEQ issued a News Release that concluded that skinless fish fillets from all species in the Tar Creek Superfund site are safe to eat. However, DEQ's data indicate that lead and cadmium are present and above safe levels for consumption in bottom

feeding species like carp, buffalo, and catfish when fish flesh and bones are combined (DEQ, 2003).

Several species of amphibians, reptiles, and birds occur in the vicinity of the project. However, wildlife diversity and numbers are very limited because of the extremely poor or non-existent habitat.

Mammals most likely to occur in the area include species such as fox squirrel (*Sciurus niger*), coyote (*Canus latrans*), raccoon (*Procyon lotor*), opossum (*Didelphis marsupialis*), striped skunk (*Mephitis mephitis*), and cottontail rabbit (*Sylvilagus floridanus*).

4.5 Wetlands

In an April 6, 2007 letter, the United States Army Corps of Engineers stated that no jurisdictional wetlands are identified within the project boundaries. Best Management Practices will be followed to ensure that any activity taken in close proximity to waters of the United States will be protected from incidental pollution from demolition debris or runoff. No major road relocations will occur that span streams in the area. Anticipated road or utility relocations will not impact wetlands in the project area (see Appendix E of USACE 2007).

4.6 Threatened and Endangered Species

Federally listed species that occur in Ottawa County include the candidate Arkansas darter (*Etheostoma cragini*), endangered gray bat (*Myotis grisescens*), threatened Neosho madtom (*Noturus placidus*), candidate Neosho mucket mussel (*Lampsilis rafinesqueana*), endangered Ozark big-eared bat (*Corynorhinus (=Plecotus) townsendii ingens*), endangered American burying beetle (*Nicrophorus americanus*), threatened Ozark cavefish (*Amblyopsis rosae*), endangered winged mapleleaf mussel (*Quadrula fragosa*), and endangered/threatened piping plover (*Charadrius melodus*).

The Arkansas darter is being proposed for federal listing. One of the regions that it can be found is the Ozark Plateau within the Spring and Neosho River drainages of southwestern Missouri, southeastern Kansas, and northeastern Oklahoma. The Arkansas darter typically lives in small streams with clear, cool water (generally less than 25°C) in the vicinity of springs or groundwater seeps with abundant broad-leaved aquatic vegetation (USGS, 2006).

The gray bat was listed in 1976. It has a medium wingspan of 10 to 11 inches and a total length of 4 to 5 inches. It has grayish brown fur and is the only bat within its range with unicolored dorsal hair. The bat roosts almost exclusively in caves year-round and has very specific requirements. They are generally limited to limestone caves and have specific temperature requirements (USFWS, 2007).

The Neosho madtom was listed in 1991. It has features characteristic of all North American catfish, including scaleless skin and a relatively large head with sensory barbels. Adult Neosho madtoms average less than three inches in length. They have a brownish midline stripe and an overall mottled appearance. The preferred habitat of adult Neosho madtoms is shallow riffles with loose, incompact gravel bottoms. They are occasionally found in areas with sandy bottoms

covered with leaf litter (USFWS, 2007).

The Neosho mucket mussel is listed as endangered on the Kansas state list, but it is not listed on the federal list. It lives in freshwater and has an elongated, slightly rounded shell and is approximately 4 inches across. The shell is thin, light brown and has a dull, waxy shin that usually becomes darker with age. One region that the Neosho mucket mussel was historically found is the Spring and Neosho River systems in Kansas, which flow into Oklahoma (KDWP, 2000).

The Ozark big-eared bat was listed in 1973. It is a medium sized bat with large ears. Its snout has prominent lumps and its fur ranges from light to dark brown. It is found in caves, cliffs, and rock ledges associated with oak-hickory forests of the Ozarks. They forage along the edges of upland forests for insects (USFWS, 2007).

The American burying beetle (ABB) was listed in 1989. The ABB is a member of the beetle family Silphidae and is known to bury vertebrate carcasses for reproductive purposes as well as exhibit parental care of young. The ABB is fully nocturnal and active when nighttime temperatures consistently exceed 60 F. For the remainder of its life cycle (generally mid-May to late-September) the ABB remains in an inactive state buried at soil depths ranging from 6- to 36-inches. It is the largest of the ABB species reaching a length of 1 to 1 ½ inches and is a relatively robust beetle having shiny black elytra with four orange-red spots. It also has a large orange-red spot on the pronotum which is indicative of the species. The habitat requirement for the ABB is not fully understood and it is considered a habitat generalist (USFWS, 2007).

Ottawa County, Oklahoma is within the documented historic range of the ABB. While its current presence has not been confirmed in this location, suitable habitat is present in Ottawa County and the area is adjacent to a county where the presence of the ABB has been confirmed. While many areas slated for demolition activities resulting from the proposed action do not possess suitable habitat for the species (e.g., paved areas), some ground disturbance may occur in areas with potentially suitable habitat. Critical habitat has not been designated for this species.

The Ozark cavefish was listed in 1984. It is a small, (2 to 2 ¼ inches), blind, pinkish-white fish that lives in cave streams and springs within the Springfield Plateau in Arkansas, Missouri, and Oklahoma (USFWS, 2007).

The winged mapleleaf mussel was listed in 1991. Originally it existed in 13 states in river and stream tributaries to the Mississippi River. Today it is found in one river, the St. Croix River, in Minnesota and Wisconsin. It is found in riffles with clean gravel, sand, or rubble bottoms and in clear, high quality water (USFWS, 2007).

The piping plover was listed in 1985. It is a small shorebird about seven inches long with a wingspan of 15 inches. Adults have sand-colored upper parts with white undersides and are easily distinguished by their bright orange legs. This species migrates across the eastern ¾ of Oklahoma during the spring and fall utilizing sandy shorelines on lakes and sandbars along the major river systems for forage and resting areas (USFWS, 2007).

4.7 Cultural Resources

The Picher-Cardin mining area is a historic district eligible for listing on the National Register of Historic Places (NRHP). This was a determination made by Tulsa District in 2004 in consultation with the Oklahoma State Historic Preservation Office (SHPO) in accordance with the district's responsibilities under Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended) and its implementing regulation 36 CFR Part 800. Although the full extent of historic features contributing to this historic district has not been described, a Heritage Study of the area is currently being produced to address this shortcoming. The Heritage Study is addressed more thoroughly in Section 5.5 and in Appendix C of Tulsa District (2007). However, fieldwork and historic research conducted to date has resulted in identification of numerous historic structures related to the historic mining activities in the Picher-Cardin area. These structures may include, but are not limited to, processing towers, mine shafts, foundations, structure footings, and chat waste piles. Many or all of these historic features or structures may be contributing elements to the National Register historic district.

In accordance with Section 106 of the NHPA, consultation was initiated in 2004 with the SHPO and the Oklahoma Archeological Survey (OAS). Consultation for the general Tar Creek area, specifically relating to the Picher Field, was also initiated with appropriate Native American tribes in 2004. These tribes included the Caddo Tribe of Oklahoma, Cherokee Nation of Oklahoma, Delaware Tribe of Indians of Oklahoma, Eastern Shawnee Tribe of Oklahoma, Miami Tribe of Oklahoma, Modoc Tribe of Oklahoma, Osage Nation of Oklahoma, Ottawa Tribe of Oklahoma, Peoria Tribe of Indians of Oklahoma, Quapaw Tribe of Oklahoma, Seneca-Cayuga Tribe of Oklahoma, Wichita and Affiliated Tribes of Oklahoma, and Wyandotte Tribe of Oklahoma. To date, cultural resources consultation on the Picher-Cardin area has been extensive, culminating in the execution of a Programmatic Agreement (PA). Consultation efforts and results are discussed in more detail in Section 5.5.

4.8 Water Quality

Mining began in Ottawa County in the early 1900's and continued until the 1970's. The Boone Formation is the geological formation that was the source of the metal ore. The Boone Formation is also an aquifer. Due to the presence of the aquifer in the ore-producing Boone Formation, the mining companies were forced to pump large volumes of water from the extensive underground mine workings. Pumping continued until the mining ceased, at which time the aquifer and the mines began refilling. As water filled the mines, sulfide minerals within the mines, which had been oxidized by exposure to air, dissolved, creating acid mine water. By 1979, water levels had increased to the point that the acid mine water began discharging at the surface from numerous locations, severely impacting Tar Creek (EPA, 2005).

In addition, millions of tons of mine tailings and other waste material left over from the mining operations are present in the Picher area. Runoff from these materials is characterized by elevated concentrations of metals; especially iron, zinc, lead, and cadmium; and mineral acidity and sulfate (EPA, 2005). Thus these mine tailings, ponds, and wetlands throughout the project area contain many toxicants including lead and other heavy metals.

4.9 Air Quality

EPA published a Conformity Rule on November 30, 1993, requiring all Federal actions to conform to appropriate State Implementation Plans (SIP's) that were established to improve ambient air quality. At this time, the Conformity Rule only applies to Federal actions in non-attainment areas. A non-attainment area is an area that does not meet one or more of the National Ambient Air Quality Standards for the criteria pollutants designated in the Clean Air Act (CAA). According to the DEQ, the State of Oklahoma was in compliance with the CAA through the end of 2006 (see Tulsa District 2007).

A conformity determination based on air emission analysis is required for each proposed Federal action within a non-attainment area. Since this geographical region is in attainment and meets the National Air Quality Standards for the criteria pollutants designated in the CAA, a conformity determination is not required.

4.10 Hazardous, Toxic, and Radiological Waste

Once purchase is complete, structures will be evaluated for lead based paint and asbestos containing materials prior to demolition or resale. All waste materials will be disposed of properly per appropriate federal and state regulations.

SECTION 5.0 ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

5.1 Social and Economic Impacts

Both the no action and buy-out alternatives have social and economic consequences. This section addresses the methods and evaluation criteria along with assessment of the nature of the consequences.

5.1.1 Evaluation Methods and Criteria for Social and Economic Conditions

The legal mandates to address economic and social consequences are well-defined within the language of the National Environmental Policy Act (NEPA). The Council on Environmental Quality's (CEQ's) regulations for implementing NEPA (40 CFR 1500-1508) specify that the "human environment" is to be "interpreted comprehensively" to include "the natural and physical environment and the relationship of people with that environment" (40 CFR 1508.14). Further the "direct" effects, but also "aesthetic, historic, cultural, economic, social, or health" effects are to be addressed in NEPA documentation, "whether direct, indirect, or cumulative" (40 CFR 1508.8). The implementing regulations also recognized human attitudes and perceptions toward an environmental change as part of the human environment. Further, the regulations note public controversy as one of the variables to be considered in determining the significance of impacts (40 CFR 1508.27b[4]). These regulations further note that "..economic or social effects are not intended by themselves to require preparation of an environmental impact statement" (40 CFR 1508.14). The regulations likewise state that when "…economic or social and natural or physical environmental effects are interrelated" the environmental documentation "will discuss all of these effects on the human environment". The determination of significance of changes in social and economic conditions is applied in this analysis within the context of NEPA and its

regulations. Significance within this context is determined by those changes in the economic and social conditions linked to alterations in the bio-physical environment, as associated with each alternative. The proposed action – the grant of Federal funds to DEQ for the continued buy-out of residences, business and other buildings and the demolition and removal of uninhabited structures -- does not in itself constitute an alteration to the bio-physical environment. Given the continuing environmental threats posed by the Tar Creek mining area, substantial change from its existing and historic conditions is inevitable, even if no buy-out occurs. The proposed action will expedite many of those inevitable social and economic changes.

The human environment includes individual human beings who are directly or indirectly impacted by a change in the bio-physical and built environment on which they depend. The human environment also includes the social, economic, cultural and other relationships, interactions, and systems of values and norms that that groups of individual share (Canter, 1996: 500). Human social, cultural and economic systems are complex and not all are well understood in terms of statistical measurement and predictability (Soderstrom1980:15). However, enough is understood to address impacts of each of the alternatives.

The population refers to two groups: those who remain residing and conducting other activities in the Tar Creek Mining District, and those who leave or migrate elsewhere. Changes associated with the action most clearly and directly impact these two groups.

In this evaluation, one of the criteria of significance -- as related to what is defined within NEPA -- is if the buy-out constitutes a change in the bio-physical environment. The other criterion is the difference in social and economic conditions between no action and buy-out alternatives.

5.1.2 Population

The buy-out action will result in the purchase of 814 residential structures. Based on the 2000 Census data on persons per household, the action will relocate an estimated 1,700 persons representing over 75 percent of persons of the estimated population living in the affected area. Outmigration from the area may be similar to those who confront “chronic technological disasters”, such as those discussed by Couch and Kroll-Smith (1990). Their research of Centralia, PA, focused on a community situated above a coal mine fire resulting in the emission of toxic gasses that endangered health as well as possible cave-ins that threatened life and property. Over a period of years while attempting to find solutions to the threat from the mine fires, out-migration did take place, leaving the community older and poorer than it originally was. Hunter notes that human migration in response to environmental hazards is complex (Hunter 2004). Research suggests that environmental factors play a role in shaping migration decisions, particularly among those most vulnerable to environmental hazards. Research also suggests that risk perception acts as a mediating factor. Research further suggests that socio-economically advantaged households are more likely to have undertaken out-mitigation strategies (e.g., Peacock and Girard 1997), indicating they may have expected serious threats and have undertaken, or planned to undertake, threat reduction actions by moving away from the threat. However, Perry and Mushkatel (1984) suggest that communities can be successfully relocated if measures are undertaken that minimize disruption.

Without a buy-out, out-migration will result in a decrease in the population in the area over a relatively long period of time. The environmental threats within the Tar Creek Mining District and the perceptions that those threats are immediate will be instrumental to continued out-migration of populations from the area in the long-term. Along with the threats, the already depressed property values will continue in the long term. Property values then will complicate trade-off decisions of residents and business owners in the mining district, having to weigh finding comparable housing versus environmental threats. As the environmental threat will continue for the long term, out-migration from the area will continue. The property values and economic opportunities in the immediate area will decline sharply for those that remain, along with the dislocation of social networks. Because of the scale of the environmental threats, the risk to human health and safety will likely remain in the long term. Consequently, any in-migration into the area will be stifled. Out-migration, the lack of in-migration, and natural decrease of the remaining population will result an increase in population decline.

Under the proposed buy-out action, that migration will continue, but will lessen the complexities of the economic trade-offs residents and business owners make in deciding to move or stay. The time frame for the out-migration will be substantially shorter than the No Action alternative. The out-migrating population will move sooner and in greater numbers. As noted, the proposed action is a voluntary buy-out, with the option for the population to remain or participate. Some residents will decide not to participate in the buy out. In the long term, most of those not participating in the buy-out will eventually relocate or not be replaced by in-migration. Individuals participating in the buy-out likely will seek residence in locations away from, but in close proximity to the immediate Tar Creek Mining area. Informal feed-back from local officials supports that most of those relocating will remain in Ottawa County. While there are no systematic observations of past out-migration behaviors, it is likely that most of the population will seek residences in communities near-by, maintaining ties to established kin, economic, friend, religious and cultural networks.

Though the buy-out will result in population changes, the alternative is not associated with any changes to bio-physical conditions in the Tar Creek mining area. In the long term, the decline will be similar to without project alternatives as the threats to human health and safety plays out in terms of out-migration and overall population dynamics. The buy-out will only expedite the population decline.

5.1.3 Age and Gender Characteristics of the Population

Without a buy-out, the age distribution of the population will continue to be skewed toward older age categories. The environmental threats posed by the Tar Creek Mining District are even greater to children. Given that threat, families with children are the most likely to move. As noted in the research literature, older populations tend to be least likely to move. Older populations tend not to have sufficient economic resources and have the propensity not to have the physical stamina to relocate. A buy-out would provide incentives and opportunities for all age groups to relocate.

Without a buy-out, the gender distribution of the population is anticipated to have more women than men. The population is expected to be older and older populations tend to have relatively more women than men, as women have greater statistical odds to outlive men. Because of that demographic dynamic, the analysis anticipates a higher proportion of women in the affected area without a buy-out. With a buyout, the gender distribution of the population would be similar to existing population characteristics.

5.1.4 Ethnic and Race Identification

Under the no action alternative, the distribution of ethnic and race characteristics of the population remaining in Tar Creek Mining District area may change. The largest ethnic group in Tar Creek Mining District area is categorized by the US Census as white. A vast majority of the non-white population is Native American. Without a buy-out, out-migration is more likely to be white than non-whites. Non-whites have a greater likelihood of having lower income than whites. Without a buy-out, non-white groups are less likely to have the economic resources to facilitate moving out of the area than with a buy-out. Under the proposed action, a buy-out and relocation option will be offered to all wanting to participate. Based on economic considerations, non-whites and whites will be equally likely to participate in a buy-out.

5.1.5 Educational Attainment

As with income, educational attainment is a social characteristic associated with mobility and opportunity for social status improvements. Without a buy-out and as the population declines, the economic resources of the existing public schools will decline, challenging those who seek out educational opportunities. Population decline is anticipated under both with and without buy-out scenarios. Those with lower level of educational attainment have a greater likelihood to have lower incomes and, in turn, are less likely to move. Consequently, without buy-out, the remaining population will have less educational attainment than those that move. With a buy-out, there will more likely be options for all levels of educational attainment. The out-migrating population will have greater education opportunities relative to the population that stays. For the population that remains, declining resources will be a deterrent to educational attainment – a condition shared under both the no action and proposed alternative.

5.1.6 Housing

Without a buy-out, the housing stock available to the population will remain older and less amenable to family well-being than that found in other parts of the state. Because of environmental threats, newer housing is non-existent. Lending institutions are typically reluctant to finance re-investment in existing housing stock in environmentally distressed areas. Replacement and improvements in the area's housing has been stifled. Current housing is located adjacent to highly contaminated areas. Much of the current housing is in mine subsidence areas. These housing units remain exposed to these threats under the without project alternative. With a buy-out, 814 fewer housing units will be under such exposure. The remaining housing units and those living in them will continue to be exposed.

5.1.7 Safety and Public Health

Without a buy-out, the population will continue to be exposed to the threat of mine subsidence

and mine waste. The buy-out action would relocate those living in 814 residences. The population conducting activities at 87 businesses, churches, and public facilities will also no longer be exposed to these environmental threats. The population opting not to participate in the buy-out will continue to be exposed to environmental hazards.

5.1.8 Social Institutions

Though the buy-out does not change the bio-physical conditions in the Tar Creek mining area, the action will result in relocation of business and residents which in turn changes social institutions. Specific anticipated changes to institutions include those listed below.

5.1.8.1 Education and Child Care

Without the buy-out, schools and child care facilities will continue to be strapped for resources as the environmental hazards stifle property values, the tax base, and incomes upon which these social institutions are dependent. As well as meeting educational purposes, public schools and related school activities serve as a focus for community life in the Tar Creek Mining District. As the population ages and families move from the area to areas with fewer environmental hazards to children, school and child care enrollment will decline. With a buy-out, relocation also decreases enrollment as well as financial support for the school systems and child care facilities, only over a shorter timeframe.

5.1.8.2 Religious Institutions

Under the no action alternative, population decline will result in fewer attendees in churches and those available to participate in religious activities within the Tar Creek Mining District. Many of the churches serve populations outside the district area as well. The decline in attendance may not parallel the area's population decline. With the buy-out, 22 church structures will be bought out. The congregations associated with those churches will have an opportunity to purchase structures at a location outside the district and still serve the population currently served. However, in some cases, the historic and cultural significance churches provide may not be able to be replaced.

5.1.8.3 Culturally Traditional Lands and Tribal Ties

The mining district is within an area of historic importance to a number of Native American tribes including: the Caddo Tribe of Oklahoma, Cherokee Nation of Oklahoma, Delaware Tribe of Indians of Oklahoma, Eastern Shawnee Tribe of Oklahoma, Miami Tribe of Oklahoma, Modoc Tribe of Oklahoma, Osage Nation of Oklahoma, Ottawa Tribe of Oklahoma, Peoria Tribe of Indians of Oklahoma, Quapaw Tribe of Oklahoma, Seneca-Cayuga Tribe of Oklahoma, Wichita and Affiliated Tribes of Oklahoma, and Wyandotte Tribe of Oklahoma. Of particular importance within the mining district is an area currently part of the Quapaw Tribe's significant traditional practices. Both with and without a buy-out, that area will remain a part of that cultural tradition. Out-migration of tribal members of Native American Tribes is a concern as relocation could result is less interaction with other tribal members and participation in tribal events. However, members of the Native American population have a likelihood of remaining in the general vicinity of traditional areas, maintaining cultural and kin networks.

5.1.8.4 Health Care Delivery

Under both alternatives, delivery of health care to populations remaining in the mining district and those relocating will remain unchanged. Existing hospitals, clinics, and private offices will continue to provide those services to populations within and outside the mining district area.

5.1.8.5 Public Safety and Other Services

Without and with a buy-out, the agencies responsible for providing public safety to the population remaining in the mining district and those relocating will remain unchanged. The public safety and services, such as water sewer and waste disposal provided by the incorporated municipalities will continue to be provided to those that remain, under both with and with-out buy-out alternatives. A decline in population will result in a decline in tax revenues to support such services and may affect the quality or breadth of services provided. However the decline in population also equates to a decline in demand for those services. Without a buyout, recreation and places of public gathering will continue to provide opportunities as in the past. However, many of those areas expose users to environmental hazards. The buy-out would include the purchase of 2 parks and sport complexes. There are a variety of alternative recreational facilities and places for gatherings available in the surrounding area.

5.1.9 Public Controversy and Community Cohesion

The changes in community cohesion and public controversy under both with and without action alternatives are very similar. The existing environmental hazards and the decades-long discourse regarding how to address the hazards have impacted resident's sense of belonging to their neighborhood or community, including commitment to the community, attachment to neighbors, institutions in the community, and particular groups. Community cohesion of the population in the mining district is evidenced by the degree of interaction among individuals, groups, and institutions within a community regarding the environmental hazards. For some, the buy-out action is viewed as a positive step in meeting community needs. For others, the buy-out is seen as a deterrent to the community, because it severs the bonds and previously developed cohesion of the population. Some community members do not favor relocation of the community while stressing the desire for large scale environmental remediation. Perhaps the greatest aspect of public controversy is the lack of action in terms of removing the population from environmental hazards.

5.1.10 Economic Conditions

Neither alternative results in changes to bio-physical conditions in the Tar Creek mining area. However, both without- and with-buy-out alternatives have economic consequences In the long term, overall economic conditions under the buy-out alternative will be improved relative to the without project alternative, as relocations of business and other economic activities improve the likelihood of economic expansion and sustainability.

5.1.10.1 Employment

Under the no action alternative, employment opportunities in the Tar Creek Mining District area will continue to decline. The environmental hazards stifle economic activities in the area, including hiring and sustained employment. Most of the employment opportunities for those residing in the mining district are in the surrounding areas and would continue to be so. Under

the proposed action, 22 business are to be bought out. These businesses do not employ large number of employees. Along with these relocated business, most of the remaining businesses may eventually relocate to less hazardous areas nearby and provide more opportunity for growth and increased employment opportunities.

5.1.10.2 Income and Earnings

Under the No Action alternative, the income of the population will continue to be below that of the state and the county. The environmental hazards stifle economic activities in the area, including investment and employment. Most of the opportunity to generate higher incomes and earnings are a result of economic activity outside the mining district area and this would not change. Similar income conditions within the mining district will result from the buy-out alternative. However, the relocated businesses will have the opportunity to develop and provide greater income and earnings opportunities. Personal income is considered a social as well an economic characteristic in that it represents life-chances in all aspects of human interactions. Under the without buy-out alternative, the distribution of income of the population would become more skewed towards lower income categories. Those in the higher income categories will have economic resources to move away from the environmental threat. Under the buy-out alternative, offers for a buy-out and relocation will include all who want to participate, increasing the likelihood for poorer residents to relocate.

5.1.10.3 Community Growth and Development

Under the without action alternative, the opportunities for community growth and development will continue to be below that of the state and the county. The environmental hazards will continue to restrict the potential for growth and development both with- and without a buy-out. However, the relocated business and population will have the opportunity to develop and expand in the areas of relocation.

5.1.10.4 Public Facilities/Services

The environmental hazards will continue to limit public services and the ability to maintain public facilities without the buy-out. Limitations will be similar under the buy-out as a large segment of population and businesses are relocated outside the mining district area, reducing the tax base to support such activities.

5.2 Executive Order 12898

Property buy-out, relocations, and demolition of structures should have mostly positive economic and health effects on minorities and low-income populations. As a result of the proposed action, these populations would be removed and relocated away from the health and safety issues documented in the Tar Creek area. Concurrent with others in the area, these populations would no longer be exposed to health hazards associated with exposure to high levels of lead and other metals in the area and would likewise be less susceptible to physical hazards associated with land subsidence. Out-migration of Native Americans could result in less interaction with other tribal members and participation in tribal events. However, it is likely that this population will relocate in the vicinity of traditional tribal areas and be able to maintain their ties. Neither the No Action or buy out alternative will address the issue of environmental hazards on Quapaw tribal lands that are of important cultural significance. Consultation with the

tribe and state and Federal Agencies is on-going and will continue. The proposed action would therefore not result in disproportionately high and adverse human health or environmental effects on minority and low-income populations. In a letter dated 11 December 2006, the DEQ Environmental Justice Coordinator concurred with this finding (see letter contained in Appendix A of USACE 2007).

5.3 Executive Order 13045

The proposed action would likewise have positive effects on children's health and safety. As children are a highly-susceptible sub-population to health effects associated with exposure to lead and other metals, removal from and relocation away from residential areas high in these metals would benefit area children. In addition to chemical-related health impacts, the proposed action would result in reduced potential for physical harm to children associated with land subsidence, chat piles and mill ponds, and other physical hazards. The proposed action would therefore not have significant detrimental or disproportionately high adverse impacts to area children.

5.4 Natural Resource Impacts

5.4.1 Terrestrial

Property buy-out and relocations should have an overall positive impact on terrestrial resources in the area. Prior to lead and zinc mining, the Picher area was mainly upland timber and native grassland. Extensive ground coverage of chat left behind from mining operations resulted in the topsoil in the area being in very poor condition. The chat material is essentially devoid of organic content and will not support vegetation in many areas. In addition, terrestrial resources have been modified by activities associated with residential and commercial development. Terrestrial impacts would be restricted to the general area associated with standing structures or related facilities slated for buy-out and ultimate demolition. Following site restoration, impacts to terrestrial resources should be largely positive as constructed facilities are replaced by vegetative cover and more natural, undeveloped conditions.

5.4.2 Prime Farmland

There will be no impact to prime farmland soils since none exist in the project area.

5.4.3 Wildlife

In general, the buy-out and relocation of residences and other structures should have a positive impact on most wildlife species. As developed residential and business areas are replaced by more natural conditions and vegetation, suitable habitat for most species should increase to the benefit of these populations. Though some wildlife populations benefiting from co-habitation with human development activities and structures might experience adverse impacts, these would be anticipated to be isolated and minor. Disturbance from noise caused by demolition activities once property buy-outs and relocations are complete could create a minor, short-term impact on wildlife in the immediate demolition vicinity. This disturbance would be temporary and would cease when demolition activities are completed. As they are not addressed by the proposed action, threats to wildlife resulting from remaining mining waste materials would be unchanged by proposed activities.

5.4.4 Wetlands and Water Quality Permits

Structures to be subject to buy-out, relocation, and ultimate demolition are not located in wetlands. Should there be an adjacent wetland present, best management practices will be utilized to minimize any effects on these nearby resources. In addition, anticipated road or utility relocations will not impact wetlands in the project area. Accordingly, no impacts to wetlands are anticipated and the project will not necessitate issuance of a Department of Army Section 404 permit (see correspondence in Appendix E of USACE 2007).

5.4.5 Threatened and Endangered Species

Administrative activities involving property buy-out and relocation associated with the proposed action would have no effects on threatened and endangered species or their habitat. With the possible exception of the American burying beetle (ABB), suitable habitat for listed species does not exist in the immediate project area to be affected by subsequent demolition activities. Impacts to these species are therefore not anticipated. With the exception of the ABB, the USACE concluded that demolition activities in the Tar Creek project area would have "no effect" on Federally-listed species. The U.S. Fish and Wildlife Service (USFWS) concurred with this finding (see correspondence, Appendix C). With regard to the ABB, standard protocol (Appendix D of USACE 2007) developed by the USFWS will be employed by the LICRA Trust in coordination with DEQ to ensure that the species is not adversely affected by demolition activities. The DEQ will coordinate site-specific aspects of the protocol with the USFWS Ecological Services Field Office as described in Appendix D of USACE (2007). With proper implementation of this protocol and coordination of site-specific results, the USFWS concurred with the USACE's finding that proposed demolition activities "may affect – not likely to adversely affect" the ABB in the Tar Creek area. Accordingly, no further consultation is required under Section 7 of the Endangered Species Act of 1973, as amended.

5.5 Cultural Resources

As addressed in Section 4.7, the Picher-Cardin mining district is a historic district eligible for listing on the NRHP. Since 2004 Tulsa District has been engaged in a number of consultation efforts to ensure that the district meets the requirements identified in Section 106 of the National Historic Preservation Act of 1966 (as amended) and its implementing regulation 36 CFR Part 800. Ultimately, in 2005 a Programmatic Agreement (PA) was executed between a number of agencies working in the area to guide undertakings and to offset the loss of historic features that contribute to Picher Field's eligibility for listing on the National Register.

Initially, for a series of five small pilot projects in the Tar Creek area, in 2004 Tulsa District executed a Memorandum of Agreement (MOA) with the SHPO in order to achieve compliance under Section 106. However, regarding all additional work planned for the Tar Creek area, SHPO subsequently withdrew from consultation under Section 106. Tulsa District subsequently began consulting with the Advisory Council on Historic Preservation (ACHP) in late 2004 to develop a PA to facilitate compliance with Section 106. Efforts were aimed at Section 106 compliance in consideration of a diverse field of agencies operating in the Picher-Cardin area, and a broad set of proposed undertakings to provide environmental remediation support. The PA also served to provide mitigation measures to offset the loss of historic features within the proposed Picher Field National Register Historic District.

In December 2004 the Quapaw Tribe of Oklahoma expressed an interest to participate in consultation, and in January 2005 the Quapaw Tribe hosted a consultation meeting in at their offices in the town of Quapaw, Oklahoma. Shortly thereafter, the Quapaw Tribe facilitated a consultation meeting in Tulsa, which began to focus on specific measures to be addressed in a PA. In late February 2005, the PA was executed among a number of federal and state agencies and the Quapaw Tribe. Signatories included (1) Advisory Council on Historic Preservation; (2) Oklahoma State Historic Preservation Office; (3) Oklahoma Archeological Survey; (4) Quapaw Tribe of Oklahoma; (5) U.S. Army Corps of Engineers, Tulsa District; (6) Environmental Protection Agency, Superfund Division; (7) U.S. Department of Housing and Urban Development; (8) U.S. Department of the Interior, Bureau of Indian Affairs; and (9) Oklahoma Department of Environmental Quality.

The PA, which is included as Appendix C of Tulsa District (2007), specified a number of different types of undertakings which would be exempt under the Agreement, as long as the mitigation measures outlined in the agreement were completed within a five year time frame. The primary method of offsetting the loss of historic properties is through the compilation of a Heritage Study, which is described in some detail in the PA. To date – although not fully completed – major portions of the Heritage Study exist in draft form.

The PA addresses buildings and standing structures within the Tar Creek study area in stipulation IV, Non-Exempt Undertakings. Specifically, "Agencies shall consult in accordance with subpart B of 36 CFR Part 800 regarding 1) undertakings that may affect buildings and standing structures and 2) activities that are not exempt (see stipulation III.A., or as may be revised)." In short, buildings and standing structures must be evaluated through the standard Section 106 process. This process includes the identification of historic properties and assessment of adverse effects relative to proposed undertakings. In accordance with these responsibilities, Tulsa District will evaluate all individual buildings and standing structures that are 45 years or older and planned for buy-out and/or demolition within the framework of the Section 106 process. If historic properties are identified and if these structures will be adversely affected, a MOA will be drafted through consultation with the SHPO and executed between SHPO, USACE Tulsa District, DEQ, other parties, and other federal/state agencies or Native American tribes, as appropriate. Mitigation measures to offset the loss of these historic properties will be identified in the MOA.

Concerns exist regarding the potential for discovery of pre-mining archeological remains or burials or human remains during project activities. In accordance with provisions of Section XV of the PA, such discovery would result in immediate cessation of activities and notification of the SHPO, OAS, and tribes within 48 hours of discovery. Further details of procedures regarding inadvertent discoveries can be found in Section XV of the PA (Appendix C of USACE 2007).

Correspondence related to Section 106 coordination for property buy-out and relocations as a result of the proposed plan is contained in Appendix B.

5.6 Water Quality

Property buy-out, relocation, and demolition activities would most likely have minor beneficial impacts to water quality in the Tar Creek area though major threats to these resources occur as a result of mining waste. Conversion of paved and developed areas with commercial activities to a more natural and vegetated state would likely improve the quality of runoff waters from the area in terms of non-point source pollutants. With regard to demolition activities, the project is designed to properly demolish and dispose of structures within the boundary of the Relocation Assistance Zone (Appendix A). Best management practices will be employed during demolition activities to control impacts to surface water and groundwater (connected to the surface by open mineshafts). Because of these safeguards, this project is not expected to affect the quality of surface water or groundwater. (See email correspondence dated March 19, 2007 regarding sole source aquifers in the project area in Appendix A of USACE 2007).

5.7 Air Quality

Buy-out and relocation of businesses, residences, and other facilities should have a minor beneficial impact to air quality in the project area. Vehicle emissions, air releases associated with commercial activities, and other air quality-related issues characteristic of developed areas should be diminished in the project area by abandonment and relocation of these activities. These minor impacts to air quality may be subsequently transferred to areas of relocation, though impacts are anticipated to be minimal.

Demolition activity would have a minor, temporary, and adverse impact on air quality caused by heavy equipment operation and from fugitive dust (particulate) emissions in and around the project site. Demolition contractors will comply with all appropriate Federal air quality regulations to limit the dispersal of particulate matter. A temporary increase in exhaust emissions would be expected during demolition. Once demolition activities are complete, adverse impacts to air quality should be negligible.

5.8 Hazardous, Toxic, and Radiological Waste

Buy-out and removal of structures containing lead-based paints, metals-contaminated dust, and other wastes will ultimately have a positive impact to the area though these improvements may be minor relative to remaining mine waste materials. Prior to demolition activities, structures will be evaluated for lead based paint and asbestos containing materials. All waste materials will be disposed of properly per appropriate federal and state regulations.

5.9 Noise

The proposed plan would involve the buy-out and relocation of residences and businesses in the project area, thereby decreasing ambient noise normally associated with these activities. During the demolition phase, there would be an increase in noise from heavy equipment, but this would be temporary and last only during the demolition period. In addition, due to relocation activities there will be fewer citizens remaining to be adversely affected by noise-related impacts.

5.10 Cumulative Impacts

It is recognized that the associated activities of this project are only a part of a potentially much broader scope of remediation activities for the Tar Creek area. It is also recognized that land

uses for the Tar Creek area which would follow property buy-out and relocation of residents and businesses are highly uncertain. Equally uncertain are potential waste clean up alternatives (if any) which may or may not address the large extent of remaining mine waste. Cumulative effects associated with future land use and additional clean-up activities are therefore difficult to predict. While this EA generally focuses on environmental impacts associated with property buy-out and relocation in the Tar Creek area, demolition of structures and associated site disturbance are associated activities which would follow property buy-out and relocation. While briefly mentioned in this EA as part of the proposed action, impacts associated with demolition activities and road and utility relocations were thoroughly addressed in a previous EA (Tulsa District 2007) which is incorporated here by reference.

While environmental impacts associated with the proposed action are largely positive in nature, it is also recognized that the large-scale relocation of residences and businesses will result in its own set of impacts in areas receiving these residents, businesses, and facilities. Though difficult to predict and quantify, substantial adverse impacts are not anticipated in these areas.

SECTION 6.0 RESTORATION PLAN

In terms of structural demolitions, all construction and demolition debris will be disposed of properly. The remaining lot will be graded and vegetated as appropriate and best management practices will be followed for all demolition activities.

Clearing and grubbing will be accomplished only to the extent necessary to perform required work . Clearing and grubbing within the construction limits will be strictly adhered to. Care will be exercised so as not to damage existing trees or vegetation outside the clearing limits. The transition between the disturbed areas and the undisturbed areas will be graded to minimize abrupt slope changes and possible erosion. Final grade contours will be carried to existing contours such that there is a smooth transition with no ponding of surface waters.

SECTION 7.0 FEDERAL, STATE, AND LOCAL AGENCY COORDINATION

A draft EA/FONSI for this proposed action was provided to the following tribes, agencies, and organizations having responsibilities or interests in the Tar Creek Superfund Site. See Appendix D for a list of addresses.

Senator Jim Inhofe
Senator Tom Coburn
U.S. Representative Dan Boren
State Representative Larry Glenn
State Senator Charles Wyrick
U.S. Environmental Protection Agency
Advisory Council on Historic Preservation
Oklahoma State Historic Preservation Office
Oklahoma Archeological Survey
Quapaw Tribe of Oklahoma (cc: Conners and Winters, LLP)

Eastern Shawnee Tribe of Oklahoma
Wyandotte Tribe of Oklahoma
Wichita and Affiliated Tribes of Oklahoma
Seneca-Cayuga Tribe of Oklahoma
Peoria Tribe of Indians of Oklahoma
Ottawa Tribe of Oklahoma
Osage Nation of Oklahoma
Modoc Tribe of Oklahoma
Miami Tribe of Oklahoma
Delaware Tribe of Indians of Oklahoma
Caddo Indian Tribe of Oklahoma
Cherokee Nation of Oklahoma
Bureau of Indian Affairs, U.S. Department of the Interior
U.S. Geological Survey
Office of Surface Mining, U.S. Department of the Interior
Oklahoma Conservation Commission
USDA Natural Resources Conservation Service
U.S. Bureau of Land Management
U.S. Fish and Wildlife Service
Oklahoma Department of Wildlife Conservation
Lead Impacted Communities Relocation Assistance Trust
City of Picher
Ottawa County Commissioner, District #1
Oklahoma Secretary of the Environment

SECTION 8.0 REFERENCES

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SECTION 9.0 APPLICABLE ENVIRONMENTAL LAWS AND REGULATIONS

Table 11

Relationship of Plans to Environmental Protection Statutes and Other Environmental Requirements

Policies	Compliance of Alternatives
Federal	
Archeological and Historic Preservation Act, 1974, as amended, 16 U.S.C. 469, et seq.	All plans in full compliance
Clean Air Act, as amended, 42 U.S.C. 7609, et seq.	All plans in full compliance
Clean Water Act, 1977, as amended (Federal Water Pollution Control Act, 33 U.S.C. 1251, et seq.	All plans in full compliance
Comprehensive Environmental Response, Compensation and Liability Act, as amended, 42 U.S.C. 103, et seq.	All plans in full compliance
Endangered Species Act, 1973, as amended, 16 U.S.C. 1531, et seq.	All plans in full compliance
Federal Water Project Recreation Act, as amended, 16 U.S.C. 460-1-12, et seq.	N/A
Fish and Wildlife Coordination Act, as amended, 16 U.S.C. 661, et seq.	All plans in full compliance
Land and Water Conservation Fund Act, 1965, as amended, 16 U.S.C. 4601, et seq.	N/A
National Historic Preservation Act, 1966, as amended, 16 U.S.C. 470a, et seq.	Ongoing
National Environmental Policy Act, as amended, 42 U.S.C. 4321, et seq.	All plans in full compliance
Native American Graves Protection and Repatriation Act, 1990, 25 U.S.C. 3001-13, et seq.	All plans in full compliance
Rivers and Harbors Act, 33 U.S.C. 401, et seq.	N/A
Watershed Protection and Flood Prevention Act, 16 U.S.C. 1001, et seq.	N/A
Wild and Scenic Rivers Act, as amended, 16 U.S.C. 1271, et seq.	N/A
Water Resources Planning Act, 1965	N/A
Floodplain Management (E.O. 11988)	All plans in full compliance
Protection of Wetlands (E.O. 11990)	All plans in full compliance
Environmental Justice (E.O. 12898)	All plans in full compliance
Farmland Protection Policy Act, 7 U.S.C. 4201, et seq	All plans in full compliance
Protection of Children From Environmental Health Risks and Safety Risks (E.O. 13045)	All plans in full compliance

Note: Full compliance - Having met all requirements of the statutes, Executive Orders, or other environmental requirements for the current stage of planning.

SECTION 10.0 LIST OF PREPARERS

This EA has been prepared to address impacts associated with transfer of Federal funds to accomplish buy-out, relocation, and demolition of structures (homes, businesses, and public use facilities), necessary road and utility relocations, and NEPA compliance documentation. The following personnel contributed to the preparation of this document.

Heather R. Mallory – Environmental Programs Specialist; 3 years Oklahoma Department of Environmental Quality.

Angela R. Brunsman – Environmental Programs Manager; 12 years Oklahoma Department of Environmental Quality.

Stephen L. Nolen - Chief, Environmental Analysis and Compliance Branch; Biologist; 22 years U.S. Army Engineer District, Tulsa.

Jerry C. Sturdy - Biologist; 3 years U.S. Fish and Wildlife Service; 8 years U.S. Army Garrison, Fort Chaffee, Arkansas; 25 years U.S. Army Engineer Districts, Tulsa and Fort Worth.

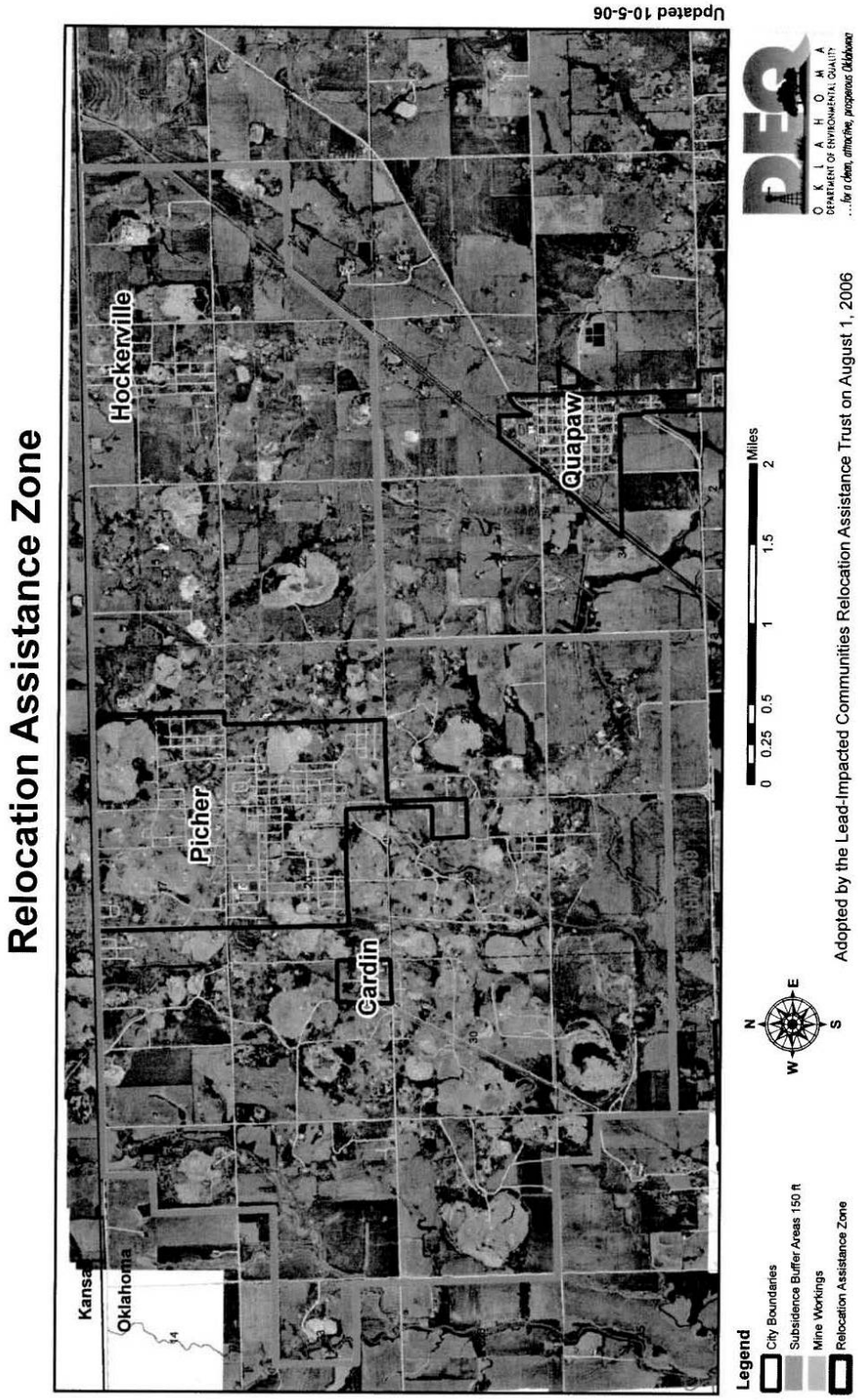
Kenneth L. Shingleton, Jr. - Archaeologist; 7 years U.S. Army Engineer District, St. Louis; 4 years U.S. Army Engineer District, Tulsa.

Edwin J. Rossman – Chief, Planning Branch; Social Scientist; 27 years U.S. Army Engineer District, Tulsa.

Maria M. Wegner-Johnson – Regional Economist; 3 years U.S. Army Engineer District, Tulsa.

APPENDIX A

RELOCATION ZONE MAP


Relocation Assistance Zone
Updated 10-5-06
Hockerville
Picher
Cardin
Quapaw
Kansas
Oklahoma
Legend
City Boundaries
Subsidence Buffer Areas 150 ft
Mine Workings
Relocation Assistance Zone
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0 0.25 0.5 1 1.5 2
Miles
Adopted by the Lead-Impacted Communities Relocation Assistance Trust on August 1, 2006
DEQ
OKLAHOMA
DEPARTMENT OF ENVIRONMENTAL QUALITY
...for a clean, attractive, prosperous Oklahoma

APPENDIX B

CULTURAL RESOURCES (SECTION 106) COORDINATION

DEPARTMENT OF THE ARMY
UNITED STATES ARMY CORPS OF ENGINEERS, TULSA DISTRICT
1645 SOUTH 101 EAST AVENUE
TULSA OK 74128-4609

REPLY TO
ATTENTION OF

December 7, 2007

Planning and Environmental Division
Environmental Analysis and Compliance Branch

Dr. Bob Blackburn
State Historic Preservation Officer
Oklahoma Historical Society
Oklahoma History Center
2401 N. Laird Ave.
Oklahoma City, OK 73105-7914

Dear Dr. Blackburn:

This letter is to continue consultation under Section 106 of the National Historic Preservation Act of 1966 (as amended) for the Tar Creek Superfund Site in Ottawa County, Oklahoma. In 2006, the U.S. Army Corps of Engineers, Tulsa District suspended cleanup projects and mine shaft closures. Subsequently in 2007, Tulsa District granted remaining Tar Creek funds appropriated under Section 111, Energy and Water Development Appropriations Act of 2004 (PL 108-137) to the Oklahoma Department of Environmental Quality (ODEQ) for demolition of structures, necessary road and utility relocations, and National Environmental Policy Act (NEPA) of 1969 compliance activities. The federal funds grant classifies the subsequent use of those funds by ODEQ as a federal undertaking, and therefore subject to Section 106.

ODEQ plans for the federal grant have changed since our last correspondence this summer, and were originally intended for structure demolition and related activities only. However, buyout and relocation activities were authorized for use of these Corps funds in the recently passed Water Resources Development Act (WRDA) of 2007 (PL 110-114, 121 Stat. 1041). As currently planned, the existing grant will be amended such that ODEQ could use the existing funds to conduct either buyout or demolition of standing structures, as necessary and appropriate. In addition, WRDA 2007 authorized future appropriation of up to $30,000,000 for this work though appropriations have not been provided. Buyout and/or demolition, therefore, constitute the proposed activities subject to Section 106. Within this framework, Tulsa District believes the proposed activities have the potential to affect historic properties, and the District asked ODEQ to identify and document structures 45 years of age or older which the agency was targeting for buyout and demolition. Individual documentation of standing structures and separate Section 106 coordination of those structures is required by the multi-agency Programmatic Agreement executed in 2005.

ODEQ conducted identification and documentation of targeted standing structures in a first phase during June 2007. These 62 structures were subsequently coordinated with your office in

July 2007. Of the 62 structures on which we consulted with you, one was determined eligible for the National Register. The undertaking, as previously discussed in this letter, has changed from demolition only to buyout and relocation and/or demolition of structures. Since the 62 structures coordinated in Phase I was done so on the basis of demolition as the undertaking, we believe this modification will not change the outcome of our consultation with you. We agree that only one (Christian Church of Picher) of the 62 structures is eligible for listing on the National Register and that demolition of that structure would constitute an adverse effect.

Enclosed are the Historic Preservation Resource Identification Forms and photographs for historic standing structures targeted in another phase of work (Phase II) proposed by ODEQ. This phase consists of another 73 structures in the Picher-Cardin area (see attached list) proposed for buyout and/or demolition. Tulsa District has reviewed the documentation provided by ODEQ, and we believe that none of the 73 structures are eligible for the National Register under any criteria.

We request your comment on our determinations of eligibility for the 73 standing structures in the Picher-Cardin area, and our determination of "no historic properties affected" for buyout and/or demolition of these structures in Phase II of the ODEQ action. If you have questions, please contact Mr. Ken Shingleton at 918-669-7661.

Sincerely,

Stephen L. Nolen,
Chief, Environmental Analysis
and Compliance Branch

Enclosures

Section 106 letters identical to the one that follows in this Appendix (Quapaw Tribe of Oklahoma) were likewise sent to the following:

United Keetoowah Band of Cherokee
Seneca-Cayuga Tribe of Oklahoma
Peoria Tribe of Indians of Oklahoma
Ottawa Tribe of Oklahoma
Osage Nation of Oklahoma
Modoc Tribe of Oklahoma
Miami Tribe of Oklahoma
Eastern Shawnee Tribe of Oklahoma
Cherokee Nation of Oklahoma
Caddo Indian Tribe of Oklahoma
Wyandotte Tribe of Oklahoma
Wichita and Affiliated Tribes of Oklahoma

DEPARTMENT OF THE ARMY
UNITED STATES ARMY CORPS OF ENGINEERS, TULSA DISTRICT
1645 SOUTH 101 EAST AVENUE
TULSA OK 74128-4609

REPLY TO
ATTENTION OF

December 7, 2007

Planning and Environmental Division
Environmental Analysis and Compliance Branch

Mr. John Berrey, Chairman
Quapaw Tribe of Oklahoma
P.O. Box 765
Quapaw, OK 74363

Dear Chairman Berrey:

This letter is to continue consultation under Section 106 of the National Historic Preservation Act of 1966 (as amended) for the Tar Creek Superfund Site in Ottawa County, Oklahoma. In 2006, the U.S. Army Corps of Engineers, Tulsa District suspended cleanup projects and mine shaft closures. Subsequently in 2007, Tulsa District granted remaining Tar Creek funds appropriated under Section 111, Energy and Water Development Appropriations Act of 2004 (PL 108-137) to the Oklahoma Department of Environmental Quality (ODEQ) for demolition of structures, necessary road and utility relocations, and National Environmental Policy Act (NEPA) of 1969 compliance activities. The federal funds grant classifies the subsequent use of those funds by ODEQ as a federal undertaking, and therefore subject to Section 106.

ODEQ plans for the federal grant have changed since our last correspondence this summer, and were originally intended for structure demolition and related activities only. However, buyout and relocation activities were authorized for use of these Corps funds in the recently passed Water Resources Development Act (WRDA) of 2007 (PL 110-114, 121 Stat. 1041). As currently planned, the existing grant will be amended such that ODEQ could use the existing funds to conduct either buyout or demolition of standing structures, as necessary and appropriate. In addition, WRDA 2007 authorized future appropriation of up to $30,000,000 for this work though appropriations have not been provided. Buyout and/or demolition, therefore, constitute the proposed activities subject to Section 106. Within this framework, Tulsa District believes the proposed activities have the potential to affect historic properties, and the District asked ODEQ to identify and document structures 45 years of age or older which the agency was targeting for buyout and demolition. Individual documentation of standing structures and separate Section 106 coordination of those structures is required by the multi-agency Programmatic Agreement executed in 2005.

ODEQ conducted identification and documentation of targeted standing structures in a first phase during June 2007. These 62 structures were subsequently addressed in a letter to you dated July 31, 2007. The undertaking, as previously discussed in this letter, has changed from demolition only to buyout and reloca-

tions, and/or demolition of structures. Phase II of the proposed ODEQ buyout of properties in the Picher-Cardin area is also now available for your consideration. This phase consists of another 73 structures in the Picher-Cardin area over 45 years in age that have been proposed for buyout and/or demolition.

Please review the enclosed lists (Phase I and II) of structures and provide us with information should any have historical significance to you. Additionally, please notify us should you have information that sacred sites, traditional cultural properties, or archaeological sites are likely to be affected by the proposed actions. Your assistance will help us appropriately evaluate our impact upon historic properties as required by Section 106 of the National Historic Preservation Act of 1966 (as amended). In order to meet strict timelines associated with this grant amendment, we would appreciate your response by January 11, 2008. If you have questions, please contact Mr. Ken Shingleton at 918-669-7661.

Sincerely,

Stephen L. Nolen,
Chief, Environmental Analysis
and Compliance Branch

Enclosures

CC: Mr. Stephen R. Ward, Conner & Winters

APPENDIX C

ENDANGERED SPECIES ACT COORDINATION

DEPARTMENT OF THE ARMY
UNITED STATES ARMY CORPS OF ENGINEERS, TULSA DISTRICT
1645 SOUTH 101 EAST AVENUE
TULSA OK 74128-4609

REPLY TO
ATTENTION OF

September 12, 2007

Planning and Environmental Division
Environmental Analysis and Compliance Branch

Mr. Jerry Brabander, Field Supervisor
U.S. Fish and Wildlife Service
9014 East 21st Street
Tulsa, OK 74145

Dear Mr. Brabander:

This letter is to request your concurrence pursuant to Section 7 of the Endangered Species Act of 1973, (ESA) as amended (16 U.S.C. 1231 *et seq.*) with regard to effects on Federally-listed species resulting from demolition of structures and associated activities to address lead exposure and other environmental problems related to historical mining activities in Ottawa County, Oklahoma. The Corps of Engineers (USACE) has been given the authority under Section 111, Energy and Water Development Appropriations Act of 2004 (PL 108-137) to fund demolition of structures (homes, businesses, and public use facilities), necessary road and utility relocations, and National Environmental Policy Act (NEPA) compliance documentation. These proposed activities will specifically occur within the Tar Creek Relocation Zone in the communities of Picher, Cardin, and Hockerville, Ottawa County, Oklahoma. The work will be contracted by the Lead Impacted Communities Relocation Assistance (LICRA) trust in coordination with the Oklahoma Department of Environmental Quality (DEQ). Federal funds under Section 111 will be made available to DEQ on a reimbursable basis for these activities.

Our review of Federally-listed species potentially present in Ottawa County, Oklahoma has identified the following: American burying beetle (ABB) (*Nicrophorus americanus*), gray bat (*Myotis grisescens*), Ozark big-eared bat (*Corynorhinus townsendii ingens*), winged mapleleaf mussel (*Quadrula fragosa*), Neosho madtom (*Noturus placidus*), Ozark cavefish (*Amblyopsis rosae*), piping plover (*Charadrius melodus*), Arkansas darter (*Etheostoma cragini*) (candidate species), and Neosho mucket mussel (*Lampsilis rafinesqueana*) (candidate species). Upon

review of life history and habitat requirements for species identified above, it is our determination that, with the exception of the ABB, proposed actions will have "no effect" on Federally-listed species. We request your concurrence with this species list and determination regarding these species.

With regard to the ABB, standard protocol developed and modified by the Service and contained in Appendix D of the May 2007 Environmental Assessment (EA) prepared under NEPA for this action will be employed by the LICRA trust in coordination with DEQ for all activities. As specified in the protocol and described in the EA, site-specific findings and conclusions regarding the ABB will be coordinated among the DEQ, LICRA trust, and your office. Implementation of this protocol, as described, should ensure protection of the ABB and that any impacts to the species or its habitat should be minimal. Accordingly, it is our determination that the proposed activities "may affect - not likely to adversely affect" the ABB in the project area. We similarly request your concurrence regarding this determination.

Should you concur with our determinations, it is our understanding that this concludes consultation under Section 7 of the ESA for this action. It is also our understanding that the Service will work with the DEQ and the LICRA trust to efficiently implement and coordinate site-specific technical aspects of the ABB protocol as the project progresses. Thank you for your efforts with regard to these matters. Questions can be directed to me at 918-669-7660.

Sincerely,

Stephen L. Nolen
Chief, Environmental Analysis
And Compliance Branch

CONCURRENCE NOT LIKELY TO ADVERSELY AFFECT
The described action is not likely to adversely affect federally-listed or proposed species or their habitats.
Date 9-11-2007
Consultation # 21440-2007-I-306
Approved by Kenneth Collins
U.S. FISH and WILDLIFE SERVICE, TULSA, OK

APPENDIX D

MAILING LIST

Mailing List for Draft EA/FONSI

U. S. Senator Jim Inhofe
1924 S. Utica Avenue
Suite 530
Tulsa, OK 74104 -6511

Senator Tom Coburn
1800 South Baltimore
Suite 800
Tulsa, OK 74119

U. S. Representative Dan Boren
309 West 1st Street
Claremore, OK 74017

State Representative Larry Glenn
1916 H NW
Miami, OK 74354

State Senator Charles Wyrick
58500 E. 155 Rd.
Fairland, OK 74343

Mike McAteer
USEPA REGION 6
1445 Ross Avenue
Suite 1200
Mail Code: 6SFLP
Dallas, TX 75202-2733

Sing Chia
USEPA REGION 6
1445 Ross Avenue
Suite 1200
Mail Code: 6SFLP
Dallas, TX 75202-2733

Mr. Don Klima, Director
Office of Federal Agency Programs
Advisory Council on Historic Preservation
12136 West Bayaud Ave, Suite 330
Lakewood, CO 80228

Dr. Bob Blackburn
State Historic Preservation Officer
Oklahoma Historical Society
2401 North Laird Avenue
Oklahoma City, OK 73105

Dr. Robert L. Brooks
University of Oklahoma
Oklahoma Archeological Survey
111 E. Chesapeake
Norman, OK 73019

Mr. John Berrey, Chairman
Quapaw Tribe of Oklahoma
P.O. Box 765
Quapaw, OK 74363

Mr. Stephen R. Ward
Conners and Winters, LLP
4000 One Williams Center
Tulsa, Oklahoma 74172-0148

Mr. Charles Enyart, Chief
Eastern Shawnee Tribe of Oklahoma
P.O. Box 350
Seneca, MO 64865

Mr. Leaford Bearskin, Chief
Wyandotte Tribe of Oklahoma
P.O. Box 250
Wyandotte, OK 74370

Mr. Gary McAdams, President
Wichita and Affiliated Tribes of Oklahoma
P.O. Box 729
Anadarko, OK 73005

Mr. Leroy Howard, Chief
Seneca-Cayuga Tribe of Oklahoma
P.O. Box 1283
Miami, OK 74355

Mr. John Froman, Chief
Peoria Tribe of Indians of Oklahoma
P.O. Box 1527

Miami, OK 74355

Mr. Charles Dawes, Chief
Ottawa Tribe of Oklahoma
P.O. Box 110
Miami, OK 74355

Mr. Jim Gray, Principal Chief
Osage Nation of Oklahoma
P.O. Box 779
Pawhuska, OK 74056

Mr. Bill G. Follis, Chief
Modoc Tribe of Oklahoma
515 G SE Street
Miami, OK 74354

Mr. Floyd Leonard, Chief
Miami Nation of Oklahoma
P.O. Box 1326
202 S. Eight Tribes Trail
Miami, OK 74355

Mr. Jerry Douglas, Chief
Delaware Tribe of Indians of Oklahoma
170 N.E. Barbara
Bartlesville, OK 74006

Ms. LaRue Parker, Chairwoman
Caddo Indian Tribe of Oklahoma
P.O. Box 487
Binger, OK 73009

Mr. Chad Smith, Principal Chief
Cherokee Nation of Oklahoma
P.O. Box 948
Tahlequah, OK 74465

Ms. Jeanette Hanna
Regional Director
Eastern Oklahoma Regional Office
Bureau of Indian Affairs
P.O. Box 8002
Muskogee, OK 74402-8002

Ms. Kim Winton
District Chief
U.S. Geological Survey
202 NW 66th, Building 7
Oklahoma City, OK 73116

Mr. Dwight Thomas, Director
Tulsa Field Office
Office of Surface Mining
5100 East Skelly Drive, Suite 470
Tulsa, OK 74135

Mr. Mike Thralls, Executive Director
Oklahoma Conservation Commission
2800 N. Lincoln Blvd., Suite 160
Oklahoma City, OK 73105

Mr. Ron Hilliard, State Conservationist
USDA Agri-Center Bldg
100 USDA, Suite 206
Stillwater, OK 74074-2655

George Thomas, Wildlife Biologist
U.S. Bureau of Land Management
Oklahoma Field Office
7906 East 33rd Street
Suite 101
Tulsa, OK 74145

Mr. Jerry Brabander, Field Supervisor
U.S. Fish & Wildlife Service
9014 East 21st Street
Tulsa, OK 74129

Mr. Greg D. Duffy, Director
Oklahoma Dept. of Wildlife Conserv.
P.O. Box 53465
Oklahoma City, OK 73105

Mr. Richard Hatcher, Assistant Director
Oklahoma Dept. of Wildlife Conserv.
P.O. Box 53465
Oklahoma City, OK 73105

Larry Rice

Chairman, LICRA Trust
P.O. Box 96
Picher, OK 74360

Mr. Sam Freeman, Mayor
City of Picher
213 East 3rd
Picher, OK 74360

Mr. John Clarke
Ottawa County Commissioner, District 1
101 McDonald Drive
Quapaw, OK 74363

Mr. Miles Tolbert
Oklahoma Secretary of the Environment
3800 North Classen Blvd
Oklahoma City, OK 73118

Miami Public Library
200 North Main
Miami, OK 74354

Joplin Public Library
300 South Main Street
Joplin, MO 64801-2384