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4.0 ENVIRONMENTAL ANALYSIS

The environmental consequences of constructing and operating the Project would vary in duration and significance. Four levels of impact duration were considered: temporary, short-term, long-term, and permanent. Temporary impacts generally occur during construction with the resource returning to pre-construction conditions almost immediately afterward. Short-term impacts would continue for up to three years following construction. Impacts were considered long-term if resources would require more than three years to recover. Permanent impacts would occur as a result of activities that modify resources to the extent that they would not return to pre-construction conditions during the life of the Project, such as impact to vegetation as a result of the construction and operations of an aboveground facility. We considered an impact to be significant if it would result in a substantial adverse change in the physical environment.

In this section, we discuss the affected environment, general construction and operational impacts, and proposed mitigation for each resource. Rockies Express, as part of its proposal, agreed to implement certain measures to reduce impacts, and we evaluated the proposed mitigation measures and in some cases identified additional mitigation measures which we believe would further reduce impacts. These additional mitigation measures that we have identified appear as bulleted, boldface paragraphs in the text. We recommend these measures be included as specific conditions to any Certificate that the Commission may issue to Rockies Express for the Project.

Conclusions in this draft EIS are based on our analysis of the environmental impact and the following assumptions:

- Rockies Express would comply with all applicable laws and regulations;
- The facilities would be constructed as described in section 2.1 of this draft EIS; and
- Rockies Express would implement the mitigation measures identified in its application and supplemental filings to the FERC.

This section of the draft EIS is organized by environmental resource. The scope of our analysis includes the construction and operation of the Project facilities. This draft EIS also includes a discussion of natural gas pipeline reliability and safety (see section 4.12) and the cumulative impacts of the Project with other projects in the area (see section 4.13).

4.1 GEOLOGY

4.1.1 Geologic Setting

The REX East Project would be located within five main physiographic regions:

- Central Lowlands (Dissected Till Plains): Missouri
- Central Lowlands (Till Plains): Illinois, Indiana, and western Ohio
- Appalachian Plateau (Glaciated and Unglaciated Allegheny Plateau): eastern Ohio
- Wyoming Basin: Wyoming
- Great Plains (High Plains): Nebraska

Much of the Project would be located in areas where the land has been shaped by multiple glacial events. Elevations along the proposed pipeline route would range from 424 feet above mean sea level in

Illinois to 1,332 feet above mean sea level in Ohio. Most of the pipeline route would be relatively flat in Missouri, Illinois, and Indiana. Generally, steeper slopes would occur in Ohio, especially in the eastern portion of the state. Geologic conditions along the REX East pipeline route are summarized in table 4.1.1-1.

Table 4.1.1-1
Summary of Geologic Conditions Along Proposed Route a/

Milepost Range	Description of Bedrock Formations Crossed
0 to 339	Pennsylvanian and Mississippian limestone, shale, siltstone, and sandstone
339 to 377	Silurian and Devonian limestone and dolomite
377 to 462	Ordovician limestone and dolomite
462 to 547	Mississippian and Silurian limestone, shale, and dolomite
547 to 639	Pennsylvanian and Permian limestone, shale, sandstone, including coal-bearing formations

a/ National Atlas of the United States, 2007

In most areas bedrock is buried so deeply by glacial deposits and/or soils that it would not be encountered during construction. Approximately 13 percent of the proposed pipeline route would cross areas where bedrock may be encountered during trenching. Table 4.1.1-2 identifies general locations where shallow bedrock may be encountered. Depending upon the type of rock, Rockies Express would use either rippers or blasting to break up bedrock encountered during construction. If blasting is required, Rockies Express would implement its Blasting Plan (FERC eLibrary, 2007c). The Blasting Plan outlines the procedures and safety measures that Rockies Express would adhere to while implementing blasting activities along the pipeline right-of-way during construction. Blasting would only be used where other methods of trenching are not feasible. Site-specific blasting plans would be prepared for each area where blasting would occur. These site-specific plans would outline the procedures to be used for notification of nearby property owners, safety precautions, methods for storing, handling, transporting, loading and detonating explosives, and monitoring the effects of explosions. No blasting would be necessary in constructing the aboveground facilities.

Table 4.1.1-2
Shallow Bedrock Areas That Requires Blasting Along Proposed Pipeline Route a/

State/County	Areas requiring blasting (miles)	Areas which may require blasting (miles)	Total (miles)
MISSOURI			
Pike	0.1	0.1	0.2
ILLINOIS			
Pike	0.1	0.0	0.1
INDIANA			
Vermillion	0.0	0.1	0.1
Morgan	0.0	<0.1	<0.1
Decatur	0.4	0.0	0.4
Franklin	0.0	4.2	4.2

Table 4.1.1-2

Shallow Bedrock Areas That Requires Blasting Along Proposed Pipeline Route a/

State/County	Areas requiring blasting (miles)	Areas which may require blasting (miles)	Total (miles)
OHIO			
Butler	0.0	9.8	9.8
Warren	0.1	2.3	2.4
Clinton	0.1	0.0	0.1
Fairfield	1.0	0.1	1.1
Perry	5.8	2.9	8.7
Muskingum	9.8	12.1	21.9
Guernsey	3.8	10.3	14.1
Noble	1.1	2.9	4.0
Belmont	14.9	1.2	16.1
Monroe	4.1	1.4	5.5
Project Total	**41.3**	**47.4**	**88.7**

a/ Source: United States Department of Agriculture, 2003.

Based on the overall geologic conditions present in the Project area, we conclude that construction of the REX East Project would not significantly alter the geologic and physiographic conditions.

4.1.2 Mineral Resources

The construction and operation of REX East facilities near or over mineral resources could impact the present and future extraction of those resources. The types of potentially exploitable mineral resources identified in the REX East Project area are oil and gas, coal, crushed stone, cement, lead, lime, salt, soda ash, clay, and Grade–A helium.

Table 4.1.2-1 identifies the known mineral resource production areas within 1,500 feet of the proposed pipeline route. No mining or mineral resource production areas were identified within 1,500 feet of any of the proposed aboveground facilities. No production of cement, lead, lime, salt, soda ash, clay, or Grade–A helium is known to occur within 1,500 feet of the Project.

Table 4.1.2-1

Summary of Known Mineral Resource Production Areas Within 1,500 Feet of Proposed Project

State/County	Milepost	Area Where Resource is Found	Distance (in feet) and Direction from Centerline
ILLINOIS			
Pike	59.9	Quarry	1,300 – Southeast
	70.6	Gravel Pit	1,250 – South
Douglas	199.9	Quarry	500 – North
INDIANA			
Morgan	310.0	Sand/Gravel Pit	575 – West
	315.2	Sand/Gravel Pit	900 – Northeast
	315.4	Sand/Gravel Pit	500 – West

Table 4.1.2-1 Summary of Known Mineral Resource Production Areas Within 1,500 Feet of Proposed Project			
State/County	Milepost	Area Where Resource is Found	Distance (in feet) and Direction from Centerline
OHIO			
Butler	424.9	Gravel Pit	450 – Southwest
	430.6	Sand/Gravel Pit	1,000 – North
	435.0	Sand/Gravel Pit	215 – North
	473.0	Sand/Gravel Pit	1,500 – North

Sand, gravel, and crushed stone

No active sand and gravel pit or quarries would be crossed by the Project. The construction of the Project would not prevent the operation of the existing pits/quarries in the area. Construction of the Project may limit future exploitation of these resources, but only in the immediate vicinity of the Project. We note that in areas where the REX East pipeline would parallel existing rights-of-way; those rights-of-way already prohibit or limit the exploitation of these mineral resources.

A landowner in Waldron, Indiana expressed concern that blasting at a nearby quarry could damage the pipeline. The nearest quarry to the proposed pipeline in this area appears to be about 3,500 feet away. As discussed in section 4.1.3, the pipeline is designed to withstand some amount of earth movement. We do not believe that blasting at a quarry more than 0.5 mile from the pipeline would affect the integrity of the pipeline.

Oil and gas

The pipeline route is within 500 feet of 101 active oil and gas wells. These wells were identified in Christian County, Illinois (5); Parke (2), Shelby (2), and Decatur (9) Counties, Indiana; and Fairfield (3), Perry (20), Muskingum (40), Guernsey (13), Noble (2), Belmont (3), and Monroe (2) Counties, Ohio.

Seven of these wells appear to be within the pipeline construction right-of-way (at MPs 555.0, 573.8, 599.0, 606.6, 627.1, 635.4, and 635.4). Grading and trenching activities could damage well heads or gathering lines, creating a potential safety hazard to workers and interrupting oil and gas production until appropriate repairs are made. Blasting operations could also damage nearby oil and gas wells. Rockies Express has indicated that it would contact the owners of the wells within the construction work area prior to construction, would modify its workspace to attempt to avoid these wells, and would require equipment to remain 10 feet from aboveground well equipment. Although, this would partially mitigate impacts to the wells, Rockies Express has not provided a plan for monitoring these wells during construction or protecting the integrity of the well and casing. Therefore, **we recommend that:**

- **Prior to the start of construction, Rockies Express file with the Secretary for review and written approval by the Director of OEP, a site-specific protection plan for oil or gas wells within the construction work area, both active and abandoned. These plans should include details on how the wells would be protected and monitored during construction. Rockies Express should also discuss how it would determine if any damage attributable to construction activities occurred to the aboveground equipment, casing, or plug (for abandoned wells). The plans should also discuss how any damage would be mitigated.**

By avoiding and/or protecting existing oil and gas production facilities, we believe the Project would not interfere with current oil and gas production in the proposed Project area. Additionally, because oil and gas are generally produced from depths of more than 1,000 feet, construction of the pipeline is not expected to affect future oil or gas production in the area because the proposed pipeline would only be at maximum depths of 10 feet from the ground surface.

Coal

Coal deposits are located in the vicinity of the REX East Project. The pipeline and facilities would be located in three coal-producing regions—the Interior, Appalachian, and Western regions. Coal is produced in the Project area through surface strip mining and underground operations; however, no active coal mines or coal bed methane production areas were identified in the locations crossed by the REX East Project facilities. The pipeline route would cross abandoned underground coal mines in Illinois, Indiana, and Ohio (see table 4.1.2-2). The main concern with crossing abandoned underground coal mines is the potential for subsidence which could affect the integrity of the pipeline. Subsidence associated with coal mining is discussed in section 4.1.3.

Table 4.1.2-2

Abandoned Underground Mines Crossed by the Proposed Pipeline Route a/

State/County	Begin Milepost	End Milepost	Length (miles)	Type of Mining
ILLINOIS				
Sangamon	117.5	119.0	1.4	Room and Pillar
	119.0	119.0	<0.1	Room and Pillar
Douglas	208.2	208.3	0.1	Room and Pillar
	208.7	211.9	3.2	Room and Pillar
INDIANA				
Warren	246.4	246.7	0.3	Room and Pillar
OHIO				
Perry	561.2	561.2	<0.1	Room and Pillar
	561.4	561.4	<0.1	Room and Pillar
	561.5	561.6	0.1	Room and Pillar
	561.6	561.7	0.1	Room and Pillar
	562.5	562.6	0.1	Room and Pillar
	563.7	563.8	0.1	Room and Pillar
	563.9	564.0	0.1	Room and Pillar
	564.1	564.3	0.2	Room and Pillar
	564.3	564.6	0.3	Room and Pillar
	564.7	565.1	0.4	Room and Pillar
Muskingum	567.0	567.1	0.1	Room and Pillar
	567.1	567.1	<0.1	Room and Pillar
	567.2	567.4	0.2	Room and Pillar
	567.4	567.5	0.1	Room and Pillar
	567.6	568.2	0.6	Room and Pillar
	570.8	571.1	0.3	Room and Pillar
	571.5	571.6	0.1	Room and Pillar
	571.6	571.7	0.1	Room and Pillar

Table 4.1.2-2

Abandoned Underground Mines Crossed by the Proposed Pipeline Route a/

State/County	Begin Milepost	End Milepost	Length (miles)	Type of Mining
Guernsey	595.3	596.0	0.7	Room and Pillar
	596.0	596.2	0.2	Room and Pillar
	596.2	596.3	0.1	Room and Pillar
	596.3	596.5	0.2	Room and Pillar
	596.5	596.5	<0.1	Room and Pillar
	597.6	597.7	0.1	Room and Pillar
	597.9	598.0	0.1	Room and Pillar
	598.8	599.2	0.4	Room and Pillar
	600.4	600.8	0.4	Room and Pillar
	600.8	600.8	<0.1	Room and Pillar
	601.0	601.1	0.1	Room and Pillar
	601.1	601.1	<0.1	Room and Pillar
	601.1	601.9	0.8	Room and Pillar
	601.9	602.4	0.5	Room and Pillar
	602.4	602.7	0.3	Room and Pillar
	602.7	603.6	0.9	Room and Pillar
	603.9	604.4	0.5	Room and Pillar
	605.9	606.1	0.2	Room and Pillar
	606.2	606.2	<0.1	Room and Pillar
Belmont	629.6	629.8	0.2	Room and Pillar, Longwall
	629.8	631.1	1.3	Room and Pillar, Longwall
Monroe	633.8	633.9	0.1	Room and Pillar
	634.3	639.1	4.8	Room and Pillar

a/ Source: Stiff, 1997; Crowell, et al., 2006

All surface mining sites within 1,500 feet of the proposed pipeline and aboveground facilities are rock quarries or sand and gravel pits. These are important non-fuel mineral resources in the project states, but are also fairly common, and the REX East Project facilities are not located near any critical deposits. Construction of the Project could prohibit or limit the mineral resource deposits located under or near the proposed pipeline or aboveground facilities from being recovered by surface mining. However, in many areas the proposed pipeline follows existing rights-of-way which would already limit the extraction of these resources.

4.1.3 Geologic Hazards

Potential geologic hazards identified in the REX East Project area are seismicity (earthquakes and faults), landslides, subsidence, and flooding/scour. Each of these hazards is discussed below.

Seismicity

Seismic hazards include earthquakes, ground faulting, and secondary effects such as liquefaction and related slope failures. Liquefaction is a phenomenon where saturated, non-cohesive soils typically having uniform grain size temporarily lose their strength when subjected to intense ground shaking, often resulting in sloughing or landslides.

The REX East Project route crosses an area of relatively low seismic risk. No active faults were identified in the vicinity of the REX East Project, although features indicative of Quaternary faulting are present in southeastern Illinois and southwestern Indiana where the Project is proposed.

Most seismic activity in the region is generally linked to the New Madrid fault zone located to the south of the pipeline route. Between December 1811 and February 1812, three of the most powerful earthquakes in United States history originated in this area, reaching a Modified Mercalli intensity of up to XII. Since that time numerous intensity V or greater earthquakes have been reported in Missouri, Illinois, Indiana, and Ohio. The project would not cross the seismically active portion of the New Madrid fault zone. The area in which the probability of a seismic event is highest is located well to the south of the Project area, along the adjoining boundaries of Missouri, Arkansas, and Tennessee. Based on the Seismic Source Zones Map provided in Algermissen et al. (1982), the majority of the Project area (including Nebraska) could experience about three to six Modified Mercalli intensity V earthquakes every 100 years (maximum Richter magnitude of 6.1). Portions of the project in Indiana and western Ohio could experience between 11 and 15 Modified Mercalli intensity V earthquakes every 100 years.

The Wabash Valley Seismic Zone is located in southeastern Illinois and southwestern Indiana. This zone is capable of producing seismic activity. On June 18, 2002, a 5.0 magnitude earthquake occurred near Evansville, Indiana, in an area that is part of the Wabash Valley Seismic Zone. The Project is located to the north of this seismic zone, but the pipeline route would cross an area in the Wabash Valley region identified as containing liquefaction features. However, no historical earthquakes in this area have been strong enough to cause liquefaction. These features are likely the result of prehistoric events in the Holocene and late Pleistocene epochs (Obermeir and Crone, 1994).

Although the intensity, frequency, and duration of impacts resulting from the potential hazard of minor earthquakes are difficult to quantify, all REX East Project facilities would be designed and constructed in accordance with 49 CFR Parts 192 and 193. These specifications ensure that pipeline facilities are designed and constructed in a manner that provides adequate protection from washouts, floods, unstable soils, landslides, or other hazards that may cause the pipeline facilities to move or sustain abnormal loads. Pipeline installation techniques, especially padding and use of rock-free backfill, effectively protect the pipeline from minor earth movements. Furthermore, the ductility of modern pipelines gives further assurance that minor earth movements would have little impact on the REX East Project pipeline.

The REX East Project would be constructed using arc-welding techniques. O'Rourke and Palmer (1996) evaluated the seismic performance of gas transmission pipelines in southern California using arc-welding as a construction method. Based on their findings, electric arc-welded pipelines constructed after World War II, and properly maintained, have never experienced a break or leak as a result of a southern California earthquake. O'Rourke and Palmer also concluded that electric arc-welded pipelines in good repair are the most resistant type of piping and are generally highly resistant to traveling ground-wave effects and moderate amounts of permanent deformation. Therefore, we do not expect seismic hazards to pose a significant risk to the proposed pipeline facilities.

Landslides

A landslide is defined as the movement of a mass of rock, debris, or earth down a slope. Several factors contribute to slope failures and subsequent landslides, including the degree of slope or tilt of geologic materials, the composition of the materials, the amount of manmade disturbance of the materials, proximity to seismic activity, and the amount of rainfall exposure. Generally, flat areas were selected for the location of the proposed compressor and meter sites; therefore, slope failure is not expected at aboveground facility locations. However, slope failures and subsequent landslides represent a potential

hazard along portions of the Project route that would traverse areas of side slopes and rolling terrain. Factors that would increase the potential for slope failures along slopes and rolling terrain include cutting along slopes, the weight of construction equipment, and unusually high precipitation.

The portions of the Project area located in Audrain, Ralls, and Pike Counties, Missouri and Hendricks and Morgan Counties, Indiana have recorded areas of moderate susceptibility/low incidence of previous landslides. Portions of the pipeline route would encounter recorded areas of high susceptibility/ low incidence in Pike County, Missouri; Pike County, Illinois; Franklin County, Indiana; and Perry, Muskingum, and Guernsey Counties, Ohio. Portions of the route would encounter recorded areas of high susceptibility/moderate incidence in Guernsey, Noble, and Belmont Counties, Ohio. Lastly, isolated areas of the pipeline route would encounter recorded areas of high susceptibility/high incidence in Belmont and Monroe Counties, Ohio. Approximately 27.5 percent of the total REX East pipeline route (based on length) is located in areas of moderate to high landslide susceptibility. Table 4.1.3-1 identifies areas along the right-of-way that are susceptible to landslides.

Table 4.1.3-1

Areas Crossed by the Proposed Pipeline Route with Moderate or High Susceptibility to Landslides a/

State/County	Begin Milepost	End Milepost	Length (miles)	Susceptibility	Incidence
Missouri					
Audrain	7.8	15.8	8.0	Moderate	Low
Ralls	15.8	19.8	4.0	Moderate	Low
Pike	19.8	36.4	16.6	Moderate	Low
	36.4	43.0	6.6	High	Low
Illinois					
Pike	43.0	69.7	26.7	High	Low
Indiana					
Hendricks	291.0	301.1	10.1	Moderate	Low
	301.1	304.3	3.2	Moderate	Low
Morgan	304.3	306.6	2.3	Moderate	Low
Franklin	379.6	396.8	17.2	High	Low
Ohio					
Perry	557.9	566.3	8.4	High	Low
Muskingum	566.3	577.4	11.1	High	Low
	577.4	591.7	14.3	High	Low
Guernsey	591.7	591.8	0.1	High	Low
	591.8	594.7	2.9	High	Moderate
	594.7	602.8	8.1	High	Low
	602.8	611.3	8.5	High	Moderate
Noble	611.3	618.0	6.7	High	Moderate
Belmont	618.0	618.1	0.1	High	Moderate
	618.1	633.8	15.7	High	High
Monroe	633.8	639.1	5.3	High	High

a/ Source: Godt, 1997

Construction of the pipeline would be accomplished in accordance with Rockies Express' Plan and Procedures (FERC eLibrary, 2007a,b), which includes measures to control runoff and erosion that would minimize the potential for slope failures. If feasible, Rockies Express would bury the pipeline

below potential landslide depth to reduce landslide susceptibility. Additionally, Rockies Express would implement drainage controls including slope and ditch breakers to reduce the potential for slope failures.

Pipeline construction on steep slopes could initiate localized slope movement. However, we believe that modern construction techniques along with the implementation of Rockies Express' Plan and Procedures would reduce the potential for construction-related activities to trigger landslides or other slope instability.

Along with the design measures to mitigate for minor earth movements (as set forth by 49 CFR Part 192), the orientation of the pipeline along the long axis of a slope face would minimize the overall energy to which a segment of pipe would be exposed during a landslide event. Should a landslide occur, sections of the pipe could become exposed and thus would require subsequent reburial. None of the aboveground facilities would be located in an area with recorded landslides or on steep slopes.

Subsidence

Subsidence can range from small localized areas of collapse to broad, regional lowering of the ground surface. It can be associated with areas of karst terrain, past underground mining, earthquake-induced liquefaction, and withdrawal of fluids such as groundwater and petroleum. Subsidence related to withdrawal of groundwater or petroleum is generally not a concern in the REX East Project area.

Karst terrain refers to areas characterized by dissolution of rocks such as limestone, dolomite, gypsum, and salt, resulting in sinkholes (closed depressions), pinnacled bedrock, caves/caverns, and underground drainage systems. The tendency for and rate of solubility of rock formations is variable and is believed to be affected by rock mineralogy as well as local structural features, such as jointing, bedding characteristics, and differences in groundwater chemistry.

Approximately 23 percent of the pipeline route crossed by the Project has the potential for karst features from 10 to 200 feet below the ground surface. Table 4.1.3-2 identifies areas of the proposed pipeline route that would cross potential karst terrain. These sections may be susceptible to subsidence caused by dissolution and sinkhole activity that can occur in karst terrain. But, as most pipeline construction would not occur at depths greater than 10 feet from the surface, and Rockies Express identified no karst-related features during its survey of the proposed right-of-way, no impacts attributable to surficial karst features are expected. However, not all areas of the right-of-way have been surveyed for karst features, and one landowner has expressed concern that karst features may be present on the pipeline route. Therefore, **we recommend that:**

- **Prior to the start of construction, Rockies Express file with the Secretary for review and written approval by the Director of OEP, a plan for the identification of karst features and mitigation for crossing any such features identified during construction. This plan should also indicate how areas with these features would be monitored during the life of the Project and what steps would be taken if the area were to destabilize in the future.**

Table 4.1.3-2

Location and Length of Potential Karst Terrain Crossed by the Proposed Pipeline Route a/

State/County	Begin Milepost	End Milepost	Length (miles)
Missouri			
Pike	25.4	42.7	17.3
Missouri Subtotal			**17.3**
Illinois			
Pike	54.5	71.2	16.7
Scott	71.2	83.5	12.3
Illinois Subtotal			**29.0**
Indiana			
Putnam	268.1	281.6	13.5
Shelby	343.3	358.7	15.4
Decatur	358.7	376.9	18.2
Franklin	376.9	397.9	21.0
Indiana Subtotal			**68.1**
Ohio			
Clinton	464.3	473.7	9.4
Greene	473.7	476.5	2.8
Fayette	476.5	499.8	23.3
Pickaway	499.8	500.7	0.9
Ohio Subtotal			**36.4**
Project Total			**150.8**

a/ National Atlas of the United States, 2007

It is possible, but unlikely that an HDD operation may intercept a solution void in a karst area, depend on the size of the void this could result in the loss of drilling mud and/or the failure of the drill. Rockies Express has not indicated what it would do if a solution void was intercepted during an HDD, therefore, **we recommend that:**

- **Prior to the start of construction, Rockies Express file with the Secretary for review and written approval by the Director of OEP, a contingency plan for HDDs in the karst areas identified on table 4.1.3-2. This plan should include pre-construction identification of the potential for subsurface karst features and identify what Rockies Express would do if a solution void is intercepted to limit the amount of mud lost and successfully complete the drill.**

Subsidence can also occur due to the collapse of underground mines. The two forms of subsidence associated with underground mining are pit and sag. Subsidence due to pits can range from 6- to 8-feet deep with a diameter from 2 to 40 feet. Subsidence due to sags may be several feet deep and cover several acres. The locations of abandoned underground mines along the Project route are listed in table 4.1.2-2. Analysis of the effects of coal mine subsidence on the REX East Project pipeline indicate that for areas in relatively gentile terrain, the pipeline should be capable of accommodating vertical and horizontal ground displacements associated with coal mine subsidence. In areas susceptible to coal mine

subsidence with steeper terrain, bends in the pipeline, or elevated pipeline operating temperature, the chances of damage to the pipeline are greater. Therefore, **we recommend that:**

- **Prior to the start of construction, Rockies Express file with the Secretary for review and written approval by the Director of OEP, a plan for monitoring areas where the pipeline would cross underground mines that includes the steps that would be taken if the area were to destabilize in the future. The monitoring should continue for the life of the Project.**

None of the aboveground facilities are located in areas considered to be affected by subsidence due to either karst features or past underground mining, with the exception of the Dominion Transmission, Dominion East, and TETCO meter stations, which are located on an abandoned underground mine area at MP 639.1. However, there is no indication of ongoing subsidence in this area.

Flooding/Scour

Seasonal and flash flooding hazards are a potential concern where the pipeline route crosses major streams and small watersheds. Although flooding itself does not present a risk to buried pipelines, bank erosion and/or scour could expose or cause sections of pipe to become unsupported.

In flood or scour-prone areas, the REX East Project pipeline would be buried at greater depths (greater than 5 feet) to minimize scour potential. Rockies Express identified three areas with the potential for severe scour, all within Indiana (see table 4.1.3-3). Aboveground facilities are generally located in upland areas and would not be susceptible to severe scouring.

Table 4.1.3-3
Waterbodies Crossed with Potential for Severe Scour

County/State	Milepost	Waterbody
Parke, IN	250.7	Leatherwood Creek
Putnam, IN	269.9	Raccoon Creek
Johnson, IN	337.9	Sugar Creek

Flooding may be an issue during the construction of the Mississippi River crossing. The pipeline would be installed under the Mississippi River by HDD. The drilling operation would involve two separate HDDs, one for the Salt River and one for the Mississippi River. These two drills would take several months to complete. The drilling equipment would be set up on Blackburn Island which is prone to flooding. The only access to the drilling site would be by boat. Flooding during the drill operation could result in hazardous material (such as diesel and hydraulic fluid) spilling into the river and equipment used for the drilling operation (such as barges, tanks, and drilling equipment) could float away in the flood waters. Rockies Express has indicated that it does not plan to construct this crossing during the time of year flooding is most likely (April 1 to July 15). Rockies Express has also indicated that it would monitor river levels during construction. If a flood is predicted, the drilling operations would be halted and to the extent possible equipment would be removed from the island with priority given to diesel fuel storage tanks and diesel powered equipment. We believe that Rockies Express has not provided sufficient information on how it would deal with flooding during construction of the Mississippi River crossing. Other issues which have not been addressed include: how would equipment/materials left on the island be secured, would the temporary dock (barge) be left in place, how would equipment/materials left behind be protected from floating debris, would timber cut on the island

(potential floating debris) be left there. Because Rockies Express has not provided sufficient detail, **we recommend that:**

- **Prior to the start of construction, Rockies Express file with the Secretary for review and written approval by the Director of OEP a High Water Contingency Plan for the construction of the Mississippi River crossing. This plan should be developed in consultation with the COE.**

4.1.4 Paleontological Resources

Many geologic formations have the potential to contain paleontological resources; however, those containing vertebrate fossils are generally considered to be most scientifically significant because vertebrate fossils are rarer than invertebrate or plant fossils. Potential impacts in fossil localities during construction could include direct impacts (such as damage to or destruction of fossils resulting from excavation activities) and indirect impacts (such as erosion of fossil beds resulting from slope regrading, clearing of vegetation, and unauthorized collection of significant fossils by construction personnel or the public).

Rockies Express consulted with MODNR, Division of Geology and Land Survey; the Illinois State Geological Survey; the Illinois State Museum; the Indiana Geological Survey; and the ODNR, Division of Geological Survey staff to identify areas along the pipeline route with potentially sensitive paleontological resources. Only the Illinois State Museum identified potential paleontological resources of concern along the Project route. In a letter dated February 13, 2007 to Rockies Express, the Illinois State Museum identified areas in Illinois where the Project route crosses potential fossil assemblages (see table 4.1.4-1). The Illinois State Museum identified members of the Glasford formation that had previously been found to contain isolated fossiliferous material and the Wedron and Equality Formations that have previously been found to contain significant fossiliferous material, including large mammals. However, the Illinois State Museum did not provide recommendations for any specific actions to be taken regarding potential fossils in these units. Additionally, the ODNR in a letter dated March 6, 2007, identified the Waynesville and Liberty Formations in the interval between MP 446.6 through 462.5 as having the potential to contain Ohio's official fossil, the *Isotelus* trilobite. However, the ODNR stated no precaution with regard to excavating a specimen is necessary.

Rockies Express contractors and staff would be instructed to be aware of the possibility of encountering paleontological material when pipeline or aboveground facility construction was taking place in the above-mentioned areas. Rockies Express has indicated that if any significant paleontological material is encountered, the EI would contact the appropriate agency and request further investigation. Construction would halt until a site determination is made. However, Rockies Express has not indicated how or who would determine if the paleontological material was significant. Therefore, **we recommend that:**

- **Prior to the start of construction, Rockies Express file with the Secretary for review and written approval by the Director of OEP, a plan for the identification of paleontological material found during construction. Rockies Express should also provide criteria for the determination of significance.**

Because of this stop-work contingency, and because pipeline construction would disturb a relatively small area of a relatively low-fossil-density formations, construction impacts to paleontological resources are considered minimal.

Table 4.1.4-1

Potential Fossiliferous Formations Crossed by the Project Route in Illinois

County	Begin Milepost	End Milepost	Length (miles)	Formation – Member
Pike	65.3	70.4	5.1	Glasford – Kellerville
Scott	75.0	86.3	11.3	Glasford – Vandalia
Morgan	86.3	94.7	8.4	Glasford – Vandalia
	95.1	105.1	10.0	Glasford – Vandalia
	105.1	106.0	0.9	Glasford – Hagarstown
	106.0	106.4	0.4	Glasford – Vandalia
Sangamon	106.4	120.4	14.0	Glasford – Vandalia
	121.3	125.6	4.3	Glasford – Vandalia
	126.3	131.7	5.4	Glasford – Vandalia
Christian	132.2	132.6	0.4	Glasford – Vandalia
	133.2	134.8	1.6	Glasford – Vandalia
Sangamon	134.8	135.4	0.6	Glasford – Vandalia
Christian	135.4	141.9	6.5	Glasford – Vandalia
	141.9	151.1	9.2	Glasford – Radnor
Macon	151.1	154.0	2.9	Glasford – Radnor
	154.6	160.3	5.7	Wedron – Piatt
	160.3	164.6	4.3	Wedron – Piatt
	164.6	165.0	0.4	Wedron – Fairgrange
	165.0	169.4	4.4	Wedron – Piatt
	169.4	172.1	2.7	Wedron – Piatt
Moultrie	172.1	172.9	0.8	Wedron – Piatt
	172.9	187.5	14.6	Wedron – Piatt
Douglas	187.5	188.0	0.5	Wedron – Piatt
	188.4	192.6	4.2	Wedron – Piatt
	193.2	195.2	2.0	Wedron – Batestown
	195.2	201.1	5.9	Wedron – Batestown
	201.1	202.4	1.3	Equality – Dolton
	202.4	202.5	0.1	Wedron – Batestown
	203.1	204.7	1.6	Equality – Dolton
	204.7	205.3	0.6	Wedron – Batestown
	205.3	212.4	7.1	Equality – Carmi
	212.4	213.4	1.0	Equality – Carmi
	213.4	214.7	1.3	Wedron – Batestown
Edgar	214.7	228.0	13.3	Wedron – Batestown
	229.1	232.6	3.5	Wedron – Batestown
	233.8	234.9	1.1	Wedron – Batestown
	235.4	236.3	0.9	Wedron – Batestown
	237.1	238.1	1.0	Wedron – Batestown

Normal operation of the pipeline and aboveground facilities would not disturb paleontological resources. Although maintenance activities would result in surface disturbance, such disturbance would typically occur in areas previously disturbed by construction. Therefore, operational impacts to paleontological resources are considered negligible.

4.2 SOILS

Information regarding the soil types present in the Project area and their characteristics was obtained using the NRCS in the State Soil Geographic (STATSGO) database. STATSGO is an electronic database maintained by the U.S. Department of Agriculture (USDA), NRCS. The soil characteristics/limitations that are evaluated are the potential for erosion by wind and water, shallow bedrock, prime farmland designation, compaction, and the percentage of stones/rocks, droughty soil, and hydric soil present.

Pipeline construction activities such as clearing, grading, trench excavation, backfilling, heavy equipment traffic, and restoration along the construction right-of-way may result in adverse impacts on soil resources. Clearing removes protective vegetative cover and exposes soil to the effects of wind, sun, and precipitation, which could potentially increase soil erosion and the transport of sediment to sensitive areas. Grading and equipment traffic can compact soil, reducing porosity and percolation rates, which could result in increased runoff potential. In addition, grading can result in the mixing of topsoil with subsoil, which could result in long-term reduction of agricultural productivity and introduce subsurface rocks to the soil surface. Trench excavation and backfilling could also lead to the mixing of topsoil and subsoil, introduction of excavated rocks from the fracturing of bedrock, and introduction of rock and/or gravel into the soil surface. This could result in future increases in operation labor, decreases in agricultural productivity, and potential damage to agricultural field equipment. Soil contamination from equipment spills and/or leakage of fuels, lubricants, and coolants could also impact soils. Rockies Express has developed three plans, the Upland Construction Plan (FERC eLibrary, 2007a), the Wetland and Waterbody Construction and Mitigation Procedures (FERC eLibrary, 2007b), and the AIMP (appendix I) for Illinois to identify baseline mitigation procedures for minimizing impacts on soils and enhancing revegetation[1]. Further discussion of the AIMPs and their proposed mitigation measures for agricultural areas can be found in section 4.8.2 of this draft EIS.

4.2.1 Soil Limitations

Table 4.2.1-1 summarizes the soil limitations that could be encountered by the proposed pipeline route and table 4.2.1-2 summarizes the soil limitations associated with the proposed aboveground facilities.[2] Impacts associated with construction and operation of aboveground facilities would be similar to those described above for pipeline limitations; however, impacts at aboveground facilities would be permanent. Because land used for construction of the aboveground facilities would be permanently converted to industrial use, mitigation measures implemented at the aboveground facilities are limited to erosion and sediment control measures.

Erosion Potential

Erosion is a natural process in which surface soils are worn away, typically by wind or water. Factors that influence the erosion potential of soil include gradation (distribution of soil particles), vegetative cover, length and percentage of slope, rainfall, and wind intensity. Soils on steep, long slopes are much more susceptible to water erosion than soils on shallow, short slopes because the steeper slopes accelerate the flow of surface runoff.

[1] At this time, Rockies Express has not provided an AIMP for Missouri, even though agricultural land is crossed in the state. This issue is discussed further in section 4.8.2.

[2] Specific soil characteristics and limitations along the Project length by milepost can be found online at FERC's eLibrary (2007k).

Table 4.2.1-1

Summary of Soil Limitations at Pipeline Facilities (by miles crossed) a/

County	Highly Water Erodible b/	Highly Wind Erodible c/	Prime Farmland d/	Hydric e/	Compaction Prone f/	Stony Rocky g/	Shallow Bedrock h/	Droughty i/
MISSOURI								
Audrain	0.7	0.0	13.5	7.0	6.1	0.4	0.0	0.0
Ralls	0.0	0.0	3.9	1.9	1.7	0.0	0.0	0.0
Pike	9.3	0.0	8.3	3.8	3.3	5.2	4.5	0.0
ILLINOIS								
Pike	5.1	0.0	16.8	6.2	1.8	0.0	0.0	0.0
Scott	3.7	0.0	9.0	2.2	0.8	0.0	0.0	0.0
Morgan	3.8	0.0	14.4	4.0	3.3	0.0	0.0	0.0
Sangamon	1.9	0.0	22.8	7.9	9.2	0.0	0.0	0.1
Christian	1.0	0.0	15.7	5.2	1.0	0.0	0.0	0.1
Macon	1.5	0.0	18.3	4.7	4.7	0.0	0.0	0.0
Moultrie	0.2	0.0	14.7	5.2	5.2	0.0	0.0	0.0
Douglas	0.4	0.0	26.1	10.7	7.4	0.0	0.0	0.0
Edgar	0.6	0.0	22.6	8.0	7.5	0.0	0.0	0.0
INDIANA								
Vermillion	2.3	0.0	5.7	1.2	0.5	0.0	0.1	0.1
Parke	5.5	0.1	14.3	3.0	0.6	0.0	0.0	0.4
Putnam	5.5	0.0	11.9	1.4	1.2	0.0	0.7	0.3
Hendricks	3.1	0.3	14.6	2.5	0.8	0.0	0.3	0.2
Morgan	1.2	0.5	11.5	3.9	2.3	0.0	0.0	0.6
Johnson	2.1	0.8	17.0	4.9	2.0	0.0	0.0	0.5
Shelby	2.4	0.8	16.7	6.0	0.9	0.0	0.3	0.6
Decatur	3.8	0.1	13.6	3.0	1.1	0.3	0.7	0.0
Franklin	16.1	0.2	10.6	1.3	0.7	5.3	7.5	0.3
OHIO								
Butler	8.6	0.0	22.6	4.3	3.2	0.0	1.5	0.2
Warren	6.1	0.0	16.5	2.2	1.7	0.0	1.3	0.2
Clinton	2.8	0.0	11.4	1.9	0.3	0.0	0.6	0.1
Greene	0.2	0.0	2.8	1.5	1.5	0.0	0.0	0.0
Fayette	2.2	0.0	20.9	8.3	7.3	0.0	0.0	0.0
Pickaway	5.1	0.3	19.0	6.1	5.8	0.1	0.0	0.0
Fairfield	7.8	0.0	16.4	2.5	1.1	1.5	1.5	0.0
Perry	14.8	0.0	2.3	0.9	0.1	3.8	7.2	0.0
Muskingum	19.5	0.0	1.9	1.7	0.5	5.6	14.2	0.0
Guernsey	15.9	0.0	1.7	1.4	0.5	2.5	14.5	0.0
Noble	6.3	0.0	0.0	0.0	0.0	4.2	5.5	0.0
Belmont	14.4	0.0	1.5	0.0	0.0	0.8	14.4	0.0
Monroe	5.2	0.0	0.1	0.0	0.0	0.0	6.1	0.0
Total	**179.1**	**3.1**	**419.3**	**124.8**	**84.1**	**29.7**	**80.9**	**3.7**
Percent of Total j/	**28.0**	**0.5**	**65.6**	**19.5**	**13.2**	**4.7**	**12.7**	**0.6**

a/ Values may be overestimated due to rounding as all values <0.1 were counted as 0.1
b/ Includes map unit having average slope class of 9 percent or more and designated as land capability subclasses 4E through 8E by NRCS
c/ Includes map unit designated as wind erodibility group 1 or 2 by NRCS
d/ Includes map unit designated as prime farmland by NRCS
e/ Includes map unit designated as hydric by NRCS
f/ Includes map unit having sandy clay loam texture or finer in drainage classes categorized as somewhat poor, poor, or very poor
g/ Includes map unit meeting criteria for stony-rocky soils
h/ Includes map unit having bedrock within 60 inches of soil surface
i/ Includes map unit meeting criteria for droughty soils
j/ Percentages sum to greater than 100 because some areas are characterized by more than one soil limitation

Table 4.2.1-2

Summary of Soil Limitations at Aboveground Facilities

Facility (County)	Total Acres	Highly Erodible a/	Prime Farmland b/	Hydric c/
MISSOURI				
Mexico Compressor Station (Audrain)	12.7	No	Yes	No
ILLINOIS				
Blue Mound Compressor Station (Christian)	12.9	Yes	Yes	No
NGPL Meter Station (Moultrie)	>5.9	No	Yes	Yes
Trunkline Meter Station (Douglas)	2.6	No	Yes	Yes
MGT Meter Station (Edgar)	1.3	No	Yes	Yes
INDIANA				
PEPL Meter Station (Putnam)	1.3	Yes	Yes	No
Bainbridge Compressor Station (Putnam)	20.0	No	Yes	Yes
Citizen Gas Meter Station (Morgan)	1.2	No	Yes	Yes
IGC Meter Station (Morgan)	1.9	No	Yes	No
ANR Meter Station (Shelby)	2.0	Yes	Yes	No
OHIO				
Hamilton Compressor Station (Butler)	14.3	Yes	Yes	No
Dominion/TETCO/TG/Vectren/CGE Meter Station (Warren)	6.7	Yes	Yes	No
CGTC Meter Station (Fairfield)	1.3	Yes	Yes	No
Chandlersville Compressor Station (Muskingum)	12.3	No	Yes	Yes
TG Meter Station (Muskingum)	1.3	Yes	No	No
DT/DEG/TETCO Meter Station (Monroe)	5.4	Yes	No	No
WYOMING				
Arlington Compressor Station	15.0	Yes	No	No
NEBRASKA				
Bertrand Compressor Station (Phelps)	17.7	No	Yes	Yes

a/ Includes map unit designated by NRCS as highly erodible land
b/ Includes map unit designated by NRCS as prime farmland
c/ Includes map unit designated by NRCS as hydric

As presented in table 4.2.1-1, approximately 28 percent of the soils crossed by the REX East pipeline route are highly susceptible to water erosion and 0.5 percent of the soils are most susceptible to wind erosion. Clearing, grading, and equipment movement could accelerate the erosion process. Without adequate protection, this could result in topsoil loss, reduced soil fertility, and discharge of sediment into sensitive areas. The sloping banks of ravines, waterbodies, and soil storage piles would be most susceptible to water erosion.

The Plan would be used during construction in upland areas. The Procedures would be followed in wetland areas and waterbody crossings and includes measures to protect soils in those areas. The Plan and Procedures are designed to control erosion and sedimentation during construction. These include use of temporary and permanent breakers on slopes. Temporary sediment barriers or slope breakers, such as straw bales or silt fences would be installed at the base of slopes adjacent to waterbodies, in wetlands, on roadways, and along the edge of the right-of-way. This would prevent sediment from flowing off the right-of-way. Permanent trench breakers, such as sacks of soil or sand, polyurethane foam, or bentonite

clay, would be installed around the pipe in the trench prior to filling to mitigate subsurface channeling of water where applicable. The measures implemented would be monitored by Rockies Express' EIs to ensure control of erosion. Temporary sediment barriers would be evaluated daily and maintained (reinstalled as necessary) until areas disturbed by construction are stabilized and successful revegetation is accomplished. Active revegetation using seed mixtures recommended by the NRCS and landowners would be used as necessary to further stabilize soils to prevent erosion. Rockies Express would also temporarily employ the use of water trucks, as needed, to reduce wind erosion and road dust associated with construction activities.

Rockies Express would also implement waterbody crossing methods as outlined in its Plan and Procedures to minimize potential impacts of soil erosion from water and sedimentation near waterbodies. For example, spoil from waterbody crossings would be maintained in the construction right-of-way at least 10 feet from the water's edge or in an additional workspace. Sediment barriers would be installed and properly maintained to prevent flow of sediment into the waterbody and to contain spoil and sediment within the construction right-of-way. In addition, trench plugs would be used as necessary to prevent diversion of water into upland portions of the pipeline trench, and all waterbody banks would be returned to a stable condition. Where trench dewatering is required, Rockies Express would pump water from the trench into vegetated upland areas to prevent soil erosion in areas disturbed by construction. Filtering and discharge dissipation devices would be used as appropriate to ensure that trench dewatering activities do not cause erosion or result in heavily silt-laden discharge water.

During the restoration in nonagricultural areas, Rockies Express would condition the right-of-way by preparing a seedbed and applying soil amendments at rates previously agreed upon by the landowner, land management agency, or soil conservation authority.

Rockies Express has detailed several ways it would construct and monitor its pipeline to ensure proper depth of cover and right-of-way stability. In addition to the procedures discussed above, landowners would have the option of negotiating with Rockies Express for the use of additional mitigation measures as long as those measures would not impact other landowners (without their permission) or impact other sensitive resources (e.g., waterbodies, wetlands, protected species, cultural sites, or residential areas). Upon commissioning the pipeline, Rockies Express would implement a surveillance plan that includes monthly aerial pipeline patrolling to inspect for excavation activities, ground movement, wash-outs, leakage, or other changes along the right-of-way. Within one year of cathodic protection system installation, Rockies Express would conduct a close internal survey along the pipeline route on foot. In addition, Rockies Express would use an outreach program for landowner and tenant communication to discuss pipeline location, operation, maintenance, and emergency reporting. We believe these measures would ensure right-of-way stability and minimize the potential for operational disturbances, including increased erosion.

Prime Farmland

Prime farmland soils consist of soils classified as those best suited for the production of food, feed, forage, fiber, and oilseed crops. These soils generate the highest yields with the least amount of expenditure. Soils currently occupying pastures and fields or otherwise undeveloped forest and open land also can be classified as prime farmland soils; lands occupied by surface water or residential, commercial, or industrial uses cannot receive this designation. Prime farmland soils generally meet the following criteria: they have an adequate water supply from either precipitation or irrigation; contain few or no rock; are permeable to water and air; are not excessively erodible or saturated for long periods; and do not flood frequently or are protected from flooding. Approximately 66 percent (419.3 miles) of the REX East Project route would cross prime farmland soils as designated under these criteria.

Potential impacts on agricultural uses and prime farmland soils from pipeline construction include eroding soil; interference with and damage to surface drainage, drain tiles, and irrigation systems; mixing of topsoil and subsoil; potential loss of fertile topsoil; and compaction of topsoil. The AIMP was developed to minimize the impacts of the pipeline to agricultural soils. Discussion of the AIMP and additional analysis of agriculture-related issues is presented in section 4.8.2 of this draft EIS. We recommend in this section the pipeline be buried at a minimum depth of five feet.

Construction of the REX East pipeline facilities would affect approximately 118.5 acres of prime farmland soils. While these soil resources would be permanently lost, the acreage affected would not significantly reduce agricultural production in the REX East Project area.

Compaction Potential

Soil compaction occurs when soil particles are compressed. Compaction modifies soil structure and can reduce the porosity and moisture-holding capacity of the soil, thus restricting rooting depth. Compaction also decreases infiltration and thereby increases runoff and the potential for water erosion. The risk for compaction is greatest when soils are wet. Fine-grained soils having poor drainage characteristics have the greatest propensity for compaction. Construction equipment traveling over wet or saturated soils could disrupt soil structure, reduce pore space, increase runoff potential, and cause topsoil/subsoil rutting and mixing. Approximately 13 percent of the soils crossed by the REX East route are susceptible to compaction.

Operating heavy equipment can cause soil compaction in residential and agricultural areas. Construction vehicles and heavy equipment could leave ruts and cause excessive soil compaction. Rockies Express would mitigate rutting and compaction in agricultural and non-agricultural soils by implementing the procedures in its Plan, such as conducting compaction tests across the right-of-way using a cone penetrometer or another similar instrument and using a paraplow or other deep-tilling equipment in severely compacted agricultural areas. In areas where topsoil has been segregated, the subsoil would be plowed before replacing the segregated topsoil. In addition, Rockies Express would consult with landowners, NRCS, and additional agencies and perform decompaction as required by the affected party. To further minimize the potential for soil impacts in residential and agricultural areas, Rockies Express indicated that it would modify its construction practices by stopping construction activities that would cause irreparable rutting and mixing of the topsoil and subsoil. However, Rockies Express has also indicated that it believes the use of full right-of-way topsoil segregation would allow the continuation of construction during wet weather. We disagree; the concerns with compaction are not limited to topsoil and removing the topsoil would not negate the compaction concern. We believe that additional mitigation measures should be implemented to minimize these potential impacts. To further mitigate for compaction in agricultural areas during wet weather, **we recommend that:**

- **Rockies Express prepare an Agricultural Wet Weather Contingency Plan to address construction practices in agricultural areas during wet weather (i.e., active precipitation and/or saturated ground or as otherwise determined by the EI). This plan should include, at a minimum:**

  a. **A determination of the allowable depth of rutting, and allowable working conditions, prior to suspension of construction activities based on the type of soil, topsoil and subsoil thickness and/or using the Atterberg Field Test Procedure;**

  b. **Designation of authority for the onsite agricultural inspector to have "stop-work" authority in the event that wet weather conditions place topsoil and subsoil at risk; and**

c. **Identification of alternate construction procedures to enable activities to continue without risking the loss and/or mixing of topsoil and subsoil and severe compaction in the event of an unseasonably wet construction season.**

This plan should be filed with the Secretary for review and written approval by the Director of OEP prior to the start of construction.

The IDOA also strongly supports the development and implementation of an Agricultural Wet Weather Contingency Plan.

Stony-Rocky or Droughty Soils

Stony soils are identified as soils having more than five percent by weight of particles larger than three inches. Stony-rocky soils could interfere with agricultural practices and inhibit revegetation efforts.

Droughty soils have a surface texture of sandy loam or coarser material and are moderately well or excessively drained. As a result, droughty soils may not be able to sustain adequate moisture levels in the root zone, making revegetation difficult.

Approximately five percent of the soils crossed by the REX East facilities are stony-rocky and less than one percent of the soils crossed by the REX East facilities are droughty. Construction through stony-rocky soil could bring rock to the surface, which could interfere with agricultural practices and also hinder revegetation of the right-of-way.

In the event that blasting is required, Rockies Express' Plan and Procedures allows blast rock to be used to backfill the trench up to the level of the preexisting bedrock profile, but requires the removal of excess blast/excavated rock, which would be considered construction debris. The Plan and Procedures also requires the removal of excess stones and rock in areas where soils off the right-of-way do not contain similar materials. In nonagricultural areas, mulch application could be used to conserve soil moisture in droughty soils, in addition to providing stability of the soil surface and reducing erosion. Based on these procedures, we conclude that Rockies Express' use of its Plan and Procedures would effectively minimize impacts from construction through these types of soils.

Hydric Soils

Hydric soils are defined as soils that are formed under conditions of saturation, flooding, or ponding that took place long enough during the growing season to develop anaerobic conditions in the upper horizon. Hydric soils include those developed under sufficiently wet conditions to support the growth and regeneration of hydrophytic vegetation, and soils that are sufficiently wet because of artificial measures. Locations where hydric soils are encountered may also contain artificial drainage systems.

Approximately 20 percent of the soils crossed by the REX East route are designated as hydric soils. Construction through hydric soils and wetlands is discussed in sections 2.3.2 and 4.3.7 of this EIS. Implementation of the measures contained in Rockies Express' Plan and Procedures would also minimize impacts on hydric soils.

Shallow Bedrock

Soils indicated as consisting of shallow bedrock have the potential for bedrock to occur within 60 inches of the soil surface. In these areas, specialized mechanical equipment or blasting may be required for trench excavation.

Approximately 13 percent of the soils that would be crossed by REX East facilities have the potential for shallow bedrock, mainly on the eastern end of the Project. Approximately 7 percent of the shallow bedrock crossed could require blasting. The remaining areas of shallow bedrock are soft enough to be ripped with backhoes or bulldozers equipped with rippers. Implementation of Rockies Express' Blasting Plan would minimize the effects of blasting (FERC eLibrary, 2007c). Shallow bedrock impacts are discussed in section 4.1.1 of this draft EIS.

4.2.2 Spill/Contamination Prevention

Soil contamination along the pipeline route could result from at least two sources: material spills during construction and trench excavation of existing contaminated areas. Contamination from spills or leaks of fuels, lubricants, coolants, and solvents from construction equipment could impact soils. Through its review of national and state regulatory databases, Rockies Express has not identified the presence of any existing contaminated sites in the immediate Project vicinity.

Rockies Express' Spill Prevention, Control, and Countermeasure (SPCC) Plan includes clean-up procedures designed to minimize contamination from accidental spills or leaks of fluids from construction-related equipment or materials (FERC eLibrary, 2007e). If an unanticipated area of suspected contamination is encountered during construction, Rockies Express would implement the procedures set forth in the SPCC Plan to minimize the spread of contamination and to ensure the health and safety of construction workers and the general public.

4.2.3 Topsoil Segregation

In addition to erosion and compaction, construction activities such as grading, trenching, and backfilling can cause mixing of soil horizons. Mixing of topsoil with subsoil, particularly in agricultural lands, leaves less productive soil in the root zone, which lowers soil fertility and the ability of disturbed areas to revegetate successfully.

According to section IV.B.1 of its Plan, Rockies Express would use full work area or ditch-plus-spoil-side method in (1) actively cultivated or rotated croplands and pastures, (2) residential areas, (3) hayfields, and (4) other areas at the request of landowners or land-managing agencies.

Rockies Express' Plan includes measures to prevent or minimize the mixing of topsoil with subsoil. In addition, for agricultural areas the AIMP includes directives for topsoil segregation.

Regarding the depth of topsoil, Rockies Express proposes to strip a maximum of 12 inches in actively cultivated or rotated croplands and other areas as requested by landowners or land-managing agencies. In areas where the topsoil is less than 12 inches, Rockies Express would attempt to segregate the entire topsoil depth. Rockies Express would protect the topsoil piles from loss or mixing with subsoil, being used as trench backfill or pipe padding, and from wind and water erosion. Procedures for soil segregation and depth of cover in agricultural areas are discussed in the AIMP.

During scoping we received several comments regarding topsoil segregation in areas of no-till farming. Erosion and sedimentation controls described in the AIMP would be implemented to minimize

impacts in no-till farming areas, in addition to conventional farming areas. By implementing the topsoil segregation procedures described in the Plan and Procedures, as well as the AIMP, impacts to soils in no-till farming areas would be minimized and would not significantly impact soil quality in the Project area.

4.3 WATER RESOURCES

4.3.1 Groundwater Resources

Along the REX East Project route, groundwater is a significant source of drinking water in selected areas and is used for agricultural irrigation and industry. Groundwater flow generally reflects surface topography. Although depth to groundwater is variable along the proposed pipeline route, groundwater is often found near the ground surface, and the Project is likely to encounter groundwater during construction activities.

Major aquifers along the Project route include the Glacial Till, Dissected Till and Residuum, Pre-Wisconsin Drift, New Castle Till, New Castle Till Subsystem, Lower Tertiary and Upper Cretaceous. These aquifers underlying the pipeline and aboveground facilities are generally found in geological units composed of glacially derived till, alluvium, sand, and gravel. Additional information on the aquifers that occur along the Project route, including sole-source aquifers, WPAs, wells, springs, and contaminated groundwater is presented below.

Aquifer Systems

The Glacial Till Aquifer underlies the pipeline route in Audrain, Ralls, and Pike Counties, Missouri. This aquifer is a glacial drift aquifer consisting of sand and gravel. Depths to this aquifer range from 0 to below 200 feet and yields range widely, from less than 1 gallon per minute (gpm) to more than 2,000 gpm (MODNR, 2007a; Miller and Vandike, 1997). Some individual households use the Glacial Till aquifer for drinking water, but it is inadequate for municipal drinking supplies.

Aquifers underlying the pipeline route in Pike, Scott, and Morgan Counties, Illinois are typically composed of glacial alluvium. These aquifers are found in unconsolidated deposits of glacial sand and gravel varying in thickness and depth. These aquifers range in thickness from about 50 feet to as much as 150 feet and are capable of yielding 200 to 1,000 gpm for municipal, industrial, and irrigation uses.

In Sangamon, Christian, Macon, Moultrie, Douglas, and Edgar Counties, Illinois, glacial alluvium aquifers are minor. However, in this area of east-central Illinois, small areas of sand and gravel incised in Pennsylvanian shales are significant sources of groundwater for small communities and domestic wells. These wells have varying yields ranging from less than 1 gpm to 100 gpm at depths of less than 25 feet (Wehrmann and Sinclair, 2003).

Aquifers underlying the pipeline route from Vermillion County through Franklin County, Indiana include a combination of glacial alluvium aquifers, Pennsylvanian-age rock unit aquifers, and unconsolidated aquifers. In the glacial alluvium aquifer zones, the depth to water and the quantity and quality of groundwater are extremely variable. The depth to groundwater ranges from 50 to more than 550 feet in the Pennsylvanian-age rock unit aquifers. In Decatur and Franklin Counties, Indiana the pipeline route would cross four unconsolidated aquifer systems: Dissected Till and Residuum, Pre-Wisconsin Drift, New Castle Till, and New Castle Till Subsystem. Water depths range from 10 to 100 feet, with the thicknesses of the unconsolidated deposits throughout these counties being quite variable, often depending on the underlying bedrock topography (INDNR, 2005).

Aquifer systems underlying the pipeline route from Butler County, Ohio to the pipeline terminus in Monroe County, Ohio include a combination of glacial alluvium, limestone bedrock, Silurian carbonate, Niagaran limestone, sedimentary bedrock, abandoned coal mine, and shaley sandstone or limestone aquifers. Glacial alluvium aquifers vary in depth to groundwater and tend to be shallower

(approximately 200 feet) than bedrock aquifers. In general, glacial alluvium aquifers can be very high-yielding, with ranges greater than 1,000 gpm.

The pipeline's route in Noble, Belmont, and Monroe Counties, Ohio features unglaciated upland areas. The two types of aquifers in these areas are from either shaley sandstone or thin limestone, both of varying depths with low yields of less than 1 gpm (Ohio State University Extension, 2007a,b).

The Lower Tertiary and the Upper Cretaceous aquifers are located beneath the Arlington Compressor Station site, in Carbon County, Wyoming. The Lower Tertiary aquifer includes a combination of shale, mudstone, siltstone, lignite, and coal. The depth to groundwater ranges from 300 to 900 feet below the surface (USGS, 1996). Wyoming wells have yields ranging from less than 1 gpm to 50 gpm, with maximum yields exceeding 1,000 gpm.

The proposed Bertrand Compressor Station site in Phelps County, Nebraska is underlain by Quaternary sand and gravel deposited by glacial and river-related processes, and the Tertiary Ogallala Group consisting of lime-cemented sand and gravel, loess-like silt, and unconsolidated sand and gravel. Depth to groundwater (with the Quaternary overlying the Tertiary) ranges from less than 50 feet to greater than 200 feet below the surface. Well yields can range from 1 to 1,000 gpm or more. Generally, the water quality is good, and dissolved concentrations of mineral constituents typically range from 200 to 500 milligrams per liter (Conservation and Survey Division, 1996).

Sole-Source Aquifers

The EPA defines a sole- or principal-source aquifer as one that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. EPA guidelines stipulate that such areas can have no alternative drinking water source(s) that could physically, legally, and economically supply all those who depend upon the aquifer for drinking water (EPA, 2006). No sole-source aquifers have been designated by the EPA in Illinois, Missouri, or Nebraska. In Wyoming, the EPA has designated two sole-source aquifers: the Eastern Snake River Plain Aquifer Stream Flow Source Area and the Elk Mountain Aquifer. These aquifers would not be impacted by the compressor station in Carbon County. One sole-source aquifer has been designated by the EPA in Indiana; however, it is located in the northern part of the state and would not be near the REX East Project facilities. In Ohio, the EPA has designated seven sole-source aquifers. The Pleasant City Sole-Source Aquifer is located 1.3 miles south of the pipeline route and would not be crossed by the Project. The Miami Valley Buried Sole-Source Aquifer would be crossed by the pipeline. It is located in the southwestern part of Ohio and underlies the pipeline route in Butler and Warren Counties. Depth to groundwater in most parts of the Miami Valley Buried Aquifer is less than 20 feet (GMBA, 2007). If properly constructed, wells may yield more than 1,000 gpm. The pipeline route would cross approximately 7.0 miles of land underlain by this sole-source aquifer. The five remaining sole-source aquifers in Ohio are located more than 10 miles from the Project and would not be impacted.

Water Supply Wells and Springs

Based on agency consultations, surveys, and an analysis of public and private water supply wells and springs, 25 wells and 6 springs have been identified within the vicinity of the pipeline. No public water supply wells were identified within 150 feet of Project facilities. The pipeline would be located within 150 feet of 2 private water wells in Illinois, 12 private water wells in Indiana, and 11 private water wells in Ohio (see appendix G). While no springs were identified in the vicinity of the route in Missouri or Illinois, the pipeline would be located within 150 feet of 1 spring in Indiana and 5 springs in Ohio (see table 4.3.1-1). Rockies Express is currently in the process of field verifying the occurrence and locations of active wells and springs within 150 feet of the pipeline right-of-way. Because surveys are ongoing for

active wells and springs, the data that have been filed with the Commission are incomplete. Therefore, **we recommend that:**

- **Prior to the start of construction, Rockies Express file with the Secretary the locations by milepost of all springs, seeps, and wells identified within 150 feet of construction work areas.**

Table 4.3.1-1

Springs Located Within 150 Feet of the REX East Proposed Pipeline Route a/

State/County	Approximate Milepost	Approximate Distance from Centerline (feet)
MISSOURI	None Identified	N/A
ILLINOIS	None Identified	N/A
INDIANA		
Franklin	401.2	200
OHIO		
Warren	456.3	139
Belmont	622.7	105
Belmont	623.4	5
Belmont	623.8	35
Monroe	628.0	33.5

a/ Spring information is based on civil survey information.

Wellhead Protection Areas

WPAs are generally defined as surface and subsurface areas surrounding a water well or wellfield supplying a public water system through which contaminants are reasonably likely to move toward and reach such water well or wellfield. As such, WPAs are regulated to protect the water supply that is drawn by that particular well. Twelve WPAs have been identified along the pipeline route and are listed in table 4.3.1-2.

Impacts and Mitigation

Standard pipeline construction procedures, such as clearing and grading, trench excavation and dewatering, fuel handling, and blasting could affect groundwater resources including aquifers, water supply wells, springs, and WPAs. Clearing and grading removes vegetation, which could affect overland water flow and infiltration rates. Trenching and soil stockpiling activities temporarily alter overland flow and groundwater recharge and could result in minor fluctuations in groundwater levels and/or increased turbidity. In addition, heavy equipment used for construction could compact soil resources along the right-of-way, reducing its ability to absorb water and thus slowing the rate of groundwater recharge and increasing surface runoff and the potential for ponding.

Table 4.3.1-2
Wellhead Protection Areas Crossed by the Construction Work Area

State/County	Milepost	Wellhead Protection Area	Crossing Length (miles)
MISSOURI a/			
Audrain	0 – 15.8	Area 1	15.8
Ralls	15.8 – 19.8	Area 4	4.0
Pike	19.8 – 43.1	Area 4	23.3
ILLINOIS			
Douglas	188.0	Arthur Community Water Supply Well	0.3
INDIANA			
Vermillion	247.0	Hillsdale Water Corporation	1.2
Morgan	308.3	Indiana American Water-Mooresville	0.3
Morgan	310.3	Hill Water Corporation-Wells	1.0
Franklin	393.7	North Dearborn Water Corporation	0.4
Franklin	393.7	Hoosier Hills Regional Water District	0.2
OHIO			
Butler	425.3	Southwest Regional District South Plant	0.9
Warren	453.5	Village of Waynesville	0.1
Fairfield	531.9	Airport Gun Club Public Water Supply	0.1

a/ Entire state is a wellhead protection area.

Rockies Express would minimize or avoid groundwater impacts during construction by implementing measures outlined in its Plan and Procedures. Construction of the pipeline would require trenching and backfilling to a depth of approximately 7 to 8 feet below the ground surface. In areas where the water table is near the ground surface, trench excavation could intersect the water table, requiring trench dewatering. Trench dewatering may result in localized, minor changes in the water table, as well as on springs and wetland areas. Because pipeline construction at a given location would be completed within a short period of time, potential impacts from dewatering would be temporary and water table elevations would be expected to quickly re-establish.

Rockies Express' Procedures detail measures to mitigate potential impacts on shallow groundwater from dewatering, excavation, excessive soil compaction, and removal of vegetation from construction, and restoration of the Project. Although surface drainage patterns could be changed during construction, Rockies Express' commitment to return the construction area to its previous contours (as practicable) would minimize or eliminate these impacts.

Potential impacts on wells and springs located within 150 feet of construction work areas could include localized decreases in groundwater recharge rates, changes in overland water flow, contamination due to hazardous material spills, decreased well yields, decreased water quality, interference with well mechanics, or complete disruption of a well's or spring's function. These impacts could result from trenching, equipment traffic, or blasting activities.

If springs or seeps are identified that construction activity could impact, Rockies Express would treat the spring or seep as a waterbody and avoid or minimize impacts by following its Procedures that

include such measures as installation of erosion control devices (i.e., silt fences, hay bales), seep collars (e.g., trench plugs), and equipment bridges and culverts, as appropriate.

Construction of the pipeline necessitates the use of heavy equipment and associated fuels, lubricants, and other potentially hazardous substances that, if spilled, could affect shallow groundwater and/or unconsolidated aquifers. Potential contamination due to accidental spills or leaks of hazardous materials associated with vehicle and equipment fueling and maintenance, and storage of construction materials presents the greatest potential threat to groundwater resources. If not cleaned up, soils contaminated by such spills or leaks would continue to leach and add pollutants to groundwater long after a spill occurred.

Rockies Express developed an SPCC Plan to address preventative and mitigative measures that would be used to avoid or minimize the potential impacts of hazardous material spills during construction. The SPCC Plan specifies preventative measures such as spill training for construction personnel, regular inspection of construction equipment for leaks, replacement of deteriorating containers, and construction of containment systems around equipment storing hazardous liquids. Rockies Express' SPCC Plan also restricts refueling or other liquid transfer areas to be more than 100 feet from wetlands and waterbodies, prohibits refueling within 200 feet of any water supply well and within 400 feet of any municipal water supply wells, and provides additional precautions when specified setbacks cannot be maintained. The SPCC Plan identifies emergency response procedures, equipment, and clean-up measures in the event of a spill, and requires the contractor to complete an inventory of all construction fuels, lubricants, and other hazardous materials that may be used, stored, or transferred in designated Project areas, and the amount and type of containers that would be used to store these materials. In the event soil or groundwater is contaminated during construction, Rockies Express would notify the affected landowner and coordinate with the appropriate federal and state agencies as required by its SPCC notification requirements. We have reviewed Rockies Express' SPCC Plan and find that it adequately addresses the storage and transfer of hazardous materials and the response to be taken in the event of contamination. We believe that the potential for the REX East Project to contaminate local aquifers would be minimal.

Construction through WPAs must protect against the potential for impaired water quality, decreased yield, or other disruptions of service. Potential impacts on WPAs would be avoided or minimized by the measures described above to prevent impacts on groundwater resources. Rockies Express would comply with state and local regulations and its SPCC Plan when working in WPAs to protect against the potential for impaired quality, decreased yield, or other disruptions of service. However, no consultation with state or local authorities has been filed with the Commission pertaining to WPAs, or the measures Rockies Express has agreed to; therefore, **we recommend that:**

- **Prior to the end of the draft EIS comment period, Rockies Express file with the Secretary the distance of each WPA area from the proposed construction work area and documentation of consultations with applicable municipalities and/or other federal and state agencies regarding construction in areas with WPA or other groundwater management areas crossed by the pipeline.**

Rockies Express also has committed to documenting the condition (i.e., water quality and flow evaluations) of potable water wells within 150 feet of the construction right-of-way prior to the start of construction and after construction is completed. In the event that a potable water well is damaged by construction activities, Rockies Express has agreed to provide a temporary source of water and would restore the well to its original capacity or would provide other mutually agreeable remedies. Adequate protection of water supply wells/systems needs to be insured. Therefore, **we recommend that:**

- **Within 30 days of placing the pipeline facilities in service, Rockies Express file a report with the Secretary identifying all water supply wells/systems damaged by construction and how they were repaired. The report should include a discussion of any complaints concerning the well yield or quality and how each problem was resolved.**

Construction of compressor stations would not require subsurface work. The development of the impervious surfaces and structures in association with these aboveground facilities would result in very minor alteration of infiltration/recharge rates, thus resulting in very minor effects to groundwater resources.

Blasting may be necessary along segments of the pipeline route where bedrock is located at or near the ground surface. If consolidated rock is encountered during construction that requires blasting to attain required trench depths, Rockies Express would use controlled blasting techniques in compliance with all federal and state regulations governing the use of explosives. To ensure that blasting would not have a significant impact on other environmental resources in the Project area (including water wells), Rockies Express has developed a Blasting Specification Plan (FERC eLibrary, 2007c). Potential impacts from blasting to groundwater and bedrock-based water well systems include temporary changes in water level and turbidity. These impacts would be limited to those systems located in close proximity to the pipeline construction right-of-way. In accordance with its Blasting Plan, Rockies Express would notify nearby landowners at least 48 hours prior to the initiation of blasting activities. Mitigation of impacts would include the use of controlled blasting techniques limiting rock fracture to the immediate vicinity of detonation, and pre- and post-construction well testing along with any necessary repairs and restoration to any well located within 200 feet of a particular blasting location.

Upon completion of construction, Rockies Express would restore the ground surface as closely as practicable to pre-construction contours and revegetate the right-of-way. These measures would ensure restoration of overland flow of water and aquifer recharge patterns. Effects, if any, from construction of the pipeline on groundwater would likely be localized and temporary.

No long-term groundwater impacts would be anticipated as a result of constructing and operating the Project because disturbances would be temporary, erosion controls would be implemented, and ground contours would be restored. The measures that Rockies Express would implement to avoid or minimize the potential impacts of construction on groundwater are contained in its Plan and Procedures. For the few areas with shallow groundwater that would be crossed by the pipeline route with a depth less than 10 feet below the ground surface, temporary, minor impacts could result from construction. The greatest threat posed to groundwater resources is that of a hazardous material spill or leak into groundwater supplies. However, Rockies Express' SPCC Plan adequately addresses strategies and methods to prevent such contamination and would provide effective responses should a spill occur.

4.3.2 Surface Water Resources

The REX East Project would cross two major watersheds: the Upper Mississippi Regional Watershed and the Ohio Regional Watershed. Table 4.3.2-1 provides the approximate location by milepost and descriptions of each river basin and watershed crossed by the pipeline and aboveground facilities.

Table 4.3.2-1
Major River Basins and Watersheds Crossed by the REX East Project a/

River Basin or Watershed	Approx. MP Range	Description
Upper Mississippi Regional Watershed	0.0 – 172.2	The Upper Mississippi Regional Watershed encompasses 189,000 square miles within 8 states: Illinois, Iowa, Minnesota, Missouri, Wisconsin, and small portions of Indiana, Michigan, and South Dakota. b/
Ohio Regional Watershed	171.9 – 639.1	The Ohio Regional Watershed covers approximately 203,940 square miles of land within 10 states: Illinois, Indiana, Kentucky, Maryland, New York, North Carolina, Ohio, Tennessee, Virginia, and West Virginia. c/
North Platte River Basin	Arlington Compressor Station	Beginning at snowmelt, the North Platte River flows northward from north-central Colorado into central Wyoming where it gradually curls southeast before joining the South Platte River. From its source at about 11,000 feet above sea level to its confluence with the South Platte, the North Platte River traverses approximately 665 miles and drains an area of 34,900 square miles. d/
Middle Republican Regional Watershed	Bertrand Compressor Station	The Middle Republican Regional Watershed is located in south-central Nebraska and north-central Kansas. It covers Franklin, Harlan, Kearney, Nuckolls, Phelps, and Webster Counties in Nebraska and Jewell, Phillips, Smith, and Republic Counties in Kansas. The surface of the entire watershed totals 1,399,835 acres with 961,514 acres in Nebraska and 435,321 acres in Kansas. e/

a/ Source: U.S. Geological Survey (USGS), 1994.
b/ Source: UMRSHNC, 2006.
c/ Source: StormCenter, 2002.
d/ Source: U.S. Geological Survey (USGS), 2006.
e/ Source: U.S. Department of Agriculture, 2007.

The REX East Project would cross 1,462 surface waters. Specifically, the Project would cross: 313 perennial, 435 intermittent, and 672 ephemeral waterbodies; 27 open water areas (e.g., ponds); and 15 unclassified waters (without state classifications), as follows:

- Missouri: 13 perennial, 34 intermittent, 0 ephemeral, 3 open water;
- Missouri/Illinois: 1 perennial, 0 intermittent, 0 ephemeral, 0 open water;
- Illinois: 61 perennial, 84 intermittent, 23 ephemeral, 6 open water;
- Indiana: 97 perennial, 125 intermittent, 277 ephemeral, 6 open water; and 5 unclassified; and
- Ohio: 141 perennial, 192 intermittent, 372 ephemeral, 12 open water, 10 unclassified.

A complete list of the waterbodies that would be crossed by the Project is provided in appendix G and includes the location, width, state water classification, and crossing method. No surface waters are within or immediately adjacent to the boundaries of the aboveground facility sites.

By reviewing USGS topographic maps and various databases and consulting with relevant agencies, Rockies Express identified the major (i.e., waterbodies greater than 100 feet wide) and/or sensitive waterbodies that would be crossed by the pipeline route (as described in table G-5 in appendix G).

Surface waters are generally classified according to a beneficial use classification system as developed by each state crossed by the Project. Surface waters are also classified based on size: major waterbodies being greater than 100 feet wide, intermediate waterbodies being between 10 and 100 feet wide, and minor waterbodies being less than 10 feet wide.

No waterbodies crossed by the Project are known to have or are suspected of having sediments or waters with contaminants in concentrations that pose an unacceptable risk to human health and/or the environment. Furthermore, no waterbodies crossed by the Project are known to be or suspected of being contaminated with polychlorinated biphenyls (PCBs) or other persistent chemicals.

Missouri

The state of Missouri categorizes surface waters according to 15 beneficial use classifications: irrigation; livestock and wildlife watering; cold-water fishery; cool-water fishery; protection of aquatic life (general warm-water fishery); protection of aquatic life (limited warm-water fishery); human health protection; whole-body contact recreation; secondary contact recreation; drinking water supply; industrial process and cooling water; storm- and flood-water storage and attenuation; habitat for resident and migratory wildlife species; recreational, cultural, educational, scientific, and natural aesthetic values and uses; and hydrologic cycle maintenance.

Of the waterbodies that would be crossed in Missouri, two are classified as major crossings: the Salt River (MP 42.5) and the Mississippi River (MP 43.2). The Mississippi River is categorized as sensitive due to the presence of special status species, as discussed in section 4.7. Water quality impairments (fecal coliform and PCBs) have also been identified at the Mississippi River crossing, while impairments from mercury and manganese have been identified at the Salt River Crossing.

A potable water intake source has been identified 1.6 miles downstream of the tributary to Lake Vandalia (MP 22.4) crossing. Because of the beneficial uses of this tributary, this intake source would be crossed by dam-and-pump construction methods to reduce sedimentation and turbidity downstream of the Project area. Any potential impacts on this intake source would be minimized by Rockies Express adhering to its Plans and Procedures.

Illinois

The state of Illinois categorizes surface waters into four classifications: general use—protection of indigenous aquatic life, primary and secondary contact recreation, agricultural and industrial uses; public and food processing water supply; Lake Michigan; and secondary contact and indigenous aquatic life use.

Of the waterbodies that would be crossed in Illinois, three are classified as major crossings: the Mississippi River (MP 43.2), Illinois River (MP 71.2), and South Fork Sangamon River (MP 132.1).

No potable water intake sources have been identified within 3 miles downstream of any of pipeline waterbody crossings in Illinois (ILEPA, 2006).

Indiana

The state of Indiana categorizes surface waters according to four beneficial use classifications: aquatic life use, primary contact recreation, fish consumption, and drinking water.

Of the waterbodies that would be crossed in Indiana, four are classified as major crossings: Wabash River (MP 247.3), White River (MP 315.8), Big Blue River (MP 340.8), and Whitewater Canal (MP 394.0).

The pipeline would cross 74 waterbodies in Indiana that require a floodway crossing license from the INDNR Division of Water. Of those 74 waterbodies, 29 qualify for the Utility Line Crossing General License, and thus individual licenses would not be required. The remaining 45 of 74 waterbodies would

require individual licenses because they are classified as "outstanding waters" or because they do not qualify for the general license. Those waterbodies that require a crossing license are identified in table G-5 in appendix G.

Potable water intake sources have been identified 1.6 miles downstream of the pipeline crossing at Flatrock River (MP 362.7) and 0.2 mile downstream of the Righthand Fork Salt Creek (MP 375.6) crossing. Both waterbodies would be crossed by open-cut construction methods.

Ohio

The state of Ohio categorizes surface waters according to beneficial use classifications within a three-pronged, broad classification scheme: aquatic life habitat (warm-water, limited warm-water, exceptional warm-water, modified warm-water, seasonal salmonid, coldwater, and limited resource water); water supply (public, agricultural, and industrial); and recreational (bathing waters, primary contact, and secondary contact).

Of the waterbodies that would be crossed in Ohio, seven are classified as major crossings: Four Mile Creek (MP 421.6), Great Miami (MP 430.7), Caesar Creek (MP 459.6), Deer Creek (MP 499.6), Big Darby Creek (MP 509.2), Scioto River (MP 514.6), and Muskingum River (MP 577.4).

Potable water intake sources have been identified 2.5 miles downstream of the pipeline crossing at Caesar Creek (MP 459.6) and 0.2 mile downstream at the tributary to Somerset Creek (MP 553.2). Caesar Creek would be crossed by HDD construction methods and Somerset Creek would be crossed by open-cut construction methods.

No consultation with the organizations or individuals who withdraw potable water within 3 miles of the proposed open-cut crossings of Flatrock River and Righthand Fork Salt Creek in Indiana and Somerset Creek in Ohio have been filed with the Commission. Therefore, **we recommend that:**

- **Prior to the start of construction across Flatrock River (MP 362.7) and Righthand Fork Salt Creek (MP 375.6) in Indiana and Somerset Creek (MP 553.2) in Ohio, Rockies Express file with the Secretary documentation of consultation with the organizations or individuals who withdraw potable water within 3 miles of these proposed open-cut crossings.**

4.3.3 Impacts on Surface Water Resources

Pipeline construction could affect surface waters in several ways. Clearing and grading of stream banks, instream trenching, trench dewatering, and backfilling could result in modification of aquatic habitat, increased sedimentation, turbidity, decreased dissolved oxygen concentrations, releases of chemical and nutrient pollutants from sediments, and introduction of chemical contaminants such as fuel and lubricants. The crossing of irrigation canals could interrupt the flow of irrigation water, which could damage crops and reduce crop yields. Further agricultural discussion is provided in the Land Use section (section 4.8) of this draft EIS.

The greatest potential impact on surface waters would result from the temporary suspension of sediments during instream construction. The extent of the impact would depend on sediment loads, stream velocity, turbidity, bank composition, and sediment particle size. These factors would determine the density and downstream extent of sediment migration. Instream construction could cause the dislodging and transport of channel bed sediments and the alteration of stream contours. Changes in the bottom contours could alter stream dynamics and increase downstream erosion or deposition. Turbidity

resulting from resuspension of sediments from instream construction or erosion of cleared right-of-way areas could reduce light penetration and photosynthetic oxygen production. Instream work could also introduce chemical and nutrient pollutants from sediments. Resuspension of deposited organic material and inorganic sediments could cause an increase in biological and chemical use of oxygen, resulting in a decrease of dissolved oxygen concentrations in the affected area. Lower dissolved oxygen concentrations could cause temporary displacement of motile organisms and may suffocate less- or non-motile organisms within the affected area.

Rockies Express may require blasting activities in or adjacent to 53 perennial waterbodies along the Project right-of-way. Instream blasting could injure or kill aquatic organisms, displace organisms during blast-hole drilling operations, and temporarily increase stream turbidity. Rockies Express has agreed to file a site-specific Blasting Specification Plan with the FERC before beginning any construction where blasting would be required within each waterbody greater than 10 feet wide.

The clearing and grading of streambanks would make soil vulnerable to erosion and reduce riparian vegetation along the cleared section of the waterbody. The use of heavy equipment for construction could compact near-surface soils, resulting in an increased runoff into surface waters. The increased runoff could transport additional sediment into the waterbodies, resulting in increased turbidity levels and sedimentation rates in the receiving waterbody.

The HDD method could potentially impact surface waters if drilling fluids were released (frac-out) during drilling. Response to and mitigation for such a release is described in Rockies Express' HDD contingency plan, which includes the containment of an inadvertent release of drilling mud. However, this HDD contingency plan is not specific to the states that would be crossed by the project. Therefore, **we recommend that:**

- **Prior to the start of construction, Rockies Express file with the Secretary a revised HDD contingency plan that indicates the agencies that would be contacted should a frac-out occur.**

The drilling fluid would be primarily freshwater, with high-yield bentonite clay added to facilitate drill-hole stability. A temporary, localized increase in turbidity could occur from the release and cleanup of the release. However, the EPA does not list bentonite as a hazardous substance. Further, an inadvertent release of drilling fluids would have no long-term adverse environmental impacts on water quality. Because Rockies Express is currently in the process of completing site-specific geotechnical surveys and developing site-specific construction diagrams and contingency plans for each HDD location, we have not reviewed them. Therefore, **we recommend that:**

- **Rockies Express file with the Secretary for review the results of its HDD geotechnical feasibility investigations, site-specific construction diagrams, and contingency plans for each HDD location. If a planned HDD crossing is not feasible, then Rockies Express should develop a site-specific alternative crossing plan for each waterbody in consultation with all relevant agencies. Rockies Express' plans and documentation of consultations regarding the site-specific HDD plans should be filed with the Secretary prior to the end of the draft EIS comment period.**

Refueling of vehicles and storage of fuel, oil, or other hazardous materials near surface waters could create contamination. If a spill were to occur, users immediately downstream could experience degradation in water quality. Acute and chronic toxic effects on aquatic organisms also could result from such a spill.

The measures Rockies Express would implement to avoid or minimize the potential impacts of construction on surface waters are contained in its Procedures and SPCC Plan and are discussed below. No long-term impacts are anticipated as a result of the Project because the beneficial use classifications would not be permanently affected, the pipeline would be installed beneath the bed and banks of waterbodies, erosion controls would be implemented, and the streambanks and streambed contours would be restored.

For each state crossed by the Project, Rockies Express has developed conceptual mitigation and restoration plans identifying procedures that would be implemented to minimize impacts on riparian areas affected by the Project. These procedures describe site-specific conditions found at wetland and stream-bank crossings in the respective states along the proposed route, and describe methods for re-seeding, planting, and monitoring reclamation success. In response to the plan Rockies Express submitted for Missouri, the MDC has requested that crossings with alluvial substrate in the state be identified that would possibly require toe protection (i.e., rip rap), which would protect those crossings vulnerable to head-cutting of the banks. Rockies Express has committed to consult with appropriate agencies prior to installation of the pipeline to ensure adequate toe protection.

4.3.4 Waterbody Construction and Mitigation Procedures

As described in appendix G, Rockies Express proposes to use several methods to cross perennial waterbodies, including HDD, dam-and-pump, or open-cut. Rockies Express would minimize impacts on surface waters by implementing the construction and mitigation procedures contained in its Procedures, which include:

- limiting clearing of vegetation between extra work areas and the edge of the waterbody to preserve riparian vegetation;
- constructing crossings as close to perpendicular to the waterbody as site conditions allow;
- maintaining adequate flow rates throughout construction to protect aquatic life and prevent the interruption of existing downstream uses;
- locating areas for equipment staging, soil stockpiles, and refueling at appropriate setbacks from surface waters;
- requiring construction across waterbodies to be completed as quickly as possible and during the windows specified in its Procedures or required by applicable permits;
- developing and adhering to any required site-specific construction plan for each waterbody greater than 100 feet wide at the crossing location (major waterbody);
- requiring temporary erosion and sediment control measures to be installed across the entire width of the construction right-of-way after clearing and before ground disturbance;
- requiring maintenance of temporary erosion and sediment control measures throughout construction until streambanks and adjacent upland areas are stabilized;
- requiring bank stabilization and re-establishment of bed and bank contours and riparian vegetation after construction;

- limiting post-construction maintenance of vegetated buffer strips adjacent to streams;
- restoring, monitoring, and correcting any drainage or irrigation system problems that have resulted from pipeline construction in active agricultural areas;
- developing a Stormwater Pollution Prevention Plan to minimize impacts on surface waters associated with silt-laden runoff during construction; and
- implementing its SPCC Plan if contamination occurs during construction.

In addition to the use of the measures described above, Rockies Express would need to obtain and comply with all conditions of its COE Section 404 permit, Section 10 of the Harbors Act, and Section 401 state water quality certifications.

In many areas, such as the crossing sites on the Mississippi River and the Illinois River, the U.S. Coast Guard and COE should be notified in the event of a spill or leak during construction or operation. Therefore, **we recommend that:**

- **Rockies Express include the U.S. Coast Guard and COE to the list of agencies contacted in the event of a spill or leak as described in the SPCC Plan. Rockies Express should file the revised SPCC plan with the Secretary prior to the start of construction.**

A major use of water during Project construction would be to mitigate air quality impacts from construction-related dust. Rockies Express would obtain water from municipal sources to use for dust control.

Rockies Express would cross non-sensitive, dry intermittent waterbodies using conventional upland construction methods. The depth of cover over the pipeline at intermittent waterbodies would be a minimum of 3 feet. After construction, Rockies Express would restore all contours to pre-construction conditions. Impacts on dry intermittent waterbodies would be limited to temporary alteration of channel beds and banks, and possibly increased sediment load during initial storm events following construction. If intermittent waterbodies are flowing at the time of construction, Rockies Express states it would install the pipeline using the open-cut method in accordance with its Procedures. For some minor or smaller intermediate waterbody crossings with specific environmental sensitivities, Rockies Express proposes to use the dam-and-pump method, which would isolate the construction work area from the water flow, thereby providing continuous flow and minimizing downstream sedimentation and turbidity.

4.3.5 Sensitive or Unique Waterbodies

Numerous waterbodies that are considered sensitive for several reasons, including, but not limited to, size, the presence of coldwater fish species, special status species, high-quality recreational or visual resources, historic value, or the presence of impaired water or contaminated sediments would be crossed by the pipeline. In accordance with its Procedures, Rockies Express has committed to filing site-specific crossing plans for these waterbodies. However, because surveys and agency consultations are ongoing, these crossing plans have not been provided to the FERC. Therefore, **we recommend that:**

- **Prior to the end of the draft EIS comment period, Rockies Express file with the Secretary revised site-specific crossing plans that identify specific restoration and mitigation measures applicable to each sensitive waterbody crossing (listed in tables 4.3.3-1 and 4.6.2-1) and any applicable agency consultations.**

Potential impacts associated with construction on riparian areas, fisheries, and special status species are discussed in sections 4.4, 4.6, and 4.7, respectively.

The pipeline would cross 51 waterbodies that are considered sensitive because of significant fisheries resources: one on the border of Missouri and Illinois, one in Illinois, six in Indiana, and 43 in Ohio. Table 4.6.2-1 lists these crossings. All of these waterbodies are designated as significant fisheries resources based on outstandingly remarkable values, exceptional habitat, or the presence of special status species.

As shown in table 4.3.5-1 below, 52 of the waterbodies that would be crossed by the Project have been designated as impaired waters by the EPA. Examples of impairments commonly found in these waterbodies include metals, pathogens, dissolved oxygen, pH, PCBs, total suspended solids (TSS), and sedimentation/siltation. None of the waterbodies that would be affected by the Project are known or suspected of having sediments or waters contaminated in concentrations that pose an unacceptable risk to human health and/or the environment.

Table 4.3.5-1

Impaired Waterbodies Crossed by the REX East Project

State/County	Milepost	Waterbody Name	Proposed Crossing Method	Impairment Cause
MISSOURI				
Pike	42.5	Salt River	HDD	Mercury, Manganese
ILLINOIS				
Pike	43.2	Mississippi River	HDD	Fecal coliform, PCBs
Pike	61.0	Honey Creek	Open-cut	Dissolved oxygen, Sedimentation/Siltation
Pike	63.9	Bay Creek	Open-cut	303(d) Impairment – Dissolved oxygen, Phosphorus, Sedimentation, Siltation, TSS, Fecal coliform
Scott	71.2	Illinois River	HDD	PCBs, Mercury
Sangamon	117.1	Panther Creek	Open-cut	Sedimentation/siltation
Sangamon	121.2	Sugar Creek	Open-cut	Fecal coliform
Sangamon	125.2	Brush creek	Open-cut	Dissolved oxygen, Manganese
Sangamon	126	Horse Creek	Open-cut	Dissolved oxygen, Manganese
Sangamon	130.7	Tributary to South Fork Sangamon River	Open-cut	Iron, Nitrogen, pH, Dissolved oxygen, Manganese, Phosphorus, Sedimentation/Siltation, TSS, Chlordane
Sangamon	132.1	South Fork Sangamon River	Open-cut	Iron, Nitrogen, pH, Dissolved oxygen, Manganese, Phosphorus, Sedimentation/Siltation, TSS, Chlordane
Christian	140.7	Buckhart Creek	Open-cut	Dissolved oxygen
Macon	174.9	Tributary to West Okaw River	Open-cut	Nitrogen, Fecal coliform, Dissolved oxygen, pH, Phosphorus, TSS
Macon	175.5	Tributary to West Okaw River	Open-cut	Nitrogen, Fecal coliform, Dissolved oxygen, pH, Phosphorus, TSS
Douglas	193.4	Kaskaskia River	Open-cut	Manganese, Fecal coliform, Dissolved oxygen, pH, Phosphorus, Sedimentation/Siltation, TSS
Edgar	198.7	Scattering Fork	Open-cut	Nitrogen, Phosphorus
Douglas	201.2	Hackett Branch	Open-cut	Dissolved oxygen, Phosphorus
Edgar	202.9	Embarras River	HDD	Nitrogen, Dissolved oxygen, pH, Phosphorus, Sedimentation/Siltation, TSS, Fecal coliform
Edgar	227.4	Brouiletts Creek	Open-cut	Fecal coliform

Table 4.3.6-1

Impaired Waterbodies Crossed by the REX East Project

State/County	Milepost	Waterbody Name	Proposed Crossing Method	Impairment Cause
INDIANA				
Vermillion	246.9	Wabash River	HDD	*E. coli*, PCBs, Mercury
Putnam	282.2	Plum Creek	Open-cut	Biotic Community Status
Hendricks	286.6	Clear Creek	Open-cut	Pathogens
Hendricks	288.7	Tributary to Miller Creek	Open-cut	Pathogens
Hendricks	289.7	Tributary to Crittenden Creek	Open-cut	Pathogens
Hendricks	291.8	Mill Creek	Open-cut	Pathogens
Hendricks	294.3	East Fork Mill Creek	Open-cut	Pathogens
Hendricks	299.4	Mud Creek	Open-cut	Pathogens
Morgan	312.4	White Lick Creek	HDD	*E. coli*, PCBs, Mercury
Morgan	312.5	Tributary to White Lick Creek	HDD	*E. coli*, PCBs, Mercury
Morgan	314.8	Tributary to White Lick Creek	Open-cut	*E. coli*, PCBs, Mercury
Morgan	315.8	White River	Open-cut	PCBs, Pathogens, Mercury
Morgan	317.5	Crooked Creek	Open-cut	Pathogens
Morgan	318.1	Banta Creek	Open-cut	Pathogens
Johnson	323.3	Tributary to North Prong Stotts Creek	Open-cut	Pathogens
Johnson	331.3	Buckhart Creek	Open-cut	PCBs
Johnson	336.1	Youngs Creek	Open-cut	PCBs
Shelby	337.9	Sugar Creek	Open-cut	*E. coli*, PCBs, Mercury
Shelby	340.8	Big Blue River	HDD	*E. coli*, PCBs
Decatur	362.7	Flatrock River	Open-cut	Mercury, PCBs, Pathogens
Franklin	392.5	Blue Creek	Open-cut	*E. coli*
Franklin	392.8	Tributary to Blue Creek	Open-cut	*E. coli*
Franklin	397.5	Big Cedar Creek	Open-cut	*E. coli*
OHIO				
Butler	421.6	Four Mile Creek	HDD	PCBs
Butler	422.7	Seven Mile Creek	HDD	PCBs
Butler	430.7	Great Miami River	HDD	PCBs
Warren	447.3	Clear Creek	Open-cut	Nutrients, Organic enrichment
Fayette	480.4	Rattlesnake Creek	Open-cut	Nutrients, Organic enrichment
Fayette	486.4	Paint Creek	Open-cut	Nutrients, PCBs, Siltation, Organic enrichment
Pickaway	515.9	Walnut Creek	HDD	PCBs, Mercury, Organic enrichment, Cause unknown
Fairfield	529.6	Hocking River	Open-cut	PCBs, Metals, Chlorides, pH
Muskingum	566.1	Moxahala Creek	Open-cut	pH, Siltation
Muskingum	577.5	Muskingum River	HDD	Pathogens, PCBs, Organic enrichment

The Project would cross five sensitive perennial waterbodies that are listed on the Nationwide Rivers Inventory. These rivers possess one or more "outstandingly remarkable" natural or cultural values judged to be of more than local or regional significance. Two of the five rivers listed on the National Rivers Inventory that would be crossed (Big Walnut Creek and Big Blue River) are located in Indiana, and the remaining three rivers (Four Mile Creek, Great Miami River, and Paint Creek) are located in Ohio. The Big Blue River, Four Mile Creek, and Great Miami River, are all proposed to be crossed by

the HDD method. Rockies Express proposes to cross Paint Creek and Big Walnut Creek by the open-cut construction method. Rockies Express is continuing its consultation with the NPS for approval of these crossings. Therefore, **we recommend that:**

- **Prior to the end of the draft EIS comment period, Rockies Express file with the Secretary revised site-specific crossing plans for Nationwide River Inventories waterbodies and documentation of consultation with the NPS and other applicable agencies regarding these finalized plans.**

Wild and Scenic Rivers

Federal designation for wild and scenic rivers stems from the WSR of 1968, which protects the free-flowing natural condition; water quality; and outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, and cultural values of the designated rivers. The NPS is responsible for reviewing any actions that might disturb the beds or banks of National Wild and Scenic Rivers. Two Ohio waterbodies, the Little Miami River and Big Darby Creek, are designated as National Wild and Scenic Rivers. At the proposed points of crossing by the pipeline, the specific classifications for these rivers under this general designation are scenic river areas, which are regarded as being rivers free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped but accessible in places by roads.

The state-designated wild and scenic rivers crossed by the proposed pipeline route are also the Little Miami River and Big Darby Creek in Ohio. The ODNR administers a state Scenic Rivers Act, which—based on the waterbody's length, adjacent forest cover, biological characteristics, water quality, present use, and natural conditions—provides three categories for river classification: wild, scenic, and recreational. Both the Little Miami River and Big Darby Creek are designated as scenic under this classification scheme.

The Little Miami River is a perennial river that would be crossed at MP 451.3 in Warren County, Ohio. The approximately 323-foot-long crossing would be accomplished using the HDD method to minimize disturbance to vegetation, stream banks, and streambed.

Big Darby Creek is a perennial river that would be crossed at MP 509.2 in Pickaway County, Ohio. Rockies Express would accomplish the approximately 522-foot-long crossing using the HDD method to minimize disturbance to vegetation, stream banks, and streambed.

At both the Little Miami River and Big Darby Creek, Rockies Express has conducted geotechnical investigations and determined that conditions are suitable for HDD methods. However, there is always a risk that an HDD could be unsuccessful. The geotechnical investigation of the Big Darby Creek crossing points out that cobbles and boulder-size materials may be encountered and may be problematic during drilling operations. Rockies Express has identified open-cut as the alternative construction method that would be used if the HDD failed. An open-cut crossing would cause temporary and permanent impacts to the bed and banks of these waterbodies and would not be an acceptable crossing in NPS. Therefore, **we recommend that:**

- **Prior to the end of the draft EIS comment period, Rockies Express develop a contingency plan for the crossings of the Little Miami River and Big Darby Creek that identifies the alternative routes and crossing locations evaluated in section 3.4.3 and 3.4.7, respectively, of this draft EIS as the preferred alternative should the HDD of either waterbody fail. Rockies Express should file with the Secretary the contingency**

plans, as well as site-specific construction plans for the alternatives and a list of landowners affected by the alternatives.

Successful HDDs of the Little Miami River and Big Darby Creek would eliminate impacts on these waterbodies. However, if alternative crossing locations were necessary (as stated in sections 3.4.3 and 3.4.7 respectively), construction to the proposed HDD entry and exit locations would create greater impacts than if just the alternative were constructed. Therefore, **we recommend that:**

- **Rockies Express successfully complete the HDD crossing of the Little Miami River prior to the start of construction between MP 432.9 and MP 467.2.**

Further, we recommend that:

- **Rockies Express successfully complete the HDD crossing of the Big Darby Creek prior to the start of construction between MP 494.1 and MP 533.9.**

Rockies Express lists the Little Miami River as a potential source of hydrostatic test water. Due to the presence of state-listed mussels and the recreational and scenic value of the river, we have recommended in section 4.8.5 that the Little Miami river not be used as the source of hydrostatic test water.

Mississippi River

The Mississippi River is the principal feature in the Upper Mississippi Regional watershed that would be crossed by the Project (see table 4.3.2-1). The river has been designated as: supporting irrigation, livestock and wildlife watering, protection of warmwater aquatic life and human health—fish consumption, 'Class B' whole body contact recreation, secondary contact recreation, drinking water supply, and industrial process and cooling water. Impairments by fecal coliform and PCBs have been identified at the Mississippi River Crossing.

The Mississippi River crossing would be part of a larger-scale crossing, starting in Pike County, Missouri, and ending in Pike County, Illinois, where the Salt River and the Mississippi River would be crossed at their confluence (totaling about 4,700 feet). At MP 43.2, the Mississippi River's width is about 1,800 feet. Rockies Express proposes to cross these waterbodies using the HDD method in two stages. The Mississippi River portion of this crossing would begin from Blackburn Island on the west side of the Mississippi River and exit east of the Sny Levee, which is located on the east side of the Mississippi River. Further analysis of the Sny Levee crossing is located in section 4.8 of this draft EIS.

By utilizing the HDD method, Rockies Express would minimize the potential impacts on the Mississippi River by the Project. Hard limestone formations underlay the substrate of the proposed crossing. The design radius that has been chosen for the Project would avoid these formations while minimizing the stresses placed on the pipeline itself.

Crucial to the planned HDD crossing of the Mississippi River would be the dredging operation required to achieve sufficient water depth on the east side of Blackburn Island to accommodate barges. These barges would be used to transport necessary equipment for the HDD operations that would take place on the island.

Because the HDD crossing of the Mississippi River would require dredging, there are potential impacts not only from the dredging itself, but also from the resultant dredge spoils. Potential impacts include, but are not limited to: increased turbidity, habitat destruction, noise and air (localized) pollution,

thermal stratification disruption within the water column, entrainment of organisms, and release and spread of previously sequestered contaminants from the dredged spoils. The spreading of previously sequestered contaminants from the dredged spoils has been addressed through consultations with the MDNR, the IEPA, and USGS and is not considered a threat because no contaminated sediments were identified in the proposed dredging location. Furthermore, the COE has indicated that chemical analysis of the sediments to be dredged is unnecessary. Rockies Express has provided a Dredged Material Disposal Plan that describes the dredging activities that would be carried out along with the dredging and disposal schedule.

Upon review of Rockies Express' Dredged Material Disposal Plan, MDNR has concluded that the quarry for the disposal of the estimated 4,500 cubic yards of dredge spoils has been identified incorrectly. Specifically, the Wayne B. Smith Quarry, as identified in the Dredge Plan (FERC eLibrary, 2007h), no longer exists, and has been re-permitted as the S-S-S Quarry. The S-S-S Quarry has its own reclamation plan. Therefore, **we recommend that:**

- **Prior to the end of the draft EIS comment period, Rockies Express file with the Secretary an updated Dredged Material Disposal Plan for the Mississippi River, which includes the disposal location of this material.**

The MDNR has also noted that the Dredge Plan incorrectly assigns the dredge spoils' fate for "beneficial reuse." "Beneficial reuse" is a term used for regulated solid waste, and should not be applied to the dredged material in question.

White River and Big Walnut Creek

The IDEM and FWS have expressed concerns that the proposed open-cut trench through a meander of the White River, along with the removal of riparian trees along the river, could speed the process of a potential natural adjustment by the river to straighten in this area. IDEM states that impacts on this stream from the adjustment would be unforeseeable. Additionally, with the changing hydrology, the potential exists for the pipeline to become unearthed in this section.

The IDEM and FWS are also concerned about the proposed open-cut trench through Big Walnut Creek and the amount of tree clearing proposed through its wooded riparian habitat. (Wooded riparian corridors are discussed in section 4.4 of this draft EIS). The proposed tree clearing would change the vegetation, thereby impacting the viewshed, wildlife, aquatic species, predation, and recreational enjoyment. Therefore, **we recommend that:**

- **Prior to the end of the draft EIS comment period, Rockies Express file with the Secretary site-specific HDD crossing plans for the White River (MP 315.8) and Big Walnut Creek (MP 281.5). If geotechnical feasibility assessments indicate that HDD crossings of the White River and the Big Walnut Creek would not be possible, then Rockies Express should consult with IDEM and FWS regarding alternative crossing methods and file the results of these consultations with the Secretary along with the geotechnical report.**

We recognize that the workspace for our recommended Big Walnut Creek HDD crossing would be within a forested area; however, utilizing this construction method would limit the impact to the waterbody bed and banks and the riparian habitat.

Hunter Lake Reservoir

The area near the proposed Hunter Lake Reservoir, south of Springfield, Illinois, is considered a unique area of the Project because it is licensed to be a reservoir. Rockies Express is maintaining ongoing consultations with representatives from the City of Springfield's Office of Public Utilities to ensure that the correct measures are taken regarding construction techniques. Through consultations with the City of Springfield's Office of Public Utilities, Rockies Express has agreed to construct through the area near the proposed reservoir similar to that of crossing a waterbody. To assure the right-of-way would not adversely impact the proposed reservoir, Rockies Express would provide 4 to 5 feet of cover over the pipeline, and would weight the pipeline similarly to how it is weighted at a waterbody crossing. Rockies Express would provide the City of Springfield an engineering plan to review and, if appropriate, would develop additional mitigation measures in coordination with the city.

4.3.6 Hydrostatic Testing

Rockies Express would verify the integrity of its pipeline before placing it into service by conducting a series of hydrostatic tests. These tests involve filling the pipeline with water, pressurizing it, and then checking for pressure losses due to pipeline leakage. Sources of hydrostatic test water are expected to be surface waterbodies in close proximity to the pipeline. Rockies Express would require approximately 246.3 million gallons (755.9 acre-feet) of water to hydrostatically test the entire mainline.

Rockies Express identified preliminary hydrostatic test water sources and approximate amounts of water required for construction spreads 1 through 7 (see table 4.3.6-1). In accordance with its Procedures, Rockies Express has agreed to file a final list of hydrostatic test water sources and discharge locations for the review and approval of the Director of OEP prior to construction.

Table 4.3.6-1
Project Water Requirements for Hydrostatic Testing

State/Spread	From MP	To MP	Spread Length (miles)	Approx. Volume (gallons) a/	Approx. Volume (acre-feet)	Potential Supply and Discharge Sources
Missouri/Illinois/1	0.0	107.2	107.2	41,100,000	126.1	Grassy Creek Salt River Mississippi River—east side Illinois River—west side Little Apple Creek (Seasonal) Left Fork of Little Apple Creek (Seasonal)
Illinois/2	107.2	230.3	123.1	47,500,000	145.7	Brush Creek South Fork of Sangamon River Mosquito Creek (Seasonal) Ditch #3 Ditch #4 Lake Fork Kaskaskia River Embarras River Brushy Fork

Table 4.3.6-1

Project Water Requirements for Hydrostatic Testing

State/Spread	From MP	To MP	Spread Length (miles)	Approx. Volume (gallons) a/	Approx. Volume (acre-feet)	Potential Supply and Discharge Sources
Illinois/Indiana/3	230.3	334.0	103.7	40,000,000	122.8	Crabapple Creek Wabash River Little Raccoon Creek Big Raccoon Creek Big Walnut Creek White Lick Creek White River-east side
Indiana/Ohio/4	334.0	424.0	90.0	34,700,000	82.6	Youngs Creek—west side Big Blue River—west side Flatrock River—west side Little Flatrock River—west side Salt Creek Whitewater River (IN) Big Cedar Creek White Water River (OH) Indian Creek Four Mile Creek Seven Mile Creek
Ohio/5	424.0	533.3	109.3	42,200,000	106.5	Great Miami River Little Miami River Caesar Creek feeding Caesar Creek Lake Scioto River
Ohio/6	533.0	587.0	53.7	20,700,000	63.5	Moxahala Creek Muskingum River
Ohio/7	587.0	639.1	52.1	20,100,000	61.7	Wills Creek Barnesville Reservoir
Total			639.1	246,300,000	755.9	

a/ Rockies Express continues to review waterbodies for supply and discharge capacity.

The withdrawal of large volumes of hydrostatic test water from the surface water sources could temporarily affect the recreational and biological uses of the resource if the diversions comprise a large percentage of the source's total flow or volume. The diversion of large volumes of water from waterbodies could also result in temporary changes in habitat, changes in water temperature and dissolved oxygen levels, and entrainment or impingement of fish or other aquatic organisms.

Rockies Express would minimize the potential effects of hydrostatic testing on surface water resources by adhering to the measures in its Procedures. These measures include screening intake hoses to prevent the entrainment of fish and other aquatic organisms and regulating the rate of withdrawal of test water to avoid adverse impact on aquatic resources or downstream users. Rockies Express would not add chemicals to the water during testing. Rockies Express would acquire the necessary permits from state agencies before withdrawing hydrostatic test water, including specific approvals from applicable resource agencies.

Five of Rockies Express' proposed hydrostatic test water sources (Mississippi River, Whitewater River, Seven Mile Creek, Scioto River, and Muskingum River) are known to contain federally- and state-

listed endangered and threatened species. The impacts on federally listed and state-listed species, including potential depletion impacts, are discussed in section 4.7.

Rockies Express would discharge the test water in upland areas unless direct discharge into surface waters is determined to be acceptable and permitted by the relevant agencies. Hydrostatic test water discharged into waterbodies has the potential to cause erosion of the stream bed and banks, resulting in a temporary increase of sediment load and disturbance of habitat. These discharges could potentially affect state-designated uses. If discharge into waterbodies is permitted, Rockies Express would minimize the potential for these effects through the use of energy dissipating devices that would disperse and slow the velocity of any discharges. Final test water discharge locations would be in accordance with Rockies Express' NPDES permit and any state-issued hydrostatic test water discharge permits. Water discharged over land would be conducted through containment structures, such as hay bale structures or filter bags. Rockies Express has estimated that the discharge rate of the hydrostatic test water would be regulated to be between 2,000 and 5,000 gpm using valves and energy dissipation devices. Furthermore, Rockies Express continues to review waterbodies for supply and discharge capacity, and has agreed to file necessary permits for hydrostatic testing during the third quarter of 2007.

4.3.7 Wetlands

Wetlands are areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of wetland vegetation typically adapted for life in saturated soil conditions (Environmental Laboratory, 1987). Wetlands are found primarily in temporarily flooded sinks, along drainage ways, in shallow basins, and in association with riparian areas.

Section 404 of the CWA of 1972 established standards to minimize impacts to wetlands under the regulatory jurisdiction of COE. These standards require avoidance of wetlands where possible and minimization of disturbance where impacts are unavoidable to the degree practical. Rockies Express conducted field delineations during winter, spring, and summer 2007 in accordance with the methodology outlined in COE's 1987 Wetland Delineation Manual (Environmental Laboratory, 1987), which constitutes at least 61 percent of the Project right-of-way. In addition, in areas where access was denied, Rockies Express used NWI data to identify wetlands crossed by the proposed REX East pipeline right-of-way and aboveground facilities. This information would be included in Rockies Express' Section 404 permit application filed with COE.

Affected Wetlands

The REX East pipeline route would cross approximately 4.7 miles of wetlands by the proposed pipeline right-of-way. Construction of the Project would affect a total of about 66.6 acres including 8.0 acres of wetlands in Missouri, 10.8 acres in Illinois, 15.1 acres in Indiana, and 32.7 acres in Ohio. No wetlands would be affected by the proposed facilities in Nebraska and Wyoming. A description of wetland types crossed by the pipeline route is presented in table 4.3.7-1. Wetlands vegetation is discussed in section 4.4.

The primary impact of pipeline construction and right-of-way maintenance activities on wetlands would be the temporary and permanent alteration of wetland vegetation. These effects would be greatest during and immediately following construction. Generally, the palustrine emergent and palustrine scrub-shrub wetland vegetation would be temporarily impacted by the construction of the Project and would transition back into a community functionally similar to pre-construction wetlands. The Project would

Table 4.3.7-1

Descriptions of Wetland Types Crossed by the Project a/

Wetland Type	NWI Code	Description
Palustrine Emergent	PEM	These are wetlands that are characterized by erect, rooted herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years and is usually dominated by perennial plants. All water regimes are included except subtidal and irregularly flooded. Emergent wetlands are known by many names, including marsh, meadow, fen, prairie pothole, and slough. In areas with relatively stable climatic conditions, emergent wetlands maintain the same appearance year after year. However, in other areas, such as the prairies of the central United States, severe climatic fluctuations cause them to revert to an open-water phase in some years. Dominant hydrophytic species may include *Phalaris arundinacea, Polygoum pensylvanicum, Polygonum hydropiper,* or *Polygonum lapathifolium.*
Palustrine Scrub-Shrub	PSS	These are wetlands that include areas dominated by woody vegetation less than 20 feet tall. Vegetation forms found in this wetland include true shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions. All water regimes are included except subtidal. Scrub-shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable communities. Dominant species may include *Cornus spp, Salix, Lindera,* and immature tree species, such as *Acer spp, Fraxinum spp,* and *Ulmus spp.*
Palustrine Forested	PFO	These are wetlands that are characterized by woody vegetation that is 20 feet tall. All water regimes are included except subtidal. Forested wetlands are most common in the eastern United States and in those sections of the West where moisture is relatively abundant, particularly along rivers and in the mountains. Forested wetlands normally have an overstory of trees, an understory of young trees or shrubs, and an herbaceous layer. Dominant species may include *Acer spp., Faxinus spp., Platanus spp, Ulmus spp,* or *Populus spp.*

a/ Source: Cowardin, et al., 1979
NWI = National Wetlands Inventory
PEM = Palustrine Emergent
PSS = Palustrine Scrub-shrub
PFO = Palustrine Forested

affect about 29.2 acres of forested wetlands, 34.0 acres of emergent wetlands, and 3.4 acres of scrub-shrub wetlands. The emergent and scrub-shrub wetlands vegetation would regenerate within 1 to 3 years. Forested wetlands would take more than 30 years to regenerate into a forest community. Following construction, emergent and scrub-shrub wetlands would regenerate within two to three growing seasons. To facilitate periodic pipeline corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide would be maintained in an herbaceous state according to the REX East Procedure and in accordance with our procedures. Therefore, impact on forested wetlands would be long-term with limited permanent alteration to scrub-shrub and herbaceous types (see table 4.3.7-2).

Table 4.3.7-2

Wetlands Affected by the REX East Project

State	Wetland Classification a/	Length of Wetland Crossed (miles)	Wetland Area Affected During Construction (acres) b/	Wetland Area Affected by Operations (permanent acres) c/
Missouri	PEM	0.1	2.3	0.0
	PFO	0.5	5.6	0.8
	PSS	0.0	0.1	0.0
	MO subtotal:	**0.7**	**8.0**	**0.8**

Table 4.3.7-2
Wetlands Affected by the REX East Project

State	Wetland Classification a/	Length of Wetland Crossed (miles)	Wetland Area Affected During Construction (acres) b/	Wetland Area Affected by Operations (permanent acres) c/
Illinois	PEM	0.3	4.3	0.0
	PFO	0.8	6.0	2.7
	PSS	<0.1	0.5	0.2
	IL subtotal:	**1.2**	**10.8**	**2.9**
Indiana	PEM	0.4	7.0	0.0
	PFO	0.4	7.3	1.8
	PSS	<0.1	0.8	0.4
	IN subtotal:	**0.8**	**15.1**	**2.2**
Ohio	PEM	1.2	20.4	0.0
	PFO	0.7	10.3	4.0
	PSS	0.1	2.0	0.3
	OH subtotal:	**2.0**	**32.7**	**4.3**
Totals	PEM	**2.0**	**34.0**	**0.0**
	PFO	**2.5**	**29.2**	**9.3**
	PSS	**0.2**	**3.4**	**0.9**
	Total	**4.7**	**66.6**	**10.2**

a/ Wetland Types:
PEM = Palustrine Emergent
PFO = Palustrine Forested
PSS = Palustrine Scrub-shrub

b/ Area affected during construction (temporary impact) is based upon a 100-foot-wide construction right-of-way to reflect the maximum potential impact to the wetlands.

c/ Acreage reflects a maintained permanent right-of-way width of 30 feet in forested wetlands within the 50-foot-wide permanent easement and a maintained permanent right-of-way width of 10 feet within the 50-foot-wide permanent easement in scrub-shrub wetlands. The remaining area would be restored. Emergent wetlands would not be permanently affected during operation of the pipeline, as they would be allowed to revegetate to pre-construction condition.

Given the tree species that typically dominate forested wetlands in the Project area (red maple, American elm, ash, black gum, tupelo gum, and swamp white oak), regeneration may take 30 years or more. To facilitate periodic pipeline corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet may be maintained in an herbaceous state. In addition, trees taller than 15 feet and within 15 feet on either side of the pipeline may be selectively cut and removed. By limiting revegetation of a portion of forested wetlands, some of the wetland functions would be altered, therefore, permanently altering 9.3 of the 29.2 acres palustrine forested wetlands during operations. Additionally, 0.9 acre of scrub-shrub wetlands would be converted to emergent wetlands during operations from maintenance activities. Clearing activities and disturbance of wetland vegetation would temporarily affect the wetland's capacity to buffer flood flows and/or control erosion. Removal of wetland vegetation could also deprive wildlife of valuable habitat and encourage the recruitment of less desirable invasive species. Forested wetlands would be converted to scrub-shrub and emergent type.

Other types of impacts associated with construction of the pipeline could include temporary changes in wetland hydrology and water quality. During construction, failure to segregate topsoil over the trenchline in non-saturated wetlands could result in the mixing of topsoil with subsoil. This

disturbance could result in altered biological activities and chemical conditions in wetland soils and could affect the reestablishment and natural recruitment of native wetland vegetation after restoration. In addition, inadvertent compaction and rutting of soils during construction could result from the movement of heavy machinery and the transport of pipe sections. The resulting alteration of the natural hydrologic patterns of the wetlands could inhibit seed germination or increase the potential for siltation.

No wetlands would be permanently filled or drained as a result of the Project. The aboveground facilities proposed for the REX East Project would not be located within wetlands. However, the improvement of one temporary access road between county routes 5 and 22 in Clinton County, Ohio would affect a palustrine emergent wetland located near MP 470.8. The measures that Rockies Express would implement to avoid or minimize these impacts are discussed below.

Wetlands within Shallow Bedrock

Shallow bedrock exists in 48 of the 351 unique wetland areas identified along the right-of-way. Rockies Express may perform blasting in some of these wetland areas. If blasting is performed during construction in wetlands areas, Rockies Express would implement the measures in its Blasting Plan to avoid or minimize impacts to wetlands, as they could be habitat for wildlife species. Areas with shallow bedrock with the potential for blasting are discussed in section 4.1.1. Wildlife species potentially occurring in these areas are discussed in section 4.5.2.

Additional Temporary Workspace

There are 42 proposed additional temporary workspaces located less than 50 feet from a wetland. We have recommended in section 2.3.1 that Rockies Express file site-specific justifications for each extra workspace within 50 feet of a wetland prior to construction.

Wetlands of Special Concern or Value

The Wetland Reserve Program (WRP) is a voluntary program offering landowners the opportunity to sell conservation easements and/or enter into cost-share agreements with NRCS on eligible wetlands. NRCS provides technical and financial assistance to eligible landowners to protect, restore, and enhance the original hydrology, native vegetation, and natural topography. The goal of the program is to restore and protect the functions and values of wetlands in the agricultural landscape. The emphasis of the program is to attain habitat for migratory birds and wetland-dependent wildlife, including threatened and endangered species, protect and improve water quality, attenuate water flows, recharge groundwater, and protect native flora and fauna. NRCS-held easements identified along the Project route have been avoided, and, therefore, no WRP lands would be crossed by the proposed Project.

Wetlands can be categorized as sensitive and significant because of their ecological quality and high level of functionality. This quality and functionality is based on wildlife habitat and hydrologic and recreational functions. Two wetlands in Missouri are categorized as sensitive and significant because they are both located in the Upper Mississippi COA. One wetland in Indiana and five wetlands in Ohio are categorized as sensitive and significant because of their high-functional value. Additional information on the high-functioning wetlands (wooded riparian corridors) in Indiana, which are also significant habitat features, is discussed in section 4.4.2. No sensitive and significant wetlands have been identified along the Project route in Illinois. Table 4.3.7-3 lists each sensitive and significant wetland that would be affected by the proposed pipeline route.

Table 4.3.7-3

Sensitive and Significant Wetlands Affected by the REX East Project

State/County	Wetland Identification	Wetland Type a/	Description	Temporary Impact (acres) b/	Permanent Impact (acres) c/
Missouri					
Pike d/	WL-MO-43-A	PFO	Upper Mississippi Conservation Opportunity Area	0.0	0.0
Pike	WL-MO-43-B	PFO	Upper Mississippi Conservation Opportunity Area	5.5	0.7
Indiana					
Putnam	WL-IN-265-A	PFO	High-Functioning Wetland	0.1	<0.1
Ohio					
Warren	WL-OH-437-AA2	PFO	High-Functioning Wetland	<0.1	0.0
Fayette	WL-OH-481-A	PEM	High-Functioning Wetland	<0.1	0.0
Pickaway d/	WL-OH-505-AA	PFO	High-Functioning Wetland	0.0	0.0
Muskingum	WL-OH-553-A	PFO	High- Functioning Wetland	<0.1	0.0
Muskingum	WL-OH-575-B	PEM	High- Functioning Wetland	0.1	0.0
Total	—	—	—	**<6.0**	**<0.8**

a/ Wetland Types:
PEM = Palustrine Emergent
PFO = Palustrine Forested
PSS = Palustrine Scrub-shrub

b/ Area affected during construction (temporary impact) is based upon a 100-foot-wide construction right-of-way to reflect the maximum potential impact to the wetlands.

c/ Acreage reflects a maintained permanent right-of-way width of 30 feet in forested wetlands within the 50-foot-wide permanent easement and a maintained permanent right-of-way width of 10 feet within the 50-foot-wide permanent easement in scrub-shrub wetlands. The remaining area would be restored. Emergent wetlands would not be permanently affected during operation of the pipeline, as they would be allowed to revegetate to pre-construction condition.

d/ Would be crossed using the HDD method; therefore there is no impact.

Two sensitive wetlands (WL-MO-43A and WL-MO-43B) in Missouri are located between the Salt River and Mississippi River and are part of Blackburn Island—which is included within the Upper Mississippi COA. Blackburn Island is located between the Salt and Mississippi Rivers, which includes these two sensitive wetlands that are part of a larger significant, forested wetland system. Rockies Express would locate one HDD entry workspace on Blackburn Island for both the westward HDD crossing of the Salt River and the eastward HDD crossing of the Mississippi River. Impacts to Blackburn Island would be minimized by use of the HDD method, including wetland WL-MO-43A; however, 5.5 acres of wetland WL-MO-43B would be impacted by the drill entry and additional temporary workspaces. The resulting impact would be a 0.7-acre permanent conversion of forested wetland to herbaceous emergent wetland. Rockies Express would also use the HDD method to minimize impacts to the sensitive wetland WL-OH-505-AA in Pickaway County, Ohio (see table 4.3.7-3).

Two of the eight significant wetlands identified in table 4.3.7-3 are palustrine emergent and six are palustrine forested. The impact to palustrine emergent wetlands would be short-term, whereas the palustrine forested wetland impacts would be long-term and limited permanent. Two of the six palustrine forested wetlands (WL-MO-43-A and WL-OH-505-AA) would be crossed using the HDD method.

Therefore, impacts would be avoided. The remaining four palustrine forested wetlands would be allowed to revegetate naturally according to Rockies East Procedures.

In its comments on the Administrative draft EIS, FWS expressed concern about forested wetland impacts. Specifically, FWS stated that the wetland impacts on Blackburn Island would occur on property owned by COE and managed by MDC for fish and wildlife. FWS recommended that these wetlands should be replaced near or adjacent to the Ted Shanks State Conservation Area in order to support ongoing conservation and restoration efforts and added that MDC be contacted for information on sites that may be suitable for this purpose. Therefore, **we recommend that:**

- **Prior to the start of construction, Rockies Express develop a wetland restoration plan for Blackburn Island in consultation with COE, FWS, and MDNR. Rockies Express should file this plan with the Secretary for review and written approval by the Director of OEP.**

Wetland Construction Procedures

Rockies Express' Procedures contain wetland mitigation measures that are designed to minimize the overall area of wetland disturbance, minimize the duration of wetland disturbance, reduce the amount of wetland soil disturbance, and enhance wetland restoration following construction. Examples of some of the wetland impact minimization measures specified in its Procedures are:

- using existing rights-of-way to overlap previously disturbed corridors;
- limiting the operation of construction equipment within wetlands to operating only that equipment essential for clearing, excavation, pipe installation, backfilling, and restoration;
- limiting grading in wetlands to areas directly over the trenchline, except where necessary to ensure safety;
- minimizing the length of time that topsoil is segregated and the trench is open;
- installing trench breakers at the boundaries of wetlands as needed to prevent draining of a wetland and to maintain original wetland hydrology;
- prohibiting storage of hazardous materials, chemicals, fuels, and lubricating oils within a wetland or within 200 feet of a wetland boundary;
- limiting post-construction maintenance of vegetation within herbaceous wetlands to a 10-foot-wide strip of vegetation centered over the pipeline; and
- limiting post-construction maintenance in forested and scrub-shrub areas to vegetation/tree removal in those areas that have plant growth taller than 15 feet and within 15 feet of either side of the pipeline centerline.

Rockies Express has attempted to avoid and minimize impacts on wetlands to the extent practicable by collocating the proposed pipeline route within existing corridors. As discussed previously, Rockies Express would also avoid permanent impacts on several wetlands by using the HDD construction method. Rockies Express would further minimize wetland impacts by adhering to the measures specified in its Procedures, which are in accord with our Procedures.

Rockies Express would restore wetlands to pre-construction contours and elevations. Within the construction right-of-way, Rockies Express would leave existing root systems intact where possible. This would encourage regrowth and revegetation of those areas. In areas to be excavated, Rockies Express would salvage topsoil removed and replace that material as a source of native seeds and propagules after construction. These methods would constitute a passive approach to wetland revegetation in the trench and traffic areas. In comments provided to us during the preparation of this draft EIS, federal and state agencies recommended that measures be implemented to control the growth of noxious weeds and other invasive species in wetlands during construction (see section 4.4.4 for a discussion of noxious weeds and invasive species).

In addition, Rockies Express' Procedures (FERC eLibrary, 2007b) include the commitment to ensure that all disturbed areas successfully revegetate with wetland herbaceous and/or woody plant species. If revegetation is not successful at the end of 3 years, Rockies Express would develop and implement (in consultation with a professional wetland scientist) a remedial plan to actively revegetate the wetlands. The remedial program would be implemented and would continue until wetland revegetation is considered successful by the federal and state regulatory agencies. In the following paragraphs we are requiring Rockies Express to include reforestation of forested temporary work areas (additional temporary work spaces, contractor yards, pipe yards, etc.) as part of its wetland mitigation plan.

The REX East Project would affect a total of about 3,101.9 acres of forested lands during construction, of this about 29.2 acres would be forested wetlands and 3072.7 acres would be upland forest land. About 10.2 acres of the forested wetland would be collocated with other facilities. In its comments on the advanced draft EIS, FWS expressed concern about mitigation for impacts to upland/bottomland forest areas and non-jurisdictional wetlands. FWS stated that "in order to minimize overall impacts on fish and wildlife it is appropriate to mitigate for impacts to all forested habitats and non-jurisdictional wetlands." Impacts to upland forests are discussed in section 4.4 of the draft EIS. Impacts to forested wetlands (jurisdictional and non-jurisdictional) are discussed below.

Our Procedures require that gas pipeline be built such that wetlands are not permanently lost. However, forested vegetation would be converted to herbaceous and scrub-shrub type wetlands. With proper planting and restoration practices, this impact can be minimized. Due to safety concerns, the entire disturbed right-of-way can not be replanted with trees. As a result, we do not require vegetation maintenance over the full width of the permanent right-of-way (50 feet centered over the pipeline). However, to facilitate periodic pipeline and corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide may be maintained in an herbaceous state. In addition, trees within 15 feet of the pipeline that are greater than 15 feet in height may be selectively cut and removed from the permanent right-of-way.

Alternative Measure to Our Procedures

Rockies Express has requested to use a 100-foot-wide construction right-of-way in wetlands. This alternative measure is requested because of the size of the pipeline (42 inches in diameter), the depth of the trench, and the size of equipment required to install a 42-inch pipeline. We have recommended in section 2.3.2 that Rockies Express revise its Procedures to use a 75-foot-wide right-of-way for wetlands. A 75-foot-wide right-of-way is recommended to reduce impacts on wetlands. It is our experience that a 42-inch-diameter pipeline can be constructed in a 75-foot-wide construction right-of-way.

Wetland Mitigation

Impacts to Blackburn Island would be minimized by use of the HDD method, including wetland WL-MO-43A; however, 5.5 acres of wetland WL-MO-43B would be impacted by the drill entry and additional temporary workspaces. The resulting impact would be a 0.7-acre permanent conversion of forested wetland to herbaceous emergent wetland.

We concur with FWS and believe it is reasonable to require off-site compensatory mitigation for the permanent loss of forested vegetation in wetlands that would occur along the permanent right-of-way due to maintenance activities. We believe that the off-site mitigation option represents the preferable compensation system because it: allows for improvement of existing degraded wetlands; can be implemented on a large scale; can be designed to utilize public land; and has the potential to avoid or lessen land ownership, long-term protection, and long-term maintenance problems. Therefore we believe off-site compensatory wetland mitigation be incorporated into the Project-specific wetland mitigation plan for unavoidable forested vegetation in wetlands lost due to permanent maintenance activities.

Natural gas pipeline projects modify forested wetland vegetation to herbaceous and scrub-shrub vegetation, both temporarily and permanently. We believe that on-site restoration should be pursued along the temporarily cleared portions of the right-of-way to mitigate long-term impacts to forested wetlands. Also, COE (St. Louis District) in its comments on the administrative draft EIS stated that "all forested areas shall be replanted, monitored, and managed for reforestation. The monitoring and management of these areas should continue for five years." COE added that on-site areas conducive to tree planting could be replanted with native tree species to compensate for temporal loss of replanting and for the spatial loss of non-forested areas over the pipeline. Hence we are requiring Rockies Express to actively plant native trees to revegetate the right-of-way, excluding the 30-foot-wide permanently maintained strip centered over the pipeline, to restore preconstruction forested wetlands affected by the REX East Project. Therefore, **we recommend that:**

- **Prior to the start of construction, Rockies Express consult with COE, FWS, and other relevant agencies regarding replanting, monitoring, and managing reforestation for all temporary and permanent right-of-way, additional temporary workspaces, and contractor yards/pipe yards located within forested wetlands. Rockies Express should include this information in its Wetland Mitigation Plan.**

Based on the results of the consultations completed to date, Rockies Express has proposed to compensate other permanent wetland impacts through purchase of wetland mitigation bank credits. A mitigation bank is a wetland area set aside for restoration, establishment, or enhancement for the purpose of providing compensation for an unavoidable impact to a wetland impacted by a project. Mitigation banks are a form of "third-party" compensatory mitigation, in which the responsibility for compensatory mitigation implementation and success is assumed by a party other than the permittee (EPA, 1995). Mitigation banking is an approved alternative to onsite mitigation and often provides for greater likelihood of success in replacement of wetland function and long-term management of restored wetland areas. Rockies Express is already considering the option of wetland mitigation banking as compensatory mitigation for wetland impacts. However, FWS has indicated that it does not support the use of wetland mitigation banks to mitigate for wetland impacts until more details have been determined. FWS further stated that any mitigation through wetland mitigation banks would need to be overseen by the appropriate state and federal resource agencies, and added that wetlands should be replaced within the same state and watershed in which the impacts would occur, typically in like kind. Therefore, **we recommend that:**

- **Prior to the start of construction, Rockies Express finalize consultations with COE, FWS, and appropriate state and federal agencies to develop its Wetland Mtigation Plan;**

and file with the Secretary a draft Wetland Mitigation Plan and the results of its consultations with these agencies.

4.4 VEGETATION

The REX East Project would extend across several Ecoregions of the United States (EPA, 2007c). All ecoregions that would be crossed by the pipeline and aboveground facilities are described below in table 4.4-1 with their respective subecoregions and locations. In addition to the pipeline, two compressor stations—one constructed in Phelps County, Nebraska and the other in Carbon County, Wyoming—would be located in separate ecoregions.

Table 4.4-1
EPA Ecoregions Crossed by the Project

Ecoregion	Location of Occurrence in Project Area (State, Count[ies])	Description
Central Irregular Plains Subecoregion Claypan Prairie	**Missouri** Ralls, Audrain	This ecoregion is less irregular and less forest-covered than the ecoregions to the south and east. The potential natural vegetation of this region is a grassland/forest mosaic with wider forested strips along the streams compared to the north. Tallgrass prairies (big bluestem and Indian grass) dominate the scattered white oak dry woodland. Currently, the region is mostly used for agriculture and pastureland for cattle grazing.
Interior River Valley and Hills Subecoregion River Hills Upper Mississippi Alluvial Plain Western Dissected Illinoisan Till Plain	**Missouri** Pike **Illinois** Pike, Scott, Morgan	This ecoregion comprises old till plains, hills, forested river bluffs, major rivers, and valleys containing levees, oxbow lakes, islands, and scattered sand sheets and dunes. The region is a transitional area between the more forested Ozark Highlands, and the flatter, much less forested Central Corn Belt Plains. The potential natural vegetation of well-drained upland areas is a mosaic of oak-hickory forests and bluestem prairies, while other regions in the area often have bottomland hardwood forests, floodplain forests, and marshes. Agriculture dominates most of the prairie habitat.
Central Corn Belt Plains Subecoregion Illinois/Indiana Prairies	**Illinois** Morgan, Sangamon, Christian, Macon, Moultrie, Douglas, Edgar **Indiana** Vermillion	This ecoregion comprises vast glaciated plains that were once dominated by bluestem prairies and oak-hickory forests. At present, this region has mostly been converted for crops such as corn, wheat, and soybeans. Sycamores, cottonwood, and maple are native to floodplain regions. Bulrush sedges and reeds are common to prairie potholes and marshes.
Interior River Lowland Subecoregion Glaciated Wabash Lowlands	**Indiana** Putnam, Parke, Vermillion	This broad, undulating lowland was formed in non-resistant, non-calcareous sedimentary rock. Many wide, flat-bottomed, terraced valleys are present and are filled with alluvium, outwash, aeolian, and lacustrine deposits. Much of this ecoregion is covered by till or windblown silt and sand that is pre-Wisconsinan in age. The vegetation in the region has scattered woodlands (predominantly beech forest and oak-hickory forest) mixed with prairies. This region also supports agriculture, livestock, and surface coal-mining activities.

Table 4.4-1

EPA Ecoregions Crossed by the Project

Ecoregion	Location of Occurrence in Project Area (State, Count[ies])	Description
Eastern Corn Belt Plains Subecoregion Loamy High Lime Till Plains Darby Plains	**Indiana** Putnam, Hendricks, Morgan, Johnson, Shelby, Decatur, Franklin **Ohio** Butler, Warren, Clinton, Pickaway, Fairfield, Fayette, Clinton, Pickaway	This ecoregion is primarily a rolling plain with local end moraines; it has more natural tree cover and lighter colored soils than the Central Corn Belt Plains. Glacial deposits of Wisconsinan age are extensive. Indiana and Ohio counties have beech forests, oak-sugar maple forests, and elm-ash swamp forests. Ohio counties additionally have a mixture of oak forests, wet-prairie, and tall-grass prairie habitats. Currently, the region is dominated by extensive farming, some urban-industrial activity, and livestock areas.
Interior Plateau Subecoregion Northern Bluegrass	**Indiana** Franklin	This ecoregion has rolling to deeply dissected, rugged terrain. Land use/land cover is a transition between agriculture, livestock, and woodlands of mesophytic and oak-hickory origin.
Erie/Ontario Drift and Lake Plain Subecoregion Low-Lime Drift Plain	**Ohio** Perry	Low-lime drift and lacustrine deposits blanket the rolling to level terrain of this ecoregion. Lakes, wetlands, and swampy streams occur where stream networks are deranged or where the land is flat and clayey. This region has a mixture of forests (mesophytic forest, mixed oak forest, beech forest, oak-sugar maple forest, and elm-ash swamp forests), dairy farming, agriculture, gas wells, and coal mining.
Western Allegheny Plateau Subecoregion Permian Hills Monongahela Transition Zone Unglaciated Upper Muskingum Basin Ohio/Kentucky Carboniferous Plateau	**Ohio** Perry, Muskingum, Morgan, Guernsey, Noble, Belmont, Monroe	This extensive, rugged, wooded terrain has mixed mesophytic forests, mixed oak forests, oak-sugar maple forests, beech wood forests, hemlock hardwoods in ravines, and red maple seepage swamps. At present, most of the hilly rugged areas remain as forest, while agriculture, dairy, livestock, and residential areas lie in lower regions. Gas wells, coal mining, and reclaimed land are extensive in this region and are associated with the degradation of several streams.
Wyoming Basin Subecoregion Rolling Sagebrush Steppe	**Wyoming** Carbon	This ecoregion is broad, arid, intermontane basin, interrupted by hills, low mountains, and dominated by grasslands and shrublands. The region also has rolling plains with hills, cuestas, mesas, terraces, while near the mountains are footslopes, ridges, alluvial fans, and outwash fans. Potential natural vegetation is mostly sagebrush steppe, with the eastern edge of the region having more mixed-grass prairie. Wyoming big sagebrush is the most common shrub with silver and black sagebrush occurring in the lowlands and mountain big sagebrush in the higher elevations. Frequent fires have affected the sagebrush steppe and some areas are dominated by European annual grasses. Most of the land is in rangeland, cattle and sheep ranches, or wildlife habitat; however, there are also major gas and oil production areas.

Table 4.4-1 EPA Ecoregions Crossed by the Project		
Ecoregion	**Location of Occurrence in Project Area (State, Count[ies])**	**Description**
Central Great Plains Subecoregion Rainwater Basin Plains	**Nebraska** Phelps	The Central Great Plains is slightly lower, receives more precipitation, and is more irregular than the Western High Plains. This region has tall-grass and mixed-grass prairies dominated by bluestems with scattered low trees and shrubs. Currently, much of this ecoregion is now in cropland and is the major winter wheat growing area of the United States. Although this region has natural wetlands in the North American Central Flyway for waterfowl migration, most of the wetlands have been drained for cultivation and relatively few areas remain.

4.4.1 General Vegetation Resources

Construction of the Project pipeline would affect the following three main vegetative communities: agricultural, herbaceous, and forested vegetation as presented in table 4.4.1-1. The major vegetation categories are further subdivided into vegetative types (table 4.4.1-1). The pipeline route would cross 487.5 miles of agricultural and herbaceous open land and 144.7 miles of forested areas. Wetland habitats (emergent, scrub-shrub, and forested) are discussed in section 4.3.7. Agriculture and direct impacts associated with croplands are further discussed in section 4.8. Project-related acreage impacts for vegetative communities are presented in table 4.4.1-2.

Project Facilities

The proposed project would affect 14,226.4 acres of vegetated land during construction and 4,006.1 acres of vegetated land during operation of the project. Of the acres affected by construction, 3,101.9 acres would be forested areas, 446.6 acres would be herbaceous (nonforested) areas and 10,677.9 would be agricultural land. Of the total acres that would be affected during operation about 881.3 acres would be forested land, 180.6 would be herbaceous land and 2,944.2 would be agricultural land. See more details in table 4.4.1-2 for breakdown of these acres by facility. Acres reported in table 4.4.1-2 reflect numbers for both upland and wetland areas. Wetland impacts are addressed in section 4.3.7.

The primary impacts on vegetation from construction of the REX East Project would be the cutting, clearing, and/or removal of existing vegetation within the construction work area. The severity of impact would depend on the specific type and amount of vegetation affected, the rate at which vegetation would regenerate after the completion of construction activities. Operational impacts would include a permanent loss of vegetation where aboveground facilities would be located and long-term impacts on forested areas within the 50-foot-wide permanent pipeline right-of-way where it would take 30 years or more for forested vegetation to return to pre-construction conditions.

The majority of construction-related impacts would be temporary; and cleared vegetation would be allowed to return to natural conditions after construction, with the exception of the 10-foot-wide corridor centered on the pipeline, which would be maintained in an herbaceous state throughout the life of the Project, as well as upland areas where the entire permanent right-of-way would be maintained. Additionally, in wetland areas, trees may be selectively cut out another 15 feet from the 10-foot-wide corridor. The loss of forested vegetation along the pipeline route would result in forest fragmentation and

Table 4.4.1-1

Vegetative Communities Occurring along the Proposed Project Route a/

Classification	Representative Species	Location by State (County)
Agriculture Land		
Cropland/Pasture	Corn, alfalfa, soybean, wheat, hay, grasses, clover	Ohio, Indiana, Illinois, Missouri, Nebraska (Phelps County)
Herbaceous		
Tall-grass prairie	Big bluestem, little bluestem, Indian grass, blue grama, prairie dock sideoats grama, golden rod	Ohio, Indiana, Illinois, Missouri
Mixed-grass prairie	Blue grama, western wheatgrass, June grass, Sandberg blue grass, buffalo grass, needle-and-thread, bluestem, fringed sage, rabbitbrush	Wyoming (Carbon County)
Sagebrush steppe	Wyoming big sagebrush, sagebrush steppe, silver and black sage brush, mixed grass prairie species	Wyoming (Carbon County)
Wetlands	Bulrush sedge, reed, cord grass, cattail	Ohio, Indiana, Illinois, Missouri
Forest		
Riparian forests	Sycamore, cottonwood, maple, ash, elm, willow, green ash, American elm	Ohio, Indiana, Illinois, Missouri
Deciduous/Mixed forests	White oak, black oak, sugar oak, hickory, beech, maples, silver oak, eastern hemlock, chestnut, black cherry, poplar, pine, basswood, bur oak, hackberry, mesophytic species	Ohio, Indiana, Illinois, Missouri
Wetlands	Ash, red maple, black gum, tupelo gum, American elm, white oak	Ohio, Indiana, Illinois, Missouri
Previously Developed Land	Areas with ornamental and manicured vegetation from developed or previously developed property; mixture of native and non-native species	Ohio, Indiana, Illinois, Missouri

a/ Source: Cowardin et al., 1979
EPA, 2007c
OSU, 2007
Wyoming Game and Fish Department, 2007

Table 4.4.1-2

Rockies Express Pipeline-East Project

Summary of Vegetation Affected by Construction and Operation of the Project by State (In acres)

	Agricultural		Forested a/		Herbaceous b/		Total	
	Const.	Oper.	Const.	Oper.	Const.	Oper.	Const.	Oper.
MISSOURI								
Pipeline c/	516.8	206.8	112.9	45.1	16.5	6.6	646.2	258.5
Interconnects and Laterals d/	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Additional Temporary Workspace	211.9	0.0	54.0	0.0	9.6	0.0	275.5	0.0
Aboveground Facilities f/	12.8	12.8	0.1	0.1	0.0	0.0	12.9	12.9
Contractor/Pipe yards	22.6	0.0	11.6	0.0	0.7	0.0	34.9	0.0
Subtotal	764.1	219.6	178.6	45.2	26.8	6.6	969.5	271.4
ILLINOIS								
Pipeline c/	2,623.3	1,049.5	217.7	87.3	98.0	39.1	2,938.0	1,175.9
Interconnects and Laterals d/	5.8	3.1	0.0	0.0	0.0	0.0	5.8	3.1
Additional Temporary Workspace	1,090.7	0.0	86.1	0.0	3.9	0.0	1,180.7	0.0
Aboveground Facilities f/	21.2	21.2	0.0	0.0	0.0	0.0	21.2	21.2
Contractor/Pipe yards	65.3	0.0	0.2	0.0	2.2	0.0	67.7	0.0
Subtotal	3,806.3	1,073.8	304.0	87.3	104.1	39.1	4,214.4	1,200.2
INDIANA								
Pipeline c/	1,787.9	715.1	603.6	241.4	115.7	46.2	2,507.2	1,002.7
Interconnects and Laterals d/	4.7	2.3	0.0	0.0	0.0	0.0	4.7	2.3
Additional Temporary Workspace	814.3	0.0	188.6	0.0	1.8	0.0	1,004.7	0.0
Aboveground Facilities f/	26.9	26.9	0.0	0.0	0.0	0.0	26.9	26.9
Contractor/Pipe yards	62.2	0.0	0.8	0.0	0.0	0.0	63.0	0.0
Subtotal	2,696.0	744.3	793.0	241.4	117.5	46.2	3,606.5	1,031.9

Table 4.4.1-2

Rockies Express Pipeline-East Project

Summary of Vegetation Affected by Construction and Operation of the Project by State (in acres)

	Agricultural		Forested a/		Herbaceous b/		Total	
	Const.	Oper.	Const.	Oper.	Const.	Oper.	Const.	Oper.
OHIO								
Pipeline c/	2,072.1	828.7	1,257.7	503.0	175.4	70.2	3,505.2	1,401.9
Interconnects and Laterals d/	18.1	11.8	3.3	1.9	0.2	0.1	21.6	13.8
Additional Temporary Workspace	1,180.7	0.0	532.0	0.0	3.2	0.0	1,715.9	0.0
Aboveground Facilities f/	48.3	48.3	2.5	2.5	3.4	3.4	54.2	54.2
Contractor/Pipe yards	74.6	0.0	30.8	0.0	1.0	0.0	106.4	0.0
Subtotal	3,393.8	888.8	1,826.3	507.4	183.2	73.7	5,403.3	1,469.9
NEBRASKA								
Aboveground Facilities	17.7	17.7	0.0	0.0	0.0	0.0	17.7	17.7
Subtotal	17.7	17.7	0.0	0.0	0.0	0.0	17.7	17.7
WYOMING								
Aboveground Facilities	0.0	0.0	0.0	0.0	15.0	15.0	15.0	15.0
Subtotal	0.0	0.0	0.0	0.0	15.0	15.0	15.0	15.0
Project Total	**10,677.9**	**2,944.2**	**3,101.9**	**881.3**	**446.6**	**180.6**	**14,226.4**	**4,006.1**

NOTE: The numbers in this table have been rounded for presentation purposes. As a result, the totals may not reflect the exact sum of the addends in all cases. Totals may be off by 0.1 place.

a/ Forested wetlands are included in these estimates.
b/ Emergent wetlands are included in these estimates.
c/ Assumes 125-foot-wide construction right-of-way and a 50-foot-wide permanent right-of-way in all locations.
d/ Assumes a 70- to 120-foot-wide construction right-of-way and a 45- to 75-foot-wide permanent right-of-way.
e/ After 30 years, forested areas would return to pre-construction vegetated conditions.
f/ Includes construction and operational impact associated with the compressor stations and meter stations and access roads to compressor stations and meter stations. Because mainline valves would be constructed within the construction right-of-way, land use impacts are accounted for with the pipeline. However, because mainline valves would result in a land use conversion, aboveground totals include permanent impacts associated with mainline valves. Temporary pig launchers and receivers would be used within the area to be disturbed by the compressor stations. Therefore, land use impacts resulting from these facilities are already accounted for in the construction impacts for aboveground facilities.

Const: impacts during construction of project.

Oper: Impacts associated with operation of project.

the loss of conversion of wildlife habitat. Other impacts resulting from the widening of the existing corridor or the removal of vegetation include increased erosion, sediment runoff, altered soil chemistry, modified infiltration and groundwater recharge rates, and an increased susceptibility to invasive and/or exotic species.

Impacts to agriculture lands and herbaceous communities, such as prairie habitats, would be short-term as these vegetation types would return to their herbaceous status within one to three growing seasons after the completion of construction activities, cleanup and restoration. Areas planted with field crops are typically disturbed by periodic agricultural practices and would be replanted in the next growing season. Rockies Express would implement its AIMP to minimize impacts to these lands. Agricultural impacts are further discussed in section 4.8.

In general the clearing of upland forest would result in long-term impacts as upland forest can take 30 years or more to return to pre-construction conditions. Impacts to upland areas constitute the most significant change in vegetation strata, appearance, and habitat, as mature trees would be replaced for a period of years by herbaceous plants, shrubs, saplings, and other successional species. The Project would cross areas of unsegmented portions of forest in Missouri, Illinois, Indiana, and Ohio. About 59 percent of the proposed pipeline route is collocated parallel to existing utility corridors. Collocation avoids additional fragmentation of large forested areas. We estimate that when the pipeline crosses forested area, approximately 48 percent of the route is collocated, for a total of 1,054.4 acres. The remaining 1,137.5 acres of forested areas crossed by the pipeline appears to be unfragmented forest. The removal of trees from unfragmented forested areas would cause loss of wildlife from habitat conversion. Other impacts could include increased erosion from the conversion of deeply rooted vegetation to shallow-rooted vegetation on the right-of-way and increased exposure to solar radiation, which could dry the soil and stimulate growth of early successional species within and immediately adjacent to cleared areas. The removal of trees on the right-of-way could also expose trees growing adjacent to the newly cleared areas to higher wind gusts, which may increase the risk of blow downs.

We have received several comments expressing concern that large areas of forests and timberland would be destroyed or fragmented. Impacts to forests and other vegetation would be minimized by collocating the pipeline within existing rights-of-way and allowing the vegetation to return to pre-construction cover types and uses where practical. In addition Rockies Express would use HDD for water crossings to minimize impact on forested riparian areas. FWS, in its comments on the administrative draft EIS, expressed concern about mitigation for impacts to upland/bottomland forest areas and non-jurisdictional wetlands. FWS stated that in order to minimize overall impacts on fish and wildlife, it is appropriate to mitigate for impacts to all forested habitats and nonjurisditional wetlands. Therefore, in order to further minimize and mitigate forest impacts, **we recommend that:**

- **Prior to the end of the draft EIS comment period, Rockies Express develop an upland forest mitigation plan in consultation with FWS, COE, and appropriate state agencies for each state. Rockies Express should file this plan with the Secretary along with documentation of its consultation with the agencies involved.**

We recognize that some HDD paths, drill entry and exit holes, and associated temporary workspaces may be located within forested areas. To minimize impacts to forests, **we recommend that:**

- **For all HDDs, Rockies Express not clear any trees between the workspace for the drill site and the workspace for the exit site. Minor brush clearing, less than 3-foot wide, using hand tools is allowed to facilities the use of the HDD tracking system.**

During operation, the use of the REX East Plan would allow for maintenance mowing along the permanent 50-foot-wide right-of-way every three years; however, impacts to herbaceous communities during operational maintenance would be minimal because the vegetation would return to pre-construction conditions.

In addition, to reduce impacts within the construction and permanent rights-of-way and to improve the probability of successful revegetation of disturbed areas, Rockies Express would implement the measures included in its Plan and Procedures to ensure successful revegetation of disturbed areas. According to its Plan and Procedures, Rockies Express would:

- provide temporary and permanent erosion control measures;
- test topsoil and subsoil for compaction at regular intervals in agricultural and residential areas disturbed by construction activities;
- segregate topsoil;
- begin cleanup immediately after backfilling and completion of restoration within 20 days;
- restore pre-construction contours and natural drainage patterns within the construction right-of-way;
- fertilize and add soil pH modifiers in accordance with written recommendations obtained from the local soil conservation authority, land management agencies, or landowner; incorporate recommended soil pH modifier and fertilizer into the top two inches of soil as soon as possible after application;
- implement the NRCS and state agencies' recommendations and standards for revegetation in areas disturbed by the Project;
- provide barriers to control off-road vehicle activities; and
- monitor the revegetation progress of the right-of-way for two growing seasons following construction.

Aboveground Facilities

The Project would involve the construction of compressor stations, meter stations, MLVs, delivery point interconnects, and access roads at various locations along the proposed pipeline route that would affect grasslands, sagebrush prairie rangeland (Wyoming), agricultural lands, and forests. Aboveground facilities would impact a total of 147.9 acres of vegetated land during construction and operation including: herbaceous lands (about 18.4 acres), forested lands (about 2.6 acres), and agricultural lands (126.9 acres) (see table 4.4.1-2). Aboveground facilities would be permanent and would remain in operation throughout the life of the REX East Project. We do not consider these impacts to be significant since the impacted area represents a very small percentage of the total available land of similar type in the area surrounding the Project.

The Project would require the use of temporary contractor pipe yards that would affect a total of 272.0 vegetated acres, including 43.4 acres of forested areas. As described earlier, removal of trees within forested areas would result in long-term impacts due to the length of time needed for the forest to mature to pre-construction conditions. Herbaceous and agricultural areas affected by contractor pipe

yards would be able to revegetate in shorter timeframes. To minimize impact to forested areas, **we recommend that:**

- **Prior to the end of the draft EIS comment period, Rockies Express avoid cutting trees at or relocate the Bowling Green, Springfield, Green Castle, Middletown, Hamilton, Jeffersonville, Pickaway, Lancaster, and Guernsey contractor and pipe storage yards where feasible to minimize impacts to forested areas. Environmental information and documentation of the revised locations of the pipe storage yards should be filed with the Secretary.**

4.4.2 Vegetation Communities of Special Concern

The REX East pipeline would cross vegetation communities of special concern in Indiana and CRP lands in Missouri. The communities in Indiana include classified forests and wooded riparian corridors. No vegetation communities of special concern have yet been identified in Illinois or Ohio. State-managed and conservation areas are discussed in section 4.8.

Classified Forests

Classified forests are privately owned lands in Indiana that have been enrolled voluntarily for a conservation stewardship program by the landowner in partnership with the INDNR. The Classified Forest Program is specially designed to help keep Indiana's private forest regions intact. Classified forests that would be crossed by the pipeline route in Indiana are listed in table 4.4.2-1.

Construction of the REX East Project would temporarily disturb approximately 44.8 acres of classified forests in Indiana. Operation of the pipeline would require the conversion of approximately 17.9 acres of classified forests to scrub-shrub and herbaceous areas from maintenance of the 50-foot right-of-way. The REX East Project has the potential to impact 4.2 acres of classified forest owned by a single landowner. Impacts to classified forested areas would be long-term.

Rockies Express would compensate any classified-forest landowner who incurs costs or penalties resulting from the construction and operation of the Project. Rockies Express proposes to mitigate these areas by replanting trees outside the 50-foot permanent right-of-way (temporary construction right-of-way), at a one-to-one ratio and replanting other native vegetation. Rockies Express is continuing its consultations with the classified forest landowners, INDNR, the Division of Forestry, and the local District Forester about mitigation and state and local requirements; therefore, **we recommend that:**

- **Prior to the start of construction, Rockies Express develop its compensatory mitigation plan for classified forest areas in Indiana, in consultation with classified forest landowners; INDNR, Division of Forestry; and the local District Forester. This plan should be filed with the Secretary along with documentation of related consultation for review and written approval by the Director of OEP.**

Wooded Riparian Corridors

Indiana has wooded riparian corridors with valuable tree species that are associated with bottomlands and waterways. These riparian areas are important waterway buffers and significant habitat features. If not revegetated and stabilized properly, removal of riparian vegetation could cause soil erosion associated with surface runoff, and streambank depressions could lead to instream sediment deposition after construction.

Table 4.4.2-1

Classified Forest Areas Crossed by REX East Project Pipeline in Indiana

County	Begin Milepost a/	Length of Crossing (feet)	Temporary Impact (acres) b/	Permanent Impact (acres) c/
Parke	253.4	369.4	1.1	0.4
Parke	258.5	94.4	0.3	0.1
Parke	260.6	483.1	1.4	0.6
Putnam	268.6	927.3	2.7	1.1
Putnam	269.6	341.7	1.0	0.4
Putnam	269.7	743.8	2.1	0.9
Putnam	269.8	5.9	<0.1	<0.1
Putnam	269.8	289.8	0.8	0.3
Putnam	270.0	693.6	2.0	0.8
Putnam	270.1	32.7	<0.1	<0.1
Putnam	270.1	2,727.5	7.8	3.1
Putnam	272.8	3,337.0	9.6	3.8
Putnam	273.6	349.2	1.0	0.4
Putnam	278.7	865.6	2.5	1.0
Putnam	280.0	134.2	0.4	0.2
Putnam	282.9	405.8	1.2	0.5
Shelby	344.6	552.8	1.6	0.6
Decatur	376.0	667.5	1.9	0.8
Decatur	376.6	541.8	1.6	0.6
Franklin	381.7	23.8	<0.1	<0.1
Franklin	381.8	982.2	2.8	1.1
Franklin	382.1	212.3	0.6	0.2
Franklin	382.2	847.9	2.4	1.0
Total		**15,667.9**	**44.8**	**17.9**

a/ Mileposts are used for reference and may not reflect actual surveyed distances.
b/ Temporary impact based on a 125-foot-wide construction right-of-way in upland areas.
c/ Permanent impact based on a 50-foot-wide maintained right-of-way.

The following waterbody crossings have wooded riparian corridors and would require an INDNR permit based on their outstanding waterbody classifications: Wabash River (MP 246.9), Big Walnut Creek (MP 281.5), Sugar Creek (MP 337.9), Big Blue River (MP 340.8), and Whitewater River (MP 393.1) (INDNR, 2007). The White Lick Crossing (MP 311.1) including its wooded riparian area would also require a permit because this portion of the pipeline runs parallel to the White Lick Creek for more than 50 feet in the floodplain (INDNR, 2007). Rockies Express would comply with the INDNR's permitting requirements regarding floodway licensing and mitigation measures within the temporary right-of-way in wooded riparian corridors. These mitigation measures include: replanting trees greater than 10 inches in diameter in wooded riparian corridors at a ratio five-to-one; revegetating intermixed groundcover within the forested floodway with appropriate herbaceous seed mixes; and mitigating disturbed riparian corridor areas greater than 1 acre at a higher ratio. Rockies Express, as part of the flood control act permitting requirements, is continuing its consultations with INDNR to develop mitigation measures to minimize impacts to floodways and riparian areas. Waterbodies in Indiana that require floodway crossing licenses are further discussed in section 4.3.2. Therefore, **we recommend that:**

- **Prior to the start of construction, Rockies Express file with the Secretary a copy of its Flood Control Permit from INDNR.**

4.4.3 Conservation Reserve Program

To date a total of 24 tracts of CRP lands have been identified along the REX East pipeline route, which includes 518.5 feet (at four crossings) in Missouri (see section 4.8). No CRP lands have been identified in Illinois, Indiana, and Ohio. The CRP is managed and administered by the USDA's Farm Service Agency (FSA) with technical assistance provided by USDA's NRCS. The program provides eligible farmers and ranchers both technical and financial assistance to conserve and protect soil, water, and related natural resources on their land. The CRP encourages farmers to convert highly erodible cropland or other environmentally sensitive lands to vegetative cover such as native grasses, wildlife plantings, trees, filter strips, or riparian buffers.

Temporary and permanent impacts on CRP lands would generally be similar to those described previously for vegetation. Rockies Express would negotiate easement terms and conditions with individual landowners of CRP lands to minimize and restore temporarily impacted areas to preconstruction conditions. Rockies Express also would implement its Plan and Procedures to further minimize impacts by reseeding disturbed areas with a seed mix recommended by NRCS, state agencies, or landowners specifically for CRP lands. Rockies Express is currently consulting with representatives of FSA to confirm the location of these properties and identify any other CRP lands; therefore, **we recommend that:**

- **Prior to the end of the draft EIS comment period, Rockies Express consult with FSA and other applicable federal and state agencies to identify affected CRP lands and to develop mitigation measures to protect CRP lands. Rockies Express should file this information with the Secretary along with copies of all related correspondence.**

4.4.4 Noxious Weeds

Noxious weeds and other invasive plants are non-native, undesirable native, or introduced species that are able to exclude and outcompete desirable native species, thereby decreasing overall species diversity. The term "noxious weed" is legally defined under both federal and state laws. Under the Federal Plant Protection Act of 2000 (formerly the Noxious Weed Act of 1974 [7 U.S.C. Sections 2801-2814]), a noxious weed is defined as "any plant or plant product that can directly or indirectly injure or cause damage to crops, livestock, poultry, or other interests of agriculture, irrigation, navigation, the natural resources of the United States, the public health, or the environment." The Federal Plant Protection Act contains a list of 137 federally restricted and regulated federal noxious weeds (per CFR Title 7, Chapter III, Part 360), including 19 aquatic and wetland weeds, 62 parasitic weeds, and 56 terrestrial weeds. Each state is federally mandated to uphold the rules and regulations set forth by the Federal Plant Protection Act and manage its lands accordingly.

Noxious weeds are also addressed by Executive Order (EO) 13112, which directs federal agencies to prevent the introduction of invasive species; provide for their control; and minimize the economic, ecological, and human health impacts that invasive species can cause. The Order further specifies that federal agencies shall not authorize, fund, or carry out actions likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless it has been determined that the benefits of such actions outweigh the potential harm caused by invasive species and that all feasible and prudent measures to minimize the risk of harm would be taken in conjunction with the actions.

Federal, state, and county agencies are responsible for identifying noxious plant species and preventing them from becoming invasive. In addition to federal noxious weed lists, each state crossed by the REX East Project maintains a list of regulated and prohibited noxious and invasive weed species. County weed control boards or districts are present in most counties crossed by the pipeline route. These county weed control boards monitor local weed infestations and provide guidance on weed control.

Following disturbances to the soil caused by the Project, vegetation communities can be susceptible to infestations of invasive or noxious weed species. Vegetation removal and soil disturbance during construction could create optimal conditions for the establishment of undesirable species. Mobile construction equipment can carry weeds into disturbed areas and disperse invasive or noxious weed seeds that would propagate and spread through the affected area. Noxious species are most prevalent in areas with prior surface disturbance, such as agricultural areas, roadsides, and existing utility rights-of-way.

Federal and state agencies filed comments requesting that disturbed areas be revegetated with native plant species that are currently found in the Project area. Agencies also identified known locations of noxious weed infestations in the states the pipeline would cross and provided recommendations for seed mixes and erosion control. A list of these noxious weeds is provided in the REX East Weed Management Plan (FERC eLibrary, 2007f). The NRCS offices in Missouri, Illinois, and Indiana provided state-specific NRCS Critical Area Planting Conservation Standards. Rockies Express has developed the Weed Management Plan based on the agencies' recommendations to minimize the spread of noxious weeds with preventative measures and treatment methods such as ensuring that:

- all contractor vehicles and equipment would arrive at the work site clean and weed free;
- straw and hay bales used on the Project for sediment barrier installations or mulch would be certified weed-free;
- soils imported for agricultural or residential use would be certified as free of noxious weeds, unless otherwise approved by the landowner; and
- noxious weeds along the construction right-of-way would be removed by mechanical, biological, or chemical methods under the direction of NRCS state offices.

COE filed a comment requesting that the Japanese hop (*Humulus japonicus*) be included in the Rockies Express Weed Management Plan. Japanese hop is an aggressive, sprawling weed that is increasingly prevalent and noxious. It is most prevalent in riparian corridors and has been problematic in forested riparian corridors and wetlands restoration projects. Therefore, **we recommend that:**

- **Prior to the start of construction, Rockies Express include the Japanese hop in its Weed Management Plan and file the revised Weed Management Plan with the Secretary.**

We believe that Rockies Express' proposed measures, including the use of its Weed Management Plan, our recommendations, and the implementation of mitigation practices recommended by state and federal agencies, would minimize the REX East Project's impacts on vegetation communities and would minimize the spread of noxious weeds.

4.5 WILDLIFE

The REX East Project area encompasses a diversity of animal taxa, including large and small mammals, raptors, waterfowl, turtles, and various amphibians. General impacts to these wildlife resources are discussed in the following sections. Specific information is also provided for significant resources that occur in the Project area, including raptors and migratory birds, as well as managed and sensitive wildlife areas that would be affected by the Project.

4.5.1 General Wildlife Resources

The predominant wildlife habitats in the REX East Project area are open water, agricultural lands, forested lands, herbaceous upland, herbaceous wetland, and developed areas. These habitats provide local wildlife with areas for foraging, cover, and breeding. Vegetative species within these habitat types are described in section 4.3 (wetland habitats) and 4.4 (upland habitats). Table 4.5.1-1 lists common game and non-game species that occur within wildlife habitats crossed by the Project.

Table 4.5.1-1
Representative Wildlife Species that Potentially Occur in the REX East Project Area

Habitat Type	Representative Species	Scientific Name
Open Water	River Otter	*Lontra canadensis*
	Beaver a/	*Castor canadensis*
	Muskrat a/	*Ondatra zibethica*
	Mallard a/	*Anas platyrhynchos*
	Wood Duck a/	*Aix sponsa*
	Tundra Swan	*Cygnus columbianus*
	Great Blue Heron	*Ardea herodias*
	American Toad	*Bufo americanus*
	Snapping Turtle	*Chelydra serpentina*
Agricultural Land	Virginia Opossum	*Didelphis marsupialis*
	Coyote	*Canis latrans*
	Red Fox a/	*Vulpes vulpes*
	Long-Tailed Weasel	*Mustela frenata*
	Striped Skunk	*Mephitis mephitis*
	White-Tailed Deer a/	*Odocoileus virginianus*
	Mallard a/	*Anas platyrhynchos*
	Ring-Necked Pheasant a/	*Phasianus colchicus*
	Wild Turkey a/	*Meleagris gallopavo*
	Turkey Vulture	*Cathartes aura*
	Red-Tailed Hawk	*Buteo jamaicensis*
	Horned Lark	*Eremophila alpestris*
Forested Upland	Virginia Opossum	*Didelphis marsupialis*
	Silver-Haired Bat	*Lasionycteris noctivagans*
	Coyote	*Canis latrans*
	Red Fox a/	*Vulpes vulpes*
	Bobcat	*Lynx rufus*
	Striped Skunk	*Mephitis mephitis*
	White-Tailed Deer a/	*Odocoileus virginianus*
	Wood Duck a/	*Aix sponsa*
	Cerulean Warbler	*Dendroica cerulean*
	Hooded Warbler	*Wilsonia citrine*
	Worm-eating Warbler	*Helmitheros vermivorus*
	Kentucky Warbler	*Oporornis formosus*
	Wild Turkey a/	*Meleagris gallopavo*
	Great-Horned Owl	*Bubo virginianus*
	American Toad	*Bufo americanus*

Table 4.5.1-1

Representative Wildlife Species that Potentially Occur in the REX East Project Area

Habitat Type	Representative Species	Scientific Name
Forested Wetlands	Raccoon a/	*Procyon lotor*
	Silver-Haired Bat	*Lasionycteris noctivagans*
	Coyote	*Canis latrans*
	Bobcat	*Lynx rufus*
	White-Tailed Deer a/	*Odocoileus virginianus*
	Mallard a/	*Anas platyrhynchos*
	Wood Duck a/	*Aix sponsa*
	Wild Turkey a/	*Meleagris gallopavo*
	Great-Horned Owl	*Bubo virginianus*
	American Toad	*Bufo americanus*
	Prothonotary Warbler	*Protonotaria citrea*
	Cerulean Warbler	*Dendroica cerulean*
	Hooded Warbler	*Wilsonia citrine*
	Kentucky Warbler	*Oporornis formosus*
Herbaceous Upland	Virginia Opossum	*Didelphis marsupialis*
	Coyote	*Canis latrans*
	Red Fox a/	*Vulpes vulpes*
	Long-Tailed Weasel	*Mustela frenata*
	Striped Skunk	*Mephitis mephitis*
	Ring-Necked Pheasant a/	*Phasianus colchicus*
	Turkey Vulture	*Cathartes aura*
	Red-Tailed Hawk	*Buteo jamaicensis*
	Horned Lark	*Eremophila alpestris*
	American Toad	*Bufo americanus*
Herbaceous Wetland	Muskrat a/	*Ondatra zibethica*
	River Otter	*Lontra canadensis*
	Long-Tailed Weasel	*Mustela frenata*
	Mink a/	*Neovison vison*
	Snowy Egret	*Egretta thula*
	Northern Harrier	*Circus cyaneus*
	Swamp Sparrow	*Melospiza georgiana*
	Prothonotary Warbler	*Protonotaria citrea*
	Western Chorus Frog	*Pseudacris triseriata*
	Spring Peeper	*Pseudacris crucifer*
	Spotted Salamander	*Ambystoma maculatum*
	Northern Painted Turtle	*Chrysemys picta*

a/ Species with significant recreational or commercial value.

Source: NatureServe Explorer, 2006

Open-water habitats within the Project area include large rivers, streams, lakes, and ponds. These habitats provide food and water sources, in addition to habitat for species such as wading birds, waterfowl, beavers, otters, snakes, and other wildlife species dependent upon an aquatic environment. Waterbodies are specifically discussed in section 4.3, and fisheries resources within these waterbodies are discussed in section 4.6.

Agricultural lands within the Project area generally consist of pasture/hay, row crops, and small grains. These lands provide cover and foraging opportunities for wildlife species within the crops or pastures, or within the small areas of natural vegetation, such as vegetation along streams or small forested patches, that sometimes occur within agricultural lands. Although generally not as diverse as other habitat types, agricultural lands provide habitat for a variety of wildlife species.

Forested lands consist of deciduous, evergreen, and mixed upland forests, as well as forested wetlands. Upland forests provide both interior and edge habitats that often attract different species based

on their habitat preferences. Interior forested habitats are secluded, wetter, and more stable, whereas edge habitats are more volatile, experiencing more dramatic environmental change. Exterior forests are sunnier, drier, windier, and more prone to disturbance. Forested wetlands comprise diverse vegetation assemblages that provide an abundance of cover, foraging, and nesting habitat for a variety of wildlife species, such as migrating birds, reptiles, amphibians, and mammals.

Herbaceous uplands include upland grasslands, maintained rights-of-way, fallow fields, and areas used for production of hay and small grains. Herbaceous habitats can be important to a variety of species, particularly birds and small mammals, by providing edge areas and feeding and rearing habitats.

Herbaceous wetlands include emergent wetlands, ditches, road and railroad rights-of-way, pipeline and powerline utility corridors, fallow fields, and areas used for production of hay and small grains where hydric soils are present. Herbaceous wetlands provide an abundance of cover, foraging, and nesting habitat for a variety of wildlife species including mammals, birds, and reptiles. Emergent wetlands also provide resting sites for migratory birds; food sources for waterfowl; and nursery habitat for amphibians, crustaceans, and fish.

Developed land consists of residential, industrial, and other areas developed for active human use. Residential land occurs throughout the Project area in varying densities. These areas generally do not have diverse vegetative communities or provide substantial forage or cover for wildlife. Although they may be used by some wildlife species that are well adapted to human activity, these areas are not considered to provide significant value as wildlife habitat.

4.5.2 General Wildlife Impacts

Construction of the REX East Project, including additional temporary workspaces, aboveground facilities, pipe storage/contractor yards, and laterals, would temporarily disturb 14,226.4 acres of upland and wetland vegetation habitats and 26.1 acres of open water. Of this, 3,101.9 acres of forested habitat would be disturbed by construction. Of the total 3,101.9 acres about 881.3 acres would either be converted to developed land for aboveground facilities or maintained as permanent right-of-way in accordance with Rockies Express' Plans and Procedures (see section 4.5.4). About 237.4 acres of managed and sensitive wildlife habitats would be temporarily disturbed by construction.

The impact of the Project on wildlife species including game species and their habitats, would vary depending on the requirements of each species and the existing habitat present along the pipeline route. During construction, the more mobile species would be temporarily displaced from the construction right-of-way and surrounding areas to similar habitat nearby. Some wildlife displaced from the right-of-way would return to the newly disturbed area and adjacent, undisturbed habitats soon after completion of construction. Less mobile species, such as small mammals, reptiles, and amphibians, as well as birds nesting in the right-of-way, may be permanently affected by construction activities due to direct mortality or permanent displacement. However, the overall impact on wildlife due to active pipeline construction would not be significant because of the relatively small percentage of the available forest habitat affected and the short duration of construction.

The clearing of right-of-way vegetation would reduce cover, nesting, and foraging habitat for some wildlife. The degree of impact would depend on the type of habitat affected and the rate at which vegetation regenerates after construction. The impact on species that commonly inhabit agricultural lands would be relatively minor and temporary because these areas are regularly disturbed and would be replanted during the next growing season following pipeline installation. The effect on forest-dwelling wildlife species would be greater, as forested lands may take longer to return to pre-construction conditions (more than 30 years) and 881.3 acres would be prevented from reestablishing during operation

of the pipeline. All other forested areas impacted during construction would be allowed to re-establish. The impacts on species using nonforested areas would be short-term because herbaceous lands, riparian vegetation, and vegetated portions of developed lands would recover within 1 to 3 years. See section 4.3.7 for our recommendations to offset forested wetland impacts.

Blasting may be required along approximately 6.5 percent of the pipeline route. Blasting could result in the removal of adjacent habitat and the direct mortality or injury of wildlife species in the vicinity. These impacts would be minimized by adherence to the Rockies Express Blasting Plan (FERC eLibrary, 2007c). Rockies Express states that it would develop site-specific blasting plans that contain procedures for preventing flying rock and excessive noise.

Construction and operation of the Project would cause habitat fragmentation, especially in forested areas. Fragmentation can alter the species composition in a given community because biophysical conditions near the forest's edge can significantly differ from those found in the center or core of the forest. As a result, edge species could recruit to the fragmented area and species that occupy interior habitats could be displaced. The disturbance of these areas could create a long-term impact on some forest interior species. Species most likely to be adversely affected by the long-term or permanent conversion of forested habitat to non-forested habitat include forest interior species such as certain migratory birds, as discussed in section 4.5.3, as well as various other birds, mammals, amphibians, and reptiles. Conversion of intact forested habitats to early successional stages and the increase in forest edge that results could adversely affect forest interior species by increasing rates of nest predation, parasitism, or interspecific competition; reducing pairing success and nesting areas; increasing destruction of habitat of understory species by browsers; inhibiting migration, dispersal, foraging, and other movements of forest interior species that are hesitant to cross openings; and encouraging the expansion of non-native species. The breeding success of some forest interior bird species has been shown to be limited by the size of available unbroken forest tracts (Robbins, 1979; Robbins et al., 1989). Additional loss of forest habitat in tracts of already marginal size, in particular where the pipeline would traverse smaller isolated woodlots (Galli et al., 1976), could further reduce breeding success. The conversion of forested land may also affect woodland amphibians, through lack of cover, changes in ground moisture, and increased exposure to the sun.

Construction of the Project would affect 2,191.9 acres of forested land along the pipeline. Of that, roughly 1,054.4 acres would be collocated with existing rights-of-way, resulting in a widening of the corridor rather than forest fragmentation. The remaining 1,137.5 acres of forested area would not be collocated with other utility corridors. In these areas, construction of the Project could potentially cause habitat fragmentation. Forested areas would be allowed to revegetate naturally in the temporary construction areas but would be prevented from reestablishing in the permanently maintained right-of-way and where aboveground facilities and access roads are built (634.5 acres).

In a letter received September 12, 2007, FWS identified numerous forested areas that provide breeding habitat for forest birds of conservation concern (BCC) (FWS, 2007d). Specifically FWS expressed concern for migratory bird species and forest fragmentation. To minimize fragmentation impacts to the identified areas, we have included a recommendation that Rockies Express consult with FWS to develop site-specific plans to mitigate fragmentation impacts in these areas (see section 4.5.3). In addition, Congress charged each state and territory with developing a statewide wildlife conservation strategy, called a Comprehensive Wildlife Conservation Strategy, which identifies species and habitats of greatest conservation need and outlines the necessary actions to protect them. Each state's

Comprehensive Wildlife Conservation Strategy and the appropriate state coordinator should be consulted in order to minimize impacts to wildlife resources. Therefore, **we recommend that:**

- **Prior to the end of the draft EIS comment period, Rockies Express consult with each applicable Comprehensive Wildlife Conservation Strategy Coordinator to verify that it is in compliance with the state's Comprehensive Wildlife Conservation Strategy to the maximum extent practicable and file with the Secretary documentation of this correspondence.**

Species utilizing edge habitat and non-forested lands would return to the disturbed area after construction activities have ceased; therefore, impacts on wildlife in these habitats would be minimal. Species utilizing forest interior habitat would sustain a moderate impact through lasting habitat loss and fragmentation. However, through implementation of our recommendation for site-specific mitigation to minimize forest fragmentation, collocating the pipeline with existing rights-of-way to the extent practicable, and implementing the Rockies Express Plan and Procedures for the revegetation of wildlife habitats, we believe that the Project would not substantially alter local wildlife populations.

4.5.3 Raptors and Other Migratory Birds

Migratory birds are species that nest in the United States and Canada during the summer and migrate south to the tropical regions of Mexico, Central and South America, and the Caribbean for the nonbreeding season. Migratory birds are protected under the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703–711) and EO 13186 (66 FR 3853), which serve to protect migratory birds from adverse impacts. The EO was enacted, in part, to ensure that the environmental analysis of a federal action evaluates the impacts of that action on migratory birds. It states that emphasis should be placed on species of concern, priority habitat, and key risk factors. It also prohibits the taking of migratory birds without authorization from FWS. Destruction or disturbance of a migratory bird nest, or any eggs or young contained within it, is also a violation of the MBTA.

Portions of the Mississippi Flyway and its principal routes pass through each state crossed by the pipeline; thus, migratory birds occur in the Project area. In addition, principal routes of the Central Flyway cross through Nebraska and Wyoming, the sites of two proposed compressor stations. FWS maintains a list of migratory BCC that was developed as a result of a 1988 amendment to the Fish and Wildlife Conservation Act. The Fish and Wildlife Conservation Act mandates that FWS "identify species, subspecies, and populations of all migratory non-game birds that, without additional conservation actions, are likely to become candidates for listing" under the ESA. The goal of the BCC is to prevent or remove the need for additional ESA bird listings by implementing proactive management and conservation actions, and to ensure that these species would be considered in accordance with EO 13186. Partners in Flight is an organization with the goal of documenting and reversing population declines of neotropical migratory birds and their habitats. Migratory BCC and Partners in Flight priority bird species that potentially occur in the Project area are listed in table 4.5.3-1, along with their associated habitats.

A great blue heron rookery occurs approximately 0.9 mile south of the Scioto River pipeline crossing location (MP 514.6) in Pickaway County, Ohio. Rockies Express would cross the Scioto River using the HDD method. Although the herons may be present during construction, they are not expected to be impacted by the increase in noise because the rookery is almost 1 mile from the HDD site. In addition to the known rookery, landowner comments received March 13, 2007, indicated that the landowners observed a single heron pair south of the Dry Fork Whitewater River near MP 407.2 and a single breeding pair east of Caesar Creek near MP 459.6. However, the ODNR has no record of blue heron rookeries within 0.25 mile of these crossing locations. Although the exact location of the two

heron pairs is unknown, they may potentially suffer from decreased breeding success should they occur in close proximity during construction activities.

Table 4.5.3-1

Important Migratory Bird Species That Potentially Occur in the Project Area a/

Species Name	PIF Status b/	Migratory Classification by State c/						Preferred Habitat
		WY d/	NE e/	MO f/	IL f/	IN f/	OH f/	
Peregrine Falcon	CS	PM	PM	WR	PM	PM	PM	Along mountain ranges, river valleys, coastlines, cities
Short-Eared Owl	CC	NR, WR	NR, WR	WR	WR	WR	WR	Open fields, meadows, marsh, prairie, tundra
King Rail	--	PM	PM	NR	PM	PM	PM	Emergent wetlands
American Golden Plover	--	PM	PM	PM	PM-ST	PM	PM	Natural tributaries
Hooded Warbler	CS	PM	PM	PM	PM	NR	NR	Woodlands
Bewick's Wren	RC	NR	PM	NR	PM	PM	NR, PM	Woodlands
Chuck-Will's-Widow	RC, CS	PM	PM	NR	PM	PM	PM	Woodlands
Red-headed Woodpecker	CC, RC, RS	NR	NR	NR, WR	NR, WR	NR, WR	NR, WR	Woodlands that support cavity nesting
Yellow-bellied Sapsucker	CS	PM	PM	PM	PM	PM	PM	Woodlands that support cavity nesting
Acadian Flycatcher g/	RC, CS	PM	PM	NR	NR	NR	NR	Woodlands near water, along rivers or swamps
Wood Thrush g/	CC, RC, CS	PM	PM	NR	NR	NR	NR	Woodlands
Bell's Vireo	CC. RC	PM	NR	NR	NR	NR	PM	Successional scrub that supports ground nesting
Blue-winged Warbler	CC, CS	PM	PM	NR	NR	NR	NR	Successional scrub that supports ground nesting
Golden-winged Warbler	--	PM	PM	PM	PM	PM	PM	Successional scrub that supports ground nesting
Prairie Warbler	CS	PM	PM	NR	NR	NR	NR	Successional scrub that supports ground nesting
Cerulean Warbler g/	CC, RC, CS	PM	PM	NR	NR	NR	NR	Woodland midstory or canopy
Prothonotary Warbler g/	CC, RC, CS	PM	PM	NR	NR	NR	PM	Woodland midstory trees that support cavity nesting
Worm-eating Warbler g/	CS	PM	PM	NR	NR	NR	NR	Woodland cover to support ground nesting
Swainson's Warbler	CC, RC, CS	PM	PM	PM	PM	PM	PM	Woodland cover to support ground nesting
Louisiana Waterthrush g/	RC, CS	PM	PM	NR	NR	NR	NR	Woodlands along waterbodies
Kentucky Warbler g/	CC, RC, CS	PM	PM	NR	NR	NR	NR	Woodland cover to support ground nesting
Dickcissel	CC, RC, CS, RS	PM	NR	NR	NR	NR	NR	Grasslands that support ground nesting
Bachman's Sparrow	CC, RC, CS	PM	PM	PM	PM	PM	PM	Woodland cover to support ground nesting
Grasshopper Sparrow	RC. CS	PM	NR	NR	NR, WR	NR, WR	NR	Open fields and grasslands

Table 4.5.3-1

Important Migratory Bird Species That Potentially Occur in the Project Area a/

Species Name	PIF Status b/	Migratory Classification by State c/						Preferred Habitat
		WY d/	NE e/	MO f/	IL f/	IN f/	OH f/	
Henslow's Sparrow	CC, RC, CS, RS	PM	PM	NR	NR	NR	NR	Open fields with tall herbaceous vegetation
Smith's Longspur	CS	PM	PM	PM	PM	PM	PM	Open areas, beaches, tundra, short grass, bare fields
Rusty Blackbird	–	WR	WR	WR	WR	WR	WR	Wet, wooded areas
Bald Eagle h/	CS	NR	NR	NR	NR	NR	NR	Woodland near wetland or open water areas
Scarlet tanager g/	–	PM	PM	NR	NR	NR	NR	Woodlands

a/ Species in this list are protected under the Migratory Bird Treaty Act (MBTA) (FWS, 1989b); FWS Birds of Conservation Concern (BCC) (FWS, 2002a); and Partners in Flight (PIF) (Rich et al., 2004). Exceptions: the king rail is protected under the MBTA only, and the hooded warbler and scarlet tanager are protected under the MBTA and PIF only.
b/ PIF Species Assessment Listings for Bird Conservation Region (BCR) 22 (CC = Continental Concern Species, RC = Regional Concern Species, CS = Continental Stewardship Species, RS = Regional Stewardship Species. – = Not Listed in BCR 22
c/ Migratory classifications are represented as PM = Passing Migrant, PM-ST = Passing Migrant, Important Staging Area, NR = Nesting Resident, WR = Winter Resident
d/ Arlington Compressor Station
e/ Bertrand Compressor Station
f/ Proposed pipeline
g/ Midwestern forest breeding bird species that are known to be adversely impacted by forest fragmentation.
h/ The bald eagle is protected under the MBTA and PIF, as well as the Bald and Golden Eagle Protection Act

Sources: Gough, Sauer, and Iliff, 1998; FWS, 2007c; PIF, 2007

Bald Eagles

The bald eagle was removed from the federal list of threatened and endangered species in June 2007 due to recovery and is no longer protected under the ESA. The species is currently protected under both the MBTA and the Bald and Golden Eagle Protection Act (BGEPA), and is known to nest in the Project area. Federal and state agency consultations have indicated that bald eagles are known to overwinter between November 15 and March 15 in Pike and Ralls Counties, Missouri, and that they may be summer casuals along this section of the proposed route. A known nest is located on Blackburn Island approximately at MP 42.9. In Indiana, bald eagle habitat or nests have been specifically identified at the Wabash River (MP 247.3), Sugar Creek (MP 337.9), Big Raccoon Creek (MP 269.9), Big Walnut Creek (MP 281.5), and the White River (MP 315.8). One nest was also recorded within 0.1 mile of the proposed route at MP 315.5. The lowland areas of the Wabash River in the Project area also serve as important wintering habitat for bald eagles. Ohio hosts casual residents through the summer in Pickaway, Muskingum, Guernsey, and Noble Counties. Nesting populations have been identified in Morgan County, Indiana, including a breeding pair that maintains a nest from February 1 through June 30. In addition, bald eagles could establish new nesting sites along the route; however, these sites would predominantly be located in riparian areas.

In their comments on the Administrative draft EIS, FWS expressed concern about HDD noise impacts on nesting bald eagles located on Blackburn Island. FWS also recommended that the Applicant should identify the location of bald eagle nests in the vicinity of the Project. FWS further stated that the use of available current and reliable nesting surveys is acceptable. However, if surveys are not available, the Applicant should conduct surveys of bald eagles in the Project area. FWS recommended that where nests are located in the vicinity of the pipeline, Draft National Bald Eagle Management Guidelines be followed. According to these Guidelines, Category A activities including construction of roads and other linear utilities should be conducted outside the nesting season which occurs from February 1 through July

31. FWS has recommended that surveys be conducted to determine bald eagle nests in the vicinity of the Project for areas where current and reliable information is not available. We agree with this recommendation. Therefore, **we recommend that:**

- **Prior to the end of the draft EIS comment period, Rockies Express file with the Secretary, documentations of consultations with FWS to determine the need for bald eagle surveys. If surveys are required, Rockies Express should file with the Secretary survey reports along with FWS comments on those surveys and documentation of its consultation with FWS.**

The Project could temporarily affect aerial foraging and predatory activities if construction occurs along waterbodies when roosting eagles are present. Project disturbance could change foraging patterns or remove preferred roosting trees. Individual eagles could find other suitable roosts in similar habitat surrounding the Project area, and eagles would be expected to return to the Project area when construction activity has ceased. Given the linear nature of the clearing associated with the Project and the short time frame in which waterbody construction would occur, we believe these impacts would be a minor, temporary disruption to foraging individuals.

Crossing waterbodies using the HDD method may potentially cause noise impacts to nesting bald eagles prior to the time that the eagles have fledged. Foraging bald eagles are anticipated to return to the area once construction and HDD have been completed; however, an increase in noise near nesting bald eagles may cause nest abandonment and subsequent mortality of eggs and young. FWS has developed the National Bald Eagle Management Guidelines (NBEM Guidelines) that would minimize impacts to bald eagle nests by implementing site-specific buffers and limiting loud, disruptive construction activities (including open-cut and HDD construction methods) to periods outside of the nesting season, which is between February 1 and July 31 in the Project area. Rockies Express has agreed to adhere to the NBEM Guidelines in the presence of known or newly encountered active nests; however, Rockies Express plans to start construction in April 2008. Therefore, construction of the Project as proposed would not be in compliance with the NBEM Guidelines. Therefore, **we recommend that:**

- **Rockies Express implement the National Bald Eagle Management Guidelines, including limitation of construction activities in the vicinity of active bald eagle nests, as recommended by FWS between February 1 through July 31.**

With the implementation of our recommendations, and Rockies Express's stated compliance with the MBTA and the Bald and Golden Eagle Act to avoid disturbance to the bald eagle, we believe that the impact on the bald eagle would be minimal.

Other Migratory Birds of Conservation Concern

Additional migratory BCC include the king rail and the prothonotary warbler that occur in the COA in Missouri (as discussed in section 4.5.4). The American golden-plover and Smith's longspur have nationally important staging areas in Edgar and Douglas Counties, Illinois. Collocation of the pipeline within these counties, and adherence to the Rockies Express Procedures, would minimize impacts to these species.

The potential impacts from forest fragmentation are important for migratory bird species that have limited habitat in the Project area or are otherwise more sensitive to disturbance. In a letter received September 12, 2007, FWS identified numerous migratory BCC that would be impacted by forest fragmentation, such as the cerulean, prothonotary, worm-eating, and Kentucky warblers, wood thrush, Acadian flycatcher, and the Louisiana water thrush (see table 4.5.3-1). Many of these birds inhabit a

breeding habitat within large forested tracts in Indiana and Ohio. Forests in Indiana that are susceptible to fragmentation include those between MPs 386 and 388.3, 389.5 and 392, 397 and 398, and 399.3 and 400. These forests are known breeding sites, or close to known breeding sites, for the cerulean warbler, a species of high conservation concern by FWS and Partners in Flight. These forests also likely harbor breeding species of conservation concern, such as the hooded, worm-eating, and Kentucky warblers. In Ohio, forest fragmentation is a concern because of impacts to breeding cerulean warbler and several other forest BCC including worm-eating and hooded warblers, and potential Bewick's wren occurrence. Forests of concern for these species include forests in Perry County, Ohio, in Harrison and Clayton Townships; Muskingum County, Ohio, in Clay and Brush Creek Townships and where the pipeline crosses the Muskingum River; Belmont County, Ohio, in Somerset, Wayne, and Washington Townships; Monroe County, Ohio, in Switzerland Township. As these areas are breeding sites of species of conservation concern, fragmentation to them would cause a moderate impact through the loss of habitat to the species that use these areas. In section 3.5.10, we have recommended a route variation from MP 405.1 to 405.9 that would avoid fragmentation of two large forested parcels in Butler County, Ohio. Rockies Express is currently consulting with FWS to minimize impacts to the remaining areas of concern; however, these consultations have not been finalized. Therefore, **we recommend that:**

- **Prior to the end of the draft EIS comment period, Rockies Express file with the Secretary, documentation of its finalized consultation with FWS to determine specific areas of forest fragmentation that would impact breeding sites and activities for migratory birds, and to determine site-specific mitigation for each area of concern.**

The two compressor stations proposed for Nebraska and Wyoming would affect either agricultural or herbaceous land, decreasing the amount of habitat available for ground-nesting species while avoiding impacts to forested lands that are considered suitable nesting habitat for many migratory bird species. Therefore, there would be no impacts to wildlife species in forested areas in Nebraska and Wyoming.

Construction of the Project would start during spring 2008, which would overlap with the nesting seasons for many migratory birds. Construction during this time would cause direct and indirect impacts on the species that occur in the area. Direct effects would be from the loss or disturbance of nesting trees, nests, and young; unfledged birds would likely be lost as habitat is removed. Indirect effects would be associated with the noise created by construction, as well as by human presence. Indirect effects would not likely cause significant impacts to non-nesting birds, as they likely would be temporarily displaced and would return once construction in that area is completed. Construction activities occurring adjacent to nesting individuals could result in nest abandonment, which would subsequently result in the chilling or mortality of eggs and young, or premature fledging and ejection from the nest.

We note that EO 13186 requires federal agencies to avoid or minimize negative impacts on migratory bird populations. The EO also requires a federal agency to identify where an unintentional "take" is likely to have a measurable negative effect on migratory bird populations. Effects on nonsensitive bird species (those that do not have significantly reduced populations) would not result in long-term or significant population-level impacts, given the stability of local populations, the abundance of available habitat outside the Project right-of-way, and the linear nature of the Project over a large geographic range. Potential impacts on tree-nesting species would be minor, given the limited amount of forested land crossed by the REX East Project, collocation of the pipeline to the extent practicable, and our recommendation to consult with FWS to determine site-specific mitigation for each forested area of fragmentation concern.

In addition to implementation of its Plan and Procedures, Rockies Express has stated that it is developing an MBTA Conservation Agreement in consultation with FWS to outline the steps that would

be followed to comply with the MBTA and mitigation measures used to minimize impacts to migratory birds. Therefore, **we recommend that:**

- **Prior to the end of the draft EIS comment period, Rockies Express file with the Secretary its MBTA Conservation Agreement, which should be developed in consultation with FWS. Rockies Express should file documentation of related consultation with other agencies.**

With the implementation of Rockies Express' Plan and Procedures, including limiting right-of-way maintenance to once every three years, and never between April 15 and August 1 to limit impact to nesting birds, as well as implementation of our recommendations and the development and implementation of the MBTA Conservation Agreement, we believe that the REX East Project would minimize impact to migratory bird species.

4.5.4 Managed and Sensitive Wildlife Areas

Construction of the Project would cross 11 areas considered to be significant or sensitive wildlife habitats (see table 4.5.4-1). Impacts to the habitats and wildlife species would be based on the habitat type and crossing methods, as previously discussed. Areas with recreational or special land uses are also discussed in section 4.8. Waterbodies judged to contain significant or sensitive habitat or listed species are considered to be fisheries of special concern and are discussed in sections 4.3 and 4.6. These waterbodies would be affected during construction by increased turbidity, sedimentation, and removal of cover (structure and riparian vegetation). USDA-managed lands that would be impacted are discussed in sections 4.3 and 4.4. Intact forests and classified forests in Indiana are discussed in section 4.4.

Table 4.5.4-1
Significant or Sensitive Wildlife Habitats crossed by the Proposed Project

Wildlife Habitat	County	Milepost	Habitat Significance
Missouri			
Grassy Creek Conservation Opportunity Area	Pike	33.4-42.2	Aquatic criteria, biological richness, resource for migratory birds
Upper Mississippi Conservation Opportunity Area	Pike	42.6-42.9	Terrestrial criteria, species of conservation concern, resource for migratory birds
Ohio			
Little Miami Scenic State Park	Warren	451.6-451.7	Undeveloped shorelines, special status species
Caesar Creek State Park	Clinton	459.5-459.6	Nature preserve
Caesar Creek Wildlife Area	Clinton	459.6-459.8	Nature preserve
Deer Creek State Park	Pickaway	499.9-500.9	Nature preserve
Deer Creek Wildlife Area	Pickaway	498.8-499.9, 500.8	Nature preserve
Perry State Forest	Perry	558.5-558.7, 558.9-559.9	Nature preserve
Blue Rock State Forest	Muskingum	581.6-582.7	Nature preserve
Captina Creek Preserve	Belmont	624.6-625.1	Nature preserve
Raven Rocks	Belmont	628.5-630.3	Nature preserve

Missouri

Pipeline construction through Missouri would impact two COAs: Grassy Creek COA and Upper Mississippi COA, both of which are part of the Ted Shanks Alluvial Complex, an Important Bird Area (as designated by the National Audubon Society). COAs are designated based on the natural community; rare or threatened species, their habitat, or opportunity for recovery; and/or stream systems of high integrity, minimal alterations, or species diversity. Important bird areas provide habitat for bird species of conservation concern, those with restricted ranges, or those that congregate in large numbers.

Grassy Creek Conservation Opportunity Area

The Grassy Creek COA, also known as the Ted Shanks Conservation Area, is managed by MDC and private parties. The Grassy Creek COA is managed for aquatic criteria (stream integrity and fish spawning and nursing potential), but has a rich diversity of both aquatic and terrestrial species. The area provides abundant migratory stopover and breeding habitat for water and forest birds, such as the pied-billed grebe, king rail, bald eagle, American and least bitterns, common moorhen, and bobolink. This area is known to have one of the largest king rail populations in the Midwest; however, the specific areas impacted by construction of the proposed pipeline are not considered to be suitable habitat for the king rail (FWS, 2007d; MDC, 2007a). The area is approximately 6,705 acres and contains numerous wildlife habitats, including bottomland hardwoods and wetlands (MDC, 2007b). Rockies Express would cross the Grassy Creek COA between MPs 33.4 and 42.2 using conventional construction methods, and would have a long-term, temporary effect on 96.9 acres of forested land, and temporarily affect 9.2 acres of herbaceous land and 27.3 acres of agricultural land. Permanent impacts would include 38.8 acres of forested land, 3.6 acres of herbaceous land, and 10.9 acres of agricultural land. The pipeline route would parallel an existing right-of-way for approximately 7.8 miles of the 8.8-mile in this area, minimizing impacts from fragmentation.

Upper Mississippi Conservation Opportunity Area

The Upper Mississippi COA, located on Blackburn Island, is managed by the MDC. This COA contains a vast wetland complex and numerous species of conservation concern, including the prothonotary warbler, a migratory bird that likely breeds in the bottomland forests. The area between MPs 42.6 and 42.9 would be crossed by HDD, limiting impacts to the clearing of the HDD pit, which would have a long-term, temporary impact on 5.4 acres of bottomland forests. Operational impacts would result in permanent impacts to 0.5 acre of forested land that would be maintained in an herbaceous state.

Rockies Express would minimize impacts to the COAs during construction and operation through implementation of its Plan and Procedures, including limiting maintenance of the right-of-way to once every three years, and never between April 15 and August 1 to limit impact to nesting birds. In addition, Rockies Express, in consultation with the MDC, has developed best management practices that would limit impacts within the COAs, including utilizing timing restrictions, reducing construction right-of-way, reducing riparian clearing, revegetation practices, and invasive species control. With the implementation of these measures to minimize impacts to these areas, we do not believe that the REX East Project would significantly reduce the amount of quality wildlife habitat available within the Grassy Creek and Upper Mississippi COAs, or the associated Important Bird Area. For further discussion on the Grassy Creek and Upper Mississippi COA see section 4.8.5.

Illinois

No significant or sensitive wildlife habitats are crossed by the Project in Illinois.

Indiana

No significant or sensitive wildlife habitats are crossed by the Project in Indiana.

Ohio

Little Miami Scenic State Park

The Little Miami Scenic State Park, managed by the ODNR, would be crossed between MPs 451.6 and 451.7. The park is linear, running along the Little Miami River for approximately 50 miles across Ohio and providing various recreational activities, such as fishing and bird watching. The area also contains forested lands that are used by great blue heron (ODNR, 2006f). The park would be crossed by the HDD and horizontal bore methods, limiting long-term, temporary impacts to approximately 0.1 acre of forested lands and temporary impacts to 0.1 acre of agricultural lands. In addition, in section 4.8.5 we have recommended that Rockies Express develop a plan for the construction and restoration of the Little Miami Scenic State Park in consultation with the ODNR.

Caesar Creek State Park and Wildlife Area

The Project would cross both Caesar Creek State Park and the adjacent Caesar Creek Wildlife Area (between MPs 459.6 and 459.8), both of which are managed by the ODNR. The park is a 4,700-acre area containing scattered woodlands, meadows, and steep ravines. The various vegetative communities support 65 plant species, as well as animal species such as the red-tailed hawk, white-tailed deer, red fox, and box turtles (ODNR, 2006a). The park would be crossed by HDD, eliminating impacts. About 2,500 acres of the wildlife area is used by deer, turkey, waterfowl, and rabbits. The wildlife area would be crossed by conventional open-cut, impacting 1.4 acres of forested lands and 1.1 acres of agricultural lands, and open water (0.1 acre). The operational right-of-way would include 0.4 acre of agricultural land, 0.5 acre of forested land, and less than 0.1 acre of open water and would have no significant impact on the quality of wildlife habitat in these two areas. In addition, in section 4.8.5 we have recommended that Rockies Express develop a site-specific crossing, mitigation, and restoration plan for construction through the Caesar Creek State Park and Wildlife Areas in consultation with the ODNR.

Deer Creek State Park and Wildlife Area

Deer Creek State Park and its adjacent wildlife area are both managed by ODNR. Deer Creek State Park would be crossed between MPs 499.9 and 500.9 in Pickaway County, Ohio. Approximately 2,337 acres of the park provide fishing and hunting opportunities, and the habitat contains various species of amphibians, reptiles, mammals, and birds (ODNR, 2006c). The park would be crossed by a combination of HDD, open-cut, and horizontal bore methods, resulting in an impact to forested (4.9 acres) and agricultural (10.2 acres) lands. The wildlife portion of the park is approximately 4,085 acres and would be crossed by the Project for 1.1 miles. This area also supports hunting, fishing, and bird-watching activities (ODNR, 2006d). Approximately 16.7 acres would be disturbed by pipeline construction and impact forested (4.4 acres) and agricultural (12.3 acres) lands. Permanent impacts to the park and wildlife area would be 6.1 and 6.7 acres, respectively. In section 3.4.6, we have recommended a route variation be adopted that would collocate the pipeline with an existing right-of-way through the entire crossing length of the Deer Creek State Park and Wildlife Area, which would minimize impacts from habitat fragmentation.

Perry and Blue Rock State Forests

The Perry and Blue Rock State Forests are both managed by the ODNR for reforestation efforts (ODNR, 2007a,c), habitat preservation, and recreational opportunities (such as hunting and wildlife viewing). The Perry State Forest in Perry County would be crossed by conventional methods at two locations: between MPs 558.5 and 558.7, and between MPs 558.9 and 559.9. The total impact to these areas would include 18.1 acres of forested land; however, the pipeline route would be collocated with existing rights-of-way for the entire crossing length, minimizing habitat fragmentation. The Blue Rock State Forest in Muskingum County would be crossed by conventional methods between MPs 581.6 and 582.7, impacting 16.7 acres of forested lands. The forested lands may recover, but the impacts would be long-term. Permanent impacts to the Perry and Blue Rock State Forests would be 7.3 and 6.7 acres, respectively. In a September 12, 2007 letter, FWS expressed concerns about impacts to migratory birds through forest fragmentation in Perry and Muskingum Counties. As the pipeline is collocated through Perry State Forest, the existing corridor would be widened during construction, but no further fragmentation would occur. Should consultations with FWS, as recommended in section 4.5.3, result in the Blue Rock State Forest containing areas of concern, site-specific mitigation would be developed for each area. In addition, we have recommended in section 4.8.5 that Rockies Express develop a site-specific crossing, mitigation, and restoration plan for construction activities through the Perry and Blue Rock State Forests.

We believe, with the implementation of Rockies Express's Plan and Procedures, AIMP, Weed Management Plan (FERC eLibrary, 2007f), and our recommendation for site-specific mitigation and restoration, the REX East Project would have minimal impacts on the quality of wildlife habitat in Perry and Blue Rock State Forests.

Captina Creek Preserve

Captina Creek Preserve is a privately owned woodland preserve in Belmont County. The Preserve would be crossed between MPs 624.6 and 625.1 by open-cut construction. Temporary impacts would occur on 3.8 acres of herbaceous lands. Long-term, temporary impacts would occur on 3.7 acres of forested land. Permanent impacts would be limited to 2.8 acres of forested area that would be within the permanently maintained right-of-way. We believe with the implementation of Rockies Express' Plan and Procedures, AIMP, and Weed Management Plan (FERC eLibrary, 2007f) the REX East Project would have minimal impact on the quality of wildlife habitat in the Captina Creek Preserve. FWS expressed concerns about impacts to migratory birds through forest fragmentation in Belmont County. Should consultations with FWS, as recommended in section 4.5.3, result in the Captina Creek Preserve containing areas of concern, site-specific mitigation would be developed for each area. For further discussion on the Captina Creek Preserve, see section 4.8.5.

Raven Rocks

Raven Rocks, a privately owned preserve, would be crossed by the pipeline between MPs 628.5 and 630.3 in Belmont County. The area currently preserves approximately 1,260 acres of scenic ravines, hills, and woodlands (including high-quality hemlock-hardwood forest). The proposed conventional crossing of this area would require the clearing of 25.5 acres of forested land and 1.9 acres of agricultural land. The permanent right-of-way would require maintenance of 10.9 acres of land, of which 10.1 are forested. Although FWS expressed concerns about impacts to migratory birds through forest fragmentation in Belmont County, the pipeline route through Raven Rocks parallels an existing powerline right-of-way, and construction would not cross special use areas of the preserve; therefore, construction of the REX East Project would have minimal impact on Raven Rocks Preserve. For further discussion on Raven Rocks, see section 4.8.5.

Sensitive and significant wildlife areas may support greater numbers and diversity of species during certain times of the year. Migratory birds pass through the Project area during spring and fall, utilizing many of the sensitive wildlife areas crossed by the Project. As construction of the Project is scheduled to commence in the spring of 2008, it would overlap with spring migration, causing impacts to more birds through loss or disturbance of nesting habitat and nest abandonment, than would be incurred during non-migratory times when fewer birds would be present. Other wildlife species also may be present in greater numbers or have vulnerable young during certain times of the year. However, Rockies Express has not provided construction schedules through these sensitive wildlife areas. Therefore, **we recommend that:**

- **Prior to the end of the draft EIS comment period, Rockies Express consult with appropriate jurisdictional agencies regarding construction schedules and any necessary mitigation measures for the sensitive wildlife areas identified in table 4.5.4-1 that would minimize construction-related impacts to wildlife. Rockies Express should file its construction schedule along with documentation of its consultation with the Secretary.**

We believe, with the implementation of our recommendations, use of HDD and bore crossings where practicable, and implementation of Rockies Express' Plan and Procedures, AIMP, Weed Management Plan Citation (FERC eLibrary, 2007f), and Blasting Plan Citation (FERC eLibrary, 2007f), the REX East Project would minimize impacts on the quality of wildlife habitat in these managed and sensitive wildlife areas in Missouri and Ohio.

4.6 FISHERIES

4.6.1 Fisheries Resources

All waterbodies affected by the Project have been classified as warmwater fisheries. Of the 1,462 waterbody crossings, 51 would involve fisheries of special concern. No essential fish habitat, as defined by the Magnuson-Stevens Fishery Conservation and Management Act, would be affected by the Project.

Some of the more common warmwater fish species that occur within the Project area are bass, bluegill, black bullhead, bigmouth buffalo, common carp, catfish, crappie, freshwater drum, saugeye (walleye/sauger), gizzard shad, river carpsucker, sunfish, and walleye. Commercially harvested fish species are found in Missouri, Illinois, and Indiana watersheds. These species include the bigmouth buffalo, common carp, channel catfish, freshwater drum, gizzard shad, and river carpsucker.

Construction of the Project including hydrostatic testing could result in several impacts on fisheries resources. Potential impacts on fisheries include increased stress due to changes in water quality, and the alteration and removal of instream and streambank cover. Removal of cover within and adjacent to a waterbody during construction would decrease the habitat value of that waterbody. Removal of rocks and branches from the streambed would reduce the structure available for fish to aggregate. Loss of riparian vegetation would reduce shading of the waterbody, increasing the temperature of the water at that location. Removal of riparian vegetation would also increase the likelihood of streambank erosion and the subsequent sedimentation of the waterbody. Overall, these impacts would be minor due to the relatively small area in which a waterbody would be affected.

The extent of impacts on fisheries would depend on the construction method used to cross the waterbody, the existing conditions at each crossing location, the duration of instream activity, the seasonal timing of instream construction, and the mitigation measures used.

Rockies Express proposes to use the open-cut method for most of the waterbodies that would be crossed by the Project. Open-cut construction could result in increased turbidity and sedimentation in the crossing vicinity, potentially decreasing the dissolved oxygen; thereby potentially suffocating the eggs and larvae of fish and invertebrates. Sedimentation could displace the more mobile species and potentially smother benthic invertebrates, decreasing prey availability for fish. These effects could degrade the quality of the habitat, making it unsuitable for spawning and rearing activities. Impacts from open-cut construction would be temporary and limited to the crossing location and areas immediately downstream. Impacts would generally be limited to a few days, and generally no longer than one month after construction ends, depending on conditions at the crossing, the type and amount of suspended sediment, and other factors.

The dam-and-pump crossing method could also be used to cross project waterbodies. This crossing method would maintain water flow and decrease impacts from turbidity and sedimentation. Temporary impacts from sedimentation and turbidity would generally be limited to periods of active construction within a waterbody. Benthic invertebrates located in an area where water is diverted would experience direct adverse impacts. Larger, more mobile species would experience little to no impact through use of the dam-and-pump method.

Rockies Express proposes to cross 30 waterbodies using the HDD method (see appendix G). Successful use of an HDD crossing would avoid direct impacts on the waterbody. In the event of a frac-out, or a release of drilling fluid during an HDD into a waterbody, benthic invertebrates could be smothered and the more mobile species could be displaced. These impacts would be minimized by

Rockies Express' continuing geotechnical evaluations of the waterbodies to determine the suitability of an HDD crossing and implementation of its HDD Contingency Plan (FERC eLibrary, 2007d).

Rockies Express may require blasting activities in or adjacent to 53 perennial waterbodies along the Project right-of-way. Rockies Express has agreed to file a site-specific Blasting Specification Plan with the FERC before beginning any construction where blasting would be required within each waterbody greater than 10 feet wide. If instream blasting is required, aquatic organisms close to blasting activities could be injured or killed. Temporary and minor impacts on aquatic resources from blasting activities would be expected. However, the preparation for blasting may cause enough disturbance to displace many aquatic organisms from the immediate vicinity of blasting activities. Rockies Express would immediately remove all blasted rock from the area to prevent any obstruction or slowing of stream flows.

Rockies Express' Plan and Procedures contains measures that would minimize construction impacts on fish and aquatic/streambank habitat. Temporary erosion controls, such as silt fences and strawbales, would be installed immediately after vegetation removal, and rootstock would be left in the ground where possible to promote revegetation. Rockies Express would also take measures to improve the probability of successful revegetation within disturbed areas, as described in its Plan and Procedures.

Erosion and sediment control measures would prevent sediment from leaving the construction site and entering waterbodies. Impacts on the fisheries from erosion would also be minimized by limiting the amount of time that construction activities would take within a waterbody. Minor waterbodies (less than 10 feet wide) and intermediate waterbodies (10 to 100 feet wide) would be crossed in 24 or 48 hours, respectively. Major waterbody crossings (greater than 100 feet across) would require a site-specific crossing plan. Additionally, streambanks would be stabilized within 24 hours after construction has been completed.

The withdrawal of hydrostatic test water has the potential to affect fisheries from entrainment and loss of prey organisms, as well as through the loss of fish and invertebrates during early life stages. Rockies Express would withdraw water from local waterbodies for hydrostatic testing (see section 4.3.6 for details about potential withdrawal locations). The intakes for these withdrawals would be screened and located off the stream bottom to minimize the intake of large or benthic organisms and sediment.

Impacts on fisheries from hydrostatic test water withdrawals would be limited by Rockies Express adhering to its Procedures. Specifically, Rockies Express would maintain adequate flow rates in order to protect fisheries and generally try to locate hydrostatic test manifolds outside wetlands and riparian areas to the maximum extent practicable. In addition, our recommendations in sections 2.3.1, 4.7.1, and 4.8.5 would further limit impacts on fisheries from hydrostatic test water withdrawals.

After the integrity of the pipeline is established, the untreated hydrostatic test water would be discharged back into the source waterbody, if allowed by permit. Otherwise, hydrostatic test water would be discharged to upland areas. Water used from municipal or industrial sources would also be discharged into well vegetated upland areas. If discharge rates are not carefully controlled, the discharge of large volumes of hydrostatic test water into surface waters could temporarily affect the biological uses of the resources. Hydrostatic discharges could result in a change in water temperature and dissolved oxygen levels, cause an increase in downstream flows and turbidity levels, and contribute to streambank and substrate scour. To minimize impacts, Rockies Express would discharge the water at a rate between 2,000 and 5,000 gpm through an energy-dissipating device to prevent erosion, streambed scour, suspension of sediments, and increased downstream flow.

Fuels and other hazardous materials could spill or leak from storage containers, equipment working in or near streams, or fuel transfers. Any spill that reaches a waterbody would be detrimental to the fisheries. The chemicals released during spills could have acute, direct effects on fish, or could have indirect, chronic effects such as altered behavior, changes in physiological processes, or changes in food sources. Large spills also could cause the direct mortality of species within the waterbody and indirect effects on the local food chain through ingestion of contaminated prey. To minimize the potential for spills, Rockies Express would implement its SPCC Plan Citation (FERC eLibrary, 2007e), which specifies preventive measures such as training the personnel that handle fuel and hazardous materials, as well as regular equipment inspection and maintenance. Rockies Express would designate restricted refueling areas in locations where the typical 100-foot buffer between fueling activities and waterbodies could not be maintained. Any activities required in the restricted areas would be verified and approved by the EI. If a spill were to occur, adherence to measures in Rockies Express' SPCC Plan Citation (FERC eLibrary, 2007e) would reduce the time Rockies Express would need to control and cleanup a spill, thus avoiding or minimizing the effects of a spill on fisheries resources.

Impacts on fisheries through the resuspension of contaminated sediments would be similar to those discussed above. No waterbodies that would be crossed by the Project are listed on the EPA's CERCLIS database of Superfund Information Systems, which list superfund sites, or the EPA's National Priority List, which lists known or threatened releases of hazardous substances, pollutants, or contaminants (EPA, 2007b).

We believe through the use of HDD crossing methods where practicable and implementation of the Rockies Express Procedures and our recommendations, impacts on fisheries resources during construction of the Project would be minimized. No impacts on fisheries resources would be expected as a result of pipeline operations.

4.6.2 Fisheries of Special Concern

Fisheries of special concern would include those areas containing exceptional recreational or commercial fisheries, specially designated streams or rivers, and waterbodies supporting threatened or endangered aquatic species. The REX East Project would cross 51 fisheries of special concern, including one waterbody on the border of Missouri and Illinois, one in Illinois, six in Indiana, and 43 in Ohio. Information on fisheries of special concern that would be crossed by the Project is provided in table 4.6.2-1. Threatened or endangered species that occur in these waterbodies are discussed in section 4.7. Waterbodies that are listed as having ORVs are listed in the Nationwide Rivers Inventory (NRI) and discussed in section 4.3.5.

The season in which construction takes place can influence the degree of impacts associated with instream activities. Construction during periods of sensitive fish activity (i.e., spawning and migration) could have a greater impact on fish than construction during other periods. Several agencies have recommended construction timing restrictions at fish-bearing waterbodies crossed by the proposed pipeline. These timing restrictions are designed to prevent disturbance on fish spawning activities and limit destruction of instream habitat. As stated in Rockies Express' Procedures, instream construction activities at warmwater fisheries must occur from June 1 to November 30, unless otherwise permitted or restricted by the applicable agency. The ILDNR has recommended that construction not be conducted in waterbodies within Illinois between March and June to avoid the spawning periods of local fish. INDNR has recommended that construction not be conducted in waterbodies within Indiana between April 1 and June 30 without the prior written consent of the Indiana Division of Fish and Wildlife. Rockies Express has agreed to adhere to the recommendations of the ILDNR and the INDNR. We believe that adherence to these timing restrictions would reduce impacts on the fisheries resources within these waterbodies.

Table 4.6.2-1

Fisheries of Special Concern Crossed by the Project

Waterbody	Crossing Location (MP) a/	Width (feet)	Waterbody Type	Proposed Crossing Method b/	Reason for Designation c/
Missouri/Illinois					
Mississippi River	43.2	1,500	Perennial	HDD	SSS–FC Spectaclecase
Illinois					
Embarras River	202.9	50	Perennial	HDD	Biologically significant stream
Indiana					
Big Walnut Creek	281.5	56	Perennial	Open-cut	ORV–recreation, SSS–FE clubshell
Sugar Creek	337.9	40	Perennial	Open-cut	ORV–ecology, SSS–FE clubshell, and INE rabbitsfoot
Big Blue River	340.8	160	Perennial	HDD	ORV–ecology
Flatrock River	362.7	60	Perennial	Open-cut	ORV–ecology, SSS–FE clubshell
Whitewater River	393.1	60	Perennial	HDD	ORV–ecology and recreation, SSS–INE variegate darter, and INE cobblestone tiger beetle
Little Cedar Creek	394.7	30	Perennial	Open-cut	SSS–INE variegate darter
Ohio					
Dry Fork Whitewater River	407.2	50	Perennial	Open-cut	EWH
Lick Run	411.8	7	Perennial	Open-cut	EWH
Lick Run	412.0	15	Perennial	Open-cut	EWH
Four Mile Creek	421.6	278	Perennial	HDD	ORV–recreation and fish, EWH
Seven Mile Creek	422.7	45	Perennial	HDD	SSS–OHT tongue-tied minnow
Great Miami River	430.7	293	Perennial	HDD	ORV–recreation, EWH
Tributary to Clear Creek	448.4	15	Intermittent	Open-cut	EWH
Tributary to Newman Run	451.2	3	Intermittent	HDD	EWH
Little Miami River	451.3	60	Perennial	HDD	EWH, SSS–OHE snuffbox, and OHT fawnsfoot
Tributary to Little Miami River	451.9	3	Perennial	Open-cut	EWH
Tributary to Little Miami River	451.9	6	Intermittent	Open-cut	EWH
Tributary to Little Miami River	452.0	4	Ephemeral	Open-cut	EWH
Tributary to Little Miami River	452.0	3	Ephemeral	Open-cut	EWH
Tributary to Little Miami River	452.3	2	Ephemeral	Open-cut	EWH
Tributary to Little Miami River	452.5	13	Intermittent	Open-cut	EWH
Tributary to Little Miami River	452.6	8	Intermittent	Open-cut	EWH
Tributary to Little Miami River	453.3	2	Intermittent	Open-cut	EWH
Tributary to Little Miami River	453.4	1	Intermittent	Open-cut	EWH

Table 4.6.2-1

Fisheries of Special Concern Crossed by the Project

Waterbody	Crossing Location (MP) a/	Width (feet)	Waterbody Type	Proposed Crossing Method b/	Reason for Designation c/
Tributary to Little Miami River	453.4	3	Ephemeral	Open-cut	EWH
Tributary to Little Miami River	454.1	4	Intermittent	Open-cut	EWH
Tributary to Little Miami River	454.2	8	Perennial	Open-cut	EWH
Tributary to Little Miami River	454.4	7	Intermittent	Open-cut	EWH
Tributary to Little Miami River	454.4	3	Ephemeral	Open-cut	EWH
Tributary to Little Miami River	454.5	7	Intermittent	Open-cut	EWH
Tributary to Little Miami River	454.5	10	Perennial	Open-cut	EWH
Tributary to Little Miami River	454.7	7	Perennial	Open-cut	EWH
Tributary to Little Miami River	455.0	2	Ephemeral	Open-cut	EWH
Tributary to Little Miami River	455.0	14	Perennial	Open-cut	EWH
Tributary to Little Miami River	455.2	10	Perennial	Open-cut	EWH
Tributary to Little Miami River	455.2	2	Ephemeral	Open-cut	EWH
Tributary to Shaffers Run	455.4	3	Perennial	Open-cut	EWH
Sandy Run	458.3	10	Intermittent	Open-cut	EWH
Caesar Creek	459.6	134	Perennial	HDD	Foraging and spawning habitat, EWH
Deer Creek	499.6	100	Perennial	HDD	Foraging and spawning habitat
Big Darby Creek	509.2	170	Perennial	HDD	EWH, SSS–FE northern riffleshell/ OHE snuffbox/ OHT fawnsfoot
Scioto River	514.6	200	Perennial	HDD	SSS–FE northern riffleshell/ FE clubshell/ OHE rabbitsfoot/ OHE longsolid
Walnut Creek	515.9	90	Perennial	HDD	EWH
Turkey Run	520.2	20	Perennial	Open-cut	EWH
Tributary to Little Walnut Creek	520.5	15	Perennial	Open-cut	EWH
Little Walnut Creek	526.6	30	Perennial	Open-cut	EWH
Muskingum River	577.2	420	Perennial	HDD	SSS–OHT fawnsfoot
Southfork Captina Creek d/	RR 2010 MP 619.8 + 5.5	NA	NA	Open-cut	EWH
Brushy Creek	626.3	20	Perennial	Open-cut	EWH

a/ Mileposts (MP) based on a desktop analysis of the proposed pipeline route (may not match those found in Wetland and Waterbody reports)
b/ HDD = horizontal directional drilling
c/ ORV=outstandingly remarkable value, EWH=exceptional warmwater habitat, SSS=special status species, FE=federally listed endangered, INE=Indiana-listed endangered, OHE=Ohio-listed endangered, OHT=Ohio-listed threatened, FC=federal candidate
d/ Waterbody is found in the Barnesville reroute and has not been field surveyed. NA = Not Available.

The REX East Project would cross two Ohio waterbodies with significant spawning aggregations—Caesar Creek (MP 459.6) and Deer Creek (MP 499.6). Caesar Creek is one of the larger tributaries to Caesar Creek Lake, providing spawning runs for white bass. Likewise, Deer Creek is the headwater of Deer Creek Lake and an important tributary for white bass spawning runs. White bass migrate upstream to spawn in late April through May. As proposed, impacts on Caesar Creek and Deer Creek would be avoided by Rockies Express implementation of the HDD crossing method. Rockies Express would conduct HDD crossings to avoid impacts on an additional 13 fisheries of special concern.

Big Walnut Creek, Sugar Creek, Big Blue River, Flatrock River, and Whitewater River are designated as having ORVs for outstanding ecological importance. Big Walnut Creek and the Whitewater River also have ORVs for recreation. Big Blue River and Whitewater River would be crossed using the HDD method, which would eliminate direct impacts on the waterbody if the HDD is successful. Rockies Express proposes to cross Big Walnut Creek, Sugar Creek, and Flatrock River using the open-cut method. Mitigation procedures for the open-cut method are described in section 4.3.4. However, as stated in section 4.3.5, we are recommending that Rockies Express cross Big Walnut Creek using the HDD method.

We believe that a properly implemented waterbody crossing using an open-cut method, including adherence to specific construction time of year restrictions and other measures in the Procedures, would adequately minimize impacts to most aquatic resources and their instream impacts. Rockies Express currently proposes to open-cut 36 of the waterbodies considered to be fisheries of special concern. Rockies Express, as described in its Procedures, proposes to cross fisheries designated by a state as "significant" using a dry-ditch technique if the water-to-water width is 30 feet or less at the time of construction (unless otherwise permitted by the appropriate state agency). Dry-ditch techniques typically refer to the flume or dam-and-pump methods, but a bore or HDD may also be used. Because Rockies Express has not provided correspondence with state agencies approving an open-cut technique for any of the sensitive waterbodies, **we recommend that:**

- **Rockies Express use a dry-ditch technique, such as flume, dam-and-pump, bore, or HDD, to cross any waterbodies that are considered fisheries of special concern with a wetted width less than 30 feet, as described in table 4.6.2-1. If a wet-crossing method would be used for waterbodies less than 30 feet, Rockies Express should file with the Secretary the proposed crossing method along with documentation of approval by the appropriate state agency prior to the end of the draft EIS comment period.**

4.7 THREATENED AND ENDANGERED SPECIES

Section 7 of the ESA requires the lead federal agency (the FERC) to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of a federally listed threatened or endangered species or result in the destruction or adverse modification of the designated critical habitat of a federally listed species. The agency is required to consult with FWS to determine whether any federally listed or proposed species or any critical or proposed critical habitat may occur in the Project area, and to determine the potential effects of the proposed actions on these species or critical habitats. If the Project would adversely affect a listed species, the agency must report its findings to FWS in a BA. The BA would be prepared by the FERC and submitted to FWS, with a request for formal consultation as required by section 7 of the ESA.

To comply with section 7 of ESA, Rockies Express, as the FERC's non-federal representative, has been assisting the FERC by conducting informal consultation with FWS. The FERC also contacted and consulted with the FWS about which species under their respective jurisdictions would be potentially affected by the Project. In addition to FWS, Rockies Express consulted with the Natural Heritage Program and other appropriate state and local agencies to develop a list of state-listed special status species in the Project area. Based on these consultations, we developed a list of federally and state-listed species that could possibly occur in the Project vicinity.

Rockies Express initially identified 23 federally listed threatened, endangered, or candidate species as potentially occurring in the Project area. However, since the initial review started, 10 of those species are no longer being evaluated. The bald eagle has become delisted and is now discussed as a state-listed species. There is no habitat for the black-footed ferret, Canada lynx, blowout penstemon, and Ute ladies'-tresses orchid at the Arlington Compressor Station in Carbon County, Wyoming, where these species could potentially occur. Similarly, there is no habitat for the black-footed ferret, interior least tern, piping plover, or pallid sturgeon at the Bertrand Compressor Station in Phelps County, Nebraska, where these species could potentially occur. The pink mucket pearly mussel and the sheepnose are no longer being evaluated, because the Project no longer crosses Morgan County, OH, where these species could potentially occur. Table 4.7-1 lists the 10 federally listed threatened or endangered species and three candidate species that may occur in the Project area.

Rockies Express initially identified 27 state-listed threatened or endangered species as potentially occurring in the Project area. Sixteen of the 27 state-listed species were eliminated from detailed review because they are either transient in the Project area, are unlikely to adversely respond to temporary and permanent impacts associated with the proposed facilities, or were determined after the initial review, in consultation with the agencies, to probably not occur in the Project area. These species include: the big eye chub, little spectaclecase, black sandshell, butterfly mussel, bobcat, scarlet hawthorn, northern madtom, mountain madtom, Sloan's crayfish, Carolina willow, upland sandpiper, rock ramalina, American badger, cobblestone tiger beetle, diffuse rush, and white wood-sorrel. The ODNR identified additional state-listed species in Ohio.

A total of 15 state-listed species were identified as potentially affected by the Project, and are discussed in section 4.7.2. No state-listed threatened or endangered species would be affected by the Project in Carbon County, Wyoming, the location of the proposed Arlington Compressor Station.

Table 4.7-1

Federally Listed Endangered or Threatened Species Potentially Occurring in the Project area

Species	Federal Status	State Status	Counties/State	Preferred Habitat	Preliminary Determination
Mammals					
Indiana bat (*Myotis sodalis*)	E	OH/E	All counties crossed by the pipeline route	Riparian and upland forests along proposed pipeline route	Likely to adversely affect
Birds					
Whooping crane (*Grus Americana*)	E	NE/E	Phelps/NE; and IN and OH a/	Winter migrant that nests in wetlands with protective vegetation	Not likely to adversely affect
Reptiles					
Eastern massasauga (*Sistrurus catenatus catenatus*)	C	MO, IL, IN, OH/E	Clinton, Fayette, Greene, and Warren/OH	Crayfish burrows in wetland areas	NA
Mussels					
Clubshell (*Pleurobema clava*)	E	OH/E	Greene, Pickaway, Fairfield/OH	Prefers medium to small waterbodies with sand or gravel substrate and low turbidity	Not likely to adversely affect
Fanshell (*Cyprogenia stegaria*)	E	OH/E	Muskingum/OH	Prefers medium to large waterbodies with sand or gravel substrate and low turbidity	Not likely to adversely affect
Fat pocketbook (*Potomalus capax*)	E		Pike, Ralls/MO	Found in deep pools of large waterbodies with silt, mud, and sand substrates	Not likely to adversely affect
Northern rifffleshell (*Epioblasma torulosa rangiana*)	E	OH/E	Pickaway/OH	Firm sand or gravel substrate in various-sized waterbodies and low turbidity	Not likely to adversely affect
Rayed bean (*Villosa fabalis*)	C	OH/E	Pickaway, Warren/OH	Headwater species that requires low turbidity	NA
Spectaclecase (*Cumberlandia monodonta*)	C	IL/T	Pike /MO and ILL	Large rivers and low turbidity	NA
Plants					
Decurrent false aster (*Boltonia decurens*)	T		Pike (MO and ILL), Scott/ILL	Prefers moist soil in open areas with regular disturbance	Not likely to adversely affect
Eastern prairie fringed orchid (*Platanthera leucopheea*)	T	IL, OH/E	All counties crossed by the pipeline in ILL.	Requires full sunlight, inhabits tall grass calcareous silt/loam or sub-irrigated sand prairies, including calcareous wetlands	Not likely to adversely affect
Prairie bush clover (*Lespedeza leptostachya*)	T		All counties crossed by the pipeline in ILL.	Found in tall-grass prairies or steep slopes that have not been converted to prairies	Not likely to adversely affect
Running buffalo clover (*Trifolium stoloniferum*)	E		Warren/OH	Habitat generalist; requires moderate disturbance and cannot tolerate full sun or full shade	Pending

a/ This includes an experimental migratory population

T = Threatened

E = Endangered

C = Candidate for listing as Threatened or Endangered

NA = Not applicable – determination does not apply to candidate species

4.7.1 Federally listed Species

Indiana Bat

Background

The federally endangered Indiana bat is listed as occurring in all of the counties crossed by the proposed pipeline route. Since this species was first listed as endangered in 1967, populations have declined by nearly 60 percent (FWS, 2002b). The Indiana bat is a temperate, insectivorous, migratory bat that utilizes mines, caves, and wooded habitats. Indiana bats use a spectrum of forest habitats that are utilized by maternity colonies, as well as male and non-reproductive (juvenile) female Indiana bats. Indiana bats can travel up to 300 miles in search of caves that provide the necessary habitat for hibernation. It hibernates in mines and caves from mid-October to April and later disperses to reproduce and forage in spring and summer in various forested areas associated with streams. The mines and caves provide stable cold temperatures. In late March to early June, females leave the caves and migrate to roosting areas (ODNR, 2007b). Individuals may roost under the bark of trees in riparian and upland forests, generally near perennial waterbodies. During the summer, maternity colonies typically occur behind sloughing bark or in cavities, often in, but not limited to, dead trees. Indiana bats forage on insects in and around the tree canopy of floodplain, riparian, and upland forests. Waterbodies associated with floodplain forests and impounded bodies of water such as ponds, reservoirs, and wetlands are sometimes considered preferred foraging habitats for bats (FWS, 2006e). Population declines are caused primarily by human disturbance during hibernation and the loss of suitable hibernacula (FWS, 2002b).

FWS has identified important habitat for this species near the Wabash River, Sugar Creek, Big Raccoon Creek, Big Walnut Creek, West Fork White River, and Big Darby Creek along the pipeline route. FWS additionally noted that the Indiana bat can be found among the Mississippi River islands and floodplain and within the floodplain areas of the Illinois side of the Mississippi River. FWS maintains that summer foraging and roosting habitat is likely to be present throughout the Project area (FWS, 2006c; FWS, 2006d; FWS, 2006e). FWS specifically identified important habitat for this species surrounding the Wabash River, Sugar Creek, Big Raccoon Creek, Big Walnut Creek, the West Fork White River, and Big Darby Creek. Mississippi River islands and their associated floodplains, as well as the Mississippi River floodplains in Illinois along the pipeline route (FWS, 2006d; 2006b).

There are 11 caves/mines designated as critical habitat for the Indiana bat, including the Blackball Mine in LaSalle County and the Slick Crawl Cave in Pike County, Illinois; the Big Wyandotte Cave in Crawford County and Rays Cave in Greene County, Indiana; Cave 021 in Crawford County, Caves 009 and 017 in Franklin County, Pilot Knob Mine in Iron County, Bat Cave in Shannon County, Frankford Cave in Pike County, and Cave 029 in Washington County, Missouri. In the counties crossed by the REX East Project, there is one record of a Priority IV hibernaculum in Pike County, Missouri (Frankford Cave, located 8.5 miles from the REX East centerline), and one historic winter record of Indiana bats in Pike County, Illinois (Slick Crawl Cave, located 17.4 miles from the proposed centerline), both of which are designated as critical habitat.

Human activities are a major cause of declining bat populations. Clusters of hibernating bats are highly susceptible to disturbance and vandalism. The clearing of forests decreases the amount of summer foraging and roosting habitat available to the Indiana bat. Rockies Express would minimize the amount of tree cutting and removal in areas documented as Indiana bat habitat.

Rockies Express completed an Indiana bat survey to include mist net collection sites and roost site identification along the Project right-of-way. The mist surveys were conducted from May 14 through August 16, 2007. Forty sites were identified as potential habitats for the Indiana bat. An additional

17 sites are still being analyzed by FWS to determine whether mist surveys would be necessary. These 17 sites are located in Edgar County, Illinois; Morgan, Johnson, Shelby, Decatur, and Franklin Counties, Indiana; and Butler, Warren, Pickaway, Fairfield, and Muskingum Counties, Ohio. Access was denied by the landowner for two areas along the route: one habitat unit is located in Pike County and a second habitat unit is located in Belmont County. Surveys have yet to be completed in these areas. Rockies Express would assume the presence of good Indiana bat habitat within these areas until all surveys are complete, as requested by FWS. Forty sites were surveyed and 26 Indiana bats were counted during the survey (table 4.7.1-1).

Table 4.7.1-1
Indiana Bat Survey Results

County, State	Habitat ID	Sex and Maturity of Bats Found	Number of Roosts Found	Roosts Located Within Project Right-of-way
Audrain, MO	MO-1.0	2 adult females	1	Not located within ROW
Pike, MO	MO-3.0	2 adult females; 4 adult males	0	No roosts found
Pike, IL	IL-1.0	1 juvenile female a/	0	No roosts found
Vermillion, IN	IN-0.5	3 adult females	3	1 in ROW; 2 outside of ROW
Parke, IN	IN-11.0	5 adult females; 2 adult males	5	None located within ROW
Putnam, IN	IN-18.0	1 adult female 1 adult male	0	No roosts found
Hendricks, IN	IN-19.5	1 adult female; 1 adult male	3	None located within ROW
Franklin, IN	IN-32.0	1 adult female	0	No roosts found
Warren, OH	OH-10.7	1 adult female	0	No roosts found
Belmont, OH	OH-33.0	1 adult female	1	Not located within ROW
Totals		**17 adult females** **1 juvenile female** **8 adult males**	**13 roosts**	

a/ Due to the small size of the juvenile female, a transmitter could not be attached, but the capture of a juvenile female could be an indicator of a maternity colony in the Project area.

Impact Assessment

Construction of the pipeline through forested areas known to or capable of supporting Indiana bats could result in direct and indirect impacts on the species. Potential direct impacts, or those that have immediate impacts on the species or occupied habitat, from the Project on Indiana bats could occur through changes to occupied foraging habitat, removal of or changes in potential roost trees in occupied habitat, injury or harm to individual bats, and/or disturbances near roosting bats.

Potential indirect impacts, or those that are caused by or would result from the Project but occur later in time, could result from a reduction in potential roost trees, alterations to potential foraging areas or migration corridors, and forest fragmentation in potential roosting areas. Potential direct and indirect impacts are discussed in the following paragraphs. The discussions below focus on potential Project impacts on maternal roosts or reproductive female Indiana bats. Impacts on non-reproductive female or

male Indiana bats would generally be similar in nature, but typically on a lesser scale as those groups do not normally assemble in large colonies and utilize a wider range of habitat since they can occupy trees with very limited suitable roost areas.

As currently proposed by Rockies Express, construction of the REX East Project would start during the summer and fall of 2008. This construction period would conflict with FWS recommendation that potential roost trees be removed between October 1 and March 31 to avoid the summer roosting season for Indiana bats along the Project route. Removal of occupied roost trees between April 1 and September 30, when bats may occur along the proposed route, could cause injury or death. In addition, the noise associated with construction would disturb bats in the immediate vicinity of the construction corridor.

Loss of maternity roost trees due to clearing incurs a loss of potential summer habitat to individuals. Rockies Express proposes that cleared materials such as limbs, brush, and debris be burned on site. The smoke from these activities could affect the Indiana bat. Roost trees are by nature, ephemeral, changing from season to season in condition. As historically used roost trees are lost due to human disturbance or natural events (e.g., wind damage), bats are required to locate alternate roost trees. Given that locating alternate roost trees is a typical process for Indiana bats and that the bats typically utilize more than one roost tree per season, and up to 20 alternate sites, roost tree availability for maternal colonies is not likely to be a limiting factor for occupation within an area, even if a primary roost tree is lost. Nonetheless, bats seeking roost trees may be under additional physical stress, potentially during a critical time when females are pregnant. However, this stress is not expected to rise to the level of failed reproduction or death (FWS, 2007a). Additionally, although roost trees are present in the construction right-of-way, no known maternal colony roost trees are present within the construction right-of-way or would otherwise be directly affected by the Project.

Project-related construction activities could directly expose roosting bats to noise and vibrations caused by tree clearing activities and pipeline construction equipment. The response of Indiana bats exposed to these disturbances while roosting could range from no perceivable response to avoidance of the area. In the biological opinion developed for the Ohio Department of Transportation's (ODOT) Statewide Transportation Program (FWS, 2007a), FWS notes that linear ODOT projects that occur in previously disturbed areas within existing roadways would likely have existing vehicle noise and additional noise from construction would not likely elicit a measurable response from roosting Indiana bats in the surrounding landscape. Although the REX East Project would not be built within road rights-of-way, the route does traverse areas with fairly intensive agricultural use which requires regular seasonal use of heavy equipment in open areas surrounding forested stands. Equipment activity in agricultural areas, although not particularly heavy in mid-summer, can be regular during the late spring, when bats are expected to be returning to roost sites and young are born.

During May to August 2007, Rockies Express conducted surveys and delineated areas where Indiana bat occurs, in accordance with FWS recommendations. The survey included a review of forested stands in field surveys, identifying the surrounding landscape, tree diameter, and snag or live-tree presence. Trees were also observed for exfoliating bark and/or cavities for potential roosts. Secondly, the survey identified areas as low-, medium-, and high-quality habitat based on field reviews which will be verified by FWS personnel. Thirdly, Rockies Express conducted mist net surveys as recommended by FWS. The mist net surveys were conducted from May 14 through August 16, 2007. Forty sites were identified as potential habitats for the Indiana bat.

Thirteen roost locations were identified during the 2007 survey efforts. Nine are located near a road, active agricultural field, or occupied residence, all of which receive at least some level of equipment use or activity during the entire summer or at least during the spring roost lactating stage. See table

4.7.1-1. Of the 40 sites completely surveyed, 26 Indiana bats were counted during the mist net surveys. These survey results are identified in table 4.7.1-1. In these areas, it is unlikely that disturbance associated with construction activity would cause abandonment or even an alteration in bat use of the area. One of the remaining four roosts is within a pasture while the three other roosts were identified towards the interior of a forested stand. Only roost trees IN-291A and IN-291C occur in close enough proximity to potentially be disturbed by construction activities associated with the Project and only roost tree IN-291A would be considered a primary roost tree (≥ 30 bats on more than one occasion according to Callahan, et al. 1997).

With the exception of activities associated with horizontal directional drills of major waterbodies, no lights or noise would occur in any areas after dusk or before dawn. Directional drills require continuous operation to facilitate successful completion of the bore, reaming, and pull back portions of the process. Lights and noise associated with these activities are not expected to affect foraging or roosting by Indiana bats, but directional drills would reduce the amount of forested area that would be impacted at the waterbody crossings as drill entry and exit pads were generally located outside of riparian forests. Construction of the pipeline and use of HDD methods would temporarily increase noise levels. This could temporarily deter the Indiana bat from using the Project area during construction activities, which would be a short-term adverse affect. The bat would be anticipated to return to the area once construction has been completed.

Fragmentation of forest habitat used for foraging or migration may contribute to population declines, as it reduces the area individuals can safely traverse without the heightened threat of predation (FWS, 2006d; FWS, 2002e). Additionally, a reduction in the amount of forest habitat available in the general vicinity of roost trees or foraging areas, if substantial, could alter use patterns in an area or preclude use of an area altogether.

In order to better understand potential landscape level changes in areas where reproductively active female Indiana bats were captured in 2007 and per a recommendation by FWS, Rockies Express evaluated the amount of forested area surrounding each mist net site (based on National Land Cover Database, 2001) where a reproductively active female Indiana bat was captured. Specifically, Rockies Express placed a 2.2-mile-diameter circle around the mist net site and calculated the amount of forested area within the circle. Rockies Express then calculated the amount of forested area within the circle that would be affected by construction and operation of the REX East Project, see table 4.7.1-2.

To understand potential impacts on identified roost trees along the route, Rockies Express evaluated the amount of forested area surrounding each maternity roost tree within approximately 1 mile of the proposed centerline using the same methodology as that described above for mist net sites. Impacts were calculated separately such that impact values presented in table 4.7.1-2 for mist nets and roost trees are overlapping and should not be considered cumulatively.

As shown in table 4.7.1-2, almost 37 acres of forest could be temporarily removed within 1.1 miles of a location where a reproductively active female Indiana bat was captured during the 2007 field effort (TEH-MN-IN-388B). Up to 11 acres (TEH-MN-IN-388B) of forest would be permanently removed (based on a 50-foot-wide permanent right-of-way maintained in uplands and 10-foot-wide right-of-way maintained in wetlands). By county, the percent change in current forest area and forest area following construction in the areas surrounding successful mist net sites ranged from 0.1 to 0.8 percent, averaging less than 0.5 percent per area. During a field visit with FWS to one of the sites where a female Indiana bat was captured in Ohio (TEH-MN-OH-458A), FWS acknowledged that a pipeline corridor through an already fragmented area would not likely alter bat use of the area. Given the fragmented nature of the landscape surrounding the majority of the areas where female Indiana bats were captured, this minimal reduction in forest is not expected to have a measurable effect on bat use.

Table 4.7.1-2
Forested Areas and Expected Impacts Around Mist Net Sites Where Reproductively Active Female Indiana Bats Were Captured and Associated Roost Trees Along the REX East Project

		Mist Net Sites				Roost Trees			
State/County	Habitat ID	Forested Area Within 2.2 mile-diameter of Mist Net (acres) a/	Forested Area Within 2.2-mile diameter Area Affected During Construction (acres) a/, b/	Forested Area Within 2.2-mile diameter Area Affected During Operation (acres) a/, b/	Permanent Reduction in Forested Area Within 2.2-mile Diameter Area of Mist Net Site a/, b/	Forested Area Within 2.2 mile diameter of Roost Tree (acres) a/	Forested Area Within 2.2-mile diameter Area Affected During Construction (acres) a/, b/	Forested Area Within 2.2-mile diameter Area Affected During Operation (acres) a/, b/	Permanent Reduction in Forested Area Within 2.2-mile Diameter Area of Roost Tree a/, b/
MISSOURI									
Audrain	MO-1.0	331.6	3.1	0.7	0.2%	224.9	0.9	0.2	0.1%
Pike	MO-3.0	455.1	8.9	2.6	0.6%		No roost tree identified		
ILLINOIS									
Pike	IL-1.0	899.0	18.4	3.3	0.4%		No roost tree identified		
INDIANA									
Vermillion	IN-0.5	666.4	5.3	1.6	0.2%	984.0	11.1	3.0	0.3%
Putnam	IN-18.0	979.7 c/	27.7 c/	6.4 c/	0.7% c/	1,235.3 c/	27.7 c/	6.4 c/	0.5% c/
Putnam	IN-18.0	855.3	15.2	3.8	0.4%				
Hendricks	IN-19.5	355.3	3.4	0.8	0.2%	377.5	3.4	0.8	0.2%
Franklin	IN-32.0	1,569.1	36.6	11.0	0.7%		No roost tree identified		
OHIO									
Warren		922.5	13.2	3.9	0.4%		No roost tree identified		
Belmont		1,324.0	28.0	7.0	0.5%		Not applicable d/		

a/ Forested area is based on National Land Cover Database (NLCD), 2001.
b/ Amount of forest impacts is based on the proposed construction and operation rights-of-way combined with the NLCD, 2001 data.
c/ This area encompasses two overlapping 2.2-mile-diameter circles around two mist net sites where Indiana bats were captured and multiple roost trees. Construction area of effect for either circle was considered to be half the total presented.
d/ This roost was an occupied residence located more than 1.1 miles from the right-of-way.

For the four areas where roost trees were identified within 1.1 miles of the proposed centerline, the forest area that would be affected by construction ranges from 0.9 acre (TEH-RT-MO-00A) up to approximately 14 acres (TEH-RT-IN-272/273 series), and based on the operational right-of-way, between 0.2 acre (TEH-RT-MO-00A) and 3.2 acres (TEH-RT-IN-272/273 series) of forest could be permanently altered. The percent change in current forest area and forest area following construction in the areas surrounding identified roost trees ranged from 0.1 to 0.3 percent, averaging less than 0.2 percent. Similar to successful mist net sites, the minimal reduction in forest around identified roosts is not expected to have a measurable effect on bat use.

Some areas were not available for mist net survey during the 2007 effort due to a lack of access. Additionally, some areas have not yet been evaluated to determine if potential roost trees are present or if mist net surveys are necessary. Areas where mist net surveys are required but surveys were not completed in 2007 are listed in table 4.7.1-3. Rockies Express evaluated these areas similar to those containing maternity roost trees (see table 4.7.1-2). The 2.2-mile-diameter circle was centered on an assigned point on the pipeline rather than a maternity roost. A maternity roost is not likely to occur at each of these locations, but for purposes of this analysis, it was assumed that a roost tree would be identified within 1 mile of the centerline in areas near other sites where Indiana bats were captured during the 2007 survey. Based on this assumption, it is anticipated that roost trees would be identified near route re-alignments across the Wabash River in Vermillion County, Indiana and around the Barnesville Reservoir in Belmont County, Ohio.

Table 4.7.1-3

Forested Area and Expected Impacts Surrounding Areas Where Mist Net Surveys Could Not be Completed During 2007

State/County	Number of Mist Net Sites to be Completed	Forested Area Within 2.2-mile Diameter of Roost Tree (acres) a/	Forested Area Within 2.2-mile diameter Area Affected During Construction (acres) a/, b/	Forested Area Within 2.2-mile diameter Area Affected During Operation (acres) a/, b/	Permanent Reduction in Forested Area Within 2.2-mile Diameter Area a/, b/
Pike, MO	1	918.0	23.3	4.9	0.5%
Pike, IL	1	764.2	6.4	4.4	0.6%
Vermillion, IN	2	2,119.6	26.5	8.8	0.4%
Fayette and Pickaway, OH	2	743.6	12.3	6.3	0.8%
Belmont, OH	3	2,484.2	53.7	14.5	0.6%

a/ Forested area is based on National Land Cover Database (NLCD), 2001.
b/ Amount of forest impacts is based on the proposed construction and operation rights-of-way combined with the NLCD, 2001 data.

Up to 23.3 acres of forest could be temporarily removed within 1.1 miles of a location where mist net surveys need to be completed. Up to 4.9 acres of forest would be permanently removed (based on a 50-foot-wide permanent right-of-way maintained in uplands and 10-foot-wide right-of-way maintained in wetlands) within 1.1 miles of a location where mist net surveys need to be completed. The percent change in current forest area following construction in the areas surrounding successful mist net sites ranged from 0.4 to 0.8 percent, averaging about 0.6 percent per area. Given the fragmented nature of the landscape surrounding the majority of the areas where mist netting is to occur, even if Indiana bats are captured at each location, this minimal reduction in forest is not expected to have a measurable effect on bat use.

In addition, because of the distance from the REX East Project and the designated critical habitat, (8.5 miles and 17.4 miles from the REX East centerline, respectively), the Project would not affect or alter designated critical habitat.

Compensation, Mitigation, and Monitoring

During a visit with FWS to a site where two female bats were captured in 2007 (TEH-MN-MO-00A/TEH-RT-MO-00A), FWS expressed concern about an extra workspace planned for the area that would facilitate the crossing of Littleby Creek at MP 1. The proposed workspace was located within the forested stand where the bats were captured and the roost tree was located. Although the workspace would not directly impact the roost tree, FWS indicated that a reduced right-of-way through the forest stand would help minimize potential impacts on the character of the area. After reviewing the crossing location, the construction footprint in the area has been revised from 1.1 acres to 0.5 acre, a reduction of 0.6 acre of forest impact.

Rockies Express has proposed to limit specific construction activities (clearing, trenching, welding, backfilling, and grading) within 300 feet of roost trees identified during the 2007 field surveys from one-half hour before dawn to one-half hour before dusk. This would be in effect for the period of tree clearing restriction as identified by FWS (May 15 - September 30) in order to minimize potential impacts on foraging Indiana bats during construction. Rockies Express believes that this timing restriction would allow ample time for bats to return to roost trees at dawn and time for bats to emerge from roosts at dusk. To minimize the potential impacts on the Indiana bat, **we recommend that:**

- **Prior to the end of the draft EIS comment period, Rockies Express, in consultation with FWS and the COE, should develop a project- and site-specific tree clearing plan for the Indiana bat that includes the location of any potential maternity roost trees in or adjacent to the construction corridor. For forested wetlands, Rockies Express should develop the project- and site-specific tree clearing plan for the Indiana bat that includes that location of any potential maternity roost trees in or adjacent to the construction corridor in consultation with FWS and COE.**

- **During construction, trees, limbs, brush, and debris should not be burned in the right-of-way within 500 feet of potential Indiana bat habitat to avoid smoke impacts on Indiana bats.**

All forested habitat along the right-of-way would be considered Indiana bat habitat whether or not Indiana bats are currently using these areas. Therefore, **we recommend that:**

- **Rockies Express not use herbicides or pesticides for maintenance of the permanent right-of-way or adjacent forested areas, regardless of whether Indiana bats are present, for the life of the Project.**

Rockies Express stated that mist net surveys would be conducted before construction occurs in areas where mist net surveys were not completed during 2007 survey efforts. If potential roost trees are identified during these efforts, Rockies Express would evaluate the areas to determine habitat quality and determine if mist net surveys are warranted, and if so conduct these surveys in accordance with the survey methodology approved by FWS. Rockies Express would not construct in these areas until appropriate authorizations and concurrences are obtained from FWS and the FERC.

The potential exists for roost trees to be located within or immediately adjacent to the construction right-of-way. However, because the locations of active roost trees may not be known until

after construction begins and because Indiana bats may switch roost trees and occupy a potential roost tree on the right-of-way even after surveys, construction activities could inadvertently disturb a tree being used by roosting Indiana bats. Indiana bats in a tree disturbed by construction would be expected to vacate the tree and avoid being harmed; however, harassment of the bats would be considered "take" under provision of the ESA. If roost trees are identified adjacent to or along the edge of the right-of-way, Rockies Express would attempt to avoid the tree during construction. Further, if positive results for Indiana bats are determined (i.e. roost tree identification, foraging habitat) Rockies Express would not conduct tree clearing within a 300 foot radius unless otherwise approved by FWS and the FERC until after September 30, 2008. To further minimize the potential impacts on the Indiana bat, **we recommend that:**

- **Prior to construction, Rockies Express not begin construction or cut or remove trees until:**

  a. **Staff have reviewed the results of the Indiana bat surveys, habitat analysis, and any comments from FWS regarding the proposed action;**

  b. **Staff complete any necessary consultation with FWS for the Indiana bat; and**

  c. **Rockies Express has received written notification from the Director of OEP that construction or use of mitigation may begin.**

Adherence to the recommendations presented in section 4.3, Water Resources, relating to site-specific crossing plans that identify specific restoration and mitigation measures, alternative routes and crossing methods, and HDD contingency plans would minimize some of the impacts on the Indiana bat.

Determination of Effect

Based on the above discussion and survey information identifying the presence of Indiana bat habitat and individuals, we believe the Project is *likely to adversely affect* the Indiana bat and its habitat.

However, we believe that based on the location of the designated critical habitat from the proposed REX East Project corridor, the Project would have *no effect* on the hibernacula (the designated critical habitat) during construction or operation of the Project.

Whooping Crane

Background

The whooping crane is a federally endangered species. The populations of whooping cranes utilize the Texas Gulf coast, including Arkansas NWR, Texas, and Bosque del Apache NWR, New Mexico, and migration and staging areas through northwestern Montana, the western half of North Dakota, central South Dakota, Nebraska, Oklahoma, and east-central Texas, and a non-migratory population in Florida. In addition, a nonessential experimental population of whooping cranes was established by FWS. FWS stated that this population migrates between Wisconsin where it summers and Florida where it winters (50 CFR 17). Therefore, the whooping crane may have a migratory or staging area presence in the Project area at the Bertrand Compressor Station site in Phelps County, Nebraska, as well as in portions of Ohio and Indiana. There are five areas of Critical Habitat designated for the whooping crane, located in Idaho, Kansas, Nebraska, Oklahoma, and Iowa, primarily on federal and state

wildlife management lands. These areas provide roosting, nesting, and foraging habitat for whooping cranes as they migrate between their breeding and wintering grounds.

Whooping cranes generally arrive at their Canadian breeding grounds during late April and conduct their southward migration from the breeding grounds from mid September to mid October. They are normally on their wintering grounds in the southern United States by mid November. They use a variety of habitats during migration including croplands for feeding and large palustrine wetlands for nesting. They are also known to roost in riverine habitat, most notably the Platte River, Middle Loup River, and Niobrara River in Nebraska; Cimarron River in Oklahoma; and the Red River in Texas. Cranes also roost on submerged sandbars in wide unobstructed channels that are isolated from human disturbance (NatureServe, 2006). The whooping crane nests in areas around wetlands and shallow ponds that have dense vegetation. Females lay eggs in late April to mid May. During migration whooping cranes eat grains and small plants from agricultural fields, acorns, berries, insects, and crustaceans. Threats to this species include loss of habitat to agriculture, shortened breeding season, collision with obstructions during migration, predation, and mortality caused accidentally or intentionally by humans (FWS, 2005a).

Impact Assessment

The Bertrand Compressor Station site is not located near any designated critical habitat and is comprised of agricultural rangeland, which although would be considered marginal foraging habitat, could be used by individual whooping cranes during migration. However, additional suitable and higher quality foraging habitat is located adjacent to and in the general area surrounding the site. Also, no wetlands or waterbodies would be affected by construction of the compressor station. Therefore, Rockies Express does not anticipate that whooping cranes typically use the proposed compressor station site during migration nor would individuals being encountered during construction. Additionally, as discussed in a meeting with FWS, Nebraska ESO on August 23, 2006, Rockies Express was not required to survey for this species at the Bertrand Compressor Station site (FWS, 2006f). No surveys have been required by FWS at the proposed compressor station site in Nebraska.

Compensation, Mitigation, and Monitoring

FWS commented on the possibility of encountering the whooping crane during construction of the Bertrand Compressor Station. Rockies Express would immediately stop construction and contact FWS, and appropriate protection measures would be developed and implemented (FWS, 2006f).

Due the presence of the nonessential experimental population that migrates between Wisconsin and Florida passing over portions of Indiana and Ohio, and FWS recommendation that construction should stop immediately if an encounter occurs, **we recommend that:**

- **During construction, if any whooping cranes are encountered in the immediate vicinity during construction of the pipeline or other aboveground facilities in Indiana and Ohio, construction should immediately stop in that area, FWS and the FERC should be contacted, and appropriate protection measures would be developed and implemented. Protection measures should be developed in coordination with FWS.**

Determination of Effect

Due to the low likelihood of this species being encountered during construction, Rockies Express' commitment to halt construction and correspond with FWS to develop appropriate protection measures if an individual is identified near the compressor station site during construction, and the FERC

recommendation, we have determined that the REX East Project would *not likely adversely affect* the whooping crane.

Eastern Massasauga

The eastern massasauga is a candidate for federal listing as threatened or endangered. This snake species has the potential to occur along the route in Clinton, Fayette, Greene, and Warren Counties, Ohio, and is state-listed as endangered in Missouri, Illinois, Indiana, and Ohio. It inhabits marshy areas, wet prairies, sloughs, vegetation around marshes and lakes, and floodplains of major rivers (FWS, 1998). Crayfish burrows are the most common hibernacula for this species. The eastern massasauga has been observed within one mile of the Project, in the vicinity of MP 457.9. Hibernacula may exist within 2 miles of a sighting (ODNR, 2003).

Landscape fragmentation is expected to result from construction of the Project. As the right-of-way is cleared, open landscape would be present. Although it would be revegetated within 3 years, during those 3 years it is possible that the snake would either not use the land or could be easily open to predation. However, long-term impacts to the snake population are not expected. Operational impacts are not anticipated during the life of the Project.

Provided hibernacula are avoided if encountered or mitigated for, it is unlikely that this species would be adversely impacted. Currently Rockies Express is consulting with FWS regarding appropriate mitigation measures during construction to avoid impacts to the snake. These measures could include timing restrictions or exclusionary fencing near wetlands determined to be eastern massasauga habitat in the four documented counties. Rockies Express would also provide training for its workers and prohibit killing or harassment of wildlife.

Rockies Express consulted with ODNR to determine whether surveys would be needed. The ODNR has recommended habitat assessments for the eastern massasuga during fall of 2007, with possible follow-up surveys in suitable habitat areas during spring and summer 2008.

The impact on this species cannot be determined until all surveys and consultation with the ODNR have been completed. Therefore, **we recommend that:**

- **Prior to the end of the draft EIS comment period, Rockies Express file with the Secretary, the completed habitat assessment for the eastern massasauga snake along with FWS comments on the habitat survey.**

Mussels and Mussel Beds

Background

Four federally listed endangered mussel species (fat pocketbook, clubshell, northern riffleshell, and fanshell), and two federally listed candidate mussel species (rayed bean and spectaclecase) have the potential to occur along the pipeline route. Three of the four federally endangered species are known to occur in Ohio: the clubshell, northern riffleshell, and fanshell. The fourth, the fat pocketbook is known to occur in Missouri (FWS, 2006c;e). Mussel larvae, or glochidia, attach themselves to the gills or fins of specific fish species. The parasitic relationship minimizes the larval mortality rate by offering protection from increased turbidity and predation, as well as a food supply from the water passing though the gills. Juveniles eventually drop from the host and mature to adults (Bruenderman, 2002). Juveniles could be dispersed to areas with undesirable environmental conditions, thus increasing their mortality. Adult

mussels typically live on the waterbody floor. Mussels have specific habitat preferences and some cannot withstand bottom types other than preferential substrate.

Fat Pocketbook

- The fat pocketbook is known to occur in Pike and Ralls Counties, Missouri. This freshwater mussel is generally found in deep pools of large waterbodies, typically over a mixture of silt, mud, and sand (FWS, 1997d; MDC, 2000a). The fat pocketbook prefers sand, mud, and fine gravel bottoms of large rivers. It buries itself in the substrates in water ranging in depth from a few inches to 8 feet (INHS, 1997a). Within Pike and Ralls counties, Missouri, it is known to occur only in three rivers in these counties, none of which would be crossed by the Project. In addition, according to NHI Data supplied by the MDC, there are no known observations of the mussel within 1 mile of the pipeline route (MDC, 2006).

Clubshell

- The clubshell, known to occur in only 13 waterbodies throughout its range, has been identified in the following counties crossed by the Project route: Greene, Pickaway, and Fairfield Counties, Ohio. It is sensitive to disturbance and inhabits areas with low turbidity in medium to small waterbodies with loose sand or gravel substrate (FWS, 1997a). This species prefers clean, loose sand and gravel in medium to small rivers and streams. This mussel would bury itself in the bottom substrate to depths up to 4 inches. It has been identified in Sugar Creek, the Flatrock River, Scioto River, and Deer Creek State Park (ODNR, 2006b).

Northern Riffleshell

- The northern riffleshell is known to occur in Pickaway County, Ohio, where it inhabits firm sand or gravel substrates in waterbodies of varying size (FWS, 1997e). This species is found in a variety of streams from small to large. It buries itself in bottoms of firmly packed sand or gravel. Reproduction requires stable, undisturbed habitat and sufficient host fish for food (FWS, 1997e). Dams and reservoirs have flooded most of this mussel's habitat, reducing its preferred gravel sand habitat. Natural heritage data identified it in Big Darby Creek and the Scioto River. Rockies Express' August 2007 survey identified two weathered specimens in Walnut Creek (MP 515.9). According to FWS, northern riffleshell is extirpated from Walnut Creek and it is not unusual to find weathered shells in streams where mussel species once lived.

Fanshell

- According to the Ohio natural heritage data, the fanshell is known to occur in Muskingum County, Ohio. This species is found in medium to large rivers with sand or gravel substrate of moderate current (FWS, 1997c). No known populations have been recorded along the Project.

Rockies Express completed surveys for each mussel species along the Project right-of-way and did not identify any federally listed mussels species along the Project right-of-way. In May 2007, FWS approved a Proposed Mussel Survey Protocol in Ohio and a Proposed Mussel Survey Protocol in the Mississippi River prepared by Rockies Express. Rockies Express completed surveys for listed mussel species in all waterbodies greater than 20 feet in width crossed by the proposed Project in Ohio during the summer of 2007. Of the 87 waterbodies in Ohio qualifying for survey, 70 were surveyed during the survey season. The remaining 17 waterbodies were not surveyed due to lack of access by landowners.

No federally listed threatened or endangered mussel species were found during surveys and none of the 17 waterbodies where survey was denied are known or suspected to contain listed mussel species. In addition, through discussions between Rockies Express and FWS, FWS recommended that Rockies Express not conduct mussel surveys in Big Darby Creek because another pipeline project with a nearby proposed crossing location completed a survey within the waterbody before Rockies Express. FWS later indicated that the other survey did not identify listed mussels at Big Darby Creek. In the Mississippi River, Rockies Express had experienced malacologists survey the dredge site for mussels and mussel beds in May 2007. The survey documented 337 live unionids representing 13 species within the survey area; however, no federally threatened or endangered species were encountered.

Impact Assessment

Mussels are sensitive to heavy loads of silt, which affect mortality by changing the substrate type. Disturbance from construction activities would be short term, as crossing of intermediate waterbodies would take approximately two days and minor crossings would take one day. All of the perennial waterbodies would be crossed primarily by HDD methods, except for those listed in appendix G, which would avoid/minimize impacts to mussels. As requested by FWS, Rockies Express would avoid construction activity between April 15 and June 15 in waterbodies containing freshwater mussel beds.

Rockies Express would implement its Procedures to reduce turbidity and siltation in all waterbodies crossed by the Project (FERC eLibrary, 2007b). Procedures for reducing turbidity and siltation include: installation of sediment barriers across the entire construction right-of-way to prevent the flow of sediments into the waterbody, and the use of trench plugs at all waterbody crossings to prevent the diversion of water into upland portions of the pipeline trench. Rockies Express would implement measures in its HDD Contingency and Inadvertent Release Plan (FERC eLibrary, 2007b) at HDD crossings to prevent impacts from unexpected frac-outs during HDD operations.

Following pipeline installation, hydrostatic testing would be performed at the waterbodies listed in table 4.3.6-1. To prevent negative impacts on mussels and mussel beds, the test water would be withdrawn close to crossing locations. Intake screens would be used to limit or prevent the entrainment of mussels, and discharged water would be deposited on upland areas or back into the water body. The water uptake rate would be regulated to prevent adverse impacts on the aquatic resources, specifically focused on not notably altering downstream instream flows. Energy dissipating devices such as hay bale filters or sediment bags would be used to reduce the velocity of the water returning to the streams or rivers and limiting the suspended material and associated turbidity of the water. Rockies Express would comply with all permit requirements. Minor impacts from negligible decreases in instream flows and increases in turbidity are anticipated from withdrawal and release of hydrostatic test water. At test locations with known species sightings, Rockies Express would consult with FWS and implement mitigation measures to avoid adverse impacts on the mussel species. Specific impacts to each mussel species are as follows:

Fat Pocketbook

- Due to the heavy sediment loads regularly transferred throughout the Mississippi River, the dredging of 4,500 cubic yards on the eastern side of Blackburn Island would have a minor impact on the turbidity in the Mississippi River.

Clubshell

- According to information provided by the ODNR, clubshell populations have been identified in Big Darby Creek, Sugar Creek, Scioto River, and within Deer Creek State Park, all of

which would be crossed by the Project (ODNR, 2006e). Big Darby Creek, the Scioto River, and Deer Creek would be crossed using the HDD method; therefore, no instream impacts associated with pipeline construction are anticipated.

However, hydrostatic testing of the pipeline would require the intake and discharge of water from Big Darby Creek, Sugar Creek, Scioto River, and Deer Creek. The intake of water from these creeks and the river could directly impact the mussels by entrainment of the glochidia, juvenile mussels, or the ichthyoplankton of the host fish or indirectly impact the mussels due to water quality degradation or reduction in water quantity in the creek as discussed above.

Northern Riffleshell

- NHI data identified historical populations of the northern riffleshell in the Scioto River and Big Darby Creek (FWS, 2006e). The Scioto River and Big Darby Creek would be crossed using the HDD method and no instream impacts associated with pipeline construction are anticipated.

  However, hydrostatic testing of the pipeline would require the intake and discharge of water from Big Darby Creek and Scioto River. The intake of water from the creek and river could directly impact the mussels by entrainment of the glochidia, juvenile mussels, or the ichthyoplankton of the host fish or indirectly impact the mussels due to water quality degradation or reduction in water quantity in the creek as discussed above.

Fanshell

- Of the perennial waterbodies crossed in Muskingum County, four may be large enough to support fanshell populations. However, no known records of fanshell have been reported within one mile of the pipeline route (ODNR, 2006e).

- Hydrostatic testing of the pipeline would require the intake and discharge of water from the perennial waterbodies. The intake of water from the waterbodies could directly impact the mussels by entrainment of the glochidia, juvenile mussels, or the ichthyoplankton of the host fish, or indirectly impact the mussels due to water quality degradation or reduction in water quantity in the creek as discussed above.

Compensation, Mitigation, and Monitoring

Adherence to the recommendations presented in section 4.3, relating to site-specific crossing plans that identify specific restoration and measures, alternative routes and crossing methods, and HDD contingency plans would reduce some of the impacts on the mussels and mussel beds. In addition to the recommendations presented in section 4.3, to further reduce potential impacts on the fat pocketbook, clubshell, northern riffleshell, and/or fanshell mussels, **we recommend that:**

- **Prior to the end of the draft EIS comment period, Rockies Express file with the Secretary site-specific HDD crossing contingency plans for the waterbodies that are surrounded by floodplains that provide important Indiana bat habitat, and that would be crossed using the HDD method, such as the Mississippi River, Wabash River, Big Raccoon Creek, Big Walnut Creek, and West Fork White River. Should HDD fail at one of these crossings, the new crossing procedure and mitigation measures should be completed in consultation with FWS, and the results should be filed with the Secretary for review and written approval by the Director of OEP.**

- **Prior to the end of the draft EIS comment period, Rockies Express file with the Secretary the feasibility of using a dry crossing method for the Sugar Creek at MP 484.3.**

- **Prior to the end of the draft EIS comment period, Rockies Express file with the Secretary site-specific HDD crossing contingency plans for the Scioto River and Deer Creek. If HDD fails at these crossings, the new crossing procedures and mitigation measures should be developed in consultation with FWS. Results of such consultations should be filed with the Secretary for review and written approval by the Director of OEP.**

- **During construction, Rockies Express not withdraw hydrostatic test water from waterbodies where endangered mussels or glochidia/host fish or juveniles could be directly impacted.**

In addition, 16 sites were not surveyed because of unsafe field conditions (Moxahala Creek in Perry County, Ohio), or time constraints (Paint Creek in Fayette County, Ohio). Final determination of the impact on mussel species cannot be made until all surveys and consultations with FWS have been completed. Therefore, **we recommend that:**

- **Prior to end of the draft EIS comment period, Rockies Express file with the Secretary completed mussel survey reports for the federally listed mussel species, documentation of its consultation with FWS and ODNR, and conservation measures necessary to minimize impact to mussel beds.**

If listed mussels are identified in waterbodies yet to be surveyed, Rockies Express would coordinate with FWS to relocate the mussels out of instream construction work areas to areas of suitable habitat upstream of the crossing location.

Determination of Effect

Due to the low likelihood of any mussel species being present at any of the river crossings, the construction measures and hydrostatic testing methods that would be employed, where survey were conducted, and the FERC recommendations, we have determined that the REX East Project *would not be likely to adversely affect* the fat pocketbook, the clubshell, the northern riffleshell, or the fanshell mussels.

Candidate Species - Rayed Bean and Spectaclecase Mussels

The rayed bean and spectaclecase are candidate mussel species for federal listing. The rayed bean mussel is a headwater species in Warren and Pickaway Counties, Ohio, and FWS has identified the spectaclecase as present in the Mississippi River.

Rockies Express would cross the Mississippi River by HDD, which would avoid any direct impacts to mussels or mussel beds. However, limited dredging in the river would be required to install the pipeline by HDD. Dredging operations would temporarily increase sediment loads in the water and could affect mussels and mussel beds.

Rockies Express employed qualified malacologists to survey for the presence or absence of mussels in the waterbodies. Surveys for each species occurred from June 1 through August 31, 2007. No federally listed candidate species of concern were found during the surveys conducted in Missouri or

Ohio. The Missouri mussel survey report was filed with the Secretary on August 14, 2007. The Ohio mussel survey report was filed with the Secretary on August 27, 2007.

Given the results of the Rockies Express mussel and mussel bed surveys and the conservation measures generated through consultation with FWS, we believe it is unlikely that there would be an adverse impact on these federal candidate species.

Running Buffalo Clover

Background

The federally endangered running buffalo clover was assumed to be extinct until 1985, when two populations of the species were discovered in West Virginia. Running buffalo clover require open habitat in rich soils between open forest and prairies. They cannot tolerate full sun or full shade. The species requires moderate, periodic disturbance, but it is intolerant to severe disturbances. Successful colonies of running buffalo clover can be found in woodlots, mowed areas such as parks and cemeteries, along streams and trails, and on the fringe of forests and bottomland meadows (FWS, 1992; 2003).

Once presumed extirpated within the area affected by the Project, running buffalo clover is now found in isolated populations in Indiana, Missouri, and Ohio (DOI, 2005). This species is known to exist in areas with appropriate habitat within Warren County, Ohio. The pipeline route crossing of Warren County is predominantly comprised of agricultural land, which is unlikely to sustain populations due to severe disturbance and exposure and according to information provided by the ODNR, there are no known occurrences of this species within one mile of the pipeline route (ODNR, 2006e).

In order to determine species presence in the Project area and in accordance with FWS recommendations, Rockies Express conducted a survey of areas of suitable habitat along the pipeline route. On April 26, 2007, the Reynoldsburg ESO provided approval of Rockies Express' proposed survey protocol for the running buffalo clover (FWS, 2006e). Following the plan approved by FWS, Rockies Express completed species-specific surveys during the flowering season in 2007, between mid-April and June, for the entire route in Warren County with the exception of 11 parcels for which property access was denied by landowners. No running buffalo clover individuals or populations were found. As stated in the Running Buffalo Clover Survey Report, submitted to FWS in August, 2007, it is unlikely that the species occurs in areas of denied access due to suspected poor habitat quality.

Impact Assessment

Although records of known occurrences for this species are scarce, areas may be present along the pipeline route with the appropriate habitat for running buffalo clover. Based on the results of running buffalo clover presence/absence surveys conducted during the flowering season in 2007 and the suspected lack of occurrence along the areas of the route yet to be surveyed, Rockies Express believes this species would not be impacted by the Project. Additionally, few areas of suitable habitat were identified during the survey efforts and of the areas remaining for survey, few are expected to provide suitable habitat.

Compensation, Mitigation, and Monitoring

If individuals or populations of this species are identified during surveys of remaining parcels in Warren County, Ohio, Rockies Express stated that it would coordinate with FWS to evaluate potential measures to avoid or minimize impacts on the species, such as fencing off plants, transplanting individuals, or modifying the construction right-of-way configuration.

No individuals were identified during these surveys. However, 11 of the 75 sites were not surveyed because access was denied by the landowners. No surveys were conducted between MP 439.4 and 452.7. Therefore, **we recommend that:**

- **Prior to end of the draft EIS comment period, Rockies Express file with the Secretary the completed survey report for the running buffalo clover along with FWS comments on the survey.**

Rockies Express proposes to fence off plants to avoid impacts if running buffalo clover populations are encountered during construction. Therefore, **we recommended that:**

- **Prior to the start of construction, Rockies Express file with the Secretary a diagram of the fencing plan indicating perimeter and distance to running buffalo clover plants from the fence for review and written approval by the Director of OEP.**

Determination of Effect

Due to the incomplete survey information, we cannot make a final determination for the running buffalo clover. However, we believe it is possible that the impact on this species will be minimal.

Decurrent False Aster

Background

The federally threatened decurrent false aster is a big river floodplain species that primarily inhabits wetlands and borders of marshes, lakes, oxbows, and sloughs. This species reportedly favors sites characterized by moist soil and regular disturbance, which maintains open areas with high light levels. Seeds are dispersed primarily by floodwater (MDC, 2000a). Excessive siltation is a major cause of this species' decline. Highly intensive agricultural activities in the region have increased topsoil runoff, which smothers seeds and seedlings (FWS, 1997b). Habitat destruction from floodplain conversion, channeling of rivers, flood-control measures, and wetland drainage has also contributed to reductions of decurrent false aster populations.

The decurrent false aster has been recorded in Pike County, Missouri, and in Pike and Scott Counties, Illinois. NHI database records indicate that the decurrent false aster has not been observed within 1 mile of the pipeline route (MDC, 2006a; ILDNR, 2006). However, suitable habitat for this species is present in the counties listed above at the Salt, Mississippi, Sny, and Illinois River crossings and may also occur in non-riparian areas.

Impact Assessment

Construction activities in aquatic and associated floodplain areas could increase sediment suspension and downstream displacement, and may contribute to reductions in this species' reproductive success. Temporary impacts on floodplain and river-shore wetlands would occur during staging and trenching activities. Rockies Express anticipates no permanent impacts on areas with suitable habitat for the decurrent false aster, as no aboveground facilities would be built on floodplains or river-shore wetlands in the counties with populations of this species.

Temporary impacts on suitable habitat, including trampling and soil mixing, may occur during staging and construction activities associated with the Project. Individual plants, in part or in whole, may be unintentionally removed during construction activities if located in the right-of-way and not appropriately identified prior to construction activities.

Determination of Effect

In a meeting held on April 2, 2007, the Marion ESO stated that since the Illinois River, the primary area of concern for this species, would be crossed by the REX East Project using the HDD method and associated floodplain impacts would be avoided, no impacts on the decurrent false aster are expected (FWS, 2007e). Similarly, in an email dated June 26, 2007 from the Columbia ESO, it was established that the REX East Project was unlikely to affect the decurrent false aster in Missouri and as such, surveys were unnecessary (FWS, 2007b). In addition, if populations are encountered during construction, Rockies Express would attempt to fence off the plants to avoid impacts. No surveys were required by FWS for the decurrent false aster along the proposed pipeline route.

Compensation, Mitigation, and Monitoring

If decurrent false aster populations are encountered during construction, Rockies Express would attempt to fence off the plants to avoid impacts. Therefore, **we recommend that:**

- **Prior to the start of construction, Rockies Express conduct pre-construction surveys for decurrent false aster, and file with the Secretary the survey report and if necessary, a diagram of the fencing plan indicating perimeter and distance to plant from the fence for review and written approval by the director of OEP. If avoidance is not possible, Rockies Express should consult with FWS to develop mitigation measures for this species.**

Determination of Effect

Due to avoidance of the floodplain associated with the Illinois River and a lack of others of potential occurrence of the species along the Project corridor, consultations with FWS, adherence to Rockies Express procedures, and our recommendations, the REX East Project is *not likely to adversely affect* the decurrent false aster.

Eastern Prairie Fringed Orchid

Background

The eastern prairie fringed orchid is a federally threatened orchid that occurs in a wide variety of habitats, from mesic prairie to wetlands such as sedge meadows, marsh edges, and bogs. This species requires full sun and herbaceous habitat with little or no woody encroachment, and may benefit from disturbances that expose the soil to this orchid's seeds, and reduce competition from established plants (FWS, 1999). The orchid colonizes areas that have natural patch areas of disturbance or continual disturbance events. The eastern prairie fringed orchid requires soil fungi and fire regimes for seeds to establish. Mature seed capsules are wind dispersed between late August and late September (FWS, 2005b). Individual plants regenerate from tubers, which are dormant during the winter (FWS, 1989a).

This orchid is listed as potentially occurring statewide in Illinois, in all counties containing dry/mesic/wet prairies. Historically, Illinois contained the largest population of this species, which extended across 33 counties in the northern two-thirds of the state. Known populations currently concentrate in the six counties surrounding the Chicago area (FWS, 1989a). Historically threatened by the conversion of habitat to cropland, the eastern prairie fringed orchid is currently most threatened by the drainage and development of wetlands as well as competition from non-native species (FWS, 2005b). According to the Illinois Department of Natural Resources (ILDNR) NHI database, there are no known

occurrences of this species within 1 mile of the pipeline route and there are no prairie regions in the general area of the Project (ILDNR, 2006).

Impact Assessment

In a meeting held on April 2, 2007, the Marion ESO confirmed that it had no concerns about the REX East Project affecting listed plant species in Illinois (FWS, 2007e). In addition, if populations are encountered during construction, Rockies Express would attempt to fence off the plants to avoid impacts.

Compensation, Mitigation, and Monitoring

No surveys were required for the eastern prairie fringed orchid along the proposed pipeline route by FWS. If populations are encountered during construction, Rockies Express would attempt to fence off the plants to avoid impacts. Therefore, **we recommend that:**

- **Prior to the start of construction, Rockies Express file with the Secretary a diagram of the fencing plan indicating perimeter and distance to prairie fringed orchid plants from the fence for review and written approval by the Director of OEP.**

Determination of Effect

Because this species is not expected to be present along the Project corridor, and based on consultations with FWS, adherence to Rockies Express procedures, and our recommendations, the REX East Project is *not likely to adversely affect* the eastern prairie fringed orchid.

Prairie Bush Clover

Background

The federally threatened prairie bush clover is often found on the north-facing slopes of dry upland prairies. It is endemic to the tall-grass prairie region of the upper Mississippi River Valley in Iowa, Illinois, Minnesota, and Wisconsin. Throughout this region, the prairie bush clover is known to occur in 23 counties, where it is restricted to fewer than 40 sites (FWS, 2006g).

This clover is listed as potentially occurring statewide in Illinois in areas containing dry/mesic/wet prairies. However, roughly 90 percent of all known plants occur within a "core area" located in Iowa and Minnesota (CPC, 2000). In all 13 known Illinois populations, a total of approximately 250 plants remain. The rarity of this endemic species can be attributed primarily to the loss of tall-grass prairie habitat, specifically mesic to dry prairie (FWS, 2006h). Surviving populations occur primarily in areas that were not converted to cropland because the terrain is too steep or rocky (FWS, 2006g).

Impact Assessment

According to the ILDNR NHI database, there are no known occurrences of this species within 1 mile of the pipeline route and there are no prairie regions in the general area of the Project (ILDNR, 2006). In a meeting held on April 2, 2007, the Marion ESO confirmed that it had no concerns about the REX East Project affecting listed plant species in Illinois (FWS, 2007e). No surveys were required along the pipeline route by FWS.

Compensation, Mitigation, and Monitoring

If the clover is found, Rockies Express would consult with FWS to determine the appropriate conservation measures. This could include exclusionary fencing or plant relocation. If encountered, Rockies Express would also control nonnative and noxious weeds during revegetation and would initiate no-mow periods in late summer.

If populations are encountered during construction, Rockies Express would attempt to fence off the plants to avoid impacts. Therefore, **we recommend that:**

- **Prior to the start of construction, Rockies Express file with the Secretary a diagram of the fencing plan indicating perimeter and distance to prairie bush clover plants from the fence for review and written approval by the Director of OEP.**

Determination of Effect

Because this species is not expected to be present along the Project corridor, and based on consultations with FWS, adherence to Rockies Express procedures, and our recommendations, the REX East Project is *not likely to adversely affect* the prairie bush clover.

Conclusion

Based on informal consultation with FWS, 10 federally listed threatened or endangered species were identified as potentially occurring in the general vicinity of (within the counties crossed by) the Project. Based on a review of the Project data and the results of the surveys completed to date, the FERC has made preliminary determinations on the affect to each of the 10 federally listed threatened or endangered species. The preliminary determination by species is listed in table 4.7.1-4.

Table 4.7.1-4
Summary of Assessment of Project Impacts on Listed Species

Species	Listed Status	Preliminary Determination
Indiana bat	Endangered	**Likely to adversely affect**
Whooping crane	Endangered	Not likely to adversely affect
Clubshell	Endangered	Not likely to adversely affect
Northern riffleshell	Endangered	Not likely to adversely affect
Fanshell	Endangered	Not likely to adversely affect
Fat pocketbook	Endangered	Not likely to adversely affect
Running buffalo clover	Endangered	Pending
Decurrent false aster	Threatened	Not likely to adversely affect
Eastern prairie fringed orchid	Threatened	Not likely to adversely affect
Prairie bush clover	Threatened	Not likely to adversely affect

Of the 10 federally listed threatened and endangered species, the Project may adversely affect one species, the Indiana bat, and a final determination is still pending on one species, the running buffalo clover. We have determined that the Project is not likely to adversely affect the remaining eight species. **After Rockies Express has completed all threatened and endangered species surveys and the FERC has reviewed the survey data, we would initiate formal consultation with FWS on the Indiana bat and potentially for the running buffalo clover.**

4.7.2 State-listed Species

Rockies Express consulted with MDC, ILDNR, INDNR, and ODNR regarding state-listed species. State-listed species in the REX East Project area that are also federally listed are discussed in section 4.7.1 (see table 4.7.2-1).

Bald Eagle

The bald eagle is listed as threatened in Illinois and as endangered in Indiana, and Ohio, and Missouri. Wyoming lists the bald eagle as a species of concern. Historically, populations of bald eagles were drastically reduced principally due to low productivity as a result of the bioaccumulation of pesticides. Since the banning of organochlorine pesticides, bald eagle numbers have been increasing. Effective August 8, 2007, the bald eagle will no longer be federally listed as threatened in the lower 48 states. However, protection is provided to bald eagle under the BGEPA and the MBTA and will continue to remain in place after the species is delisted. The BGEPA and MBTA, known collectively as the "Eagle Act" prohibit "disturbance" of eagles, their nests, or eggs. For a detailed discussion of the bald eagle and the Project's potential impacts see section 4.5.3.

Greater Prairie Chicken

The greater prairie chicken is listed as an endangered species in Missouri. Historic populations of greater prairie chicken have been identified in Audrain County between MPs 1.1 and 3.4, 3.7 and 6.9, and 16.5 and 17.7. Rockies Express has consulted with the MDC and no preconstruction surveys are required. It has been noted that if active leaks are discovered along the proposed route, Rockies Express would consult with MDC on appropriate conservation measures. Rockies Express notified 34 landowners within potential greater prairie chicken habitat areas to determine if the bird had been identified in the Project area. No notified landowners responded with any sightings. The MDC concurs with Rockies Express that no further actions are necessary to address the occurrence of the greater prairie chicken within the proposed route.

Provided conservation measures are put in place and leaks, which are seasonal and recurrent, are not disturbed, it is unlikely that the Project would adversely affect the greater prairie chicken.

Loggerhead Shrike

The loggerhead shrike is endangered in Indiana and threatened in Ohio. Grassy areas with scattered shrubs and trees are preferred habitat for this songbird species. The loggerhead shrike uses edge habitat with nests along roads, hedgerows, or fence rows in agricultural areas. Indiana historic records indicate occurrence of the species near MP 257.5. Ohio historic records place this species along the proposed route near MP 478.3 and on the 1-mile distance between MPs 511.4 and 512.4. The ODNR has not requested surveys.

Rockies Express consulted with the ODNR on measures to reduce impacts to the loggerhead shrike. The ODNR has requested that Rockies Express avoid construction in grassland or prairie habitat during its nesting season April 1 through August 2. Rockies Express is continuing its consultation with ODNR.

Table 4.7.2-1
State-Listed Endangered or Threatened Species Potentially Occurring in the Project area

Species	State Status	Counties/State	Preferred Habitat	Determination
Birds				
Bald eagle (*Haliaeetus leucocephalus*)	IL/T MO, IN, OH/E	All counties crossed by the pipeline route	Potential roosting, nesting, and feeding habitat occur along Project route.	Not likely to adversely affect
Greater prairie chicken (*Tympanuchus cupido*)	MO/E	Audrain/MO	Prefers prairie grasslands	Not likely to adversely affect
Loggerhead shrike (*Lainus ludovicianus*)	IN, OH/E	Clinton, Fayette, Greene, Pickaway, and Warren Counties/OH	Uses edge habitats along roads or fence rows in agricultural areas.	Eliminated from consideration in Indiana per consultations with the INDNR. Consultation with Ohio ongoing.
Northern harrier (*Circus cyaneus*)	OH/E	Greene, Muskingum/OH	Wetlands, meadows, prairies, and cultivated fields	Not likely to adversely affect
Trumpeter swan (*Cygnus buccinator*)	OH/E	Muskingum/OH	Wetlands near rivers, ponds, lakes, and forested areas with open canopies	Not likely to adversely affect
Amphibians				
Eastern hellbender	OH/E	Muskingum/OH	Prefers large, swift-flowing rivers with large, flat rocks for nesting	PENDING
Fish				
Tonguetied minnow (*Exoglossum laurae*)	OH/T	Butler/OH	Rocky pools and runs in Seven Mile Creek	Not likely to adversely affect
Variegate darter (*Etheostoma variatum*)	IN/E	Franklin/IN	Stream riffles with swift currents and large cobble to small boulder substrates	Not likely to adversely affect
Mussels				
Fawnsfoot (*Truncilla donaciformis*)	OH/T	Warren, Pickaway, Muskingum/OH	Large rivers with sand or gravel substrate and low turbidity	Not likely to adversely affect
Long-solid (*Fusconaia subrotunda*)	OH/E	Pickaway/OH	Clear waterbodies with swift current over gravel substrate and low turbidity	Not likely to adversely affect
Rabbitsfoot (*Quadrula cylindrical*)	IN, OH/E	Johnson and Shelby/IN, Pickaway/OH	Clear waterbodies with swift current over gravel substrate and low turbidity	Not likely to adversely affect
Sharp-ridged pocketbook (*Lampsilis ovata*)	OH/E	Pickaway/OH	Large rivers with coarse sand or gravel	Not likely to adversely affect
Snuffbox (*Epioblasma triquetra*)	IN, OH/E	Johnson and Shelby/IN, Warren, Pickaway/OH	Prefers medium- to large-sized waterbodies with clear water over gravel substrate and low turbidity	Not likely to adversely affect
Washboard (*Megalonaias nervosa*)	OH/E	Pickaway/OH	Large rivers with slow current and mud or mudgravel substrate	Not likely to adversely affect
Plants				
Drummond's aster (*Aster drummundii*)	OH/T	Pickaway/OH	Prefers semi-open areas, but intolerant of overshading; thrives in maintained areas	Not likely to adversely affect

T = Threatened
E = Endangered

Northern Harrier

The northern harrier is an endangered bird in Ohio. It nests and hunts in wetlands, meadows, prairies, and cultivated fields (NatureServe 2007). There are no historic records of the northern harrier within the project area. The ODNR has not requested surveys.

Rockies Express consulted with the ODNR on measures to reduce impacts to the northern harrier. The ODNR has requested that Rockies Express avoid construction in grassland or prairie habitat during its nesting period between May 15 and August 1. Rockies Express is continuing its consultation with ODNR.

Trumpeter Swan

The trumpeter swan is an endangered bird in Ohio. Preferred habitat for the swan includes wetlands near rivers, lakes, ponds, forested areas with open canopies, and prairies (FWS 2007g). Trumpeter swans build their nests close to the water, including: on the shore, small islands, or near beaver or muskrat lodges (FWS 2007g). This species of swan either does not migrate or migrates very short distances. The ODNR has not requested surveys

Rockies Express consulted with the ODNR on measures to reduce impacts to the trumpeter swan. The ODNR has requested that Rockies Express avoid construction in wetland habitat during the swan's nesting period of May 1 through August 1. Rockies Express is continuing its consultation with ODNR.

Eastern Hellbender

This species of aquatic salamander is threatened in Ohio. Historically it was found from New York State to Missouri and Arkansas. It takes up oxygen through tiny vessels in the skin and is therefore highly susceptible to pollution and turbidity within the water (Johnson and Briggler, 2004).

Construction at waterbody crossings can increase turbidity in water. Increased turbidity can reduce the eastern hellbender's ability to uptake oxygen. The ODNR has requested that Rockies Express conduct surveys for the hellbender in Muskingum County during fall 2007. If any of the species are found, Rockies Express would consult with the ODNR. All of the waterbodies in Muskingum County would be crossed by open-cut methods. Depending on potential survey results and agency consultation, we **recommend that:**

- **Prior to the end of the draft EIS comment period, Rockies Express file with the Secretary the feasibility of using a dry crossing method for waterbody crossings in Muskingum County that contain eastern hellbenders.**

Tonguetied Minnow

The tonguetied minnow is listed as threatened in Ohio. The preferred habitat for this species includes rocky pools and runs in creeks and small to medium-sized rivers that have vegetation or other forms of cover. The tonguetied minnow has been observed in Seven Mile Creek near MP 422.7, and may also occur in the tributary to Seven Mile Creek. Loss of habitat due to siltation is the major cause of decline for this species (OJS, 1973).

Rockies consulted with the ODNR on measures to reduce impacts to the tonguetied minnow. Rockies Express would avoid in-stream work between March 15 and June 30. The ODNR has not requested surveys. Rockies Express has not yet agreed to this construction window.

With the implementation of conservation measures established by ODNR, it is unlikely that this species would be adversely impacted by the Project.

Variegate Darter

The variegate darter is listed as endangered in Indiana. This fish is restricted to the Ohio River drainage in eastern Indiana and may exist in waterbodies crossed between MPs 382.1 and 398.4. Waterbodies in the Project area where this species potentially occurs include Big Cedar Creek, the Whitewater River, Little Cedar Creek, and their tributaries.

Rockies Express conducted surveys for this species. No individuals were identified during the surveys. Because no individuals were encountered during the surveys, it is unlikely that this species would be adversely impacted by the Project.

Mussels

Rabbitsfoot Mussel

The rabbitsfoot mussel is endangered in Indiana and Ohio. It may occur in the vicinity of MP 337.9 in Indiana and MP 514.5 in Ohio. The rabbitsfoot was once widespread throughout the Ohio River and Mississippi River Valleys. Construction impacts such as increased sedimentation loads downstream, could affect either the host fish used by larval stages of the mussel or the substrate used by adults. The INDNR indicated in a meeting on January 10, 2007, that Youngs Creek and Sugar Creek were waterbodies of concern regarding the rabbitsfoot mussel. Ohio FWS has stated that Rockies Express should avoid construction activities in waterbodies containing freshwater mussel beds between April 15 and June 15.

The Scioto River in Ohio is proposed to be crossed by HDD; therefore, impacts to aquatic resources are not expected for that waterbody. However, Rockies Express is proposing an open-cut method to cross Sugar Creek and Youngs Creek, which would increase suspended sediment in the water column. We are recommending that Rockies Express conduct dry crossing of Sugar Creek in section 4.7.1. Depending on potential survey results and based on agency consultation, **we recommend that:**

- **Prior to the end of the draft EIS comment period, Rockies Express file with the Secretary the feasibility of using a dry crossing method for Youngs Creek (MP 336.1) to minimize impact to rabbitsfoot mussel.**

Rockies Express conducted surveys of waterbodies in Indiana and Ohio, where suitable habitat for rabbitsfoot mussel were identified. No individuals were observed during the surveys. As discussed earlier, 17 sites in Ohio are yet to be surveyed because access was denied.

With the implementation of our recommendations, we believe it is unlikely that there would be an adverse impact to the rabbitsfoot mussel.

Snuffbox, Long-solid, Fawnsfoot, Washboard, and Sharp-ridged Mussels

The snuffbox is a mussel that may occur in Ohio, where it is endangered, and inhabits intermediate to major rivers with clear, gravel riffles (INHS, 1997d). This species has been observed in the Little Miami River (south of MP 451.3) and Big Darby Creek (MP 509.2).

The long-solid mussel is an endangered species in Ohio that occurs in major rivers with gravel substrates. Historic records indicate that the species has been identified in the Project area in the Scioto River (MP 514.6).

The fawnsfoot is widespread and common throughout most of its range, preferring a sand or gravel substrate; however, it is listed as threatened in Ohio (INHS, 1997b). It has been observed in the Little Miami River (south of MP 451.3), Big Darby Creek (MP 509.2), and the Muskingum River (north of MP 577.3).

The washboard is an endangered species in Ohio that occurs in major rivers with slow current and mud or mudgravel substrate (KDWP 2007). It is believed to be rare in the lower Big Darby River.

The sharp-ridged pocketbook is an endangered species in Ohio that occurs in large rivers in course sand or gravel (INHS 1997c). It is believed to be rare in the Big Darby River.

Construction at waterbody crossings can increase turbidity in water. Increased turbidity of the water can have detrimental effects on mussels. Clouding the water as sediment falls to the surface of the streambed can cover the mussel and make the environment inhospitable. Suspended sediment can also interfere with the lifecycle of the mussel. Big Darby Creek, the Little Miami River, Muskingum River, and Scioto River are known to contain these state-listed species in Ohio, and all of these waterbodies would be crossed by HDD. Therefore, direct impacts to mussels and mussel beds would be avoided in these rivers.

Rockies Express conducted surveys from June 1 through August 31, 2007, in waterbodies where suitable habitat for the mussels was identified. No individuals were observed during the surveys. Therefore, we believe that the Project would not affect the mussel species of concern.

Drummond's Aster

This species is threatened in Ohio. Historical records indicates occurrence of Drummond's aster in the vicinity of MPs 510.1 and 510.2. At this location, a plant community has succeeded in the maintained right-of-way corridor through a wooded area. According to the ODNR webpage (ODNR, 1984), its recovery potential is presumed good.

Construction impacts related to destruction due to collision could result in mortality. Measures to ensure avoidance include a reroute if necessary—placing fencing around plants during construction—and consulting with agencies to determine conservation measures. Imported plants on equipment used for construction or maintenance during operation could also negatively impact the species. Noxious weeds are a threat to this species, and mechanical destruction due to mowing is also a concern.

Rockies Express performed construction surveys during the week of October 8, 2007. However, surveys have not been filed to date. Rockies Express would fence off the plants found on the edge of the Project right-of-way during construction. If any species are found to lie within the Project right-of-way, Rockies Express would temporarily relocate the species and return it to its approximate locations after construction. **We recommended that:**

- **Prior to the start of construction, Rockies Express file with the Secretary for review and approval by the Director of OEP, pre-construction survey reports, ODNR comments on the survey, and a diagram of the fencing plan for the Drummond's Aster, including the fence perimeter and distance to plants from the fence.**

With the implementation of our recommendations, the impact to Drummond's aster would be minimized.

4.8 LAND USE AND VISUAL RESOURCES

The REX East Project would consist of approximately 639.1 miles of natural gas pipeline that would cross the states of Missouri, Illinois, Indiana, and Ohio. Aboveground facilities would include 13 meter stations, seven compressor stations (including one in Nebraska and one in Wyoming), 36 MLVs, 11 contractor/pipe yards, and 39.4 miles of access roads.

This section examines the current uses of the land required for construction and operation of the Project, and evaluates the Project-related impacts. In general, lands required for construction would be temporarily impacted, while lands required for operation of the Project would be permanently impacted. The Project would cross several land use types, the majority of which are agricultural land. This section quantifies the acreage of each land use type that would be affected and discusses measures that would be taken to avoid, minimize, or mitigate land use impacts. Impacts to recreational and special interest areas, as well as impacts on visual resources, are also presented. Detailed discussion of vegetation types along the Project route is presented in section 4.4, while discussion of waterbodies along the Project route is presented in section 4.3.

For the discussion that follows, impacts are classified as temporary, short-term, long-term or permanent based on the time it takes them to recover to pre-construction conditions. Temporary impacts are defined as those impacts that would occur during the construction phase only. Short-term impacts would extend beyond the timing of construction but no longer than a period of three years. Long-term impacts require more than three years to recover but less than the expected lifetime of the project. Permanent impacts are defined as lasting as long as the life of the project or longer.

4.8.1 General Land Use

Land use and land cover types crossed by the pipeline and facilities include six primary types: agricultural, forested, industrial/commercial, residential, open land, and open water. Table 4.8.1-1 presents the land use impacts that would occur from construction and operation of the Project. The primary land use that would be crossed by the pipeline route is agricultural (462.1 miles or about 72 percent of the total pipeline route). Other land uses that would be crossed by the pipeline route include forest land (144.7 miles or 23 percent of the total pipeline route), open land (25 miles or less than 4 percent of the total pipeline route), open water (1.6 miles or less than 1 percent of the total pipeline route), industrial/commercial land (4.0 miles or less than 1 percent of the total pipeline route), and residential land (1.3 miles or less than 1 percent of the total pipeline route). Of the estimated 14,348.9 acres affected by construction, 67 percent would be for the pipeline right-of-way and 29 percent for additional temporary workspaces. Aboveground facilities would impact approximately 149.3 acres (table 4.8.1-1). Approximately 59 percent of the pipeline (377.1 miles) would be collocated with existing pipeline rights-of-way. Following construction, lands used for temporary workspace and pipe and contractor yards, would be allowed to revert to their pre-construction use type.

Approximately 99 percent of the Project route would cross privately owned land. One percent of the land crossed by the pipeline route is managed or owned by state agencies, federal agencies, or local municipalities. Negotiated easements would be used to confer rights-of-way by a landowner to the pipeline company, on either a permanent or temporary (usually for construction) basis. The easement would give the company the right to construct, operate, and maintain the pipeline within a permanent or temporary right-of-way. In return, the company would compensate the landowner for its use of the land. Typically, an easement agreement between the company and landowner would specify compensation for loss of use during construction, loss of resources, damage to the property, and would specify allowable uses for the permanent right-of-way after construction is completed.

Table 4.8.1-1

REX East Project
Summary of Land Uses Affected by Construction and Operation of the Project by State (In acres)

	Agriculture a/		Forested b/		Industrial/ Commercial c/		Residential d/		Open Land e/		Open Water f/		Total	
	Const.	Oper.	Const.	Oper.	Const.	Oper.	Const.	Oper.	Const.	Oper.	Const.	Oper.	Const.	Oper.
MISSOURI														
Pipeline g/	516.8	206.8	112.9	45.1	1.4	0.5	0.0	0.0	16.5	6.6	4.6	1.8	**652.1**	**260.8**
Interconnects and Laterals h/	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	**0.0**
Additional Temporary Workspace	211.9	0.0	54.0	0.0	0.2	0.0	0.0	0.0	9.6	0.0	0.1	0.0	**275.8**	**0.0**
Aboveground Facilities i/	12.8	12.8	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**12.9**	**12.9**
Contractor/Pipe yards	22.6	0.0	11.6	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	**35.0**	**0.0**
Subtotal	764.1	219.6	178.6	45.2	1.6	0.5	0.0	0.0	26.8	6.6	4.7	1.8	**975.8**	**273.7**
ILLINOIS														
Pipeline g/	2,623.3	1,049.5	217.7	87.3	11.8	4.7	2.6	0.9	95.4	38.2	5.8	2.2	**2,956.6**	**1,182.8**
Interconnects and Laterals h/	5.8	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**5.8**	**3.1**
Additional Temporary Workspace	1,090.7	0.0	86.1	0.0	1.0	0.0	0.0	0.0	3.9	0.0	0.0	0.0	**1,181.7**	**0.0**
Aboveground Facilities i/	21.2	21.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**21.2**	**21.2**
Contractor/Pipe yards	65.3	0.0	0.2	0.0	2.3	0.0	0.0	0.0	2.2	0.0	0.0	0.0	**70.0**	**0.0**
Subtotal	3,806.3	1,073.8	304.0	87.3	15.1	4.7	2.6	0.9	101.5	38.2	5.8	2.2	**4,235.3**	**1,207.1**
INDIANA														
Pipeline g/	1,787.9	715.1	603.6	241.4	11.1	4.5	0.0	0.0	115.7	46.2	3.8	1.6	**2,522.1**	**1,008.8**
Interconnects and Laterals h/	4.7	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**4.7**	**2.3**
Additional Temporary Workspace	814.3	0.0	188.6	0.0	0.6	0.0	0.1	0.0	1.7	0.0	0.2	0.0	**1,006.4**	**0.0**
Aboveground Facilities i/	26.9	26.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**26.9**	**26.9**
Contractor/Pipe yards	62.2	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**63.0**	**0.0**
Subtotal	2,696.0	744.3	793.0	241.4	11.7	4.5	0.1	0.0	117.4	46.2	4.0	1.6	**3,622.1**	**1,038.0**
OHIO														
Pipeline g/	2,072.1	828.7	1,267.7	503.0	36.4	14.7	18.1	7.2	157.3	63.0	10.6	4.2	**3,552.1**	**1,420.8**
Interconnects and Laterals h/	18.1	11.8	3.3	1.9	0.3	0.2	0.0	0.0	0.2	0.1	0.0	0.0	**21.9**	**14.0**
Additional Temporary Workspace	1,180.7	0.0	532.0	0.0	1.8	0.0	2.3	0.0	0.9	0.0	0.5	0.0	**1,718.2**	**0.0**
Aboveground Facilities i/	48.3	48.3	2.5	2.5	1.4	1.4	1.0	1.0	2.4	2.4	0.0	0.0	**55.6**	**55.6**
Contractor/Pipe yards	74.6	0.0	30.8	0.0	28.2	0.0	0.0	0.0	1.0	0.0	0.5	0.0	**135.1**	**0.0**
Subtotal	3,393.8	888.8	1,826.3	507.4	68.1	16.3	21.4	8.2	161.8	65.5	11.6	4.2	**5,483.0**	**1,490.4**
NEBRASKA														
Aboveground Facilities	17.7	17.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**17.7**	**17.7**
Subtotal	17.7	17.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**17.7**	**17.7**

Table 4.8.1-1

REX East Project
Summary of Land Uses Affected by Construction and Operation of the Project by State (In acres)

	Agriculture a/		Forested b/		Industrial/ Commercial c/		Residential d/		Open Land e/		Open Water f/		Total	
	Const.	Oper.	Const.	Oper.	Const.	Oper.	Const.	Oper.	Const.	Oper.	Const.	Oper.	Const.	Oper.
WYOMING														
Aboveground Facilities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0	15.0	0.0	0.0	15.0	15.0
Subtotal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0	15.0	0.0	0.0	15.0	15.0
Project Total	**10,677.9**	**2,944.2**	**3,101.9**	**881.3**	**96.5**	**26.0**	**24.1**	**9.1**	**422.5**	**171.5**	**26.1**	**9.8**	**14,348.9**	**4,041.9**

NOTE: The numbers in this table have been rounded for presentation purposes. As a result, the totals may not reflect the exact sum of the addends in all cases. Totals may be off by 0.1 place.

a/ Agricultural land consists of pasture/hay, row crops, and small grains.
b/ Forest land consists mainly of deciduous and mixed forest and forested wetlands. Does not include shelterbelts or similar features associated with agricultural areas.
c/ Industrial/Commercial land consists of commercial/industrial developments such as utility stations, rock quarries, strip mines, gravel pits, and major railroad and road crossings (i.e., greater than 100 feet).
d/ Residential land consists of existing and planned residential developments.
e/ Open land consists of grasslands, non-farmed areas, and non-forested wetlands.
f/ Open water consists of waterbody crossings 100 feet or greater in width.
g/ Assumes a 125-foot-wide construction right-of-way and a 50-foot-wide permanent right-of-way in all locations.
h/ Assumes a 70- to 120-foot-wide construction right-of-way and a 45- to 75-foot-wide permanent right-of-way.
i/ Includes construction and operational impact associated with the compressor stations and meter stations and access roads to compressor stations and meter stations. Because mainline valves would be constructed within the construction right-of-way, land use impacts are accounted for with the pipeline. However, because mainline valves would result in a land use conversion, aboveground totals include permanent impacts associated with mainline valves. Temporary pig launchers and receivers would be used within the area to be disturbed by the compressor stations. Therefore, land use impacts resulting from these facilities are already accounted for in the construction impacts for aboveground facilities.

If an easement cannot be negotiated between the company and a private landowner, and the project has been certificated by the FERC, Rockies Express may use the right of eminent domain granted to it under Section 7(h) of the NGA and the procedures set forth under the Federal Rules of Civic Procedure (Rule 71A) to obtain necessary right-of-way and extra workspace areas. In that event, Rockies Express would still be required to compensate the landowner for the right-of-way and damages that are incurred during construction. Under eminent domain, a court according to applicable state or federal law would determine the level of compensation, once Rockies Express had been issued a Certificate. In either case, Rockies Express would compensate landowners for use of their land.

Pipeline Facilities

Rockies Express has proposed a typical construction right-of-way width of 125 feet. The construction right-of-way would be reduced to 100 feet in wetlands. We have recommended that Rockies Express reduce the construction right-of-way to 75 feet in wetlands (see section 2.3.2). In addition to the pipeline construction right-of-way, Rockies Express proposes to use additional temporary workspaces at various points along the pipeline route. The pipe would generally be installed using the trenching method in upland areas. Other installation techniques, such as conventional boring or HDD methods, would be used to cross some water bodies, roads, and other areas in order to reduce construction-related impacts to these features. Section 2.0 provides a description of the different construction methods that would be utilized for the Project. The REX East Plan and Procedures (FERC eLibrary, 2007a,b) describe measures that Rockies Express would implement in order to minimize the impacts of construction on the land required for the Project.

Following construction, a 50-foot-wide permanent right-of-way would be maintained by Rockies Express. The permanent right-of-way may overlap other permanent rights-of-way where the pipeline is collocated with existing rights-of-way. Areas within the permanent right-of-way would generally be allowed to revert to pre-construction usage with certain restrictions. For example, no permanent structures or trees would be allowed within the permanent right-of-way. The permanent right-of-way would be maintained as described in the REX East Plan and Procedures. Use of the land for cultivation and pasture would be able to resume after construction. Uncultivated areas would be maintained with an herbaceous cover. In general, periodic maintenance procedures would prevent forested areas from recovering within the permanent right-of-way during operation of the Project.

Aboveground Facilities

Aboveground facilities would require 149.3 acres for operation. Of the 42 mainline block valves, six would be located entirely within the footprint of a compressor station and would not require additional land for operation. The remaining 36 would be located on the right-of-way and would each require <0.1 acre additional to the right-of-way for operation, requiring 2.2 acres in total. The valves would be located within the pipeline right-of-way or within the footprint of a compressor facility, and therefore would not require the use of additional land. Of the 149.3 acres for aboveground facilities, 85 percent (126.9 acres) would be agricultural land. Construction and operation of aboveground facilities would result in a conversion of those lands to commercial/industrial use for the life of the Project. Lands impacted by operation of large aboveground facilities such as compressor stations would typically be purchased from the current landowners.

Access Roads

Rockies Express intends to use 56 existing public and private roads and construct 62 new roads to gain access to the pipeline right-of-way during construction and operation of the Project. The project would require a total of 121 access roads. The location of new access roads and existing roads to be

modified are provided in the FERC e-library (FERC eLibrary, 2007i). Routine road maintenance such as grading may be required to maintain the private and public dirt and gravel roads in a passable condition. Existing roads may be widened in some areas. Based on an average width of 40 feet, a total of 85.3 acres of land would be impacted for maintenance of existing roads.

Sixty-two new access roads would be constructed by Rockies Express. The length of newly constructed roads would range from 528 to 5,808 feet, with an average length of 1,899.1 feet. Based on an average width of 40 feet, new permanent roads would occupy approximately 108.1 acres. In section 2, a recommendation has been included asking Rockies Express to provide information on which access roads would remain in operation and which would be removed after construction (see section 2.2.1).

Specific impacts of construction and operation of the Project on the different land use types affected are discussed below.

4.8.2 Agricultural Land

We define agricultural land as areas that are actively cultivated or rotated croplands, pastures, or hayfields. Construction of the Project would affect approximately 10,677.9 acres of agricultural land. Agricultural land in the Project area is generally used to grow corn, soybean, and alfalfa, and hay or as pasture. During operation of the Project, the permanent pipeline right-of-way and aboveground facilities would affect 2,944.2 acres of agricultural land.

General Agricultural Impacts

Pipeline Facilities

Rockies Express has proposed a typical construction right-of-way width of 125 feet for agricultural lands, with pipe installed using the standard trenching method (see section 2.0). Rockies Express has requested additional 35-foot-wide temporary workspaces across agricultural fields for the segregation of topsoil. Although we believe some temporary workspaces may be needed in these areas, for road, waterbody, and utility crossings, we believe in most cases this additional 35 feet for topsoil storage is not justified and have included a recommendation to this effect in section 2.3.

Construction activities such as clearing, grading, trenching, stripping, and backfilling would potentially impact agricultural lands by causing soil erosion, by damaging surface or subsurface irrigation or drainage systems, and by degrading fertile soils through mixing and compaction. These impacts could result in direct loss of crops or pasture, as well as reduced crop productivity in future planting seasons.

Rockies Express has proposed a number of mitigation measures to address impacts on agricultural lands, as described in the REX East Plan and the AIMP (appendix I). Rockies Express proposes to restore all disturbed agricultural areas associated with the construction of the REX East Project in accordance with the AIMP, its Plan, and all other applicable federal, state, and local permit requirements. Typical mitigation measures include topsoil segregation, decompaction, and repair/replacement of irrigation and drainage structures. The measures Rockies Express proposes are discussed further below.

Fields would generally be taken out of production for one growing season while the pipeline is constructed. Rockies Express would compensate landowners for crop losses resulting from removal of standing crops, disruption of planned seeding activities, disruption of general farming activities, or other losses resulting from construction of the pipeline facilities as negotiated with the landowners.

Crops, other than trees, would be allowed to be cultivated within both the construction and permanent rights-of-way once construction has been completed. As such, unless the land was used for orchards, maple syrup production, or other tree-related farming,[1] no permanent change in land use or a permanent reduction in the amount of land available for cultivation would be associated with the pipeline facilities. Rockies Express has proposed to compensate landowners for reduced crop yields due to construction of the pipeline facilities and use of the easement. Restoration of lands would be considered successful if crop yields are similar to adjacent undisturbed portions of the same lands. Rockies Express would conduct post-construction monitoring of revegetation in affected agricultural areas for three years after revegetation. We do not believe three years is sufficient. Some issues such as damage to or poor repair of drain tiles may take longer to show up due to weather conditions following construction. Therefore, **we recommend that:**

- **Rockies Express develop and implement a five-year post-construction monitoring program to evaluate crop productivity in areas impacted by the construction of the Project. Rockies Express should file with the Secretary quarterly reports for a period of five years following construction documenting any crop-related problems, including soil heating near compressor stations, identified by the company or landowner and describing any corrective action taken to remedy those problems. If any landowner agrees that revegetation and crop productivity are successful prior to the five year requirement, Rockies Express should provide documentation in its quarterly reports, indicating which landowners have agreed that monitoring is no longer necessary. This documentation should include the landowners' name, tract number, and the date of agreement.**

If crop yields in restored areas are not similar to or greater than those on adjacent undisturbed croplands, Rockies Express would develop and implement remedial measures in conjunction with the Agricultural Inspector, appropriate agency personnel, and landowners (see appendix I).

Aboveground Facilities

Aboveground facilities would require 149.3 acres of agricultural land during construction and operation of the Project. The land required for aboveground facilities would be converted to commercial/industrial use for the life of the Project.

Agricultural Impact Mitigation Plan and Agreements

Rockies Express has developed AIMPs for Illinois, Indiana, and Ohio (see appendix I for a representative example of the AIMP) for dealing with construction and restoration issues unique to agricultural areas. Rockies Express has provided no AIMP for Missouri. In an October 18, 2007 filing, the MODNR expressed concern that even though the Project would cross agricultural lands in the state, Rockies Express had not provided an AIMP for Missouri. MODNR stated that without appropriate mitigation, soil conservation practices, some of which are paid for by the State Soil and Water Conservation Program, would potentially be permanently impacted. Specifically, MODNR mentioned potential impacts to terraces and sediment retention ponds. If pipeline construction crosses these sediment control systems, the Project may damage or destroy the structural and hydrologic integrity of these sediment control systems unless they are promptly and properly repaired. We agree that agricultural

[1] Removal of trees from the permanent right-of-way would be considered as a permanent impact. Normally trees are not allowed to be replanted on the permanent right-of-way. Rockies Express would compensate the landowner for the loss of trees for orchards, maple syrup operations, and other tree-related agricultural uses.

lands in Missouri should also have mitigation similar to that provided in the other states affected by this Project. Therefore, **we recommend that:**

- **Rockies Express file with the Secretary, and provide to the MODNR, a state-specific AIMP for Missouri prior to the end of the draft EIS comment period.**

We have identified only three differences among the three plans. The Illinois AIMP requires the pipeline be buried with at least five feet of cover in croplands and pasture land or other agricultural land with prime soils, as recommended by the IDOA. The Indiana and Ohio AIMPs both require only four feet of cover. The Ohio AIMP requires repairs be made in accordance with ODNR standards, this AIMP also allows for the decompaction of subsoil and the replacement of topsoil as weather permits due to generally unsuitable weather in late autumn and winter. The issue of pipeline cover is discussed in greater detail further on in this section of the draft EIS. We have identified no issue with requiring repairs to meet state standards.

The purpose of the AIMP is to help protect and conserve agricultural lands that may be affected by construction and/or operation of the proposed pipeline. Rockies Express would follow the policies outlined in the AIMP for all activities occurring on privately owned farmland. A copy of the AIMP would be provided to the landowner, the local Soil and Water Conservation Districts, and the local Farm Bureau offices. Landowners may negotiate any action in advance of construction as long as the changes are acceptable to Rockies Express, the FERC, and any permitting agency. Prior to the start of construction, Rockies Express would provide the landowners with a telephone number and address to contact them regarding any work performed on the property or any construction-related concerns. The AIMP extends to any future construction and maintenance that may occur. All actions outlined in the AIMP would be implemented to the extent that they do not conflict with any federal, state, or local regulations.

The following construction standards and policies would be implemented on all privately owned farmlands impacted by the proposed pipeline. The depth of the pipeline would be a minimum of five feet in Illinois and 4 feet in Indiana and Ohio where it crosses croplands, pasture lands, and agricultural lands classified by USDA as prime soils, unless the pipeline would be within 100 feet of an existing pipeline[2]. In cropland and pastures with non-prime soils the depth of the pipeline would be three feet. In areas where the proposed pipeline parallels an existing pipeline, the same amount of top cover would be used as the existing pipeline, but not less than three feet of cover. When the proposed pipeline crosses surface drains, diversions, grassed waterways, open ditches and streams, at least 60 inches (5 feet) of cover over the pipeline would be maintained. In areas where rock in its natural formation and/or a continuous stratum of gravel exceeds 200 feet in length, the minimum depth would be 24 inches (2 feet).

Prior to trenching, Rockies Express proposes to remove up to 16 inches of topsoil. Upon removal, topsoil would be kept separate from removed subsoil to prevent intermixing of the two layers. During backfilling of the trench, the subsoil material would be replaced first and all rocks greater than three inches would be removed from the surface of all exposed subsoil. In sections of the right-of-way crossed by construction vehicles and equipment where the topsoil was stripped, the subsoil would be decompacted by ripping the subsoil to a depth not to exceed 16 inches prior to topsoil replacement. After ripping has occurred, all rocks greater than 3 inches would be removed. Backfilling and replacement of topsoil would be crowned to account for any future soil settling so that original depth and contours of the topsoil would be restored. Unless originally present in the topsoil, all rocks greater than 3 inches would be removed from the topsoil surface following final restoration.

[2] Depth of cover would be measured from the top of the pipe to the lowest shoulder of the ditch after topsoil is stripped.

No backfilling would be done in water-filled trenches. Any freestanding water would be removed prior to backfilling. Pumping of water from the trenches would be done in a manner to minimize or avoid damaging adjacent agricultural lands and crops. If damages cannot be avoided, the landowner would be compensated.

If tile lines were affected by the construction of the proposed pipeline, all necessary actions and precautions would be taken to insure proper functioning of the tiles. Prior to construction, Rockies Express would make an effort to locate all drain tile lines within the right-of-way and contact the landowners and the local county Soil and Water Conservation Districts. If drain tile lines are damaged, cut, or removed during construction, the lines would be distinctly marked and these markers would not be removed until the line has been repaired and approved by the landowner and the Agricultural Inspector. Before completing permanent drain tile repairs, all tile lines would be examined on both sides of the trench for the entire length within the right-of-way to check for damage that may have occurred due to construction equipment. Upon completion of the proposed pipeline, all permanent repairs are to be made within 14 days as long as weather and soil conditions permit.

After completion of the proposed pipeline, the right-of-way would be restored to its original elevation and contour. Landowners would be provided with contact information to alert Rockies Express of the need to provide further leveling services, with Rockies Express performing these services within 45 days of the landowner's written notice. Rockies Express would also work with landowners to find a reasonable method to control excessive erosion. Rockies Express would monitor the areas that are subject to erosion, checking that the depth to the pipeline does not decrease to less than three feet.

Landowners would be compensated for any construction related damages caused by Rockies Express on or off the construction work area. If there were trees of commercial or other value to the landowner that must be removed, Rockies Express would compensate the landowner at a fair market value. Removal and disposal of trees and brush would follow the landowners' wishes and federal, state, and local regulations. If the proposed pipeline intersects an operational spray irrigation system, Rockies Express would establish with the landowner an acceptable amount of time that the system could be offline. If crops were damaged during this time, the landowner would be compensated for the damaged crops.

Routes used to enter and exit the proposed pipeline right-of-way would be agreed upon by Rockies Express and the landowner. Temporary roads would be negotiated with the landowner and would be designed not to impeded surface drainage and built to minimize soil erosion. If agreed upon by landowners, and allowed by regulatory agencies, temporary roads may be left intact after completion of the proposed pipeline. If temporary roads are to be removed, the area that the roads were constructed through must be returned to its previous use.

Following placing the pipeline in service or the completion of initial right-of-way restoration, a monitoring and remediation period of no less than three years would commence. As we have said previously, we do not believe three years is sufficient, we have recommended that monitoring continue for up to five years. Rockies Express would be responsible for the cost of monitoring and remediation. This phase would be used to identify any remaining impacts due to construction that are in need of correction. Conditions to be monitored are topsoil thickness, rock content, trench settling, crop production, drainage and repair of fences. Onsite monitoring of agricultural lands would occur at a minimum of three times during the growing season. The affected landowners would be periodically updated by the Inspector of the duration of remediation.

Agency Concerns

Rockies Express submitted the AIMP to various state agencies and agricultural groups. No state agricultural agency has approved the AIMP. Comments provided by the IDOA identified the following areas of concern:

- Identification of all encountered, severed, and /or damaged tile lines;
- Drain tile repair;
- Pipeline depth of cover;
- Topsoil segregation;
- Working in wet fields;
- Repairing current soil and water conservation structural practices; and
- Landowner having the ability to negotiate for other/additional mitigation.

Drain Tile Repair

Drainage systems, such as drainage tiles or diversion terraces, are used to improve the productivity of crops by diverting water from areas subject to saturation. The REX East pipeline would cross agricultural lands that make use of such systems. Rockies Express has indicated they would consult with landowners, tenants, and drainage district officials prior to construction to identify existing and planned drainage systems along the proposed pipeline right-of-way. Rockies Express has proposed to restore agricultural drainage systems to their original conditions or better, and would continue restoration until systems are operating fully. Specific requirements for drain tile repair are described in the REX East AIMP. Terraces and drainage trenches would be restored to their original contours, as much as practicable, to ensure proper function.

Rockies Express has indicated that the pipeline contractor would be given the option of repairing the tiles themselves or hiring local drain tile contractors. We do not believe that this is acceptable. The design and installation of drain tiles is precision work that should be done by professionals who are knowledgeable of both drain tiles and local conditions. Therefore, **we recommend that**:

- **Rockies Express hire local drain tile contractors to install/repair drain tiles that are damaged or need to be rerouted due to construction activities.**

The identification and marking of all encountered, severed, and/or damaged tile lines is important for reference in the event of future drainage problems on affected agricultural lands. Therefore, **we recommend that:**

- **During construction, Rockies Express should identify and mark all encountered, severed, and/or damaged tile lines on each affected landowner's property using GPS coordinates accurate to one meter. Rockies Express should provide this information to the landowner, the local county Soil and Water Conservation District, and be kept in the company's landowner records for future reference.**

Pipeline Depth of Cover

In most agricultural fields, Rockies Express proposes to install its pipeline with three (in Missouri), four (in Ohio and Indiana) or five (in Illinois) feet of cover. Deeper burial may be required for the crossings of underground utilities and drain tiles.

Following construction, Rockies Express would implement measures to monitor depth of cover over the pipeline in agricultural areas. Rockies Express would implement a surveillance plan that includes monthly aerial pipeline patrolling to inspect for excavation-related effects, ground movement, wash-outs, leakage, and/or other activities. Within one year of installation, a survey would be conducted along the pipeline right-of-way. If any excavation activities such as ground movement, wash-out, or any other signs of reduction or disturbance of the right-of-way, aside from typical farming practices (e.g., planting, discing, harvesting) are observed, Rockies Express would initiate a corresponding depth survey in the respective area, and if warranted would take necessary corrective actions including importing additional soil material or line lowering.

In addition to monitoring, Rockies Express would conduct an outreach program that includes landowner and tenant communication to address pipeline location, operations, maintenance, and emergency reporting. The landowner and tenant outreach program would facilitate ongoing company and landowner communications and education, including appropriate land use practices within the permanent easement during and after right-of-way restoration.

As noted above, comments from state agencies that reviewed the AIMP indicated a preference for installation of pipeline below three feet. In general, the reason was that drain tiles in the Project area are commonly located at a depth of three to four feet, and therefore installation of the pipeline at three feet would significantly impact drainage systems. In general, the agencies recommend a depth of cover of five feet in agricultural areas.

Rockies Express has agreed to bury the pipeline five feet deep in cropland and pasture with prime farmland soil, as long as it is not within 100 feet of an existing pipeline. We believe that 5 feet of cover is the proper depth in the agricultural areas crossed by the proposed pipeline due to the regional agricultural practice. Therefore, **we recommend that:**

- **Rockies Express should bury the pipeline at a minimum depth of five feet where the pipeline would cross agricultural fields with prime soils unless otherwise negotiated with landowners.**

Topsoil Segregation

For soil removal and replacement, a qualified agricultural inspector or soil scientist would assess the topsoil, determine the depth that needs to be removed, and monitor during the removal phase. When construction requires the cut-and-fill of the soil profile across grades, stockpiling of the topsoil would be located on the up-slope of the right-of-way. In locations where topsoil cannot be separately stored on the up-slope side, right-of-way space would be provided on the down-slope side to ensure the segregation of the topsoil. Upon removal, topsoil would be kept separate from removed subsoil to prevent intermixing of the two layers. During backfilling of the trench, the subsoil material would be replaced first and all rocks greater than three inches would be removed from the surface of all exposed subsoil. In sections of the right-of-way crossed by construction vehicles and equipment where the topsoil was stripped, the subsoil would be fractured by deep ripping to a depth not to exceed 16 inches prior to topsoil replacement. After ripping has occurred, all rocks greater than three inches would be removed. Replacement of the topsoil would be done in a way that after settling occurs, the original depth and contours of the topsoil would be restored. Unless originally present in the topsoil, all rocks greater than three inches would be removed from the topsoil surface following final restoration.

Working in Wet Fields

Rockies Express has stated that segregation of topsoil across the entire construction right-of-way would allow construction activities to continue even in wet weather. We disagree; subsoil can also be damaged by rutting and compaction in wet weather. In addition, full right-of-way topsoil segregation can cause extensive ponding on right-of-way increasing issues with runoff of heavily silt-laden water. In section 4.2.1 we have recommended that Rockies Express develop an Agricultural Wet Weather Contingency Plan to provide for addition mitigation during wet conditions. The IDOA also strongly supports the development and implementation of an Agricultural Wet Weather Contingency Plan.

Landowners Having the Ability to Negotiate for Other/Additional Mitigation

Rockies Express' proposed AIMP allows landowners to negotiate for different and/or additional mitigation in agricultural areas. We encourage landowners to work with Rockies Express during the construction and restoration on their property.

Other Agricultural Concerns

Irrigation and Livestock Systems

Irrigation and/or livestock systems would be crossed by the pipeline route at MPs 17.1 (irrigation), 17.3 (irrigation), 17.7 (irrigation), 228.3 to 228.5 (livestock), 248.2 (irrigation), 248.6 to 249.3 (irrigation), 337.4 to 337.9 (irrigation), 604.4 to 604.9 (irrigation and livestock), 606.0 to 606.9 (livestock), and 636.3 to 636.8 (irrigation). Several construction-related activities may damage or interrupt irrigation and/or livestock systems during construction, including clearing, trenching, grading, and backfilling. If the flow of water is disrupted for a prolonged period, crops may be damaged and crop yields reduced or livestock may be harmed. Rockies Express would coordinate disruption of irrigation systems or livestock systems with each landowner and compensate the landowner for damages. Rockies Express would also repair damaged irrigation systems and livestock systems. Impact and mitigation would be site-specific and based on agreements and/or easement conditions with the affected landowners or tenants. Because these impacts would be temporary and/or mitigated, we believe that construction and operation of the pipeline would not have a significant adverse affect on irrigation systems. For additional discussion of impacts to irrigation systems, see section 4.2.

Soil Heating

Heated soils may occur along the pipeline right-of-way in areas near compressor stations. Heated natural gas flowing through the pipeline could raise the temperature of the surrounding soil, causing water evaporation and thereby reducing crop yields. Gravelly and sandy soils would be the most susceptible soil types due to the deeper rooting depths required in these soils.

Specialty Crops/Land Use

Wilson Friendly Maple Farm

The proposed pipeline route would cross the Wilson Friendly Maple Farm between MP 457.3 and MP 457.6. Maple syrup production began in 1861. Rockies Express has stated that they would minimize the number of maple trees to be removed during construction to the extent practicable; however, they have not indicated what they would do. The impacts to the farm would be permanent, as the maple trees would not be replanted. Therefore, **we recommend that**:

- **Rockies Express file a plan with the Secretary of the crossing of Wilson Friendly Maple Farm prior to the end of the draft EIS comment period. This plan should include avoiding the removal of trees and impacts on the maple syrup operation. For any unavoidable impacts Rockies Express should quantify the impact, justify why the impact is required, and provide mitigation for the impact.**

A route alternative has been developed that would avoid the maple trees of the Wilson Friendly Maple Farm. The alternative is discussed in section 3.5.13 and is called the Jones and Mowrey Alternative. The FERC recommends the Jones and Mowrey Alternative to the Project route.

Conclusions Regarding Agricultural Land Use

We believe that implementation of the mitigation measures discussed above would minimize or mitigate the potential impacts to agricultural land uses. However, construction of the pipeline may affect the fertility of the agricultural fields for several years. Operation of the aboveground facilities would have a permanent impact on agricultural lands, and operation of the pipeline would impose permanent restrictions on some agricultural land uses, including the construction of barns and other structures and the planting of windrows or other trees within the permanent pipeline right-of-way.

4.8.3 Residential Land

Pipeline Facilities

A discussion of construction techniques in residential areas can be found in section 2.3.2. Construction of the pipeline would impact residential properties, mainly from increased noise, heavy vehicle traffic, and dust. These adverse affects would be short-term in nature, lasting only a few weeks at any particular location. Typical concerns of landowners regarding the impact of construction and operation of proposed facilities on residences include impacts on landscaping, property use rights, general disruption/disturbances/damages, safety issues, and the use of eminent domain. Details regarding the measures that would be taken to minimize impacts to residences are discussed below. As discussed above, Rockies Express would acquire easements for temporary and permanent right-of-way for construction and operation of the Project, respectively. Landowners would be compensated for the use of their land through the easement negotiation process. Landowners would have the opportunity to request that specific measures be undertaken or that development plans for their property be considered. Most existing developed land uses would continue following construction. There will be no restrictions on the ability to subdivide a property for inheritance purposes, or otherwise sell or transfer ownership of a property. However, there would be some restrictions regarding the use of land in the permanent right-of-way, such as restrictions on the construction of new permanent structures. During easement negotiations, landowners would have the opportunity to request that development plans for their property be considered during pipeline construction.

There are 84 residences located within 50 feet of the proposed construction work areas (table 4.8.3-1). An additional 18 non-residential structures (e.g., grain bins, silos, outbuildings, etc.) have been identified within 50 feet of the construction right-of-way. Rockies Express has provided site-specific construction plans for 80 of the residences (see appendix D).

Table 4.8.3-1

Residences Within 50 ft of Right-of-Way a/

State/County	Milepost	Dist from Centerline to residence (ft)	Dist from construction work area (ft)	Direction from pipeline	Comments	Drawing ID
MISSOURI						
Pike	23.4	229.0	31.0	N	Residence	MO-PI-016.000
Pike	25.0	239.0	39.0	N	Residence	MO-PI-023.000
ILLINOIS						
Pike	66.5	166.0	31.0	N	Residence	IL-PK-132.S03
Scott	79.2	36.0	0.0	N	Residence	IL-SC-043.000
Scott	79.6	138.0	12.0	N	Residence	IL-SC-046.000
Scott	81.5	133.0	0.0	N	Residence	IL-SC-054.N01
Morgan	95.9	241.0	42.0	N	Residence	IL-MO-040.N01
Sangamon	126.3	191.0	0.0	S	Residence	IL-SA-224.001
Sangamon	131.1	43.0	0.0	S	Residence	IL-SA-259.000
Macon	165.7	153.0	0.0	S	Residence	IL-MC-082.000
Moultrie	186.6	188.0	27.0	S	Residence	IL-MU-048.001
Edgar	234.2	43.0	0.0	S	Residence	IL-ED-076.000
INDIANA						
Putnam	270.8	173.0	41.0	N	Residence	IN-PU-022.N01
Putnam	272.8	178.0	18.0	N	Residence	IN-PU-035.000
Hendricks	292.2	87.0	47.0	S	Residence	IN-HE-214.000
Hendricks	294.0	252.0	17.0	N	Residence	IN-HE-223.000
Hendricks	296.7	183.0	0.0	S	Residence	IN-HE-241.N01
Hendricks	301.7	168.0	43.0	S	Residence	IN-HE-273.S01
Hendricks	301.8	176.0	49.0	N	Residence	IN-HE-274.000
Franklin	384.3 [b]	0.0	0.0		Residence on P/L	
Franklin	384.4 [b]	6.0	0.0	N	Residence	
Franklin	384.4	130.0	10.0	N	Residence	IN-FR-053.010
Franklin	384.5	134.0	14.0	N	Residence	IN-FR-054.N10
Franklin	396.1	76.0	36.0	N	Residence	IN-FR-139.001
Franklin	401.7	31.0	0.0	S	Residence	IN-FR-165.000
Franklin	401.7	165.0	0.0	S	Residence	IN-FR-166.000
Franklin	401.8	88.0	0.0	S	Residence	IN-FR-170.000
Franklin	402.0	185.0	0.0	S	Residence	IN-FR-181.S02
OHIO						
Butler	406.0	86.0	21.0	N	Residence	OH-BU-006.000
Butler	406.4	225.0	40.0	N	Residence	OH-BU-009.N01
Butler	406.4	47.0	22.0	N	Residence	OH-BU-009.N02
Butler	408.2	90.0	5.0	N	Residence	OH-BU-022.000
Butler	408.5	119.0	34.0	S	Residence	OH-BU-027.000
Butler	408.5	46.0	0.0	N	Residence	OH-BU-028.000
Butler	409.0	115.0	28.0	N	Residence	OH-BU-039.000
Butler	409.2	163.0	0.0	N	Residence	OH-BU-040.000
Butler	411.7	79.0	0.0	S	Residence	OH-BU-059.000
Butler	418.8	74.0	0.0	N	Residence	OH-BU-110.000
Butler	418.8	183.0	0.0	N	Residence	OH-BU-111.000
Butler	419.8	60.0	0.0	N	Residence	OH-BU-119.N01
Butler	419.9	64.0	0.0	N	Residence	OH-BU-120.N01
Butler	423.1	35.0	0.0	S	Residence	OH-BU-145.000
Butler	425.9	135.0	0.0	S	Residence	OH-BU-157.S01
Butler	431.7	48.0	23.0	N	Residence	OH-BU-177.000
Butler	431.7	127.0	0.0	S	Residence	OH-BU-178.000
Butler	431.7	60.0	35.0	N	Residence	OH-BU-179.000
Warren	444.9	177.0	0.0	S	Residence	OH-WA-028.000
Warren	446.8 b/	On P/L / 137	0 / 17	N	2 Residences	OH-WA-038.001
Warren	451.7	91.0	27.0	S	Residence	OH-WA-066.000
Warren	451.7	170.0	18.0	N	Residence	OH-WA-065.N02
Warren	452.3	43.0	3.0	S	Residence	OH-WA-075.N02
Clinton	472.1	56.0	0.0	N	Residence	OH-CT-074.000
Greene	474.3	139.0	0.0	S	Residence	OH-GR-009.000
Fayette	485.2	175.0	22.0	N	Residence	OH-FY-026.S01

Table 4.8.3-1

Residences Within 50 ft of Right-of-Way a/

State/County	Milepost	Dist from Centerline to residence (ft)	Dist from construction work area (ft)	Direction from pipeline	Comments	Drawing ID
Fayette	485.2	42.0	2.0	N	Residence	OH-FY-026.N01
Pickaway	508.9	105.0	0.0	S	Residence	OH-PW-048.000
Pickaway	510.2	150.0	0.0	S	Residence	OH-PW-060-000
Pickaway	518.7	98.0	13.0	S	Residence	OH-PW-103.S01
Pickaway	518.8	95.0	10.0	S	Residence	OH-PW-105.000
Pickaway	527.9	63.0	22.0	S	Residence	OH-FF-016.000
Fairfield	536.4	79.0	6.0	S	Residence	OH-FF-076.000
Fairfield	540.7	234.0	47.0	N	Residence	OH-FF-095.N01
Fairfield	544.8	110.0	25.0	S	Residence	OH-FF-108.S01
Fairfield	545.1	81.0	0.0	S	Residence	OH-FF-118.S04
Fairfield	545.2	54.0	24.0	S	Residence	OH-FF-120.S01
Fairfield	545.8	51.0	21.0	S	Residence	OH-FF-124.S05
Perry	550.4	46.0	6.0	N	Residence	OH-PY-007.002
Perry	554.5	53.0	13.0	N	Residence	OH-PY-031.000
Muskingum	566.9	200.0	30.0	S	Residence	OH-MK-005.000
Perry	560.6	100.0	40.0	N	Residence	OH-PY-051.000
Perry	561.3	131.0	46.0	S	Residence	OH-PY-053.000
Muskingum	566.5	97.0	12.0	S	Residence	OH-MK-001.000
Muskingum	566.6	40.0	0.0	S	Residence	OH-MK-003.000
Muskingum	567.4	132.0	50.0	S	Residence	OH-MK-010.000
Muskingum	568.5	91.0	46.0	N	Residence	OH-MK-108.000
Muskingum	576.2	130.0	45.0	S	Residence	OH-MK-151.000
Muskingum	576.7	52.0	0.0	N	Residence	OH-MK-152.000
Muskingum	578.8	99.0	14.0	S	Residence	OH-MK-168.S01
Guernsey	602.0	86.0	1.0	S	Residence	OH-GN-078.000
Guernsey	609.0	171.0	0.0	S	Residence	OH-GN-127.000
Guernsey	609.9	74.0	0.0	S	Residence	OH-GN-128.000
Belmont	622.7	98.0	0.0	S	Residence	OH-BL-020.000
Monroe	635.2	18.0	0.0	S	Residence	

a/ Due to the scale of the project-specific alignment sheets, the temporary construction right-of-way would appear to extend across these structures. However, Rockies Express has created site-specific residential mitigation drawings that show the construction right-of-way as reduced or 'necked down' to avoid impacting these areas. All site-specific drawings created for the project would supersede the construction right-of-way layout shown on the alignment sheets.

b/ The residence is shown within the permanent easement. We have recommended an alternate route through the area that would preserve the structure.

Rockies Express would adopt the following mitigation measures for residences within 50 feet of a construction work area in order to minimize or mitigate impacts on residences:

- equipment would be required to have mufflers installed to minimize construction noise;
- access to residences, including emergency access, would be maintained at all times during construction;
- removal of trees and landscaping would be avoided unless necessary to construct the pipeline or for the safe operation of the construction equipment;
- lawns and landscaping within the construction work area would be restored promptly after backfilling the trench;

- construction fencing would be installed and maintained at the edge of the construction work area for a distance of 100 feet on either side of a residence during the open trench phases of the pipe installation or longer;

- dust minimization techniques would be used onsite;

- all litter and debris would be removed daily from the construction work area.

Although Rockies Express has stated that it would maintain access to all residences during construction we have noticed that on some of the site-specific plans the entire driveway for the residence is shown within the construction work area. For these residences we cannot determine how access would be maintained during active construction, therefore, **we recommend that:**

- **Rockies Express file with the Secretary prior to the end of the draft EIS comment period a site-specific explanation of how access would be maintained for each residence whose driveway or access would be affected by construction activities.**

In addition we do not know if Rockies Express has discussed these site specific plans with the land owners. Therefore, **we recommend that:**

- **Rockies Express should provide each landowner and tenant whose residence is within 50 feet of the proposed construction work area with a copy of the site-specific plan for construction near their residence at the same time Rockies Express files its Implementation Plan with the Commission.**

There are 62 residences within 25 feet of a proposed work area, of which 44 are within 10 feet of the proposed work area. Because of the proximity to construction activities we believe that additional mitigation is needed. Therefore, **we recommend that:**

- **Rockies Express file site-specific plans with the Secretary for review and written approval by the Director of OEP prior to the start of construction that:**

  a. **Describe the measures that would be taken to minimize construction impacts on each residence within 25 feet of a construction work area, including but not limited to reduced pipeline separation, centerline adjustment, use of stove-pipe or drag-section techniques, working over existing pipelines, pipeline crossover, bore, or a minor route variation;**

  b. **Include discussion of how Rockies Express would ensure that the trench is not excavated until the pipe is ready for installation and that the trench is backfilled immediately after pipe installation; and**

  c. **Include evidence of landowner concurrence if the construction work area and fencing will be located within 10 feet of a residence.**

There are also four residences which would be on the proposed permanent right-of-way. Those residences are discussed under site-specific impacts below.

Noise would also impact residences in the vicinity of the construction. The amount and duration of the impact would depend on the construction activity and the distance from that activity. Activities

such as HDDs or the construction of a compressor station would produce noise in an area longer than normal pipeline construction. In either case, this would be a short-term, temporary impact.

Operational noise impacts would usually be limited to the operation of the compressor stations. These impacts would last for the life of the Project. A more complete discussion of the impact of noise on residences is discussed in section 4.11.2 of this draft EIS.

Site-specific Impacts

We have received numerous letters from landowners and other stakeholders requesting that the proposed route either be changed or the Project denied, however no environmental justification for such action was provided. In several cases, these letters were from landowners who have not allowed Rockies Express access to their property to survey for the presence of features that may warrant a change in the route, identify the need for additional mitigation, or changes in construction technique. Therefore we have no basis to evaluate these requests in this draft EIS. If any landowners believe the Project route evaluated in this draft EIS does not address their particular concern, we encourage them to either submit comments outlining their environmental concerns and/or allow their property to be surveyed to identify important resources that may warrant a route variation or additional mitigation. We can then evaluate such new information before accepting an alignment in the final EIS.

We received letters from landowners expressing concern about the pipeline crossing their property and damaging various resources or limiting their potential to develop the property in the future. In all of these cases, the presence of the resources of concern has not been verified by surveys, typically because access to the property has not been granted and there are no plans for development at this time. Therefore, this draft EIS is not able to evaluate the need for a route variation and determine where that variation would have to go to avoid the stated resources of concern or the development. Instead, we address these landowner concerns by including recommendations that require Rockies Express to complete all necessary surveys and consultations, and to evaluate appropriate route variations or other measures to avoid impacts to those resources, prior to construction (see sections 4.7 and 4.10).

We do, however, have sufficient environmental justification for evaluating a number of route variations based on letters from landowners and other stakeholders, as well as our own independent analysis and field visits of the Project route and possible route variations. See section 3.5 of this draft EIS.

We have identified four residences, located at MP 384.3, MP 384.4, and MP 446.8 (2) which would be within the proposed permanent right-of-way. Rockies Express has not indicated whether it proposes to remove these residences. We believe that there are ways to avoid these residences without condemning unwilling landowners. We have examined alternatives which would move the pipeline so that the residences would not be on the permanent right-of-way, see section 3.5.17.

Numerous comments were received from residents in Franklin and Johnson Counties, Indiana, concerned with the development potential of property in the south Indianapolis area. Some cited safety concerns of a pipeline near developed residential communities. Many of these residents proposed that the pipeline be re-routed north of Indianapolis. An alternative to the proposed route that would pass north of the city is discussed further in section 3.4.3 but is not considered preferable to the Project route.

Numerous comments were received from landowners along the pipeline route with a generalized concern about the aesthetic impacts of the Project. These concerns are related to the impacts the pipeline route would have on vegetation, and consequently on the overall aesthetic or visual impacts to the landscape. Rockies Express has developed procedures that will minimize the impacts of construction on

vegetation, including collocating the pipeline as much as possible with existing easements. There would, however, be visual impacts within the permanent right-of-way in places where mature forest trees would be removed. The impacts of the project on vegetation are discussed in detail in section 4.4.

During a site visit a residence with extensive landscaping was identified in Macon County, Illinois (Tract IL-MC-028.051). Rockies Express has agreed to extend the horizontal bore of County Road 29 at MP 158.0 in order to preserve the landscaping. However, because Rockies Express has not provided a plan for the work in this area we do not know what the impact to the property would be. Therefore, **we recommend that:**

- **Prior to the start of construction, Rockies Express file with the Secretary a site-specific construction plan for Tract IL-MC-028.051 for review and written approval by the Director of OEP.**

Property owners in Warren County, Ohio (Tract OH-WA-066.000 to OH-WA-066.002) have indicated that pipeline construction would inhibit their ability to build a retirement home on their land. The REX East right-of-way crosses the Little Miami River and extends through this linear property along the long axis, encumbering much of the lot. Alternative crossings of the Little Miami have been proposed in section 3. The right-of-way, as currently proposed, follows the TETCO right-of-way in the vicinity of this lot. We reviewed the area to identify a route variation but houses to the north and south prevent a re-route. We also evaluated two major route alternatives which would avoid this property, Little Miami Route Alternative (section 3.4.4) and Mowrey Route Alternative (section 3.4.5). These route alternatives are not environmentally preferable to the Project route. Therefore, **we recommend that:**

- **Prior to the end of the draft EIS comment period, Rockies Express file a construction plan for the property in Warren County, Ohio on Tract OH-WA-066.000 to OH-WA-066.002 that preserves the ability to construct a home, or propose an alternative route.**

Septic Systems

Pipeline construction could damage septic systems – including septic tanks, distribution piping, and drain fields – during trenching of the pipeline right-of-way. Rockies Express has developed a Septic System Contingency Plan describing efforts to avoid septic systems where possible and mitigate or restore systems where necessary. If damage occurs during construction, a temporary system sufficient to meet existing needs would be provided. Following construction Rockies Express would relocate, restore, or replace the septic system depending on the details of the easement negotiated with the individual landowner.

Based on preliminary landowner contacts Rockies Express has currently identified that septic systems that would be crossed by the pipeline route at MPs 297.8, 448.9, 449.9, 473.8, 593.5, 595.7, and 597.1. Rockies Express would continue to verify the locations of septic tanks and, in consultation with individual landowners, would develop mitigation measures to prevent or minimize disruptions to these facilities during construction. Therefore, **we recommend that:**

- **Rockies Express identify all septic systems prior to the start of construction, present each property owner with a copy of the Septic System Contingency Plan, and restore, relocate, or replace all septic systems damaged during construction, whether or not such mitigation was part of the easement negotiation.**

Aboveground Facilities

The aboveground facilities associated with the REX East Project include the seven compressor stations. Construction of the seven facilities would have a longer duration than pipeline construction. Additionally, the compressor stations have different operational impacts than the pipeline, including visual, noise, and air emissions. Analysis of potential noise impacts on residences during construction and operation of the compressor facilities found levels to be lower than the EPA's recommended threshold and lower than existing noise levels at the residences. See section 4.11.2 for a detailed discussion of noise impacts. See section 4.11.1 for a detailed discussion of air emissions. The visual impacts of these facilities are discussed in section 4.8.6 below.

A group of six property owners in Ohio expressed concerns that the location of the Hamilton compressor station was too close to a residential area. They recommend that it be located near the Texas Eastern compressor station 2.5 miles to the north. Additional letters with similar concerns were received August 17th, 27th, and 28th, 2007. Alternate locations for the Hamilton compressor station are discussed in section 3.6.1. In response, Rockies Express has relocated the Hamilton compressor station to a different parcel of land that is further from residences on land owned by an existing steel mill.

An alternative location for the Bainbridge compressor station has been identified, and is discussed in section 3.6.2. The original proposed location could have noise impacts on as many as 10 NSA's, whereas the alternative would be fewer. The alternate location for the Bainbridge compressor station is recommended.

Conclusions Regarding Residential Land Use

The construction impacts of the Project on residential land use, including noise, dust, and vehicle traffic would be temporary. They would last only for the duration of construction, which in most cases would be no more than one or two weeks at a single location. Rockies Express established procedures to minimize these impacts during construction. Rockies Express has also developed mitigation measures for potential impacts to septic systems. We believe that the Project would have temporary impacts on residences, that the procedures developed by Rockies Express along with the mitigation we have recommended would minimize these, and that implementation of the mitigation measures would also minimize the impacts of the Project on residences. The permanent easement on residential properties would be considered a permanent impact in that it restricts the use of that portion of the property. Compressor stations would emit noise for the life of the station. For a further discussion of the noise impact see section 4.11.2.

4.8.4 Planned Residential Developments

Rockies Express has identified 10 planned residential developments within 0.25 mile of the Project right-of-way. Planned development projects would include those that are permitted but not yet constructed, or those with submitted permit applications that have been filed but not yet approved. Table 4.8.4-1 presents the planned developments that would be located within 0.25 mile of the Project.

Rockies Express has taken the following measures to minimize potential impacts regarding planned residential developments:

- Siting the pipeline route along property boundaries; and
- Collocating the pipeline with existing rights-of-way, which typically follow lot lines.

Table 4.8.4-1

Planned Developments Crossed by the Proposed Pipeline Route

State, County	MP	Crossing Length (miles)	Development Name	Comment
Illinois, Macon	162.8	0.2	Circle Z Addition	The housing development is under review with the county. Rockies Express sited its pipeline along the southern property line to minimize disturbance.
Indiana, Hendricks	297.5	0.5	Disney Residential Development	The housing development was platted in 1978. No construction has begun. Rockies Express has sited its pipeline route along the property lines to minimize disturbance.
Butler, Ohio	430.8	0.3	Tall Oaks Subdivision	The residential subdivision is currently under construction. Rockies Express is collocated with the existing power line and is sited on the property lines.
Butler, Ohio	431.3	0.4	Todd Glen Reserve	The residential subdivision has been platted and has not been approved. Rockies Express is collocated with the existing power line.
Warren, Ohio	436.4	1.1	Valley View Farms	The residential subdivision has been platted and has not been approved. Rockies Express' proposed route is sited on the property lines.
Fairfield, Ohio	535.5	0.1	Dominion Homes	The residential subdivision has been platted and has been approved. The development is currently under construction. Rockies Express is collocated with Texas Eastern's existing pipeline and the proposed route follows the lot lines.
Fairfield, Ohio	538.3	0.1	Thomas Vejan Homes	The residential subdivision has been platted and has been approved. The development is currently under construction. Rockies Express is collocated with Texas Eastern's existing pipeline and traverses the corner of two lot lines.
Fairfield, Ohio	539.1	0.3	Fairfield Homes	The residential subdivision has been platted and has not been approved. Rockies Express is collocated with Texas Eastern's existing pipeline and the proposed route follows the lot lines.
Fairfield, Ohio	539.4	0.2	Thomas American (also called Diyanni Homes)	The residential subdivision has been platted and has been approved. The development is currently building. Rockies Express is collocated with Texas Eastern's existing pipeline and the proposed route follows the lot lines.
Fairfield, Ohio	544.9	0.2	Holder Properties	The residential subdivision has been platted and has not been approved. The development is currently building. Rockies Express is collocated with Texas Eastern's existing pipeline and the proposed route follows the lot lines.

We believe that implementation of the identified mitigation measures would minimize or mitigate the impacts of the Project on planned residential developments. Construction would result in temporary impacts.

4.8.5 Recreation and Special Land Use Areas

The proposed REX East facilities would cross recreation and special land use areas in: Missouri (3), Illinois (4), Indiana (9), and Ohio (15). These areas are listed in table 4.8.5-1 along with the proposed construction methods (discussed in section 2.3) for crossing each. Rockies Express continues to coordinate with the landowners and managers of these special interest areas.

As no recreation or special interest areas were identified within 0.25 mile of any proposed aboveground facility, it is not expected that recreational and special use areas would be impacted by the proposed aboveground facilities.

Table 4.8.5-1

Recreation and Special Land Uses Crossed by the Proposed Pipeline Route

State/County	MPs	Crossing Length (miles)	Acres Affected During Construction/ Acres Affected During Operation (Acres)	Name	Management/ Ownership	Proposed Crossing Method
MISSOURI						
Pike	33.4 to 42.2	8.8	133.3 / 53.3	Grassy Creek Conservation Opportunity Area	Missouri Department of Conservation (MDC)	Conventional
Pike	40.0	<0.1	0.0 / 0.0	Scenic Byway - Little Dixie Highway along State Highway 79	Missouri Department of Transportation	Horizontal Bore
Pike	42.6 to 42.9	0.3	0.0 / 0.0	Upper Mississippi (Blackburn Island) Conservation Opportunity Area	Missouri Department of Conservation a/	HDD
ILLINOIS						
Pike	43.5	<0.1	0.0 / 0.0	Sny Levee	Sny Levee Drainage District	HDD
Sangamon	122.0	<0.1	2.6 / 0.0	Scenic Highway – U.S. Route 66	Illinois Department of Transportation	Horizontal Bore
Sangamon	125.2	0.7	0.0 / 0.0	Hunter Lake Reservoir	City of Springfield, Illinois	Conventional
Douglas	202.9	<0.1	0.0 / 0.0	Embarras River	Illinois Department of Natural Resources	HDD
INDIANA						
Vermillion/Parke	247.3	0.1	0.0 / 0.0	Indiana Canoe Crossing – Wabash River	Indiana DNR – State of Indiana	HDD
Parke	250.8	<0.1	0.0 / 0.0	B&O Trail	B&O Trail Association	Horizontal Bore
Putnam	268.4	<0.1	0.5 / <0.1	Byrd Branch within Cecil M. Harden Lake	U.S. Army Corps of Engineers (COE)	Open-cut
Putnam	269.9	<0.1	1.8 / 0.1	Big Raccoon Creek within Cecil M. Harden Lake	COE	Open-cut
Putnam	269.9	<0.1	0.5 / <0.1	Tributary to Big Raccoon Creek - within Cecil M. Harden Lake boundary	COE	Open-cut
Putnam	281.5	<0.1	2.7 / 0.2	Big Walnut Creek	Indiana Department of Natural Resources (INDNR)	Open-cut
Hendricks	298.4 to 298.5	0.1	2.6 / 0.0	Historic National Road – U.S. Highway 40	Indiana Department of Transportation	Horizontal Bore
Morgan	315.8	<0.1	0.1 / <0.01	Indiana Canoe Crossing – Tributary to West Fork White River	Indiana DNR –State of Indiana	Open-cut
Shelby	340.8	<0.1	3.2 / 0.0	Big Blue River	INDNR	HDD
Decatur	375.1 to 375.3	0.2	2.6 / 1.2	Camp Woodsmoke	Lions Club (private)	Conventional
Franklin	393.2	<0.1	0.0 / 0.0	Indiana Canoe Crossing – Whitewater River	Indiana DNR – State of Indiana	HDD

Table 4.8.5-1

Recreation and Special Land Uses Crossed by the Proposed Pipeline Route

State/County	MPs	Crossing Length (miles)	Acres Affected During Construction/ Acres Affected During Operation (Acres)	Name	Management/ Ownership	Proposed Crossing Method
OHIO						
Butler	421.6 to 421.7	0.1	0.0 / 0.0	Four Mile Creek	Ohio Department of Natural Resources (ODNR)	HDD
Butler	422.7	<0.1	0.0 / 0.0	Seven Mile Creek	ODNR	HDD
Butler	430.7 to 430.8	0.1	0.0 / 0.0	Great Miami River	ODNR	HDD
Warren	450.7	0.1	8.3 / 0.0	Scenic Byway – Accommodation Line	ODNR	Horizontal Bore
Warren	451.3 to 451.4	0.1	0.0 / 0.0	Little Miami River	NPS/ODNR	HDD
Warren	451.6 to 451.7	0.1	0.1 / <0.1	Little Miami Scenic State Park	ODNR	Horizontal Bore
Clinton	459.5 to 459.8	0.2	2.6 / 1.0	Caesar Creek State Park and Wildlife Area	ODNR	HDD and Conventional
Fayette	486.4	<0.1	0.1 / <0.1	Paint Creek	ODNR	Open-cut
Pickaway	499.9 to 500.8	1.1 <0.1	16.7 / 6.7	Deer Creek Wildlife Area	ODNR	Conventional
Pickaway	499.9 to 500.8 500.8 to 500.9	0.9 0.1	15.1 / 6.1	Deer Creek State Park	ODNR	HDD/ Conventional/ Horizontal Bore
Pickaway	509.2 to 509.3	0.1	4.2 / 0.0	Big Darby Creek	NPS/ODNR	HDD
Perry	558.5 to 558.7 558.9 to 559.9	0.2 1.0	18.1 / 7.3	Perry State Forest	ODNR	Conventional
Muskingum	581.6 to 582.7	1.1	16.7 / 6.7	Blue Rock State Forest	ODNR	Conventional
Guernsey	607.7 to 608.5 c/	Unknown b/	Unknown b/	White Oak Exotic Hunting Preserve	Privately owned	Conventional
Belmont	624.6 to 625.1	0.5	7.5 / 2.8	Captina Creek Preserve	Privately owned c/	Conventional
Belmont	628.5 to 630.3	1.8	27.3 / 10.9	Raven Rocks	Privately owned	Conventional

a/ Blackburn Island is owned by COE, leased to FWS, and managed by the Missouri Department of Conservation.

b/ MPs are approximate. A recommendation has been included that Rockies supply additional information on the White Oak Exotic Hunting Preserve.

c/ While Captina Creek Preserve is currently not formally recognized as a preserve we have included it in this analysis.

General Impacts

Construction of the Project facilities could impact recreation and special land use areas in several ways. First, resident habitats and wildlife may be affected by the clearing of vegetation, the generation of noise, and or the generation of dust. Second, construction of the Project facilities could result in a disruption of recreational uses potentially including but not limited to hiking, fishing, camping, bird watching, picnicking, and environmental education. Disruptions to recreational uses could potentially occur if access is reduced due to construction activity or if construction activities change the recreational quality of the area.

Operational impacts would be associated with permanent changes in vegetation associated with right-of-way maintenance and potential visual impacts associated with these features and aesthetics.

At a minimum Rockies Express would implement the requirements and mitigation included in its REX East Plan and Procedures (FERC eLibrary, 2007a,b; also see section 2.3). As discussed throughout this draft EIS, implementation of these requirements would generally minimize and to some extent mitigate potential impacts to resources and activities in recreation and special use areas.

Where conventional construction methods are used, construction of the pipeline would typically result in disturbances such as noise, dust, and construction-related traffic along the pipeline route. These impacts would be temporary, generally lasting between a few days to a few weeks in any given location. Conventional construction would involve the clearing of vegetation in the construction right-of-way and disturbance of the surface through trenching. In some cases recreational infrastructure, such as trails, may be cut or removed during construction. Open-cutting recreational waterbodies would preclude their use during construction.

Following construction, the 50-foot-wide permanent right-of-way would be maintained in an herbaceous state, while the temporary construction right-of-way would be allowed to return to pre-construction conditions. The duration of recovery for the temporary right-of-way would depend on the type of vegetation. For non-forested areas, recovery may occur within five years or less. For forested areas, recovery within the construction right-of-way could take twenty to thirty years or more, depending on the age and type of trees. Agricultural land, grassland, and open land would typically be allowed to return to pre-construction conditions within the construction and permanent right-of-ways. In forested areas, the permanent right-of-way would undergo periodic vegetative maintenance in order to maintain access to the pipeline.

Construction techniques such as boring or HDD can be used to avoid impacts to more sensitive resources, such as rivers. They can also be used to cross roadways to avoid disturbance to traffic. Because these methods involve installing the pipeline without disturbing the surface directly above a portion of the pipeline, they avoid impacts to the surface. These methods generally require additional temporary workspaces for staging, so while a sensitive resource such as a stream may have less impact, there would be additional land affected near the stream. Like the conventional open-cut methods, these construction techniques would still have associated noise, dust, and construction traffic. These impacts would be temporary and would last up to three months in any given location. The areas would be restored and revegetated after construction. Revegetation may take one growing season for herbaceous vegetation or decades for trees. Normal right-of-way maintenance activities (mowing) would permanently preclude the establishment of trees on the permanent right-of-way. Rockies Express has agreed not to mow areas that were crossed by HDD. In addition, we have recommended that Rockies Express not cut any trees between the drill work area and the exit work area.

As the quality of outdoor recreation depends in part on the quality and characteristics of natural resources, impacts to natural resources within recreation and special use areas could indirectly impact recreation within these areas. As noted above, the impacts to natural resources would vary depending on construction technique. If conventional construction is used, there may be permanent changes in natural resources associated with vegetation maintenance within the permanent right-of-way. In forested areas, recovery of the construction right-of-way could be short-term or long-term, depending on the age and type of trees. All other impacts would typically be short-term. If boring or HDD methods would be used, then impacts to sensitive natural resources would be avoided, but there would still be impacts to any associated temporary workspaces.

In addition, construction-related noise, dust, and traffic could indirectly impact recreation at these special use areas. Impacts due to changes in access could result if traffic flows within a recreation or special use area would be disrupted. These impacts would be temporary, lasting a few days to a few weeks in any given location. In general, the severity of impacts from noise, dust, and viewscape alteration would depend on the distance between the Project and areas where recreationalists would be located (e.g., campgrounds, picnic areas, trails). The timing of Project construction may also be important, as recreation is often seasonal.

Site-specific Impacts

Location, crossing method, and current land uses impacted are discussed for each recreation and special use area. This information is used to determine the expected impact duration.

To evaluate the magnitude of the potential impacts, we identify the specific resources, or recreational activity for which areas are managed and identify potential direct impacts to those resources. Indirect impacts are evaluated in light of direct impacts and after considering the proximity of the recreation infrastructure to the Project.

Missouri

Grassy Creek and Upper Mississippi Conservation Opportunity Areas

The proposed pipeline route would traverse two areas in Missouri identified as COAs. The MDC identifies these tracts of land as places where opportunity exists for wildlife conservation.

Grassy Creek COA

The Grassy Creek COA (also referred to as the Ted Shanks COA), contains 6,705 acres, consisting of bottomland hardwood timber, freshwater marshes, emergent wetlands, agricultural row crops, and oxbow lakes and sloughs, fields, and upland woods. Of the 6,705 acres, 3,827 acres of public land are managed by MDC and 2,878 acres of private land managed under a cooperative agreement between the MDC, FWS, and COE. Grassy Creek COA contains the Ted Shanks Alluvial Complex, an Important Bird Area (IBA) as defined by BirdLife International and the National Audubon Society. Deer and waterfowl hunting are common activities at the COA.

The pipeline route would use conventional upland construction techniques to traverse the Grassy Creek COA from MP 33.4 to MP 42.2. Several roads and highways that provide access to the site would also be traversed. Construction through this area would impact 9.2 acres of open land, 96.9 acres of forested land and 27.3 acres of agricultural lands. As noted above, construction would result in clearing of vegetation from the affected land. The permanent right of way would include 38.8 acres of forest lands, 3.6 acres of open land, and 10.9 acres of agricultural lands.

During construction individuals attempting to access the site may experience temporary delays associated with construction-related traffic congestion and or construction related detours. Noise and activity associated with construction may frighten deer and ducks away from the vicinity of the activities temporarily. Most wildlife would return after the completion of construction. Indirect effects associated with habitat modification are not expected to affect duck or deer populations or the quality of hunting on the site in the long-term. However, the removal of trees may have a long-term or permanent impact on wildlife that depends on trees.

Visual impacts would be primarily to passing users, including hunters, and would be primarily short-term in nature lasting one to two weeks during the construction phase in the area. Permanent visual impacts would occur as a result of tree removal within the permanent right-of-way as part of operational maintenance, which would occur every two to three years over the life of the Project.

Upper Mississippi COA

The Upper Mississippi COA (also referred to as Blackburn Island) is an island that separates the Mississippi River from the Salt River in Missouri. Blackburn Island is leased to FWS by COE and is managed by MDC. Outdoor activities occurring on and around Blackburn Island include fishing, waterfowl hunting, bird watching, and boating.

The pipeline route would cross Blackburn Island from MP 42.6 to MP 42.9. Rockies Express would cross both the water bodies on either side of the island (the Mississippi River and the Salt River) using HDD. A drill entry workspace would be located on Blackburn Island, approximately 300 feet from the Mississippi River. This single drill entry workspace would be used for both the westward HDD crossing of the Salt River and the eastward crossing of the Mississippi River.

MDC has recommended and Rockies Express has agreed to the following mitigation measures when crossing the area:

- Inspect equipment and remove any mud, soil, trash, plants, or animals before leaving a waterbody or work area;
- Drain water from equipment before leaving a waterbody, wash and rinse all equipment with hard spray or hot water;
- Whenever possible, dry equipment in the sun before using it again;
- Inspect and remove seeds, mowing debris, and soil from tires and tracks, the decks of mowers, trailers, and other equipment; and
- Properly dispose of all plant materials to prevent regrowth or introduction into new areas.

Construction activities and noise may cause wildlife to leave the area temporarily. Construction activities and noise may also impact the public's ability to enjoy fishing, boating, bird watching, and hunting in the vicinity during construction.

Visual impacts would be primarily to passing users, including hunters and/or river users, and would be primarily short-term in nature during the three month construction phase in the area. Use of the HDD crossing method would reduce the need for tree removal as part of routine maintenance during operation of the pipeline.

We believe that the use of HDD and utilizing a single drill entry workspace on Blackburn Island to cross both the Mississippi and Salt Rivers minimizes potential environmental impacts in the area. The duration of impacts such as noise, dust, and clearing of herbaceous vegetation would range from temporary to short-term. However, the clearing of trees would be a long-term or permanent impact.

Little Dixie Highway – Scenic Byway

The proposed pipeline would cross the Little Dixie Highway at MP 40.0 in Pike County, Missouri. This scenic highway is located adjacent to the Mississippi River, and offers scenic views of the river along the 30-mile stretch of highway. Rockies Express intends to cross the Little Dixie Highway via horizontal bore.

Potential impacts to traffic on the byway would be avoided, as the pipeline would be bored under the highway. Scenic views from the road would be impacted during construction, as construction activities would be within view of the byway. Because construction activities would take place in an agricultural field which would be allowed to return to agricultural production after construction, impacts in this area would be short-term.

There would also be short-term visual impacts to those traveling on the highway as a result of construction, which is expected to last about one to two weeks. These visual impacts would be a result of construction activities and equipment, and the disturbance of 1.5 acres of agricultural land used for additional temporary workspace alongside the highway. Depending on the construction, restoration, and rotation schedule the fields may be replanted the year following construction thus there would be no long-term visual impacts.

We believe that the use of conventional boring methods would minimize impacts on the Little Dixie Highway. Impacts would be limited to dust, noise, and views of equipment during construction. After construction the surrounding area would appear unchanged to those driving by.

Illinois

Sny Levee

The Project would cross the Sny Levee near MP 43.5 in Pike County, Illinois. The Sny Levee was built in the 1870s by the state of Illinois and financed by a state bond act. The term Sny referred to a natural arm of the Mississippi that entered the river about 6 miles north of Hannibal, Missouri. The name Sny is a shortened English version of a name given by French explorers. The levee has experienced several infamous breeches, including the Great Floods of 1880 and 1881 when water levels rose 19 feet above the low water mark. In response, the US Congress authorized COE in 1895 to repair the Sny, and build two adjacent levees, making the Sny levee system the first federally funded flood control system on the Mississippi. More recently, the upper Mississippi experienced another "Great Flood" in 1993.

The purpose of the Sny Levee is to protect adjacent portions of Illinois from the Mississippi River during potential flood stages. The most significant impact to the levee would be if the construction of the pipeline affected the integrity of the levee structure. Affecting the integrity of the levee could result in long-term or permanent impacts to the surrounding area, if the levee were to fail.

Rockies Express proposes to cross under the levee with an HDD as part of the Mississippi River crossing. The construction plan for the crossing is appendix F of this document. The Sny Levee Board has stated that it is concerned the HDD could affect the integrity of the levee, and they have requested that

Rockies Express cross the levee by placing the pipeline over top of the levee. This method is commonly used to cross levees along the Mississippi River, although recently some pipelines have used the HDD method to go under levees. There has been no agreement between Rockies Express and the Sny Levee Board to date. Two alternate crossings of the Mississippi have been identified, and are described in section 3.4.1. All would require crossing the Sny Levee. At this time, we do not have enough information to make a determination about which crossing methods are feasible, which crossing method would have the least impact on the levee, and which would be environmentally preferable. Therefore, **we recommend that:**

- **Rockies Express file with the Secretary prior to the end of the draft EIS comment period:**

  a. **Complete geotechnical information for both crossing methods for the Sny Levee;**

  b. **A feasibility study of both crossing methods;**

  c. **A detailed plan for both crossing methods, including detailed information on how the levee would be protected during construction; and**

  d. **Documentation of consultation on these plans with the Sny Levee District and the COE.**

Old Route 66 – Scenic Highway

The Project would cross Old Route 66, a scenic highway, at MP 122.0 in Sangamon County, Illinois. The crossing would be located in an agricultural field about 1,000 feet east of Interstate 55.

Potential traffic delays on Old Route 66 would be avoided by boring under the highway. Because agricultural land would be allowed to return to agricultural production, impacts in this area would be short-term. Route 66 is listed on the NRHP, but construction procedures would avoid use of heavy machinery on the historic roadway, and the Illinois SHPO has concurred with the findings.

There would be short-term visual impacts to those traveling on the highway as a result of construction, which is expected to last about two weeks. These visual impacts would be a result of construction activities and equipment, and the disturbance of 2.6 acres of agricultural land adjacent to the highway used for additional temporary workspace. Regeneration of this area would likely take one to two growing seasons, thus there would be no long-term visual impacts.

We believe that the use of conventional boring methods would minimize impacts on Route 66. Impacts would be limited to dust, noise, and views of equipment during construction. After construction the location of the pipeline would not be apparent to a driver on Route 66.

Hunter Lake Reservoir

The pipeline would cross the proposed site of Hunter Lake Reservoir at MP 125.2 in Sangamon County, Illinois. Hunter Lake Reservoir is a water supply reservoir proposed by the City of Springfield, Illinois. The city applied for a permit from COE in 1999 and the final EIS was published on November 24, 2000. Currently, the permit for the project is still pending approval by COE. The REX East Project would traverse lands that would be inundated by the proposed Hunter Lake Reservoir for a distance of about 0.7 mile. Since the pipeline would be buried four to five feet deep and no aboveground facilities are proposed within the limits of the reservoir, no adverse impacts are anticipated. Rockies Express is

planning to install weights on the segments of its pipeline that may be inundated by the proposed reservoir to ensure negative buoyancy. Additional details about the proposed reservoir can be found in sections 4.3.4 and 4.13.

Embarras River – Illinois Natural Areas Inventory

The Embarras River, which would be traversed at MP 202.9 in Douglas County, Illinois, is listed on the Illinois Natural Areas Inventory, and is identified as a biologically significant stream as well as a recreational area. The Embarras River is discussed in further detail in section 4.3.

Rockies Express intends to cross the Embarras River using the HDD method. The drill entry hole and workspace would be located on the eastern side of the Embarras River, separated from the river by 500 feet of agricultural land and about 200 feet of wetland forest. The drill exit hole and workspace located on the western side of the River would be 1,000 feet from the river and separated by wetland forest, agricultural land, and open areas.

The use of HDD to cross the river would avoid disturbance to the streambed, stream banks, wildlife, and uplands in the immediate vicinity of the crossing. Locating the temporary workspaces associated with the HDD several hundred feet from the river in agricultural areas would minimize potential impacts to the public's use of the river. The public's ability to travel the river should not be impacted during construction. The main temporary impact would be from noise and additional traffic on the local roads during construction. Since trees would not be cleared along the banks of the river, after construction the location of the pipeline may not be noticeable to a person traveling down the river.

Although construction activities would be at least 500 feet from the river's edge, some changes to the visual setting would likely be noticeable to those using the river and adjacent areas during the approximate three month construction period. The presence of construction equipment and activities would result in short-term visual impacts for these users. Use of the HDD crossing method would minimize surface disturbance, thus long-term visual impacts would not be expected.

Indiana

Indiana Canoeing Trails

The Project would cross three waterbodies in Indiana that are designated as canoeing trails (the Wabash River, the West Fork White River, and the Whitewater River). The Wabash River is crossed in Vermillion and Parke Counties (MP 247.3) near the town of Montezuma. The West Fork White River is crossed in Morgan County (MP 315.8) near Martinsville. The Whitewater River is crossed in Franklin County (MP 393.2) near the town of Brooksville. The Wabash River and Whitewater River are both classified as Indiana outstanding rivers.

Rockies Express proposes to cross the Wabash and Whitewater Rivers using HDD. The proposed drill entry and exit holes and their associated temporary workspaces would be located several hundred feet from the river in agricultural land that is separated from the river by mature forest.

The use of HDD to cross the river would avoid disturbance to the streambed, stream banks, wildlife, and uplands in the immediate vicinity of the crossing. Locating the temporary workspaces associated with the HDD several hundred feet from the river in agricultural areas, would minimize potential viewshed alterations. Use of the HDD would allow the public to continue using the waterbodies during construction, although noise from construction activities would be noticeable by the public. After construction the pipeline should not have impact on the users of these waterbodies.

Changes to the visual setting along the Wabash and Whitewater Rivers would generally result in short-term visual impacts to recreationalists and others using the rivers and adjacent areas during the approximately three months of construction. The presence of a dense forest corridor along the banks of these rivers would limit the visibility of construction activities and equipment for those recreating along side or in the river. Therefore, any potential visual impacts would short-term in nature.

West Fork White River

Rockies Express has proposed to cross the West Fork White River using open-cut techniques. Open-cutting this waterbody would result in the crossing site being temporarily closed to canoeists and others during construction. Rockies Express has indicated that prior to construction it would post warning signs regarding waterbody construction both upstream and downstream of the crossing site to warn canoeists of construction. We do not believe this is sufficient, therefore, **we recommend that:**

- **Prior to the start of construction, Rockies Express file with the Secretary for review and written approval by the Director of OEP a plan for setting up a safe portage for canoeists who wish to traverse the crossing area of the West Fork White River during construction. This plan should include assistance transporting canoes around the work area for those who request help.**

Visual impacts at the West Fork River crossing would be more severe, due to the presence of construction activities within the river. However, Rockies Express anticipates that the open-cut across the river would be completed in approximately two days. Further, Rockies Express has indicated they would work to preserve wooded banks and trees where possible and would restore the river bank contours to their original condition. Therefore, the removal of about 0.1 acre of forested land would comprise long-term to permanent visual impacts to users of this area. In section 4.3 we have recommended that Rockies Express use the HDD method for crossing the West Fork White River avoiding the temporary blockage of river traffic and the permanent alteration of the viewshed.

B&O Trail

The B&O trail, which includes portions of an abandoned railroad bed, crosses through Parke, Putnam, Hendricks, and Marion Counties. The trail is used for biking, hiking, and wildlife viewing.

Rockies Express states that it would traverse the B&O Trail using conventional boring methods at MP 250.8 in Parke County, Indiana, however alignment sheets indicate that a workspace for the crossing of County Road 325N would cover the trail. The placement of this workspace would prevent the use of the trail, in this location, during construction. Noise and dust during construction would have a temporary impact on trail users. It would also result in the clearing of trees along the path, a long-term or permanent impact. Rockies Express has indicated that it would pay for any damage to the trail.

Changes in the visual setting along the trail during construction would have a short-term visual impact on trail users. There is also a potential for long-term or permanent visual impacts on trail users due to the removal of about 0.5 acre of trees to accommodate ATWS. We believe that in order to preserve the public's use of the trail more needs to be done. Therefore, **we recommend that:**

- **Rockies Express file with the Secretary for review and written approval by the Director of OEP prior to the start of construction, a plan for the crossing of the B&O Trail. This plan should include measures for maintaining public access to the trail and avoidance of tree cutting at the crossing location.**

Areas within Cecil M. Harden Lake

The area within the Cecil M. Harden Lake boundary is managed by COE for recreational activities including: boating, camping, fishing, hiking, and picnicking. The area has infrastructure for recreational vehicles, water sports, and wildlife viewing. The area is also managed to provide flood reduction in downstream areas. The pipeline route would cross three waterbodies in Indiana that are located within the Cecil M. Harden Lake boundary: Byrd Branch at MP 268.4, Big Raccoon Creek at MP 269.9, and tributary to Big Raccoon Creek at MP 269.9.

Rockies Express has proposed open-cut construction techniques to cross Byrd Branch, Big Raccoon Creek, and the tributary to Big Raccoon Creek. As discussed in section 4.3, Rockies Express would maintain appropriate flow rates to protect aquatic life and prevent interruption to downstream uses. There would be no change to the stream's capacity during construction. About 0.5 acre of open water would be temporarily affected by each crossing and impacted by construction. All three waterbodies are bordered by forested land, which would be used for additional temporary workspace. At both the Byrd Branch and tributary to Big Raccoon Creek, about 0.5 acre of forest land would be required for temporary workspace. The Big Raccoon Creek crossing would require 1.8 acres of forest land.

Construction impacts on the public's use of Cecil M. Harden Lake would consist of an increase in noise during construction and possibly some silty water entering the lake. People hiking in the vicinity of the crossing or traveling on County Road 150 would likely notice noise, equipment, and possibly dust during construction. The changes in the visual setting during construction, especially during in-stream construction, would likely result in short-term impacts to individuals using these areas. Removal of trees in the right-of-way would result in long-term or permanent impacts to these users.

Big Walnut Creek and Big Blue River – Nationwide Rivers Inventory

NPS maintains the NRI database for river segments that are eligible for federal protection under the WSR of 1968. These rivers are valued for their fish, wildlife, and recreational significance and are considered Indiana navigable waterbodies.

The proposed pipeline route would cross two waterbodies in Indiana that are part of the NRI. Big Blue River would be crossed at MP 340.8 and Big Walnut Creek would be crossed at MP 281.5.

The Big Blue River would be crossed using the HDD technique. Approximately 3.2 acres of forested land around the waterbody would be used for additional temporary workspace associated with drill entry and exit holes. There are three wetlands that are part of the National Wetland Inventory, which would be avoided by the drill (see section 4.3.7).

The use of HDD to cross the river would avoid disturbance to the streambed, stream banks, wildlife, and uplands in the immediate vicinity of the crossing and would minimize potential viewshed alterations and potential impacts of noise and dust. No direct impacts to the Big Blue River are expected. Persons using the Big Blue River for recreation and viewing would likely be temporarily impacted by construction activities, including noise and dust. Since the extra workspaces for this crossing are set well back from the river and are in agricultural fields, after construction the crossing location should not be apparent to river users. Further, the dense forest surrounding the crossing site would help to mitigate visual impacts, making construction activities less visible to water-based users.

Rockies Express proposes to cross Big Walnut Creek using the open-cut method. Big Walnut Creek would be crossed in a scenic area about 1.0 mile downstream of a covered bridge. Open-cutting this waterbody would prevent floaters and canoeists from continuing through the area during construction.

Noise and dust from construction, along with silty water could temporarily (during construction and restoration) reduce the enjoyment of those using the area for recreation.

Visual impacts to individuals using Big Walnut Creek and adjacent areas would occur during construction due to the use of the open-cut crossing method. Short-term visual impacts would result from the clearing of 1.7 acres of forest land and use of 1.0 acre of agricultural land during construction. Long-term visual impacts to users of this area would result from the removal of about 0.2 acre of forested land within the permanent right-of-way. The removal of trees at the crossing would impact users by opening up the existing canopy. We believe that more can be done to reduce the impact on recreation in this area. We have recommended in section 4.3.5 that Big Walnut Creek be crossed using an HDD. In addition, **we recommend that:**

- **Rockies Express file with the Secretary for review and written approval by the Director of OEP prior to the start of construction a site-specific mitigation plan for the HDD crossing of Big Walnut Creek that includes a reduction of tree clearing at the crossing site, a revegetation plan including the planting of native vegetation, and a portage plan for users of Big Walnut Creek, including assistance in moving the canoes/floats around the crossing location if needed.**

U.S. Highway 40 – National Historic Road

The pipeline route would cross U.S. Highway 40, a National Historic Road, at MP 298.4 to 298.5 in Hendricks County, Indiana. This historic road was once a coast-to-coast route. In recent years, however, the entire segment west of Salt Lake City, Utah, has been decommissioned.

Potential traffic delays on U.S. Highway 40 would be avoided by boring under the highway. However, as construction activities would be within view of the highway, scenic views from the road would be impacted. Approximately 0.4 acre of forest land and 2.2 acres of agricultural land, used mainly for irrigated and non-irrigated winter wheat, wheat, corn and soybeans, on either side of the highway would be used to store excavated trench spoil. This area would be permitted to return to its pre-construction state.

Rockies Express would follow requirements included in its REX East Plan and the REX East Procedures. Any and all road damage would be repaired and no permanent structures would be placed alongside the highway. We believe that the use of conventional boring methods would minimize impacts on Route 40 which would be limited to dust, noise, and views of equipment during construction. After construction the surrounding area would be returned to agricultural activities. However, impacts to forestland within the permanent right-of-way and subsequent alterations to the viewshed would be permanent.

Camp Woodsmoke

Camp Woodsmoke is operated by the Lions Club, District 25F, and does not charge admission for the Scout groups, churches, and over 6,000 special-needs children who go there yearly.

The proposed pipeline would cross the camp between MP 375.1 and 375.3. The property would be traversed in a forested area at its southern end. Construction work would be greater than 2,000 feet from the developed campground areas. Rockies Express intends to use standard upland construction techniques, along with conventional boring, to cross Camp Woodsmoke. Construction at any one point would last approximately 8 to 12 weeks. Approximately 2.6 acres of forest land would be temporarily impacted by construction; this forest land consists primarily of mixed hardwood species including elm,

ash, maple, oak, and numerous others. Impacts to the camp during construction would include noise, dust, traffic, and machinery emissions, as well as loss of trees. However, since Rockies Express has not indicated when construction would take place through the camp and construction impacts would be more significant if campers are present, **we recommend that:**

- **Rockies Express work with Camp Woodsmoke to determine a schedule for crossing the camp. Rockies Express should discuss with the camp the need for any additional safety mitigation (fencing, signs) during construction in the camp. The results of this consultation should be filed with the Secretary for review and written approval by the Director of OEP prior to the start of construction.**

Short-term visual impacts to visitors to the camp are not anticipated as the proposed crossing route is more than 2,000 feet from the camp through a densely forested tract of land. However, others in the vicinity of construction may experience short-term visual impacts from the presence of equipment and workers associated with construction activities. These visual impacts are expected to last no longer than one to two weeks. Permanent visual impacts would occur as the result of tree removal (1.2 acres) within the permanent right-of-way as part of operational maintenance, which would occur every two to three years over the life of the Project.

Ohio

National Wild and Scenic River (Little Miami River and Big Darby Creek)

Little Miami River and Big Darby Creek are designated National Wild and Scenic River, per the provisions of Section 2(a)(ii) of the WSR. Under the authority of Section 2(a)(ii) of the WSR, the State of Ohio has the responsibility to manage the Big Darby Creek pursuant to the WSR. The Secretary of the Interior, through the NPS, retains jurisdictional authority for certain water resources projects. Section 7(a) of the WSR affords substantial protection to designated rivers and to congressionally authorized study rivers.

The NPS must prepare a Section 7(a) determination to evaluate whether a proposed water resources project would have a direct and adverse effect on the values for which a designated river was established, namely its free-flowing condition, water quality, and Outstandingly Remarkable Values (ORVs). The Little Miami River's ORVs are recreation and scenery. The Big Darby Creek's ORVs include its diverse fish and mussel communities.

Little Miami River

The Little Miami River extends south approximately 100 miles from Clark County, Ohio to the Ohio River. The OEPA has classified Little Miami River as a major and sensitive waterbody due to special status species and major crossing features. See section 4.3.5 for additional discussion about this crossing.

The Little Miami River would be crossed using HDD. The HDD entry and exit points would be in open fields, avoiding impacts to the forested riparian areas along the river bank. We have recommended in section 4.4.1 that minor brush clearing may take place within a 3-foot-wide path for the HDD tracking system. We further recommend below that another source be identified for the hydrostatic test water to protect the forested riparian areas and state-listed protect species (see section 4.7.5). Use of the HDD method would avoid disturbance to the streambed, stream banks, and upland in the immediate vicinity of the crossing. Following construction these areas would allowed to revert to pre-construction conditions. After construction, Rockies Express has agreed not to conduct normal maintenance (mowing)

on its permanent right-of-way between the entrance and exit points of the drill. Although we believe the HDD crossing of the Little Miami would limit temporary construction impacts to noise and dust and would result in no permanent impacts we believe other impacts are possible. We have also recommended additional mitigation in section 4.3.5.

In a meeting on July 10, 2007, the NPS expressed concern about the possibility of a frac-out, in which the HDD drilling fails and there is an inadvertent release of drilling fluids into the River. In order to protect water quality, Rockies Express has established procedures in its HDD Contingency and Inadvertent Release Plan for failed drills (FERC eLibrary, 2007d). We believe that Rockies Express' contingency plan is not detailed enough. Among other issues that need to be addressed in the contingency plan are: how drilling mud would be contained on site; how the drilling would conducted; would operations continue 24 hours a day until completion; how would frac-outs at shallow depths be prevented; how would down hole pressure be minimized; how would releases be categorized; what steps would be taken to stop and mitigate the release depending on where it occurred; what training would employees receive; and how would the area be monitored for releases. Therefore, **we recommend that**:

- **Rockies Express file with the Secretary prior to the end of the draft EIS comment period a site-specific plan for the crossing and restoration of the Little Miami River. This plan should include all proposed mitigation; contingency plans for HDD failures, frac-outs, and hydrostatic test water source and release; and revegetation. This plan should be developed in consultation with the ODNR and the NPS.**

In addition, the tributaries of the Little Miami River are also protected under the Wild and Scenic River Act. Rockies Express has indicated that it proposes to open-cut these tributaries. Since impacts to these tributaries have the potential to impact the Little Miami River, **we recommend that:**

- **Prior to the start of construction, Rockies Express file with the Secretary for review and written approval by the Director of OEP a site-specific plan for the crossing of each tributary of the Little Miami River, developed in consultation with the NPS. These plans should include:**

  a. dry-crossing method;
  b. minimization of tree clearing;
  c. erosion controls that would minimize down stream siltation; and
  d. a restoration and revegetation plan.

Changes to the visual setting along the Little Miami River would generally result in short-term visual impacts to people using the river and adjacent areas during construction. A few residences in the vicinity of construction may also experience short-term visual impacts from the presence of equipment and workers associated with construction activities. Due to the chosen crossing method and the riparian forest buffering the construction activities, minimal visual impacts are expected. There would also be short-term visual impacts as a result of the disturbance of agricultural land for site access and equipment staging areas. Use of the HDD crossing method would minimize surface disturbance, thus long-term visual impacts would not be expected.

Two alternatives for crossing the Little Miami have been identified. They are described in section 3 as the Little Miami Alternative (3.4.4) and the Mowrey Alternative (3.4.5). Neither is recommended as preferable. We have made a recommendation in section 4.3.2 the Little Miami Alternative be used if an HDD cannot be successfully completed at the Proposed route location and that Rockies Express successfully complete the drill before the overland pipeline is constructed in the vicinity of the Little Miami River.

Big Darby Creek

Big Darby Creek would be crossed by the REX East Project at MP 509.2 in Pickaway County. Big Darby Creek is designated as both a state and national scenic river. The Creek is nationally noted for its biological diversity, and its abundance of aquatic and terrestrial plants and animals. The creek's banks are flanked with native vegetation that varies considerably in width; at some points there is only a narrow line of trees while other areas exhibit deep and extensive forests. Low lying areas contain floodplain trees that tolerate periods of inundation such as buckeye, sycamore, silver maple, and box elder. Species more adapted to drier soils such as oak and sugar maple line the valley walls.

Rockies Express intends to cross Big Darby Creek using the HDD method. Use of HDD would avoid disturbance of the streambed, stream banks, and upland in the immediate vicinity of the crossing. Big Darby Creek would be crossed west to east with the drill entry point and extra workspace approximately 1,000 feet from the waterbody. The nearest residential area would be approximately 650 feet south of the southeast corner of the workspace. The workspace would overlap with one foreign pipeline and would be bordered by three additional foreign pipelines. The exit point and workspace is in cultivated agricultural land approximately 400 feet east of the waterbody and 350 to 400 feet south of four foreign pipelines. Measuring from the entry hole to the exit hole along the surface the total length of the drill path would be 2,128 feet. Approximately 3.3 acres of agricultural land and 0.9 acre of open land would be temporarily impacted in association with the entry and exit drill points within the additional temporary workspaces.

During the construction period, visual impacts would occur to creek visitors. Due to the chosen crossing method of Big Darby Creek, the dense forest buffering the construction activities, and the distance of the construction from the creek, minimal visual impacts are expected. These visual impacts would be short-term in nature, resulting from the disturbance of agricultural land while accessing the site.

Although we believe the HDD crossing of the Big Darby Creek would limit temporary construction impacts to noise and dust and would result in no permanent impacts we know other agencies have concerns about the crossing of this National Wild and Scenic River. In a meeting on July 10, 2007, the NPS, which administers the National Wild and Scenic Rivers program, expressed concern about the possibility of a frac-out, in which the HDD drilling fails and there is an inadvertent release of drilling fluids into the River. In order to protect water quality, Rockies Express has established procedures in its HDD Contingency and Inadvertent Release Plan for failed drills (FERC eLibrary, 2007d).

Rockies Express has filed a draft plan for the crossing of the Big Darby Creek, but we do not believe that it contains enough specific details Among other issues that need to be addressed in the contingency plan are: how drilling mud would be contained on site; how the drilling would conducted; would operations continue 24 hours a day until completion; how would frac-outs at shallow depths be prevented; how would down hole pressure be minimized; how would releases be categorized; what steps would be taken to stop and mitigate the release depending on where it occurred; what training would employees receive; and how would the area be monitored for releases. Therefore, **we recommend that:**

- **Rockies Express file with the Secretary for review and written approval by the Director of OEP prior to the end of the draft EIS comment period a site-specific plan for the crossing and restoration of the Big Darby Creek. This plan should include all proposed mitigation; contingency plans for HDD failures, frac-outs, and hydrostatic test water source and release; and revegetation. This plan should be developed in consultation with the ODNR and the NPS.**

We have also examined a route alternative in section 3.4.7 that would avoid crossing Big Darby Creek. We have made a recommendation in section 4.3.5 that this alternative be used if an HDD cannot be successfully completed.

In addition, the tributaries of the Big Darby Creek are also protected under the Wild and Scenic River Act. Rockies Express has indicated that it proposes to open-cut these tributaries. Since impacts to these tributaries have the potential to impact the Big Darby Creek, **we recommend that:**

- **Prior to the start of construction, Rockies Express file with the Secretary for review and written approval by the Director of OEP a site-specific plan for the crossing of each tributary of the Big Darby Creek, developed in consultation with the NPS. These plans should include:**

  a. dry-crossing method;
  b. minimization of tree clearing;
  c. erosion controls that would minimize down stream siltation; and
  d. a restoration and revegetation plan.

In addition, since one of the reasons Big Darby Creek was designated a Wild and Scenic River is because of the fish and state- and federally-listed mussels in the stream, we believe that the tributaries may also contain these species. Therefore, **we recommend that:**

- **Rockies Express should consult with the NPS to determine which of the tributaries of Big Darby Creek that would be crossed, should be surveyed for mussels and fish spawning areas. Rockies Express should file the results of any required surveys with the Secretary for review and written approval by the Director of OEP prior to the start of construction, along with any correspondence with the NPS.**

Nationwide Rivers Inventory (Four Mile Creek, Great Miami River, Paint Creek, and Seven Mile Creek

The pipeline route would cross four waterbodies in Ohio that are listed in the NRI: Four Mile Creek at MP 421.6, the Great Miami River at MP 430.7, Paint Creek at MP 486.4, and Seven Mile Creek at MP 422.7.

Four Mile Creek

Four Mile Creek is listed on the NRI list for its recreational and scenic values as well as for its fishery resources. Rockies Express intends to cross Four Mile Creek using the HDD method. Use of the HDD method to cross the other waterbodies would avoid disturbance of the streambed, stream banks, and upland in the immediate vicinity of the crossing. Using this method would avoid the need for re-contouring approaches and stream banks and the challenges of re-establishing vegetation adjacent to these features.

Construction activities would result in temporary impacts on recreational activities. However, locating the temporary workspaces associated with the HDD several hundred feet from the rivers in un-forested areas would minimize potential viewshed alterations and potential impacts from dust and construction equipment. Further, users of Four Mile Creek would be partially shielded from construction activities by trees along the banks which would not be impacted. Construction activities should not preclude any water-based activities, although construction noise would likely be heard on Four Mile

Creek and users may catch glimpses of the construction activities. After construction, the pipeline corridor should not be apparent to users of Four Mile Creek.

Great Miami River

The Great Miami River is listed for its fish, wildlife, and recreational values. The OEPA has also classified it as a major and sensitive waterbody due to exceptional warm-water features. Rockies Express intends to cross the Great Miami River using the HDD method. Use of the HDD method to cross the other waterbodies would avoid disturbance of the streambed, stream banks, and upland in the immediate vicinity of the crossing. Using this method would avoid the need for re-contouring approaches and stream banks and the challenges of re-establishing vegetation adjacent to these features.

The HDD entry site and extra workspace would be on the east side of the Great Miami River approximately 1,000 feet from the river and the exit site would be about 500 feet from the river. Although both work areas would be in forest, neither would be in the riparian corridor along the river. Neither work area should be visible to river users, except possibly in the winter and spring when the leaves are off the trees. Temporary impacts to recreational users include noise, dust, additional road traffic in the area, and possible season glimpses of construction equipment. Construction activities would not preclude recreational activities on the river. The only long-term or permanent impacts would be as the result of tree removal for the HDD.

Painted Creek

Painted Creek is listed for its fish, wildlife, and recreational values. Rockies Express intends to cross Painted Creek using the open-cut methods, adjacent to an existing Texas Eastern pipeline right-of-way. Temporary impacts during construction would include the closure of Painted Creek to recreational activities at the crossing location, noise, and dust. Visual impacts to individuals using Paint Creek and adjacent areas would occur during construction due primarily to the use of the open-cut crossing method. Permanent impacts include the removal of trees to widen the existing corridor. Rockies Express has not indicated how it would mitigate for the disruption in the use of this waterbody for recreational activities. Therefore, **we recommend that**:

- **Rockies Express develop a plan for warning boaters of construction on Painted Creek. In addition, the plan should contain provision for a safe portage through the construction work area. Rockies Express should provide assistance in moving the boats around the construction work area if requested. Rockies Express should file this plan with the Secretary for review and written approval by the Director of OEP prior to the start of construction.**

Seven Mile Creek

Seven Mile Creek is listed on the NRI due to its high quality water. Rockies Express intends to cross Seven Mile Creek using the HDD method. Use of the HDD method to cross the waterbody would avoid disturbance of the streambed, stream banks, and upland in the immediate vicinity of the crossing. Workspaces for the HDD would be at a minimum 600 feet from the waterbody. Changes to the visual setting along Seven Mile Creek would generally result in short-term visual impacts to recreationalists and others using the rivers and adjacent areas during construction. However, locating the temporary workspaces associated with the HDD several hundred feet from the rivers in un-forested areas, would minimize potential viewshed alterations and potential impacts from dust and construction equipment. Use of the HDD crossing method, along with implementation of the Project's Procedures should result in no temporary or permanent impacts on the water quality in Seven Mile Creek.

Accommodation Line – Scenic Byway

The pipeline route would cross U.S Highway 42 at MP 450.7 in Warren County, Ohio. The highway at this location is a Scenic Byway known as Accommodation Line. Accommodation Line was an early 19th Century stagecoach route dotted by historic farms with a large historic district at each end. Large sections of the Accommodation Line were utilized in the Underground Railroad during the nineteenth century.

Rockies Express intends to cross the Accommodation Line using traditional boring. Boring would avoid some impacts to the Accommodation Line and the traffic traveling it. Persons using the Accommodation Line would be temporarily impacted by construction activities, including noise and dust and additional traffic on the road. In addition, short-term visual impacts would occur from the disturbance of about 8.3 acres of agricultural land and a small wetland area alongside the highway. There should be no significant permanent impacts to the Accommodation Line or travelers on it.

Little Miami Scenic State Park

The Little Miami Scenic State Park roughly parallels the Little Miami River and is managed by ODNR. It is a linear park with a bicycle path on a former railway bed, and runs parallel to Corwin Road. The proposed pipeline route would cross approximately 100 feet of the park at MP 451.3 in Warren County, Ohio. Rockies Express proposes to cross the park by horizontal bore. This crossing method would allow for continued use of the trail during construction and preserve the tree canopy that exists at the crossing site. Further, the horizontal bore method helps to reduce the amount of dust, noise, and overall disruption of the existing viewscape due to the presence of construction equipment and activities. However, since Rockies Express has not provided a site-specific plan for crossing the park, therefore, we **recommend that:**

- **Rockies Express file with the Secretary for review and written approval by the Director of OEP prior to the start of construction a plan for the construction and restoration of the Little Miami Scenic State Park. Rockies Express should also include a plan for maintaining safe public access through the construction area and revegetating the disturbed areas by planting native vegetation. This plan should be developed in consultation with the ODNR.**

Caesar Creek State Park and Wildlife Area

Caesar Creek State Park and Wildlife Area would be crossed between MPs 459.5 and 459.8 in Clinton County, Ohio. The 4,700 acre state park offers outdoor recreation such as boating, fishing, hiking, and camping with a peak season throughout the summer months. The 2,500 acre wildlife area offers hunting and fishing, with a peak season of October through December.

Both Caesar Creek State Park and the Wildlife would be crossed using standard upland construction methods. Construction of the proposed pipeline across these lands would temporarily impact 1.1 acres of agricultural land comprised primarily of winter wheat, wheat, corn and soybeans along with an acre of mixed deciduous forests of elm, ash, hickory, birch, maple cherry, cottonwood, oak, willow, and/or poplar. In addition a small portion of open water (0.1 acre) and about 1.4 acres of forest land would be impacted during the construction phase.

Caesar Creek itself would be crossed by the HDD method. This crossing would temporarily affect about 1.5 acres of agricultural land within the state park and 0.9 acre of agricultural land in the

wildlife area to be used for additional temporary workspace. Post construction, approximately 0.4 acre of agricultural land and about 0.5 acre of forest land and 0.1 acre of open water would remain permanent right of way.

Temporary impacts may include the loss of revenue as the result of potential park visitors who decide to stay away during construction. Other visitors may be inconvenience by construction traffic, noise and dust during construction. In addition, visual impacts would result from the removal of trees during construction. Permanent visual impacts would occur as the result of tree removal within the permanent right-of-way as part of operational maintenance, which would occur every two to three years over the life of the Project.

Since Rockies Express has not provided a site-specific plan for crossing these areas, therefore, **we recommend that:**

- **Prior to the start of construction, Rockies Express file with the Secretary for review and written approval by the Director of OEP a site-specific crossing, mitigation, and restoration plan for pipeline construction activities in Caesar Creek State Park and Wildlife Area developed in consultation with the ODNR.**

Two alternative routes have been developed for this general vicinity and are described in section 3. The Mowrey Alternative (3.4.5) would cross more land within Caesar Creek State Park. The Little Miami Alternative (3.4.4) would avoid the Park altogether.

Deer Creek State Park

Deer Creek State Park is located in Pickaway County, Ohio. The park is managed by COE, Huntington District, and intersects the proposed pipeline from MP 499.9 to 500.8 and 500.8 and 500.9. Completed in 1968, the 2,337-acre park is centered around the Deer Park Reservoir, formed by a man-made dam, that offers various water activities for visitors. Recreational use of the park includes hunting, as well as fishing, swimming, and numerous hiking trails. Deer Creek Wildlife Area, located at MP 498.8 to 499.9, is adjacent to the park and is managed by the ODNR.

COE has indicated that the REX East pipeline should be collocated with the existing Texas Eastern pipeline corridor through Deer Creek Lake State Park, and we have recommended this in section 3.4.6.

Perry State Forest and Blue Rock State Forest

Perry State Forest is located in Perry County, Ohio between MPs 558.5 and 558.7, and again between MPs 558.9 and 559.9. Blue Rock State Forest is located in Muskingum County, Ohio, and would be crossed by the project between MPs 581.6 and 582.7. Both of these state forests are managed by ODNR for purposes of timber harvest, habitat preservation, and recreational opportunities.

Rockies Express intends to use standard open-cut construction techniques to cross these areas. Approximately 18.1 acres of forested lands, comprised mostly of evergreen and deciduous tree species such as pine, spruce, or cedar and elm, ash, hickory, birch, maple, cherry, cottonwood, oak, willow, or poplar, would be temporarily impacted during construction through Perry State Forest. Visual impacts to park visitors and/or recreationalists would be primarily due to the removal of large specimen trees. Impacts from operation of the proposed pipeline would primarily result from the permanent 10 foot wide pipeline right-of-way that would be cleared of forest cover and planted with herbaceous cover. Trees and

large shrubs would not be allowed to re-grow in the permanent right-of-way, which would result in a permanent visual impact associated with 7.3 acres of forested land.

Construction through Blue Rock State Forest would temporarily impact about 16.7 acres of forested land of similar composition as described above. Following construction, the 10 foot wide permanent right-of-way would result in impacts to approximately 6.7 acres of forested land, in which trees would not be allowed to repopulate.

Temporary impacts may include the loss of revenue as the result of potential park visitors who decide to stay away during construction. Other visitors may be inconvenience by construction traffic, noise and dust during construction.

Because Rockies Express has not provided a plan for crossing these state forests, therefore, **we recommend that:**

- **Prior to the start of construction, Rockies Express file with the Secretary for review and written approval by the Director of OEP a site-specific crossing, mitigation, and restoration plan for pipeline construction activities in Perry State Forest and Blue Rock State Forest.**

White Oak Exotic Hunting Preserve

The Project would cross the White Oak Exotic Hunting Preserve at approximately MP 607.7 in Guernsey County, Ohio. The property is a privately owned tract (Tract OH-GN-120.000) used for recreational hunting.

The owners of the White Oak Exotic Hunting Preserve indicate that they have already lost an estimated $20,000 of income as a result of survey activities along the right-of-way in the fall of 2006. The FERC expects that any loss of revenue due to the REX East Project will be addressed in the easement negotiations. The project would have unknown impacts on vegetation and wildlife. These impacts could potentially affect future revenue from the hunting preserve. The environmental impacts to the White Oak Exotic Hunting Preserve are unclear, and we have not yet identified a resolution to this issue. Therefore, **we recommend that:**

- **Prior to the start of construction, Rockies Express file with the Secretary for review and written approval by the Director of OEP a site-specific crossing plan for pipeline construction activities in the White Oak Exotic Hunting Preserve, and that Rockies Express work with the land owner to find a time for construction that is minimally disruptive to their business.**

Raven Rocks

Raven Rocks is a privately-owned reserve located between MPs 628.5 and 630.3 in Belmont County, Ohio. Raven Rocks, Inc (Raven Rocks) was established in 1970 to preserve about 850 acres of scenic ravines, hills, and woodlands. Since then, an additional 410 acres have been added to the preserve. The area is known for dramatic rock formations, high bluffs, and spectacular vistas. Several rock arches are located nearby. In addition to public education and outreach efforts, the members of Raven Rocks raise and sell Christmas trees to support the reserve. The proposed pipeline route crosses a hemlock-hardwood forest and non-calcareous cliff community along an existing power line right-of-way.

Rockies Express intends to use standard upland construction techniques to cross Raven Rocks Reserve. Approximately 0.6 acre of agricultural land primarily consisting of row crops and pasture/hay fields, 6.8 acres of open land, and 19.9 acres of forest land comprised of mixed pines and deciduous species would be temporarily impacted during construction through Raven Rocks. Following construction 0.2 acre of agricultural land, 2.7 acres of open land, and 8.0 acres of forest land would be in permanent right-of-way.

The crossing in Raven Rocks parallels an existing powerline right-of-way, and construction would not cross areas of the reserve commonly used for recreational and educational purposes. Additionally, the construction of the pipeline would be buffered by forest land so that noise, dust, and visibility impacts would be minimized.

During the construction period, visual impacts to Raven Rocks visitors and/or recreationalists, would primarily be limited the presence of construction equipment and vehicles, as the proposed crossing is located several hundred feet from activity areas. Further, the proposed pipeline route would be collated with an existing right-of-way corridor, which helps to minimize the long-term impacts to the viewshed. Due to forestland buffering the construction area, and the distance of the construction from the use areas, minimal visual impacts are expected.

Captina Creek Preserve

The Captina Creek Preserve is a privately-owned preserve located between MP 624.6 and 625.1 of the proposed right-of-way in Belmont County, Ohio. The woodland preserve contains Captina Creek, one of the few creeks in Ohio that is designated as an exceptional warm-water habitat by the EPA and supports many species of aquatic habitat. While the pipeline crosses the preserve, it would not cross Captina Creek.

Rockies Express intends to use standard upland construction techniques to cross the Captina Creek Preserve. Construction would temporarily impact 7.5 acres of agricultural land comprised primarily of row crops and pasture/hay fields and forest land consisting of mixed pines and deciduous species. Following construction, 2.8 acres of both agricultural and forest land would be impacted as part of the permanent right-of-way. Agricultural land would be allowed to revert back to pre-construction condition while the forested land would be maintained clear of trees and large shrubbery.

During the construction period visual impacts would occur to preserve visitors. This would be most notable with the removal of large specimen trees within the permanent right-of-way which would be prevented from re-establishing trees and other large vegetation.

4.8.6 Visual Resources

The proposed REX East pipeline right-of-way predominantly crosses privately owned agricultural lands. Private lands are not subject to federal or state visual management standards. Visual resources on private lands are a function of geology, climate, and historical processes; and are influenced by topographic relief, vegetation, water, wildlife, land use, human uses, and development. The topography varies along the proposed pipeline route from lowlands in eastern Missouri, flat topography in Illinois, Indiana, and Nebraska, to rolling hills in eastern Ohio and Wyoming.

This section provides a general discussion of visual impacts and specific impacts of above-ground facilities. For discussion of specific visual impacts in recreation and special use areas see section 4.8.5 (table 4.8.5-1).

Pipeline Facilities

Rockies Express proposes to use a 125-foot-wide construction right-of-way for the majority of the proposed pipeline route, which would be widened in some locations for additional temporary workspace areas. Visual impacts associated with the construction right-of-way and additional temporary workspace areas would include the removal of existing vegetation and the exposure of bare soils, as well as earthwork and grading scars associated with heavy equipment tracks, trenching, blasting, rock formation alteration or removal, and machinery and tool storage. Other visual effects may result from the removal of large individual trees that have intrinsic aesthetic value; the removal or alteration of vegetation that may currently provide a visual barrier; or landform changes that introduce contrasts in visual scale, spatial characteristics, form, line, color, or texture.

Visual impacts would be greatest where the pipeline route parallels or crosses roads, trails, recreational waterbodies, overlooks, historic properties and districts, and where the pipeline right-of-way may be seen by passing motorists or recreational users. The impacts of which would vary depending on vegetation type. The recovery timeframe would be shortest on agricultural and open lands consisting of herbaceous and shrub communities, where the re-establishment of vegetation following construction would be relatively fast (between one or two growing seasons). Short-term impacts to developed lands would also be minor due to the previously disturbed nature of these areas and the quick recovery time.

The greatest potential for visual impact would be from the removal of large, mature forest, which would take a longer time to regenerate than other vegetation types, and would be prevented from re-establishing on the permanently-maintained 50-foot-wide right-of-way. Clearing of forested areas would produce long-term and permanent impacts. Clearing would convert existing forested areas to open areas and result in a new corridor with distinctive edges. Rockies Express has attempted to collocate the pipeline with existing rights-of-way through forested areas, reducing new visual impacts. In general, visual impacts would diminish over time as the affected areas gradually blend in with the surrounding landscape.

The landscape setting along the pipeline route is generally flat, and views of the construction activities may extend for some distance. However, the construction work areas would be restored as near as possible to pre-construction contours and in some areas, revegetation would occur. Once revegetation is complete, there would be no significant alteration of the landscape of the region.

Site-specific Visual Impacts

Because of these considerations, we conclude that construction of the REX East Pipeline would not significantly alter the visual resources of the areas crossed.

Aboveground Facilities

Aboveground facilities would be the most visible features constructed as part of the project, and would result in a long-term change to the appearance of the landscapes where they are located. Aboveground facilities associated with the REX East Project consist of five compressor stations on the main REX East route from Missouri to Ohio, and one each in Phelps County, Nebraska and Carbon County, Wyoming. Additionally, 20 meter stations would be constructed along the REX East route in 13 locations, all but four of which would be located within the footprint of a proposed compressor station. The project would include 42 MLVs, but these would be relatively small facilities compared to other above ground facilities. The compressor stations and meter stations would be more readily visible. These facilities are listed in table 4.8.6-1, which also gives the distance to the nearest viewshed that has the potential to view the proposed compressor stations and meter stations.

Table 4.8.6-1

Potential Visual Impacts Associated with Major Aboveground Facilities a/

State/County	Facility	MP	Nearest Public Viewshed	Visual Impact	Distance from Facility to Viewshed (feet)
MISSOURI					
Audrain	Mexico Compressor Station	0.0	Road 441	Highly visible from immediate surrounding roads	327
ILLINOIS					
Christian	Blue Mound Compressor Station	144.1	North 1400 East Road	Highly visible from immediate surrounding roads	369
Moultrie	NGPL	178.7	Unnamed Road	Visible from adjacent road	158
	Illinois Power Meter Station				
Douglas	Trunkline Gas Company Meter Station	195.3	Unnamed Road	Visible from adjacent road	1,205
Edgar	Midwestern Meter Station	231.5	North 1700th Street	Visible from adjacent road	992
INDIANA					
Putnam	Panhandle Eastern Pipe Line Company Meter Station	274.5	West Cord 850 North Road	Visible from adjacent road	216
Putnam	Bainbridge Compressor Station	277.3	North County Road 200 East	Highly visible from immediate surrounding roads and Walnut Creek	566
Morgan	Citizen Gas & Coke Utility Meter Station	305.9	Greencastle Road	Visible from adjacent road	193
Johnson	Indiana Gas Company Meter Station	316.4	Old Road	Visible from adjacent road	671
Shelby	ANR Meter Station	342.3	South 600 West Road	Visible from adjacent road	186
OHIO					
Butler	Hamilton Compressor Station and AK Steel Meter Station	435.6	Emerald Way Road	Visible from adjacent road	1,750
Warren	Lebanon Hub – Dominion, TETCO, Texas Gas, Vectren, and Columbia Gas Meter Station	444.0	Unnamed Road	Visible from adjacent road	818
Pickaway	Columbia Gas of Ohio Meter Station	515.0	U.S. Highway 23	Visible from nearby road	947
Fairfield	Columbia Gas Meter Station	539.8	North Glenn Drive Northeast	Visible from adjacent road	925
Muskingum	Chandlersville Compressor Station	575	Irish Ridge Road	Visible (moderately) from road	1,250
Guernsey	Tennessee Gas Meter Station	592.4	Spencer Road	Visible from adjacent road	67
Noble	Dominion Transmission, Inc Meter Station	612.0	Saint John Road	Visible from road	1,387

Table 4.8.6-1

Potential Visual Impacts Associated with Major Aboveground Facilities a/

State/County	Facility	MP	Nearest Public Viewshed	Visual Impact	Distance from Facility to Viewshed (feet)
Monroe	Clarington Hub – Dominion Transmission, Dominion East Ohio, and TETCO Meter Station	639.1	Township Highway 964	Visible from adjacent road	234

a/ The Arlington and Bertrand compressor stations would not have visual impacts.

The compressor stations would be built at various locations throughout the pipeline right-of-way. With the exception of the Hamilton Compressor Station, they would be located on primarily agricultural lands with a generally flat topography. The Hamilton Compressor Station would be located on primarily agricultural and industrial lands with rolling topography. On flat land, compressor stations would be fairly visible due to their height relative to surrounding areas.

Each of the meter stations would be installed at locations with aesthetics and topography similar to that described for the pipeline and any nearby compressor station. The meter stations would be installed on primarily agricultural and open land. They would visible from nearby roads, but are not expected to create a unique visual impact on the area. Meter stations serve as interconnects with other pipeline systems, and would be located close to existing, previously disturbed and cleared pipeline rights of way.

Most MLVs are expected to be located in agricultural or open areas where minor visual impacts on nearby viewers may occur. In general, the impacts on visual resources resulting from the construction and operation of the MLVs would be minimal as each site would be less than 0.06 acre in size and would be operated within the pipeline right-of-way or within a proposed aboveground facility (e.g., compressor station site). MLVs would be enclosed in a chain-link security fence. As previously discussed, MLVs are relatively small and are not expected to present a significant change in the visual quality of areas surrounding the pipeline right-of-way. Rockies Express does not intend to visually screen MLVs as this would necessitate a larger land area and may impede current farming practices. Maintaining smaller, yet viewable, MLV sites on agricultural land would preclude the need to permanently remove agricultural land from production.

Our review indicates that construction and operation of the REX East Project would not result in significant adverse impacts on visual resources. Temporary impacts could result from the presence of construction equipment along the right-of-way, but the remote location and short duration of the construction sequence would minimize these impacts.

4.9 SOCIOECONOMICS

The REX East Project would involve the construction and operation of a 639.1-mile-long natural gas pipeline that would cross 34 counties in four states: Illinois, Indiana, Missouri, and Ohio. Seven compressor facilities would also be constructed. Five compressor stations would be constructed along the REX East pipeline route in these states, while the two other compressor stations would be constructed in Carbon County, Wyoming, and in Phelps County, Nebraska along the REX West pipeline (for a total of 36 counties). Additional temporary workspaces along the pipeline right-of-way would be necessary at multiple locations to support construction activity. Although existing roads would be utilized to access the construction right-of-way to the extent practicable, the Project would include the modification and extension of some existing roads and the construction of new roads. The use of several contractor/pipe yards would also be required during construction. Refer to sections 2.0 and 4.8 for more information regarding the Project facilities, their proposed locations, and land requirements.

For the purposes of this socioeconomics section, the term "Project area" refers generally to the 36 counties in which Project pipeline and the Project facilities would be located. The following sections discuss the existing socioeconomic conditions in the REX East Project area, the anticipated socioeconomic impacts of the Project on this area, any planned mitigation measures, our analysis, and our recommendations. Potential impacts of the Project on socioeconomic conditions in the Project area include potential impacts associated with a Project-related increase in population, potential local and regional economic impacts, potential impacts on transportation, and potential impacts on property values. Potential impacts associated with Project-related increases in population include impacts on employment, housing, and the provision of public services. Potential local and regional economic impacts include impacts on tax revenues and economic activities within areas crossed by the Project. Potential impacts on transportation include potential disruptions of traffic and potential increases in traffic. Potential impacts of property values include changes in property value associated with the presence of the Project facilities.

In accordance with EO 12898 on Environmental Justice, all public documents, notices, and meetings were made readily available to the public throughout the REX East Project area during Project development. The mailing list for the Project has been continuously updated during the EIS process. The public has been notified of all official proceedings of the various Project components with the issuances of Notices of Intent (NOIs) and scoping meetings in the Project area. Section 1.3 of this draft EIS further describes the public participation and notification process. Much of the proposed route is collocated with other utility or transportation corridors. The REX East Project would not significantly impact urban or residential areas, and no disproportionately high and adverse human health or environmental effects on minority or low-income communities or Native American tribes have been identified.

4.9.1 Existing Socioeconomic Conditions in the Project Area

Table 4.9.1-1 presents selected demographic and socioeconomic data existing in the counties and states that would be affected by the Project.

The total population in counties affected by the Project is over 2.2 million. Fewer than half the counties (15 of 36) have populations greater than 40,000. The populations among the individual counties vary from 5,412 to 350,412. Although the majority of the counties crossed by the Project are moderately populated, the Project area includes both rural and metropolitan areas. The average population density for all 36 counties within the Project area is 123.8 persons per square mile, although seven counties have more than 200 persons per square mile. The average annual per capita income for the states affected by the Project is $32,197 compared to an average annual per capita income of $26,848 for the counties affected by the Project area. The average county workforce is about 33,000 persons and varies from less

Table 4.9.1-1

Demographic and Socioeconomic Conditions for States and Counties Crossed by the Project

State/ County	Population a/	Population Density (persons/square mile) a/	Per Capita Income (in annual dollars) a/	Civilian Labor Force (persons) b/ c/	Unemployment Rate (percentage) b/ c/	Major Industry (percentage) a/
Missouri	**5,842,713**	**81.2**	**30,475**	**3,017,000**	**5.7**	**Education, health, social services (20.4)**
Audrain	25,739	37.3	23,694	11,806	4.6	Manufacturing (23.4)
Ralls	9,925	20.4	25,111	5,400	5.0	Manufacturing (21.3)
Pike	18,566	27.3	21,881	8,707	5..3	Manufacturing (19.1)
Illinois	**12,831,970**	**223.4**	**34,721**	**6,386,000**	**6.1**	**Education, health, social services (19.4)**
Pike	16,840	20.9	25,290	8,605	4.5	Education, health, social services (20.3)
Scott	5,377	22.1	23,090	2,812	5.3	Education, health, social services (19.3)
Morgan	35,666	64.4	26,224	17,800	4.9	Education, health, social services (25.2)
Sangamon	193,524	217.6	32,736	108,444	4.2	Education, health, social services (22.3)
Christian	35,063	49.9	26,605	27,195	6.6	Education, health, social services (20.9)
Macon	109,309	197.6	30,667	54,604	5.3	Education, health, social services (20.1)
Moultrie	14,383	42.6	26,117	8,175	3.6	Manufacturing (26.9)
Douglas	19,791	47.8	27,461	10,349	4.2	Manufacturing (22.7)
Edgar	19,183	31.6	24,527	10,695	4.8	Manufacturing (27.0)
Indiana	**6,313,520**	**169.5**	**30,204**	**3,160,000**	**5.3**	**Manufacturing (22.9)**
Vermillion	16,645	65.4	26,633	8,216	6.5	Manufacturing (23.2)
Parke	17,021	38.8	23,007	8,015	5.5	Manufacturing (23.6)
Putnam	36,978	75.0	25,113	18,157	5.3	Manufacturing (20.5)
Hendricks	131,204	254.9	32,060	71,508	3.6	Education, health, social services (17.7)
Morgan	70,290	164.1	29,485	38,288	4.5	Manufacturing (19.0)
Johnson	133,316	359.8	31,583	72,115	3.9	Education, health, social services (18.6)
Shelby	44,114	105.3	29,376	24,335	4.4	Manufacturing (28.1)
Decatur	24,948	65.9	27,194	12,631	4.4	Manufacturing (37.0)
Franklin	23,373	57.4	28,908	12,246	5.7	Manufacturing (29.8)

Table 4.9.1-1

Demographic and Socioeconomic Conditions for States and Counties Crossed by the Project

State/ County	Population a/	Population Density (persons/square mile) a/	Per Capita Income (in annual dollars) a/	Civilian Labor Force (persons) b/ c/	Unemployment Rate (percentage) b/ c/	Major Industry (percentage) a/
Ohio	**11,478,006**	**277.3**	**31,161**	**5,884,000**	**6.3**	**Manufacturing (20.0)**
Butler	354,992	712.2	31,332	189,698	5.6	Manufacturing (21.7)
Warren	201,871	396.3	32,745	105,550	4.9	Manufacturing (23.2)
Clinton	43,399	98.7	27,073	24,218	4.8	Manufacturing (20.4)
Greene	152,298	356.5	32,497	77,420	5.1	Education, health, social services (23.8)
Fayette	28,305	69.9	27,280	16,261	5.0	Manufacturing (24.0)
Pickaway	53,606	105.1	24,842	24,206	5.8	Education, health, social services (16.2) Manufacturing (16.2)
Fairfield	140,591	243.0	30,383	74,172	4.8	Education, health, social services (17.7)
Perry	35,313	83.2	20,484	16,593	7.4	Manufacturing (26.1)
Muskingum	86,125	127.3	25,883	39,092	7.2	Manufacturing (24.8)
Guernsey	40,876	78.2	22,817	20,011	6.5	Manufacturing (21.8)
Noble	14,166	35.2	17,145	5,883	7.2	Manufacturing (23.5)
Belmont	68,771	130.7	25,259	32,494	5.9	Education, health, social services (23.4)
Monroe	14,606	33.3	22,291	5,105	11.3	Manufacturing (24.8)
Wyoming	**515,004**	**5.1**	**34,278**	**282,000**	**3.8**	**Education, health, social services (21.5)**
Carbon	15,325	2.0	28,438	7,939	3.4	Education, health, social services (17.1)
Nebraska	**1,768,331**	**22.3**	**32,341**	**990,000**	**3.8**	**Education, health, social services (20.7)**
Phelps	9,442	18.1	33,305	5,231	2.2	Education, health, social services (18.9)

Sources:
a/ U. S. Census Bureau, 2000.
b/ U.S. Department of Labor, Bureau of Labor Statistics, 2004.
c/ U.S. Department of Labor, Bureau of Labor Statistics, 2006..

than 3,000 to more than 189,000. The unemployment rate also varies substantially across counties within the Project area, from 2.2 percent to 11.3 percent with an average of 5.3 percent. In terms of number of persons employed, the two main industries in the Project region are manufacturing and the social services industry, which includes education and health. Agricultural production encompasses much of the acreage.

4.9.2 Employment

Potential impacts of the REX East Project on employment within the Project area could result from the influx of construction personnel and operational staff. The civilian labor force and unemployment rates for counties within the Project area are shown in table 4.9.1-1. The number of civilian laborers per county for counties within the Project area ranges from fewer than 3,000 to more than 185,000. Unemployment rates for counties within the Project area are generally comparable to corresponding state levels, with the exception of Monroe County, Ohio, which is approximately twice that of the state.

Pipeline construction would occur over seven "spreads," which are sections of the pipeline that would be constructed independently. Construction of the seven spreads would begin simultaneously in the spring of 2008, and each would require between 420 and 520 workers. Therefore, the total number of construction workers necessary for pipeline construction would be between 2,940 and 3,640. In addition, a total of 560 to 700 workers would be needed to construct the seven compressor stations (80 to 100 workers per site). Construction of the compressor stations would begin in the spring of 2008, except for the Chandlersville and Arlington Compressor Stations, which would begin construction in January 2009. Construction of meter stations, laterals, and interconnects would not require additional workers beyond those estimated above for construction of the pipeline and aboveground facilities. The total construction workforce would be 3,500 to 4,340. The construction workforce estimates are presented in table 4.9.2-1.

Table 4.9.2-1
Estimated Construction Workforce

	Number of Workers (Local and Non-local) a/
Pipeline Facilities	
Construction workforce per spread	420–520
Total construction workforce (7 spreads)	2,940–3,640
Aboveground Facilities	
Construction workforce per compressor station	80–100
Total construction workforce (7 spreads)	560 to 700
Total Construction Workforce	**3,500-4,340**

a/ This includes workforce for the meter stations, laterals, and interconnects.

Project construction would use local workers supplemented by workers from outside the Project area, as required. Pipeline industry labor agreements stipulate that local labor unions must provide at least 50 percent of the construction workforce. If non-union labor is used or local unions cannot provide at least 50 percent of the necessary workforce, additional non-local workers would be used. Rockies Express expects that about half the total construction workforce (between 1,750 and 2,170 workers) would be non-local. If the maximum workforce for a single spread is present within a single county, the increase in county population due to the influx of non-local workers would range from 0.1 percent to 4.8

percent during construction. Therefore, we believe that the construction of the REX East Project would provide a minor, temporary increase in construction-related employment in the Project area.

Following construction, 20 permanent full-time employees would be required to operate the new pipeline and aboveground facilities. The Mexico, Blue Mound, Bainbridge, Hamilton, Chandlersville, and Bertrand Compressor Stations each would have three full-time staff, and the Arlington Compressor Station would have two full-time staff. The small number of permanent staff required for operation of the proposed facilities would be a minor permanent increase in the local employment rate in the Project area.

4.9.3 Housing

Potential impacts on housing in the Project area would be from the temporary influx of pipeline construction workers and the relocation of permanent non-local employees into the Project area.

The estimated availability of temporary housing within the Project area is shown in table 4.9.3-1. The average number of estimated available units per county is about 3,000, but ranges considerably across counties within the Project area, from fewer than 500 units to just over 12,000.

Table 4.9.3-1
Temporary Accommodations for Counties within the Project Area

State/County	Rental Vacancy Rate (percent) a/	Hotel/Motel Units b/	Mobile Home Spaces a/	Vacant Rental Units a/	Vacant Units for Seasonal, Recreational, or Occasional Use a/	Total Available Units
Missouri						
Audrain	10.5	162	1,056	299	69	1,586
Ralls	16.3	485	979	130	437	2,031
Pike	12.4	64	1,177	238	317	1,796
Illinois						
Pike	7.3	41	1,024	124	342	1,531
Scott	6.9	0	342	37	57	436
Morgan	11.5	298	1,389	542	81	2,310
Sangamon	10.3	3,351	5,569	2,715	240	11,875
Christian	9.3	8	939	341	63	1,351
Macon	11.0	1,178	2,364	1,628	139	5,309
Moultrie	4.6	165	382	56	31	634
Douglas	6.2	205	591	115	32	943
Edgar	8.0	37	675	175	57	944
Indiana						
Vermillion	8.3	37	794	126	79	1,036
Parke	6.7	127	1,383	91	592	2,193
Putnam	5.2	326	1,731	146	409	2,612
Hendricks	10.1	1,082	1,893	713	168	3,856
Morgan	7.5	142	2,345	400	168	3,055
Johnson	10.1	708	2,356	1,124	261	4,449
Shelby	7.5	445	855	357	94	1,751
Decatur	6.3	239	861	170	106	1,376
Franklin	6.1	156	1,451	95	310	2,012

Table 4.9.3-1

Temporary Accommodations for Counties within the Project Area

State/County	Rental Vacancy Rate (percent) a/	Hotel/Motel Units b/	Mobile Home Spaces a/	Vacant Rental Units a/	Vacant Units for Seasonal, Recreational, or Occasional Use a/	Total Available Units
Ohio						
Butler	7.3	3,850	4,994	2,775	390	12,009
Warren	7.5	2,909	1,025	973	178	5,085
Clinton	8.1	248	1,561	422	146	2,377
Greene	7.0	1,461	871	1,266	270	3,868
Fayette	7.2	275	680	285	41	1,281
Pickaway	6.5	219	2,293	312	65	2,889
Fairfield	6.2	1,315	1,570	711	462	4,058
Perry	6.4	29	2,464	176	293	2,962
Muskingum	7.9	597	3,701	738	338	5,374
Guernsey	8.9	573	3,120	417	1,086	5,196
Noble	5.7	52	1,175	55	536	1,818
Belmont	8.5	383	2,760	659	380	4,182
Monroe	7.1	8	1,454	88	140	1,690
Wyoming						
Carbon	16.9	617	1,678	360	1,050	3,705
Nebraska						
Phelps	8.6	62	302	96	32	492

a/ U.S. Census Bureau, 2007.

b/ HotelsTravel, 2007.
World Wide Web, 2007.
Access Vermillion County, 2007.
Parke County Chamber of Commerce, 2007.
Sullivan Chamber and Economic Development, 2006.
Scott County Courthouse, 2007.

Rockies Express estimates that about 50 percent of the total construction workforce would come from outside the Project area. This means that 1,750 to 2,170 workers would require temporary housing. Over the seven construction spreads, this is an average of 250 to 310 workers requiring temporary housing per spread, including compressor station personnel. Non-local workers would likely choose various types of temporary accommodations including daily, monthly, and weekly rentals in motels and hotels, campgrounds, recreational vehicles and mobile homes, apartments, and houses. Based on past pipeline construction experience, Rockies Express expects that about 30 percent of the workers would use their own campers or trailers for temporary housing. Therefore, only 175 to 215 units would be required per spread, including compressor station personnel.

For purposes of this analysis, we assume that the workforce associated with an average spread would be located within only one county at a time. We then compared the number of available temporary housing units in each county to the estimated number of required units (which range from 175 to 215). The estimated number of temporary housing units available in each county is greater than the number of units required for an average spread. Therefore, we believe that the number of temporary units within the Project area would be sufficient to accommodate the temporary housing demand associated with non-local construction workers.

The availability of temporary accommodations would vary depending on local activities and tourism. Tourist and local activities in the Project area include, but are not limited to, outdoor recreation at state parks and National Forests, festivals and concerts, sporting events, and visitation to historical activities and sites. Construction activities would occur during the peak visitation period to many of the tourist attractions located within the Project area when hotels and campgrounds already have limited vacancies. If vacancy shortages occur during times of peak demand, non-local construction workers would need to seek accommodations in communities adjacent to the Project area and face a longer commute to their worksite. If such shortages occur, we expect that they would be localized and of limited duration (such as isolated weekends). We believe that construction of the REX East Project would have a minor temporary impact on temporary housing availability in the Project area.

As noted above, 20 permanent workers would be required for operation of the Project. The housing markets of the communities within the Project area would easily accommodate the small number of permanent employees seeking new housing. We believe that operation of the Project would result in negligible impacts on the housing market.

4.9.4 Public Services

Public services in the Project area include law enforcement, fire and emergency response, medical treatment, and education. Construction and operation of the Project could result in impacts on the provision of public services. The potential impact on public services resulting from Project construction and operation would vary from community to community depending on the number of non-local workers relocating in each location, the duration of their stay, and the size of the community.

Table 4.9.4-1 summarizes the educational, medical, police, and fire full-time equivalents (FTE) for all counties and states within the Project area. For the services that have the most potential to be affected by the Project – medical, police and fire protection public services - there are an average of 181 medical, 115 police, and 53 fire FTEs in the counties crossed by the Project. Many counties, however, have less than 10 FTEs employed in these public services. As table 4.9.4-1 details, there are eight counties with less than 10 fire FTEs; 4 counties with less than 10 medical FTEs; and one county with less than 10 police FTEs in the Project area. Additionally, there are five counties with zero (0) fire FTEs and three with zero (0) medical FTEs.

Emergency response to potential construction accidents could impact local police and emergency medical services. The magnitude of this impact would depend on the frequency and severity of such accidents. Rockies Express has stated that it would coordinate with local police, fire, and emergency medical services to minimize impacts of Project construction on public services.

Given Rockies Express' commitment to coordinate with public service purveyors, we believe that impacts related to the need for emergency services during construction of the Project would be minor and temporary.

The influx of non-local workers could result in impacts on public services that are typical for an increase in population, such as increased demand for police and fire response, non-emergency medical services, and educational services. The degree of impact would vary from community to community depending upon the number of non-local workers and any accompanying family members that reside in each community, how long they stay, and the size of the community. The total population in the Project area is more than 2.2 million, as discussed above. Fewer than 2,170 non-local workers would temporarily

Table 4.9.4-1

Educational, Medical, Police, and Fire Full-time Equivalents within the Project Area

State/County	Education	Health and Hospitals	Police Protection	Fire Protection	Total Full-Time Equivalent (excluding education)
Missouri	**122,120**	**12,167**	**14,380**	**5,692**	**32,239**
Audrain	577	1	55	3	59
Ralls	134	5	18	0	23
Pike	445	157	58	25	240
Illinois	**251,680**	**22,108**	**39,335**	**15,205**	**76,648**
Pike	449	52	34	0	86
Scott	190	0	9	0	9
Morgan	768	79	90	26	195
Sangamon	4,080	148	469	242	859
Christian	993	24	82	40	146
Macon	2,059	59	255	160	474
Moultrie	227	4	38	19	61
Douglas	370	0	28	2	30
Edgar	484	14	42	16	72
Indiana	**126,426**	**25,692**	**12,520**	**6,316**	**44,528**
Vermillion	443	201	29	5	235
Parke	345	23	23	4	50
Putnam	998	241	45	13	299
Hendricks	1,946	712	166	94	972
Morgan	1,450	407	109	43	559
Johnson	2,135	473	210	91	774
Shelby	895	387	85	35	507
Decatur	523	248	47	20	315
Franklin	338	5	18	1	24
Ohio	**215,400**	**29,059**	**27,383**	**14,160**	**70,602**
Butler	5,668	293	611	385	1,289
Warren	2,458	326	243	112	681
Clinton	849	1,092	78	18	1,188
Greene	2,739	172	295	171	638
Fayette	593	271	57	14	342
Pickaway	996	370	120	121	611
Fairfield	1,901	69	211	134	414
Perry	732	64	50	5	119
Muskingum	1,888	163	196	74	433
Guernsey	701	38	85	22	145
Noble	249	35	20	0	55
Belmont	1,174	145	128	37	310
Monroe	367	55	45	1	101
Wyoming	**16,430**	**4,324**	**1,420**	**343**	**6,087**
Carbon	520	167	78	7	252
Nebraska	**42,378**	**4,577**	**3,512**	**1,200**	**9,289**
Phelps	378	0	20	0	20

Source: U.S. Census Bureau, 2004.

relocate into the Project area during construction, and only 20 workers would relocate during operation of the Project. We believe that the relocation of these workers would result in minor temporary (during construction) and permanent (during operation) impacts on public services.

4.9.5 Transportation

Construction activities could result in temporary impacts on transportation infrastructure. These impacts could include disruption to traffic flow due to the movement of construction equipment, materials, and crew members; construction of pipeline facilities across existing roads and railways; and damage to local roads from the movement of heavy construction equipment and materials.

We expect that the transportation infrastructure would be minimally and temporarily impacted by the REX East construction activities. Any temporary impacts would include damage to local unpaved roadways and disruption of traffic flow, particularly during initial staging which requires the transport of bulk construction equipment and materials to the respective spread areas, as well as disruption associated with roads open-cut for pipeline installation.

To minimize disruption to traffic flow from construction activities taking place across major roadways, Rockies Express would install the pipeline by horizontal boring underneath all paved roadway crossings, where possible. Where roads are crossed with an open-cut, temporary travel measures, such as steel plates, would be available during active construction to allow passage of emergency vehicles. Unlike horizontal boring, this technique may impact traffic by requiring road closures or the use of detours for the 1 to 2 days normally needed to perform the task. When no feasible detour is available, one lane of the road would remain open until full-road closure is necessary to install the pipe.

Proper signage would be used to notify drivers of construction activity and flaggers would be used to direct flow at high traffic road crossings. Road closures during peak traffic periods would be avoided to mitigate impacts on road traffic. Therefore, **we recommend that:**

- **Prior to the end of the draft EIS comment period, Rockies Express consult with each state's Department of Transportation and local traffic authorities regarding road closures and appropriate detours. Rockies Express should file documentation of this consultation with the Secretary.**

Project construction could also impact transportation within the Project area through damage to roadways or safety concerns from the movement and operation of construction equipment. Rockies Express would take several measures to mitigate these impacts including the following:

- observance of vehicle weight and width restrictions,
- removal of soil and other materials from roadways, and
- use of mats or other methods to ensure that equipment would not damage paved roadways.

We believe that implementation of the measures described above would avoid, minimize, or mitigate potential construction-related impacts on transportation infrastructure; these impacts would be minor and temporary.

Another potential impact is an increase in congestion on the roads from construction-related traffic. Construction-related traffic would occur each day to and from sites at each spread, and would remain relatively constant throughout the construction period. These trips are typically distributed along the spread, so areas of concentrated congestion would be avoided.

Rockies Express provided estimates of daily traffic volume for larger roadways (30 interstates and U.S. highways identified as such) that would be crossed by the proposed pipeline route. Because all such roadways would be crossed by horizontal boring, potential transportation impacts would be primarily related to construction and worker traffic. The average annual daily traffic on these routes is

30,000 vehicles per day, ranging from 1,230 to 93,130 vehicles per day. Based on the anticipated peak workforce for a site, we estimated that on average construction activities would result in an additional 175 vehicles per day. This results in an average increase in traffic volume of 0.6 percent on the roadways, with the volume ranging from a 14.2 percent increase on the least traveled roads to a 0.2 percent increase on the most heavily traveled roadways. These increases in construction-related traffic would be small relative to existing traffic within the Project area. We believe that transportation impacts resulting from construction-related traffic would be temporary and minor.

Therefore, in general, we believe that during construction, impacts on local traffic levels would not be significant because of the short duration of activities located within each construction spread and the generally rural locations in which most of the REX East Project would take place. Furthermore, pipeline construction work schedules typically begin and end outside of peak commuting hours.

The only impacts on transportation during Project operations would result from the presence of the small number of operational employees within the Project area. We believe that operational employees moving into and commuting to the Project area would have a negligible impact on transportation.

4.9.6 Economy and Tax Revenues

Construction and operation of the REX East Project would impact the economies and tax revenues of the Project area. During construction, Project-related spending on local goods and services and tax revenues paid for such goods and services would temporarily provide additional income in the Project area. During operation, annual property tax revenues would provide additional income to local governments.

However, both construction and operation could adversely impact the local economy through disruption to agriculture or commercial properties. These types of impacts are highly correlated with impacts on land use, and are discussed further in section 4.8. Another potential economic impact of the Project is effects on property values; these are discussed in a separate section below. Finally, revenue of parks or other recreational areas could be reduced if the Project resulted in a decrease in tourism and a corresponding decrease in user fees. An analysis of the impacts of the Project on recreational and special interest areas is discussed in section 4.8. Based on that analysis, we believe that any reductions in user fees would be minor. The remainder of this section focuses on the impact of Project-related spending on local goods and services and tax revenue.

During construction, some portion of the construction payroll would be spent locally for the purchase of goods and services, such as housing, food, gasoline, entertainment, and luxury items. The amount would depend on the number of construction workers and the length of their employment. Some portion of the construction materials likely would be purchased locally. These direct payroll and materials expenditures would have a positive impact on local economies and would stimulate indirect expenditures within the region as inventories are restocked or new workers are hired to meet demands. Local sales taxes would be paid on all goods and services purchased with payroll monies or for construction materials.

To estimate the economic impact of workforce payroll, Rockies Express assumes that 30 percent of the workforce payroll would be spent locally on goods and services, such as housing, food, fuel, entertainment, and luxury items. The increase in expenditures on goods and services would have a direct

impact on the local economy and could generate local tax revenues estimated up to $3.5 million.[1] The estimated workforce payroll and associated sales tax revenues are shown in table 4.9.6-1. Using Rockies Express' assumption that 50 percent of the construction workers would be local, the total pay to local workers (a maximum of 2,170 workers) during construction would be about $25 million. Therefore, the Project would add tax revenues to those states within the Project area during construction, providing a temporary and minor positive impact.

Table 4.9.6-1
Project Payroll and Sales Tax Revenues by State

State	Estimated Construction Payroll (dollars) a/	Estimate of Spending of Construction Payroll (dollars)	Estimated State Consumer Use Tax Revenues (dollars)b/	Estimated Sales Tax Revenues from Workforce Local Spending (dollars) c/
Missouri	$11,352,000	$3,405,600	$47,622	$204,336
Illinois	$51,480,000	$15,444,000	$9,286,299	$1,235,520
Indiana	$43,296,000	$12,988,800	$7,810,016	$779,328
Ohio	$61,512,000	$18,453,600	$11,095,937	$1,291,752
Wyoming	$240,000	$72,000	$336,000	$16,800
Nebraska	$240,000	$72,000	$336,000	$16,800
Total	**$168,120,700**	**$50,436,000**	**$28,911,874**	**$3,544,536**

a/ Rockies Express estimated construction payroll by multiplying the estimated total payroll by the amount of construction that would occur in each state.
b/ Rockies Express estimated consumer use tax revenues by multiplying estimated use sales tax on average for each state by the anticipated costs of non-local materials purchased.
c/ Rockies Express estimated that the total workforce local spending is equal to 30% of total construction payroll. This amount was multiplied by the estimated sales tax rate. The sales tax rates used for calculation are 6.9% for Missouri (average from range of 4.2% to 9.6%), 7.6% for Illinois (average from range of 6.25% to 9.0%), 6% for Indiana, 6.8% for Ohio (average from range of 6.0% to 7.5%), 6% for Carbon County, Wyoming, and 6.25% for Nebraska (average from range of 5.5% to 7.0%).

As mentioned in section 4.9.2, Rockies Express anticipates hiring 20 new permanent employees to operate the proposed pipeline and compressor station facilities, which would also generate additional state and local tax revenues.

Economic and fiscal impacts during Project operations would result from the property taxes paid on underground and aboveground facilities. These ad valorem taxes would vary depending on the size, type, and location of the facility. For example, tax revenues paid to localities with compressor facilities are larger than those revenues related to the pipeline because of the high capital costs of compressor facility construction. The estimated property taxes paid to each state for pipeline and major aboveground facilities are shown in table 4.9.6-2. We believe that property taxes paid on underground and aboveground facilities would have permanent, minor, and positive impacts on localities within the Project area.

[1] The total tax revenues generated by the expenditures of non-local workers within the Project area would depend on the temporary housing type that they choose. Taxes would be paid on hotel and motel rooms, but taxes would not be paid on rent for an apartment or house. This estimate assumes that all expenditures within the Project area would generate sales tax.

Table 4.9.6-2
Estimated Annual Ad Valorem Taxes (2009—2028) a/

Facility/State	Estimated Annual Ad Valorem Taxes Generated
Pipeline	
Missouri	$16,966,000
Illinois	$0 b/
Indiana	$42,555,000
Ohio	$350,057,000
Subtotal	**$409,578,000**
Major Aboveground Facilities	
Carbon County, Wyoming	$6,046,000
Phelps County, Nebraska	$6,630,000
Audrain County, Missouri	$26,402,000
Christian County, Illinois	$880,000
Putnam County, Indiana	$11,025,000
Butler County, Ohio	$106,950,000
Muskingum County, Ohio	$68,509,000
Subtotal	**$226,442,000**
Total	**$636,020,000**

a/ Ad valorem taxes are a property tax on public utility equipment. Ad valorem taxes generate revenue for the counties along the pipeline route.
b/ The state of Illinois does not tax pipeline facilities but does tax aboveground facilities.

4.9.7 Property Values

Landowners typically have the following concerns regarding potential impacts on property values: devaluation of property if encumbered by a pipeline easement; being the responsible party for property taxes within a pipeline easement; paying potential landowner insurance premiums for Project-related effects; and negative economic effects resulting from changes in land uses.

Prior to initiating construction, Rockies Express would acquire easements on private lands for both the temporary (construction) and permanent (operation) rights-of-way. The easement would provide Rockies Express the right to construct, operate, and maintain the pipeline, and establish a permanent right-of-way. In return, Rockies Express would compensate the landowners for use of the land and the temporary loss of crops or other land use. Where the pipeline route crosses public land, Rockies Express would coordinate with the managing agencies to obtain any required easements or permits.

If an easement cannot be negotiated with the landowner and a project has been certificated by the Commission, Rockies Express may use the right of eminent domain granted to it under Section 7(h) of the NGA to obtain the right-of-way and additional workspaces identified in the Certificate. Section 7(h) implies that eminent domain is a remedy of last resort, to be used "when any holder of a Certificate cannot acquire by contract, or is unable to agree with the owner of property to the compensation to be paid for, the necessary right-of-way." Under eminent domain, Rockies Express would still be required to compensate the landowner for the right-of-way and for any damages incurred during construction. However, the level of compensation would be determined by a court according to state law.

The impact that a natural gas project may have on the value of any land parcel depends on many factors, including the size of the parcel, parcel's current value, land use, and the value of other nearby

properties. However, subjective valuation is generally not considered in appraisals. This is not to say that the Project would not affect resale values. Potential purchasers may make a decision based on intended future use and, if the presence of the Project would make that use infeasible, it is possible that that potential purchaser may not acquire the parcel. However, each potential purchaser has differing criteria and means.

Landowners are responsible for all property taxes levied against parcels, and this responsibility would be independent of the existence of any Project-related pipeline easement. However, if a landowner felt that the Project, should it be constructed, reduced the value of their property, the landowner could appeal the assessment and subsequent property taxation to the local property taxation agency. If the parcel were re-appraised, the landowner would then be responsible for property taxes based upon an appraisal that directly incorporated the easement.

Regarding the potential for insurance premium adjustments associated with pipeline proximity, insurance advisors consulted on other natural gas projects reviewed by the FERC have indicated that LNG terminals and associated pipeline infrastructure do not have an impact on homeowner insurance rates (FERC, 2004). As such, the FERC believes that homeowners' insurance rates are unlikely to change as a result of construction and operation of the Project facilities.

As described in section 4.8, construction and operation of the Project would result in a permanent conversion of some lands currently used for agriculture or forestry operations to a maintained, utility right-of-way. As part of the right-of-way procurement process, Rockies Express would negotiate with the affected landowners to obtain an easement agreement that would compensate the landowner for lost economic production on agricultural or forested lands. Potential impacts to these types of land are discussed further in section 4.8.

4.10 CULTURAL RESOURCES

Section 106 of the NHPA, as amended, requires the FERC to consider the effects of its undertakings (including the issuance of permits, licenses, or authorizations) on historic properties and provide ACHP an opportunity to comment. Rockies Express is assisting the FERC in meeting our obligations under Section 106 and the implementing regulations at 36 CFR 800.

4.10.1 Cultural Resource Surveys

Rockies Express conducted cultural resources surveys for the proposed facilities, including the pipeline rights-of-way, laterals, expanded work areas, pipe/contractor yards, compressor stations, meter stations, and access roads. Phase I survey reports for surveys completed to date were submitted to the FERC and SHPO of each state crossed by the Project. Cultural resources investigations included archival research, as well as archaeological and architectural surveys. In general, a corridor 200 to 250 feet wide was surveyed along the pipeline route, with block survey at aboveground facilities and yards. Various survey methods were utilized as appropriate, including pedestrian survey, shovel testing, and auguring. Deep testing was conducted at river crossings and other areas where geomorphological conditions suggested the possibility for deeply buried deposits. Historic architecture within or adjacent to the proposed project corridor was documented. For both archaeological and architectural resources, eligibility for listing on the NRHP was assessed. Rockies Express has not yet completed cultural resources investigations. Additional field surveys and evaluations are ongoing. A summary of the status of cultural resource surveys to date for the Project is presented in table 4.10.1-1 and described below.

Table 4.10.1-1
Cultural Resources Surveys Status as of August 29, 2007

Factor	Missouri	Illinois	Indiana	Ohio	Wyoming	Nebraska
Number of Miles Surveyed to Date	42.8	186.4	149.3	196.4	N/A	N/A
Percentage of Miles Surveyed	99.5%	95.4%	89.6%	83.7%	N/A	N/A
Total Acreage Surveyed to Date	1,296.6	5,917.8	3,205.9	6,267.7	20.0	17.7
Total Number of Resources Identified to Date	88	397	494	469	1	0

N/A = not applicable

Missouri

Pipeline

Rockies Express conducted cultural resources survey of 42.8 miles (99.5 percent) of the Project right-of-way within Missouri. The survey identified 86 archaeological sites. Thirty-five of these sites were recommended as potentially eligible for listing on the NRHP. These included 33 prehistoric sites, one historic site, and one site with both prehistoric and historic components.

Two architectural resources were identified; one farmstead complex (AU-1), and one agricultural shed (AU-2). Both structures have been recommended as not eligible for listing on the NRHP. No cemeteries are located within or immediately adjacent to the Project right-of-way. In letters dated May 1, 2007 and August 13, 2007, the Missouri SHPO concurred with the recommendations presented in the Phase I survey reports. We also concur.

Rockies Express has not yet completed surveys for the remaining 0.5 mile of pipeline, access roads, meter stations, laterals, and pipe/contractor staging yards. Rockies Express would complete surveys for these areas as well as for any newly identified pipeline reroutes, access roads, or pipe/contractor staging yards once permission to survey is obtained from landowners. Survey results would be summarized in a supplemental survey report that Rockies Express would file with the FERC and submit to the Missouri SHPO.

Rockies Express is conducting Phase II evaluations for 31 of the 35 sites potentially eligible for the NRHP. Results of these investigations are pending and would be filed with the FERC in a supplemental report in November 2007 and March 2008. Rockies Express would file with the FERC copies of all future correspondence with the Missouri SHPO, including comments on the survey and evaluation reports. Because Rockies Express has not indicated it is conducting Phase II evaluation at the four remaining sites (23PI1341, 23PI1352, 23PI1379, and 23RA1878), **we recommend that:**

- **Rockies Express avoid or conduct Phase II evaluation testing for any potentially eligible sites in Missouri that have not yet been addressed including 23PI1341, 23PI1352, 23PI1379, and 23RA1878. Rockies Express should file with the Secretary for review and written approval by the Director of OEP the Phase II report and the SHPO's comments on the report, prior to the start of construction.**

Mexico Compressor Station

The Mexico Compressor Station was previously surveyed and reported as part of the REX West Project (Docket No. CP06-354-000). One ineligible site (23AU141) was recorded within the facility boundaries. Rockies Express re-examined a small portion (approximately 8.4 acres) of the planned construction footprint and relocated site 23AU141 during the current survey. No historic structures or cemeteries are situated within or immediately adjacent to the Mexico Compressor Station. The Missouri SHPO concurred that the site does not meet the criteria for listing on the NRHP and no additional fieldwork is necessary. We concur as well.

Illinois

Pipeline

Rockies Express conducted cultural resources survey of 186.4 miles (95.4 percent) of the proposed pipeline corridor in Illinois. A total of 396 archaeological sites were identified. Fifty-five archaeological sites were recommended as eligible or potentially eligible for listing on the NRHP. These include 41 prehistoric sites, two historic sites, and 12 sites with both prehistoric and historic components. Five archaeological sites (four prehistoric and one site with both prehistoric and historic components) have been recommended as eligible for listing on the NRHP (11PK1599, 11PK1595, 11PK1245, 11SG1344, and 11M245) and one site has been recommended for avoidance (11PK1531). Three of these eligible and potentially eligible sites are prehistoric mound sites (11PK1245, 11PK1709, and 11PK1733). Rockies Express has developed a plan to avoid the Montezuma Mound Group (11PK1245). In a letter dated August 23, 2007, the Illinois SHPO concurred that the proposed reroute would result in no adverse effect on the site. To ensure construction does not inadvertently encroach on the mound group, **we recommend that:**

- **Rockies Express fence the right-of-way and provide an archaeological monitor during construction in the vicinity of the Montezuma Mound Group (11PK1245).**

In a letter dated September 10, 2007, the Illinois SHPO indicated that in accordance with Illinois law (Human Skeletal Remains Protection Act [20ILCS 3440]), the other two mound sites (11PK1709 and 11PK1733) must be avoided as well. Therefore, **we recommend that:**

- **Prior to the end of the draft EIS comment period, Rockies Express develop and file with the Secretary a plan for avoiding and protecting prehistoric mound sites 11PK1709 and 11PK1733, and documentation of SHPO comments on the plan.**

Architectural survey within Illinois identified one architectural resource, a farmstead complex (PK-2) in Pike County, Illinois. The farmstead complex, recommended as potentially NRHP-eligible, is located immediately north of the Project right-of-way and was determined to retain a relatively high degree of integrity. Construction is not expected to directly affect the complex, and viewshed impacts during construction would be temporary. The Cumberland Sugar Creek Cemetery, a 19th-century-era cemetery, was identified in Sangamon County, Illinois. The cemetery is located north of the project right-of-way, and is clearly marked. Therefore, the Project would have no effect on this property.

Rockies Express identified a segment of the historic U.S. Route 66 that is listed on the NRHP and is located immediately adjacent to the Project in Sangamon County. The brick and concrete roadbed may be affected by heavy vehicle traffic associated with the Project if used as an access road. Rockies Express would limit usage of the road to light-duty vehicle traffic to minimize adverse effects. In letters dated June 15, 2007 and September 7, 2007, the Illinois SHPO concurred with the findings of the Phase I survey reports. We concur as well.

Rockies Express has not yet completed cultural resources surveys for the entire pipeline, access roads, meter stations, laterals, and pipe/contractor staging yards. Rockies Express would complete surveys for these areas and for any newly identified pipeline reroutes, access roads, or pipe/contractor staging yards once permission to survey is obtained from the landowner. Survey results would be summarized in a supplemental report that Rockies Express would file with the FERC and submit to the Illinois SHPO.

Rockies Express is conducting Phase II evaluations for 37 archaeological sites potentially eligible for the NRHP. Results of these investigations are pending and would be filed with the FERC in a supplemental report in March 2008. Rockies Express would file with the FERC copies of all future correspondence with the Illinois SHPO, including comments on the survey and evaluation reports. Because Rockies Express has not indicated it is conducting Phase II evaluation at the 16 remaining sites (11E141, 11PK1334, 11PK1597, 11PK1674, and 12 pending site numbers), **we recommend that:**

- **Rockies Express avoid or conduct Phase II evaluation testing for any potentially eligible sites in Illinois that have not yet been addressed, including sites 11E141, 11PK1334, 11PK1597, 11PK1674, and 12 pending site numbers. Rockies Express should file with the Secretary for review and written approval by the Director of OEP the Phase II report and the SHPO's comments on the report, prior to the start of construction.**

Blue Mound Compressor Station

Rockies Express surveyed the planned construction footprint of the Blue Mound Compressor Station, plus a small buffer zone (approximately 18.3 acres). One archaeological site (11CN497) was recorded within the survey area. The site represents a dense concentration of early 20th-century industrial artifacts. Rockies Express recommended that the site did not meet the criteria for listing on the NRHP and recommended no additional fieldwork. The Illinois SHPO concurred. We also concur.

Indiana

Pipeline

Rockies Express conducted cultural resources surveys of 149.3 miles (89.6 percent) of the Project within Indiana. A total of 489 archaeological sites have been identified. Of the 489 sites, 37 were recommended as potentially eligible for listing on the NRHP and seven had pending determinations but are being treated as potentially eligible at this time. One previously identified archaeological site mapped within the Project corridor, 12FR125b, is a prehistoric mound group eligible for listing on the NRHP. The site was not re-identified during the current survey; however, remnants of the mounds could be present beneath the ground surface. To ensure construction does not inadvertently encroach on the mound group, **we recommend that:**

- **Prior to the end of the draft EIS comment period, Rockies Express develop and file with the Secretary a plan for avoiding and protecting prehistoric mound site 12FR125b.**

Of the 45 archaeological sites eligible or potentially eligible for listing on the NRHP, 24 are prehistoric sites, 12 are historic, and 9 have both prehistoric and historic components. Rockies Express is conducting Phase II evaluations for 33 of the 45 sites potentially eligible for the NRHP, and results of the evaluations are pending. Rockies is reviewing options for avoiding five sites (12FR125b, 12VE563, 12VE562, 12PM657, and 12PM350). Results of these investigations are pending and would be filed with the FERC in a supplemental report in November 2007 and March 2008. Because Rockies Express has not indicated that it is conducting Phase II evaluations at the seven remaining sites (12FR337, 12PM345, and the five sites with pending site numbers), **we recommend that:**

- **Rockies Express avoid or conduct Phase II evaluation testing for any potentially eligible sites in Indiana that have not yet been addressed, including 12FR337, 12PM345, 12DE776, and the five sites with pending site numbers. Rockies Express should file with Secretary for review and written approval by the Director of OEP the Phase II report and the SHPO's comments on the report, prior to the start of construction.**

In letters dated May 10, 2007 and September 17, 2007, the Indiana SHPO provided comments on the survey reports. In addition to the sites listed above, they recommended that site 12DE776 may be eligible for listing on the NRHP and should be avoided or receive Phase II evaluation. Rockies Express has since submitted Phase II plans for 12DE776. SHPO also requested additional information regarding a brick kiln site (2-92) and noted that another site (12SH12) at one time consisted of burial mounds, and requested notification of any unanticipated discoveries of human remains at that site. Therefore, **we recommend that:**

- **Rockies Express provide an archaeological monitor during construction for work in the vicinity of former mound site 12SH12.**

- **Prior to the end of the draft EIS comment period, Rockies Express address any concerns or requests for additional information expressed by the Indiana SHPO in comments submitted in letters dated May 10 and September 17, 2007.**

Architectural survey has not been completed for Indiana. Archival research indicated that the pipeline would traverse Highway 40, the National Road, at MP 298.4 in Hendricks County. Rockies Express indicated it would bore under the road, and recommended that there would be no adverse effects to the highway. Additionally, the Project would cross a portion of the abandoned B&O Railroad, which has been converted into a hiking trail. The NRHP-eligibility for this resource has not been assessed.

However, because Rockies Express would bore under the trail, there would be no impact to the former railroad bed. No additional evaluation has been recommended for either of these resources. Three cemeteries were identified in the vicinity of the Project right-of-way. The Lane Cemetery is located outside the project area approximately 175 feet from the centerline. The project would not impact this cemetery. The Brockman Cemetery, a 19th through 20th century community cemetery registered with the state, was identified adjacent to the pipeline corridor. Additionally, site 12FR332, a small historic cemetery consisting of two marked graves and two possible unmarked graves, was identified within the project corridor. The graves represent members of the Beeler family, and one is dated 1878. The survey reports recommend avoidance and development of plans for protection of the two cemeteries during construction. Therefore, **we recommend that:**

- **Rockies Express avoid the Brockman Cemetery and Site 12FR332 and prior to the end of the draft EIS comment period, develop and file with the Secretary plans for site protection from construction activities.**

- **Prior to construction, Rockies Express complete architectural surveys for Indiana, file with the Secretary for review and approval by the Director of OEP a report with the survey results, and file with the Secretary SHPO's comments on the report.**

The Project right-of-way would cross two historic canals in Indiana: the Wabash & Erie Canal and the Whitewater Canal. The Wabash & Erie Canal is located at MP 247.6 in Park County. The canal is listed on the Indiana Register of Historic Sites and Structures. Field survey found that canal features in this location retain a high degree of integrity. Rockies Express has indicated that it plans to use the open-cut method of construction to cross this area. The canal has been recommended for Phase II evaluation to assess whether the portion of the canal is eligible for listing on the NRHP. Therefore, **we recommend that:**

- **Prior to the start of construction, Rockies Express avoid or file with the Secretary for review and written approval by the Director of OEP a Phase II evaluation for the Wabash & Erie Canal and the SHPO's comments on the report.**

The Whitewater Canal is located at MP 394.0 in Franklin County. Although field investigation found much of the canal was destroyed by adjacent railroad construction and erosion, the towpath of the canal was intact. This portion of the canal was assessed as potentially eligible for the NRHP. Rockies Express would HDD beneath the towpath as well as the adjacent railroad and State Highway 52 to avoid adverse effects to this resource. Therefore, **we recommend that:**

- **Prior to the start of construction, Rockies Express file with the Secretary for review and written approval by the Director of OEP a site-specific HDD construction plan that describes how the archaeological features associated with the Whitewater Canal would be avoided.**

Rockies Express has not yet completed cultural resources survey including access roads, meter stations, laterals, and pipe/contractor staging yards, as well as some of the deep testing. Rockies Express would complete surveys for these areas and for any newly identified pipeline reroutes, access roads, or pipe/contractor staging yards once permission to survey is obtained from the landowner. Survey results would be summarized in a supplemental report that Rockies Express would file with the FERC and submit to the Indiana SHPO.

Bainbridge Compressor Station

Rockies Express surveyed the planned construction footprint of the Bainbridge Compressor Station, plus a small buffer zone (approximately 19.1 acres). No cultural resources were identified. In a letter dated May 10, 2007, the Indiana SHPO concurred with the finding of the survey report. We also concur.

Ohio

Pipeline

Rockies Express conducted cultural resources surveys for 196.4 miles (83.7 percent) of the project within Ohio. A total of 456 archaeological sites have been identified. Of those, 47 sites were found potentially eligible for listing on the NRHP. An initial assessment is pending for another 20 sites. Two sites, 33PE351 and 33PE362, represent portions of established NRHP-eligible sites. All 69 of these sites are being treated as potentially eligible.

Of the 69 archaeological sites that are eligible or potentially eligible, 41 are prehistoric sites, 11 are historic, and 17 have both prehistoric and historic components. Avoidance is recommended for the two sites (33PE351 and 33PE362) representing portions of established NRHP-eligible sites. If avoidance is not practicable, Rockies Express would develop plans for site treatment or mitigation at these locations in consultation with SHPO and would file this correspondence with the FERC. In addition, Rockies Express is reviewing options for avoiding two sites (33BU1039 and 33WA823). Rockies Express is conducting Phase II evaluations for 43 of the 69 sites. Results of the Phase II evaluations are pending and would be filed with the FERC in supplemental reports in November 2007 and March 2008. An additional 10 sites are pending both site numbers and initial determinations. Information on these sites would be filed with the supplemental reports. Therefore, **we recommend that:**

- **Rockies Express avoid or conduct Phase II evaluation testing for any potentially eligible sites that have not yet been addressed in Ohio. Rockies Express should file with the Secretary for review and written approval by the Director of OEP the Phase II report and the SHPO's comments on the report, prior to the start of construction.**

In letters dated May 9, 2007 and September 6, 2007 the Ohio SHPO provided their comments on the survey reports. They requested additional information for 35 sites in order to make eligibility and impacts assessments. Therefore, **we recommend that:**

- **Prior to the end of the draft EIS comment period, Rockies Express address the comments of the Ohio SHPO contained in letters dated September 6, 2007, and provide any information requested by SHPO.**

A total of 13 standing structures, all potentially eligible for listing on the NRHP, appear to be located within the construction right-of-way. Six buildings comprising two farmsteads and some isolated agricultural outbuildings date from the early to mid-20th century. Initial evaluation was not completed for the other seven buildings as access to the property was denied. These 13 structures were recommended for additional research to determine eligibility or project effects. One of these, the Hunt-Forman Farm, is listed on the NRHP. Access to the property has been denied by the landowner and impacts have not been assessed. Additionally, a landowner in Warren County, Ohio commented in a letter that the proposed pipeline would cut through maple trees on the Wilson Friendly Farm, a family maple farm that has been in operation since the late 19th century. Additional architectural evaluation is

needed to assess the NRHP eligibility and effects of the Project on that property. Therefore, **we recommend that:**

- **Prior to the start of construction, Rockies Express avoid or file with the Secretary for review and written approval by the Director of OEP an assessment of eligibility and effects for the architectural resources in Ohio, a report summarizing the assessment, and the SHPO's comments on the report.**

- **Prior to the start of construction, Rockies Express avoid or conduct and file with the Secretary for review and written approval by the Director of OEP a report with additional architectural evaluations of the Wilson Friendly Farm in Warren County, Ohio (MP 458) and the SHPO's comments on the report.**

The pipeline would parallel the NRHP-eligible "Big Inch" and "Little Big Inch" pipelines through portions of Ohio. Because these are buried pipelines and Rockies Express construction activities would be approximately 50 feet away, the proposed work would have no impact on this historic property, and no additional work is recommended. Additionally, the pipeline route would cross U.S. Highway 42, in Warren County, Ohio, which was constructed over the Accommodation Line, an early 19th century stagecoach route. The Project's impact on the NRHP-eligibility of the Accommodation Line has not been assessed. Because Rockies Express intends to bore under the current highway, no additional evaluation of the former stagecoach route is recommended. There are no known cemeteries within proximity of the pipeline route in Ohio.

Because the architectural evaluations are incomplete, the Ohio SHPO has not provided comments on the findings and recommendations of the architectural survey to date. Rockies Express would file completed architectural evaluations for Ohio, as well as copies of future correspondence with the Ohio SHPO including comments on the architectural evaluations.

Five historic canals would be crossed by the proposed pipeline route in Ohio; the Warren County Canal, the Miami & Erie Canal, the Ohio & Erie Canal, the Hocking Valley Canal, and the Muskingum River Improvement Canal. The Ohio SHPO considers the state canal system to be historically significant. No trace of the Warren County Canal was identified and no additional fieldwork was recommended. Rockies Express is planning to use the open-cut method of construction at this crossing. Identification-phase cultural resources surveys were conducted at the proposed crossings of the other four historic canals. Survey found that the embankments, towpath, and prism of the Miami & Erie Canal at MP 430.8 in Butler County were largely intact. The Ohio & Erie Canal is a National Heritage Corridor. The survey indicated that the canal prism at the Ohio & Erie Canal at MP 516.0 in Pickaway County was intact. At the Hocking Valley Canal at MP 534.1 in Fairfield County, both the canal prism and towpath were reported as intact. The Muskingum River Improvement Canal, located at MP 575.6 in Muskingham County, was listed on the NRHP as the Muskingum River Navigation Historic District in February 2007. Field investigations found no traces of the canal in the area of the proposed crossing, although the canal prism was observed north and south of the crossing location. The canal has likely eroded into the river at the location of the proposed pipeline crossing. Rockies Express is planning to horizontally directional drill beneath each of these canals, thereby avoiding adverse effects to the structural and visual integrity of these properties. In a letter dated September 6, 2007, the Ohio SHPO concurred with the findings and recommendations for these historic canals. We also agree.

Hamilton Compressor Station

Rockies Express surveyed 34.2 acres for the proposed Hamilton Compressor Station and identified two prehistoric sites, 33BU1071 and 33BU1072. Neither site is recommended eligible for the

NRHP. In a letter dated September 6, 2007, the Ohio SHPO concurred with these recommendations. We concur as well.

Chandlersville Compressor Station

Rockies Express surveyed an area of approximately 23.5 acres that included the proposed Chandlersville Compressor Station and a proposed access road. No cultural resources were identified. In a letter dated September 6, 2007, SHPO concurred with the recommendations of the survey report. We concur as well.

Wyoming

Arlington Compressor Station

The Arlington Compressor Station was previously surveyed for the REX Entrega Project (Docket No. CP04-413-000). One isolated prehistoric artifact was identified, and assessed not eligible for NRHP listing. Rockies Express filed the relevant sections of that survey report, and the Wyoming SHPO's concurrence dated August 9, 2005 with that report, in a supplemental filing. We concur that no historic properties would be affected by this component of the Project.

Nebraska

Bertrand Compressor Station

The Bertrand Compressor Station was previously surveyed for the REX West Project (Docket No. CP06-354-000). No cultural resources were identified and no further work was recommended for the area. Rockies Express filed the relevant sections of that survey report, and the Nebraska SHPO's concurrence with the report dated July 14, 2006, in a supplemental filing. We concur as well.

4.10.2 Native American Consultations

We sent our Notice of Intent for the Project, issued August 16, 2006, to 31 Indian tribes and Native American groups who either historically occupied the Project area or who might attach religious or cultural significance to sites in the region. Three tribes responded. The Eastern Shawnee Tribe of Oklahoma stated that they were currently unaware of a cultural link to area but wanted to be notified of unexpected discoveries. The Sac and Fox Nation of Missouri in Kansas and Nebraska and the Wyandotte Nation both wanted construction to be halted and to be notified in the event of unexpected cultural discoveries.

Rockies Express sent consultation letters to 43 Indian tribes and Native American groups regarding the Project (table 4.10.2-1). Second and third attempts were made to contact tribes who did not respond to the initial mailing. A total of 22 tribes responded to the Rockies Express contact program. Two tribes, the Iowa Tribe of Kansas and Nebraska and the Wea Indian Tribe, wished to participate in the consultation process. Three tribes expressed interest in parts of the Project, but have not responded to further inquiries. These include the Shawnee Nation United Remnant Band, Seneca-Cayuga Tribe of Oklahoma, and the Tallige Cherokee Nation. Seventeen tribes either declined to participate in the process or asked only to be notified if human remains or associated burial items were encountered during construction. The remaining 21 tribes have not yet responded.

Table 4.10.2-1
Tribal Consultations

Tribe	Response	Comment
Kickapoo Tribe of Kansas	No	No response
Kickapoo Tribe of Oklahoma	Yes	Notify if items falling under NAGPRA are discovered
Kickapoo Traditional Tribe of Texas	Yes	Declined to participate
Sac & Fox Tribe of the Mississippi in Iowa	Yes	Notify if items falling under NAGPRA are discovered
Sac & Fox Nation of Missouri in Kansas and Nebraska	Yes	Notify if items falling under NAGPRA are discovered
Sac & Fox Nation of Oklahoma	Yes	Notify if items falling under NAGPRA are discovered
Iowa Tribe of Kansas and Nebraska	Yes	Wishes to participate in consultation
Iowa Tribe of Oklahoma	No	No response
Peoria Tribe of Oklahoma	Yes	Notify if items falling under NAGPRA are discovered
Prairie Band of Potawatomi Indians	Yes	Notify if items falling under NAGPRA are discovered
Forest County Potawatomi Community of Missouri	No	No response
Gun Lake Potawatomi	No	No response
Huron Potawatomi Nation	No	No response
Pokagon Band of Potawatomi Indians of Michigan	Yes	Notify if items falling under NAGPRA are discovered
Citizen Potawatomi Nation	Yes	Notify if items falling under NAGPRA are discovered
Wea Indian Tribe	Yes	Wishes to participate in consultation
Delaware Tribe of Western Oklahoma	Yes	Notify if items falling under NAGPRA are discovered
Miami Tribe of Oklahoma	Yes	Notify if items falling under NAGPRA are discovered
Miami Nation of Indians of Indiana Council	No	No response
Eastern Shawnee Tribe of Oklahoma	Yes	Notify if items falling under NAGPRA are discovered
Loyal Shawnee Tribe	No	No response
Shawnee Nation United Remnant Band	Yes	Expressed interest, but has not provided further detail
Absentee-Shawnee Tribe of Oklahoma	Yes	Notify if items falling under NAGPRA are discovered
Turtle Mountain Band of Chippewa Indians	No	No response
Ottawa Tribe of Oklahoma	Yes	Declined to participate
Seneca Nation of Indians	Yes	Declined to participate
Seneca-Cayuga Tribe of Oklahoma	Yes	Expressed interest, but has not provided further detail
Cayuga Nation	No	No response
The Eastern Band of Cherokee Indians	Yes	Declined to participate
Tallige Cherokee Nation	Yes	Expressed interest, but has not provided further detail
Wyandotte Nation	Yes	Notify if items falling under NAGPRA are discovered
Northern Ute Indian Tribe	No	Contacted September 2007
Eastern Shoshone Tribe	No	Contacted September 2007
Northern Arapahoe Tribe	No	Contacted September 2007
Northern Cheyenne Tribe	No	Contacted September 2007
Kiowa Indian Tribe of Oklahoma	No	Contacted September 2007
Comanche Nation	No	Contacted September 2007
Oglala Sioux Tribal Council	No	Contacted September 2007
Rosebud Sioux Tribal Council	No	Contacted September 2007
Crow Tribal Council	No	Contacted September 2007
Pawnee Nation of Oklahoma	No	Contacted September 2007
Cheyenne-Arapahoe Tribes of Oklahoma	No	Contacted September 2007
Plains Apache Tribe of Oklahoma	No	Contacted September 2007

NAGPRA = Native American Graves Protection and Repatriation Act

Rockies Express sent copies of survey reports completed as of April 2007 to the Wea Indian Tribe and the Iowa Tribe of Kansas and Nebraska on April 10, 2007, at their request. To date, neither tribe has responded with comments on the reports. Rockies Express would file with the FERC copies of any future correspondence with the Indian tribes and Native American groups, including any comments on the survey reports.

4.10.3 Comments from Other Interested Parties

The City of Springfield voiced concerns about cultural resources on property associated with the Hunter Lake Water Reservoir Project in Sangamon County, Illinois. Similar concerns were raised by the Regulatory Affairs Manager for Public Utilities. The Hunter Lake Water Reservoir Project encompasses discontinuous tracts between MPs 123.1 and 124.5, MPs 125.7 and 126.2, MPs 127.1 and 127.2, and MPs 127.5 and 127.8. These areas were surveyed and three isolated artifacts were recorded (11SG1343, 11SG1333, and 11SG1342), with none recommended as eligible for the NRHP.

The Decatur County Freedom Trails Association expressed concern about "Underground Railroad" sites in Decatur County, Indiana. As described by the Decatur County Freedom Trails Association, the Underground Railroad operated between MPs 368.8 and 376.1. A public comment received also expressed concern that the proposed pipeline route would cross the National Freedom Trail historical site and archaeological study area. Surveys within this area recorded no evidence of Underground Railroad activities; archaeological survey identified no historic sites. Three prehistoric sites in the area, 12DE694, 12DE701, and 12DE713, were recommended for further testing to determine eligibility. Results of additional testing would be filed with the FERC when they become available.

A landowner of a parcel situated in Johnson County, Indiana between MPs 336.9 and 337.4 expressed concerns about the effects of the Project on historic properties. The landowner's concerns have been addressed by a reroute of the pipeline. Similarly, a landowner voiced concerns about potential impacts on cultural resources on his property between MPs 358.4 and 358.8 in Decatur County, Indiana. This was also resolved by a reroute.

A landowner voiced concerns about potential impacts on cultural resources and a graveyard on the property at MP 376.4 in Franklin County, Indiana. The landowner, however, has denied access for cultural resource surveys. Rockies Express would continue to work with the landowner to address the concerns about historic properties. The results would be filed in a supplemental report as soon as they are completed.

A landowner in Franklin County, Indiana near MP 393.7 expressed concern over a cemetery and artifacts on the property. Rockies Express surveyed the area and found two sites. Site 12FR336 is a multi-component prehistoric/historic site found not eligible for the NRHP. Site 12FR125b is the Magnesia Spring Mound Group discussed above. This prehistoric mound site is eligible for the NRHP. Although it is south of the right-of-way and would not be directly affected, we have recommended fencing and archaeological monitoring during construction activities in the vicinity of this site. No historic cemetery was identified by the survey.

A resident of Decatur County, Indiana expressed concern over Native American burials on his properties. The landowner, however, has denied access for cultural resource surveys. Rockies Express would continue to work with the landowner to address the concerns about historic properties. The results would be filed in a supplemental report as soon as they are completed.

A property owner in Franklin County, Indiana expressed concerns at a scoping meeting about a historic cemetery on his property. The landowner, however, has denied access for cultural resource

surveys. Rockies Express would continue to work with the landowner to address the concerns about historic properties. The results would be filed in a supplemental report as soon as they are completed.

The landowner of a parcel situated in Warren County, Ohio between MPs 440.8 and 441.3 expressed concerns about the effects of the Project on historic properties in a letter to the FERC. The landowner, however, has denied access for cultural resource surveys. Rockies Express would continue to work with the landowner to address the concerns about historic properties. The results would be filed in a supplemental report as soon as they are completed.

NPS expressed concern about potential impacts on several federally designated Wild and Scenic Rivers, National Natural Landmark properties, and National Historic Landmarks. The REX East Project does not affect any of the identified National Natural Landmark properties or National Historic Landmarks; however, the Project would cross the Little Miami River and the Big Darby Creek, both Wild and Scenic Rivers. Two archaeological sites were identified at the Little Miami River crossing. Neither site is eligible for the NRHP, and no additional testing is recommended. At the Big Darby crossing, site 33PI931 was identified on the eastern bank, but was also determined not eligible for the NRHP.

A landowner of property situated in Perry County, Ohio between MPs 554.6 and 555.4 voiced concerns about the effects of the Project on historic properties and natural geologic resources. The cultural resources survey for this area has been completed and three archaeological sites were identified. Two of these sites are potentially eligible for the NRHP and additional testing is recommended; the third site is not eligible for the NRHP. Rockies Express has modified the right-of-way since the fieldwork was completed to avoid this location. Rockies Express would complete the survey of the final route and provide the results of that investigation in a supplemental report.

4.10.4 Unanticipated Discovery Plans

Rockies Express has developed state-specific Unanticipated Discovery Plans for the Project specifying procedures for the handling of unanticipated discoveries of cultural material or human remains found during construction. Each state-specific plan has been submitted to the respective SHPO for review. On May 14, 2007, the Ohio SHPO concurred with the Ohio Unanticipated Discovery Plan. The Indiana and Missouri SHPOs concurred with revised state-specific discovery plans on May 21, 2007 and May 24, 2007, respectively. The Illinois SHPO concurred with the Illinois plan on June 18, 2007.

In Wyoming and Nebraska, Rockies Express submitted Unanticipated Discovery Plans that it developed for previous undertakings. In a letter dated August 9, 2005, the Wyoming SHPO concurred with the Wyoming plan developed for the REX Entrega Project (Docket No. CP04-413-000) for construction of the proposed Arlington Compressor Station. In a letter dated March 29, 2006, the Nebraska SHPO concurred with the Nebraska plan prepared for its REX West Project for construction of the proposed Bertrand Compressor Station (Docket No. CP06-354-000). These plans were updated for the REX East Project and submitted to the respective SHPOs. No additional comments have been received to date.

4.10.5 Impact and Mitigation

Construction and operation of the pipeline and associated facilities could affect historic properties. Project impacts could be direct or indirect. Direct impacts could include the physical destruction or damage to all or a portion of a site, or alteration or removal of a property. Indirect impacts could include the introduction of visual, atmospheric, or audible elements that would diminish the integrity of the site or alter settings associated with historic properties.

Mitigation measures may range from data recovery, including the scientific excavation of archaeological sites; to detailed documentation, including architectural drawings of historic buildings; to the use of landscaping techniques to screen visual intrusions and maintain site settings.

Because survey and evaluation is ongoing, the FERC has yet to determine whether any historic properties would be adversely affected. However, Rockies Express would be required to provide plans indicating how impacts on historic properties would be mitigated. The plans would be reviewed and approved by the SHPO(s) and the FERC. Implementation of the plans would occur only after the FERC issues any certificate for the Project and provides written notification to proceed.

4.10.6 Compliance with the NHPA

Compliance with Section 106 of the NHPA has not been completed for the Project. Survey and evaluation is ongoing. If any property listed on, or determined eligible for listing on, the NRHP would be adversely affected by the Project, the FERC would consult the SHPOs, and other parties, as appropriate, to resolve adverse effects, and would afford the ACHP opportunity to participate in accordance with 36 CFR 800.6(a)(1). Rockies Express would be required to produce site-specific treatment plans for the mitigation of unavoidable adverse effects to historic properties. These treatment plans would be reviewed and approved by the appropriate parties. Specified treatment measures would be implemented only after the Commission issues any order authorizing the Project. The FERC would ensure that treatment is carried out before construction is allowed in any given area.

To ensure that the FERC's responsibilities under the NHPA and its implementing regulations are met, **we recommend that:**

- **Rockies Express defer construction and use of facilities, staging, storage, temporary work areas, and new or to-be-improved access roads until:**

  a. **Rockies Express files with the Secretary all additional required cultural resource inventory and evaluation reports, avoidance or treatment plans, and any additional information that SHPOs have requested;**

  b. **Rockies Express files with the Secretary copies of the appropriate SHPO comments on all reports and plans;**

  c. **The ACHP has been provided an opportunity to comment on whether any historic properties would be adversely affected; and**

  d. **The Director of OEP reviews and approves all reports and plans and notifies Rockies Express in writing that it may proceed with treatment or construction.**

  All material filed with the Commission containing location, character, and ownership information about cultural resources must have the cover and any relevant pages therein clearly labeled in bold lettering: "CONTAINS PRIVILEGED INFORMATION—DO NOT RELEASE."

4.11 AIR QUALITY AND NOISE

4.11.1 Air Quality

Air quality would be affected by construction and operation of the Project. Though air emissions would be generated by operation of equipment during construction of the pipeline and aboveground facilities proposed by Rockies Express, most air emissions associated with the Project would result from the long-term operation of the compressor stations.

The REX East Project would consist of the installation of approximately 639.1 miles of new natural gas pipeline, construction of five new compressor stations along the new REX East Project pipeline route, construction of one new compressor station located along the REX West Project pipeline route, and construction of one new compressor station located along the REX Entrega pipeline route. The construction of the Project's facilities would impact six states: Illinois, Indiana, Missouri, Nebraska, Ohio, and Wyoming. Table 4.11.1-1 identifies each of the proposed compressor stations.

Table 4.11.1-1
Proposed Compressor Stations

Pipeline Route	Compressor Station	Location	Total Horsepower
REX Entrega	Arlington	MP 237.0, Carbon County, Wyoming	19,794
REX West	Bertrand	MP 286.8, Phelps County, Nebraska	34,210
REX East	Mexico	MP 0.0, Audrain County, Missouri	41,000
REX East	Blue Mound	MP 144.1, Christian County, Illinois	35,174
REX East	Bainbridge	MP 277.3, Putnam County, Indiana	41,000
REX East	Hamilton	MP 435.7, Butler County, Ohio	35,000
REX East	Chandlersville	MP 575.0, Muskingum County, Ohio	19,538

Rockies Express proposes to construct the Arlington Compressor Station near Arlington in Carbon County, Wyoming; the Bertrand Compressor Station near Loomis in Phelps County, Nebraska; the Mexico Compressor Station near Mexico in Audrain County, Missouri; the Blue Mound Compressor Station near Blue Mound in Christian County, Illinois; the Bainbridge Compressor Station near Bainbridge in Putnam County, Indiana; the Hamilton Compressor Station near Hamilton in Butler County, Ohio; and to the Chandlersville Compressor Station near Chandlersville in Muskingum County, Ohio.

At the Arlington Compressor Station, Rockies Express proposes to install three Caterpillar 16CM34 natural-gas fired reciprocating engines rated at 6,598 hp each totaling 19,794 hp, one 850 kilowatt (kW) natural-gas fired emergency generator, one 0.75 million British Thermal Units per hour (MMBtu/hr) natural-gas fired fuel gas heater, and five storage tanks. Rockies Express is currently in the process of applying for an air permit to the state of Wyoming. The air dispersion modeling portion of the application is currently incomplete. Therefore, **we recommend that:**

- **Prior to the end of the draft EIS comment period, Rockies Express file with the Secretary the completed air dispersion modeling portion of the permit application for the Arlington Compressor Station.**

At the Bertrand Compressor Station, Rockies Express proposes to install two Caterpillar 12CM34 and three Caterpillar 16CM34 natural-gas fired reciprocating engines rated at 5,699 hp and 7,604 hp

respectively, totaling 34,210 hp. Rockies Express also proposes to install a 1,246 hp natural-gas fired emergency generator, one 0.75 MMBtu/hr natural-gas fired fuel gas heater, and five storage tanks.

At the Mexico Compressor Station, Rockies Express proposes to install two Solar Titan 130 gas turbines rated at 20,500 hp each, totaling 41,000 hp, a 566 hp natural-gas fired emergency generator, one 0.75 MMBtu/hr natural-gas fired fuel gas heater and two storage tanks.

At the Blue Mound Compressor Station, Rockies Express proposes to install two Caterpillar 12CM34 and three Caterpillar 16CM34 natural-gas fired reciprocating engines rated at 5,860 hp and 7,818 hp respectively, totaling 35,174 hp. Rockies Express also proposes to install a 1,246 hp natural-gas fired emergency generator, one 0.75 MMBtu/hr natural-gas fired fuel gas heater, and five storage tanks.

At the Bainbridge Compressor Station, Rockies Express proposes to install two Solar Titan 130 gas turbines rated at 20,500 hp each, totaling 41,000 hp, a 566 hp natural-gas fired emergency generator, one 0.75 MMBtu/hr natural-gas fired fuel gas heater and two storage tanks.

At the Hamilton Compressor Station, Rockies Express proposes to install two electric driven centrifugals rated at 17,500 hp each, totaling 35,000 hp, a 355 hp diesel fired emergency generator, and one 0.75 MMBtu/hr natural-gas fired fuel gas heater. Since the proposed Hamilton Compressor Station would have electric, motor-driven compressors units, the station would only have short-term, construction-related air quality emissions, and very small, long-term operational air quality impacts associated with the operation of the heater and generator.

At the Chandlersville Compressor Station, Rockies Express proposes to install two Caterpillar 12CM34 and one Caterpillar 16CM34 natural-gas fired reciprocating engines rated at 5,860 hp and 7,818 hp respectively, totaling 19,538 hp. Rockies Express also proposes to install an 850 kW natural-gas fired emergency generator, and one 0.75 MMBtu/hr natural-gas fired fuel gas heater, and storage tanks. Rockies Express is currently in the process of applying for an air permit to the state of Ohio. Information contained in their air permit application, including the number of storage tanks and the final compressor station power rating and their associated emissions is necessary for verification of the air quality analysis. Therefore, **we recommend that:**

- **Prior to the end of the draft EIS comment period, Rockies Express file with the Secretary the completed air permit application for the Chandlersville Compressor Station.**

Rockies Express intends to file the necessary applications for air quality construction permits as described in Chapter 1. In general these permits may require that air dispersion modeling be conducted for each compressor station. Each station would be required to comply with the federal, state, and local air quality permitting requirements.

Existing Air Quality

The REX East Project would involve the construction and operation of a 639.1-mile-long natural gas pipeline that would cross 34 counties in four states: Illinois, Indiana, Missouri, and Ohio. These include: Pike, Scott, Morgan, Sangamon, Christian, Macon, Moultrie, Douglas, and Edgar Counties in Illinois; Vermillion, Parke, Putnam, Hendricks, Morgan, Johnson, Shelby, Decatur and Franklin Counties in Indiana; Audrain, Ralls and Pike Counties in Missouri; and Butler, Warren, Clinton, Greene, Fayette, Pickaway, Fairfield, Perry, Muskingum, Guernsey, Noble, Belmont and Monroe Counties in Ohio. Five of the seven compressor facilities would be constructed along the proposed REX East pipeline route, while the two other compressor stations would be constructed in Carbon County, Wyoming, and in Phelps

County, Nebraska (for a total of 36 counties). The regional climate along the Project is continental with frequent precipitation; however the Arlington Compressor Station located in Wyoming is located in a more semi-arid climate and is considerably drier and cooler. Representative annual average maximum temperature, minimum temperature, precipitation, and snowfall for each compressor station are presented in table 4.11.1-2.

Table 4.11.1-2
Representative Annual Average Meteorological Conditions at Compressor Station Sites a/

Station	Meteorological Monitor Location	Maximum Temperature (°F)	Minimum Temperature (°F)	Precipitation (inches)	Total Snowfall (inches)
Arlington	Rawlins, Wyoming b/	55	30	9.0	51.9
Bertrand	Holdrege, Nebraska c/	63	39	25.2	29.3
Mexico	Mexico, Missouri c/	65	42	39.6	20.2
Blue Mound	Decatur, Illinois d/	64	42	39.7	21.9
Bainbridge	Greencastle, Indiana d/	62	43	44.2	27.0
Hamilton	Middletown, Ohio d/	62	44	39.7	12.4
Chandlersville	Zanesville, Ohio d/	63	40	36.7	23.5

a/ High Plains Regional Climate Center, 2007a;b; Midwestern Regional Climate Center, 2007
b/ Based on 56 years (1951–2006)
c/ Based on 59 years (1948–2006)
d/ Based on 30 years (1971–2000)
°F = Degrees Fahrenheit

The Clean Air Act (CAA) designates six pollutants as criteria pollutants for which the National Ambient Air Quality Standards (NAAQS) are promulgated: carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter based on a particle size of 10 microns or less (PM_{10}) and a particle size of 2.5 microns or less ($PM_{2.5}$), nitrogen dioxide (NO_2), ozone (O_3), and lead (Pb). The NAAQS were developed to protect human health (primary standards) and public welfare (secondary standards). Individual state air quality standards cannot be less stringent than the NAAQS. All states the Project crosses have adopted the NAAQS, as defined in 40 CFR 50 except for Wyoming. Wyoming has standards that differ from the federal standards for SO_2. Table 4.11.1-3 lists the NAAQS and Wyoming's ambient air quality standards for the criteria pollutants.

Air Quality Control Regions and Attainment Status

The Air Quality Control Regions (AQCRs) were established in accordance with section 107 of the CAA, as a means to implement the CAA and comply with the NAAQS through State Implementation Plans (SIPs). The AQCRs are intra- and interstate regions such as large metropolitan areas where the improvement of the air quality in one portion of the AQCR requires emission reductions throughout the AQCR. Each AQCR, or portion thereof, is designated as attainment (areas in compliance with the NAAQS), unclassifiable, maintenance, or non-attainment (areas not in compliance with the NAAQS). Areas where the ambient air pollutant concentration is determined to be below the applicable ambient air quality standard are designated attainment. Areas where no data are available are designated unclassifiable. Unclassifiable areas are treated as attainment areas for the purpose of permitting a stationary source of pollution. Areas where the ambient air concentration is greater than the applicable

Table 4.11.1-3
Federal and State Ambient Air Quality Standards

Pollutant	Averaging Period	NAAQS	WAAQS a/	All Other States b/
CO	1-Hour c/	35 ppm (40,000 µg/m^3)	40,000 µg/m^3	40,000 µg/m^3
	8-Hour c/	15 ppm (10,000 µg/m^3)	10,000 µg/m^3	10,000 µg/m^3
SO_2	3-Hour c/	0.5 ppm (1,300 µg/m^3)	1,300 µg/m^3	1,300 µg/m^3
	24-Hour c/	0.14 ppm (365 µg/m^3)	260 µg/m^3	365 µg/m^3
	Annual d/	0.03 ppm (80 µg/m^3)	60 µg/m^3	80 µg/m^3
PM_{10}	24-Hour c/	150 µg/m^3	150 µg/m^3	150 µg/m^3
	Annual d/	None	50 µg/m^3	50 µg/m^3
$PM_{2.5}$	24-Hour e/	35 µg/m^3	Not Applicable	35 µg/m^3
	Annual f/	15 µg/m^3	15 µg/m^3	15 µg/m^3
NO_2	Annual d/	0.053 ppm (100 µg/m^3)	100 µg/m^3	0.053 ppm
O_3	8-Hour g/	0.08 ppm (157 µg/m^3)	0.08 ppm	0.08 ppm
Pb	3-Month d/	1.5 µg/m^3	1.5 µg/m^3	1.5 µg/m^3

a/ Wyoming Ambient Air Quality Standards
b/ Nebraska, Missouri, Illinois, Indiana and Ohio
c/ Not to be exceeded more than once per year
d/ Arithmetic mean not to exceed
e/ The 3-year average of the 98th percentile of 24-hour concentrations must not exceed
f/ The 3-year average of the annual arithmetic mean concentrations from a single or multiple local monitors must not exceed
g/ The 3-year average of the 4th highest daily maximum 8-hour average concentrations at each location over a year must not exceed
ppm parts per million
µg/m^3 micrograms per cubic meter
( ) value in parentheses is an approximate equivalent concentration

ambient air quality standard are designated non-attainment. Areas that have been designated non-attainment but have since demonstrated compliance with ambient air quality standard(s) are designated maintenance for that pollutant. For permitting of stationary sources, maintenance areas are treated similar to attainment areas. However, the state's approved maintenance plan may contain specific provisions for the permitting of stationary sources to ensure that the air quality in the area would continue to comply with the NAAQS.

The compressor stations for the Project would all be located in attainment areas for all criteria pollutants with the exception of the Hamilton Compressor Station. The Hamilton Compressor Station would be located in Butler County, Ohio, which is currently designated as non-attainment for 8-hour O_3 and $PM_{2.5}$. The pipeline portion of the project would cross multiple non-attainment counties. Hendricks, Morgan, and Johnson Counties in Indiana and Warren and Fairfield Counties in Ohio, are currently designated non-attainment for both O_3 and $PM_{2.5}$. Shelby County, Indiana and Clinton County, Ohio are designated non-attainment for O_3. Greene and Belmont Counties, Ohio are currently designated as maintenance for O_3 and non-attainment for $PM_{2.5}$. All other project counties are classified as attainment for all pollutants.

Air Quality Monitoring

EPA and state and local agencies have established a network of ambient air quality monitoring stations to measure and track the background concentrations of the criteria pollutants across the United States. To characterize the background air quality in the regions surrounding the proposed compressor stations, data from a number of existing representative air quality monitoring stations were obtained. These monitoring stations are located near the proposed compressor station sites and provide information on regional ambient air quality conditions. For some criteria pollutants, ambient air quality monitoring data in the vicinity of the proposed compressor stations were not available; therefore, the best available data were used to represent the air quality at those stations. A summary of the regional background air quality concentrations for each natural-gas fired compressor station are presented in tables 4.11.1-4 and 4.11.1-5.

Regulatory Requirements

Federal Regulations

The CAA, 42 US Code 7401 et seq. as amended in 1977 and 1990, and 40 CFR Parts 50 through 99 are the basic federal statues governing air pollution. The provisions of the CAA that are potentially relevant to the Project include the following:

- New Source Review (NSR)/Prevention of Significant Deterioration (PSD);
- New Source Performance Standards (NSPS);
- National Emission Standards for Hazardous Air Pollutants (NESHAP);
- Title V Operating Permits; and
- General Conformity.

New Source Review/Prevention of Significant Deterioration

NSR refers to the preconstruction permitting programs under Parts C and D of the CAA that must be satisfied before construction can begin on new major sources or major modifications to existing major sources located in attainment or unclassified areas. This review may include a PSD review. This review process is intended to keep new air emission sources from causing existing air quality to deteriorate beyond acceptable levels codified in the federal regulations. For sources located in non-attainment areas the Non-attainment New Source Review (NNSR) program is implemented for the pollutants for which the area is classified as non-attainment. The Arlington, Bertrand, Mexico, Blue Mound, Bainbridge, and Chandlersville Compressor Stations would be located in attainment areas and would potentially be subject to PSD review. The Hamilton Compressor Station would be located in a non-attainment area and would potentially be subject to NNSR.

The PSD review regulations apply to proposed new major sources or major modifications to existing major sources located in an attainment area. The PSD regulations (40 CFR 52.21) define a "major source" as any source type belonging to a list of named source categories that emit or have the potential to emit 100 tons per year (tpy) or more of any regulated pollutant. A major source under PSD can also be defined as any source not on the list of named source categories with the potential to emit such pollutants in amounts equal to or greater than 250 tpy. Modifications to existing major sources have lower emission thresholds, called "significant emission increases"; amounts over these thresholds trigger PSD review. The REX East Project would not include facilities or operations included on the list of named source categories to which the 100-tpy trigger applies. Also, the REX East Project does not

Table 4.11.1-4

Regional Background Air Quality Concentrations

Station	CO (ppm)		SO_2 (ppm)			PM_{10} ($\mu g/m^3$)		$PM_{2.5}$ ($\mu g/m^3$)		NO_2 (ppm)	O_3 (ppm)
	1-Hour	8-Hour	3-Hour	24-Hour	Annual	24-Hour	Annual	24-Hour	Annual	Annual	8-Hour
Arlington	4.3	3.0	0.025	0.006	0.002	61	26	17	3.9	0.005	0.068
Bertrand	5.4	3.1	0.128	0.049	0.003	86	36	23	8.3	0.017	0.104
Mexico	4.7	3.0	0.025	0.011	0.002	35	17	37	12.9	0.009	0.080
Blue Mound	4.3	1.5	0.039	0.020	0.004	48	22	42	14.5	0.016	0.075
Bainbridge	3.1	2.7	0.081	0.022	0.005	59	23	53	19.1	0.013	0.081
Hamilton	5.7	2.5	0.072	0.031	0.007	56	27	54	17.9	0.021	0.098
Chandlersville	4.4	2.6	0.276	0.071	0.008	85	35	33	13.3	0.022	0.090

Source: EPA, 2007a. Data are based on the years 2004 through 2006. Concentrations for averaging periods of 1-hour, 3-hour, 8-hour and 24-hour are based on second highest concentration over the entire 3-year period.

ppm = parts per million

$\mu g/m^3$ = micrograms per cubic meter

Table 4.11.1-5

Source of Regional Background Air Quality Concentrations

Station	CO (ppm) 1-Hour and 8-Hour	SO_2 (ppm) 3-Hour, 24-Hour, and Annual	PM_{10} ($\mu g/m^3$) 24-Hour and Annual	$PM_{2.5}$ ($\mu g/m^3$) 24-Hour and Annual	NO_2 (ppm) Annual	O_3 (ppm) 8-Hour
Arlington	Ft. Collins, CO Site ID 0806991004	Riverton, WY Site ID 560136001	Laramie, WY Site ID 560010801	Antelope Site 3, WY Site ID 560090819	Antelope Site 3, WY Site ID 560090819	15 miles SSW of Gillette, WY Site ID 560050456
Bertrand	Lincoln, NE Site ID 311090018	Omaha, NE Site ID 310550053	Cozad, NE Site ID 310470001	Grand Island, NE Site ID 310790004	Kansas City, KS Site ID 202090021	Kansas City, KS Site ID 202090021
Mexico	St. Louis, MO Site ID 295100086	Mark Twain State Park, MO Site ID 291370001	Mark Twain State Park, MO Site ID 291370001	Columbia, MO Site ID 290190004	Alton, MO Site ID 291831002	Mark Twain State Park, MO Site ID 291370001
Blue Mound	Springfield, IL Site ID 171670008	Decatur, IL Site ID 171150013	Nilwood, IL Site ID 171170002	Decatur, IL Site ID 171150013	East St. Louis ID 171630010	Effingham, IL Site ID 171170002
Bainbridge	Pittsboro, IN Site ID 180630002	Pittsboro, IN Site ID 180630003	Pittsboro, IN Site ID 180630001	Indianapolis, IN Site ID 180910043	Pittsboro, IN Site ID 180630001	Avon, IN Site ID 180630004
Hamilton	Norwood, OH Site ID 390614002	Hamilton, OH Site ID 390170004	Middletown, OH Site ID 390170015	Fairfield, OH Site ID 390170016	Cincinnati, OH Site ID 390610040	Hamilton, OH Site ID 390170004
Chandlersville	Columbus , OH Site ID 390490005	Morgan County, OH Site ID 391150003	Columbus , OH Site ID 390490024	Gifford State Forest, OH Site ID 390090003	Cleveland, OH Site ID 390350060	Centerburg, OH Site ID 390830002

Source: EPA, 2007a. Data is based on the years 2004 through 2008. Concentrations for averaging periods of 1-hour, 3-hour, 8-hour and 24-hour are based on second highest concentration.

include any existing major sources under the PSD program; therefore the Arlington, Bertrand, Mexico, Blue Mound, Bainbridge, and Chandlersville Compressor Stations are all subject to the 250-tpy threshold.

The PSD review evaluates existing ambient air quality and the potential impacts of the proposed source on ambient air quality (noting in particular whether the source would contribute to a violation of the NAAQS), and reviews the Best Available Control Technology in order to minimize emissions. The PSD regulations contain restrictions on the degree of ambient air quality deterioration that would be allowed. These increments for criteria pollutants are based on the PSD review classification of the area.

Based on the emissions data available for each proposed station (presented in table 4.11.1-6 through 4.11.1-12), the estimated potential emission rates for each pollutant would be below the 250-tpy threshold. Therefore PSD permitting is not applicable to the REX East Project.

NNSR also has major source thresholds depending on the pollutant of concern. For O_3 and $PM_{2.5}$ NNSR, a major source is defined as any source with emissions of nitrogen oxides (NO_x), volatile organic compounds (VOC), or $PM_{2.5}$ in exceedence of 100 tpy. As shown in table 4.11.1-11, the potential emissions from the electrically driven Hamilton Compressor Station are expected to be well below 100 tpy of all criteria pollutants and would, therefore, not be subject to NNSR.

Air Quality Control Regions and PSD

AQCRs are categorized as Class I, Class II, or Class III. Class I areas are designated specifically as pristine natural areas or areas of natural significance and have the lowest increment of permissible deterioration, which precludes development near these areas. Class III designations, intended for heavily industrialized zones, can be made only on request and must meet all requirements outlined in 40 CFR 51.166. The remainder of the United States is classified as Class II. Class II areas are designed to allow moderate, controlled growth. All of the Project would be located in Class II areas. However, the Arlington Compressor Station in Carbon County, Wyoming would be located within 62 miles of two Class I areas. The Mount Zirkel Wilderness area is approximately 55 miles south-southwest of the proposed compressor station and the Rawah Wilderness area is located approximately 59 miles south-southeast of the proposed compressor station. A third Class I area, Rocky Mountain National Park, is located approximately 83 miles south-southeast of the proposed compressor station.

Class I areas have special protection under the PSD program. The PSD program established air pollution increment increases for new or modified air pollution sources. If the new source is required to comply with the PSD program and is near (within 62 miles [100 kilometers] of) a federal Class I area(s), the source is required to determine its impacts on that federal Class I area(s). The source is also required to notify the appropriate federal land manager(s) of the specific federal Class I area(s). As discussed earlier, none of the compressor stations would be subject to the PSD regulations, and therefore would not be required to demonstrate compliance with the PSD Class I increments.

New Source Performance Standards

The NSPS, codified in 40 CFR Part 60, apply to new, modified, or reconstructed stationary sources in specific source categories. NSPS requirements include emission limits, monitoring, reporting, and record keeping. The following NSPS requirements were identified as potentially applicable to the specified sources at the compressor stations.

Table 4.11.1-6

Proposed Emissions for the Arlington Compressor Station

Emission Source	NO_X (tpy)	CO (tpy)	VOC (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	SO_2 (tpy)	HAPs (tpy)
Reciprocating Engine (CAT 16CM34)	44.60	14.87	25.48	1.72	1.72	0.10	6.56
Reciprocating Engine (CAT 16CM34)	44.60	14.87	25.48	1.72	1.72	0.10	6.56
Reciprocating Engine (CAT 16CM34)	44.60	14.87	25.48	1.72	1.72	0.10	6.56
Fuel gas heater	0.34	0.29	0.02	0.03	0.03	<0.01	<0.01
Emergency Generator	0.42	0.61	0.23	0.02	0.02	<0.01	0.20
Space Heaters	0.44	0.37	0.02	0.03	0.03	<0.01	<0.01
Storage Tanks	0.0	0.0	2.06	0.0	0.0	0.0	<0.01
Sumps	0.0	0.0	0.27	0.0	0.0	0.0	<0.01
Fugitive Emissions	0.0	0.0	0.52	0.0	0.0	0.0	0.04
Total	**135.00**	**45.88**	**79.56**	**5.24**	**5.24**	**0.30**	**19.92**

Table 4.11.1-7

Proposed Emissions for the Bertrand Compressor Station

Emission Source	NO_X (tpy)	CO (tpy)	VOC (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	SO_2 (tpy)	HAPs (tpy)
Reciprocating Engine (CAT 12CM34)	40.72	11.94	22.01	1.47	1.47	0.09	2.78
Reciprocating Engine (CAT 12CM34)	40.72	11.94	22.01	1.47	1.47	0.09	2.78
Reciprocating Engine (CAT 16CM34)	54.34	15.93	29.37	1.96	1.96	0.12	3.71
Reciprocating Engine (CAT 16CM34)	54.34	15.93	29.37	1.96	1.96	0.12	3.71
Reciprocating Engine (CAT 16CM34)	54.34	15.93	29.37	1.96	1.96	0.12	3.71
Fuel gas heater	0.32	0.27	0.02	0.02	0.02	<0.01	<0.01
Emergency Generator	1.79	1.37	0.41	0.02	0.02	<0.01	0.20
Space Heaters	0.41	0.35	0.02	0.03	0.03	<0.01	<0.01
Storage Tanks	0.0	0.0	1.96	0.0	0.0	0.0	0.02
Sumps	0.0	0.0	0.38	0.0	0.0	0.0	<0.01
Fugitive Emissions	0.0	0.0	1.48	0.0	0.0	0.0	0.11
Total	**246.97**	**73.67**	**136.41**	**8.92**	**8.92**	**0.53**	**33.86**

Table 4.11.1-8

Proposed Emissions for the Mexico Compressor Station

Emission Source	NO_x (tpy)	CO (tpy)	VOC (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	SO_2 (tpy)	HAPs (tpy)
Gas Turbine (Solar Titan 130 20502S)	40.16	43.43	4.67	19.79	19.79	2.26	2.14
Gas Turbine (Solar Titan 130 20502S)	40.16	43.43	4.67	19.79	19.79	2.26	2.14
Fuel gas heater	0.32	0.06	0.02	0.02	0.02	<0.01	<0.01
Emergency Generator	6.64	1.87	0.09	0.01	0.01	<0.01	0.04
Space Heaters	0.41	0.35	0.02	0.03	0.03	<0.01	<0.01
Storage Tanks	0.0	0.0	1.99	0.0	0.0	0.0	<0.01
Fugitive Emissions	0.0	0.0	0.52	0.0	0.0	0.0	0.04
Total	**87.71**	**89.14**	**11.98**	**39.66**	**39.66**	**4.55**	**4.35**

Table 4.11.1-9

Proposed Emissions for the Blue Mound Compressor Station

Emission Source	NO_x (tpy)	CO (tpy)	VOC (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	SO_2 (tpy)	HAPs (tpy)
Reciprocating Engine (CAT 12CM34)	40.74	11.88	22.07	1.51	1.51	0.09	5.65
Reciprocating Engine (CAT 12CM34)	40.74	11.88	22.07	1.51	1.51	0.09	5.65
Reciprocating Engine (CAT 16CM34)	54.35	15.85	29.44	2.01	2.01	0.12	7.53
Reciprocating Engine (CAT 16CM34)	54.35	15.85	29.44	2.01	2.01	0.12	7.53
Reciprocating Engine (CAT 16CM34)	54.35	15.85	29.44	2.01	2.01	0.12	7.53
Fuel gas heater	0.32	0.27	0.02	0.02	0.02	<0.01	<0.01
Emergency Generator	1.79	1.37	0.41	0.02	0.02	<0.01	0.20
Space Heaters	0.41	0.35	0.02	0.03	0.03	<0.01	<0.01
Storage Tanks	0.0	0.0	1.87	0.0	0.0	0.0	0.02
Sumps	0.0	0.0	0.38	0.0	0.0	0.0	<0.01
Fugitive Emissions	0.0	0.0	0.52	0.0	0.0	0.0	0.04
Total	**247.07**	**73.32**	**135.69**	**9.14**	**9.14**	**0.53**	**34.12**

Table 4.11.1-10

Proposed Emissions for the Bainbridge Compressor Station

Emission Source	NO_X (tpy)	CO (tpy)	VOC (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	SO_2 (tpy)	HAPs (tpy)
Gas Turbine (Solar Titan 130 20502S)	39.95	40.52	4.64	19.78	19.78	2.26	2.13
Gas Turbine (Solar Titan 130 20502S)	39.95	40.52	4.64	19.78	19.78	2.26	2.13
Fuel gas heater	0.32	0.27	0.02	0.02	0.02	<0.01	<0.01
Emergency Generator	6.64	0.47	0.09	0.01	0.01	<0.01	0.07
Space Heaters	0.41	0.35	0.02	0.03	0.03	<0.01	<0.01
Storage Tanks	0.0	0.0	1.81	0.0	0.0	0.0	<0.01
Fugitive Emissions	0.0	0.0	0.52	0.0	0.0	0.0	0.04
Vehicle Traffic (unpaved roads)	0.0	0.0	0.0	0.14	0.14	0.0	0.0
Total	**87.27**	**82.11**	**11.74**	**39.85**	**39.95**	**4.52**	**4.36**

Table 4.11.1-11

Proposed Emissions for the Hamilton Compressor Station

Emission Source	NO_X (tpy)	CO (tpy)	VOC (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	SO_2 (tpy)	HAPs (tpy)
Fuel gas heater	0.32	0.27	0.02	0.02	0.02	<0.01	<0.01
Emergency Generator	2.60	0.56	0.21	0.19	0.19	0.17	<0.01
Total	**2.92**	**0.83**	**0.23**	**0.21**	**0.21**	**0.17**	**<0.01**

Table 4.11.1-12

Proposed Emissions for the Chandlersville Compressor Station

Emission Source	NO_X (tpy)	CO (tpy)	VOC (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	SO_2 (tpy)	HAPs (tpy)
Reciprocating Engine (CAT 12CM34)	39.60	11.87	19.25	0.01	0.01	0.09	6.27
Reciprocating Engine (CAT 12CM34)	39.60	11.87	19.25	0.01	0.01	0.09	6.27
Reciprocating Engine (CAT 16CM34)	52.87	15.86	25.66	0.02	0.02	0.12	8.36
Fuel gas heater	0.35	0.31	0.02	0.02	0.02	<0.01	<0.01
Emergency Generator	0.10	0.08	0.22	<0.01	<0.01	<0.01	0.14
Total	**132.52**	**39.99**	**64.39**	**0.06**	**0.06**	**0.29**	**21.03**

Subpart Kb of 40 CFR 60, Standards of Performance for Volatile Organic Liquid Storage Vessels, lists affected emission sources as storage vessels containing volatile organic liquids. Regulatory applicability is dependent on the construction date, size, and vapor pressure of the storage vessel and its contents. Subpart Kb applies to new tanks, unless otherwise exempted, that have a storage capacity between 75 cubic meters (19,813 gallons) and 151 cubic meters (39,890 gallons) and contain VOCs with a maximum true vapor pressure greater than or equal to 15.0 kilopascals (kPa). Subpart Kb also applies to tanks that have a storage capacity greater than or equal to 151 cubic meters and contain VOCs with a maximum true vapor pressure greater than or equal to 3.5 kPa. The proposed storage tanks at each of the proposed compressor stations would be 10,000 gallons or less, which is below the regulated capacity. Therefore, the REX East Project would not be subject to NSPS Subpart Kb standards.

On June 12, 2006, EPA proposed a new NSPS (40 CFR 60 Subpart JJJJ) for stationary spark ignition (SI) internal combustion engines. The proposed compressor stations contain natural-gas fired compressor engines and/or emergency generators that may be potentially subject to 40 CFR 60 Subpart JJJJ. The proposed standard for stationary SI engines applies to all new, modified, and reconstructed stationary SI engines regardless of size. The pollutants to be regulated by the proposed NSPS for stationary SI engines are NO_x, CO, and non-methane hydrocarbons. The spark ignition internal combustion engines to be installed at the proposed REX East Project compressor stations (reciprocating engines) would comply with the applicable requirements of NSPS JJJJ once promulgated.

On July 6, 2006, the EPA published the final NSPS Subpart KKKK (Standards of Performance for Stationary Gas Turbines). NSPS Subpart KKKK applies to new, modified, or reconstructed stationary gas turbines with a heat input at peak load of greater than or equal to 10 million British thermal units per hour (MMBtu/hr). Two turbines are proposed for installation at both the Mexico and Bainbridge Compressor Stations, with each turbine having a total heat input of 144 MMBtu/hr. Thus, both the Mexico and Bainbridge Compressor Stations would be required to comply with applicable NSPS Subpart KKKK requirements. The NO_x emission factor for the Mexico and Bainbridge compressors are designed to have an emission factor of 0.059 lb/MMBtu/hr for NO_x and 0.0034 pounds of SO_2/MMBtu/hr, which would meet the Subpart KKKK requirements. In addition, Rockies Express would comply with the Subpart KKKK requirements for monitoring, recordkeeping, and reporting.

NSPS Subpart GG applies to stationary gas turbines with a heat input at peak load equal to or greater than 10 million Btu per hour, based on the lower heating value of the fuel fired. Since the stationary gas turbines associated with the proposed Mexico and Bainbridge compressor stations would be constructed after February 18, 2005, they would be subject to the requirements of NSPS Subpart KKKK. Also, in accordance with §60.4305, stationary gas turbines subject to NSPS KKKK are exempt from the requirements of NSPS GG.

National Emission Standards for Hazardous Air Pollutants

The NESHAP, codified in 40 CFR Parts 61 and 63, regulates hazardous air pollutant (HAP) emissions. Part 61 was promulgated prior to the 1990 Clean Air Act Amendments (CAAA) and regulates only eight types of hazardous substances (asbestos, benzene, beryllium, coke oven emissions, inorganic arsenic, mercury, radionuclides, and vinyl chloride).

The 1990 CAA established a list of 189 HAPs, resulting in the promulgation of Part 63. Part 63, also known as the Maximum Achievable Control Technology (MACT) standards, regulates HAP emissions from major sources of HAP emissions and specific source categories that emit HAPs. Part 63 defines a major source of HAPs as any source that has the potential to emit 10-tpy of any single HAP or 25 tpy of HAPs in aggregate. MACT standards are intended to reduce emissions of air toxics or HAPs through installation of control equipment rather than enforcement of risk-based emission limits. The total

HAP emissions from all equipment are above the 25 tpy major source threshold for the Bertrand and Blue Mound Compressor Stations (as shown in table 4.11.1-7 and 4.11.1-9), and total emissions of formaldehyde (the HAP emitted in the greatest amount) are over the 10 tpy threshold for the Arlington Compressor Station (11.47 tpy) and Chandlersville Compressor Station (11.32 tpy).

The turbines would potentially be subject to 40 CFR Part 63 Subpart YYYY, which requires MACT to reduce emissions of HAPs through the installation of control equipment rather than through risk-based emission limits. Natural-gas fired combustion turbines typically have low HAP emissions; thus, additional control technologies may not be required for MACT compliance. Neither the Mexico nor Bainbridge Compressor Stations are expected to be a major HAP source and therefore would not need to demonstrate compliance with 40 CFR Part 63.

The reciprocating engines would potentially be subject to 40 CFR Part 63 Subpart ZZZZ if the station is a major source of HAPs or if the engine rating is greater than 500 hp regardless of the size. The Arlington, Bertrand, Blue Mound and Chandlersville Compressor Stations would be major sources of HAPs and they all have a rating greater than 500 hp and therefore would be subject to the MACT standard in 40 CFR Part 63 Subpart ZZZZ. Emission rates as shown in table 4.11.1-6 to 4.11.1-12 do not reflect these emission reductions for HAPs. Rockies Express would comply with all of the applicable requirements of Subpart ZZZZ and demonstrate compliance through the permitting agency.

Title V Operating Permits

The Title V permit program, as described in 40 CFR 70, requires sources of air emissions with criteria pollutant emissions that reach or exceed major source levels to obtain federal operating permits. These permits list all applicable air regulations and include a compliance demonstration for each applicable requirement. The major source threshold level in attainment areas is 100 tpy of NO_x, SO_2, CO, PM_{10}, $PM_{2.5}$, and VOC. Emissions of NO_x at the Arlington, Bertrand, Blue Mound and Chandlersville Compressor Stations and emissions of VOC at the Bertrand and Blue Mound Compressor Stations would exceed the 100-tpy criteria pollutant threshold, as shown in tables 4.11.1-6 through 4.11.1-12. Therefore, the Arlington, Bertrand, Blue Mound and Chandlersville Compressor Stations would require a Title V permit. None of the criteria pollutants would be emitted at the 100-tpy level at the Mexico, Bainbridge, or Hamilton Compressor Stations; therefore, Title V permits would not be required for those facilities.

General Conformity

The EPA promulgated the General Conformity Rule on November 30, 1993 in Volume 58 of the FR Page 63214 (58 FR 63214) to implement the conformity provision of Title I, section 176(c)(1) of the CAA. Section 176(c)(1) requires that the Federal government not engage, support, or provide financial assistance for licensing or permitting, or approving any activity not conforming to an approved CAA implementation plan.

The General Conformity Rule is codified in Title 40 CFR Part 51, Subpart W and Part 93, Subpart B, determining Conformity of General Federal Actions to State or Federal Implementation Plans. A conformity determination must be conducted by the lead federal agency if a federal action's construction and operational activities is likely to result in generating direct and indirect emissions that would exceed the conformity threshold levels (*de minimis*) of the pollutant(s) for which an air basin is in non-attainment or maintenance. According to the conformity regulations, emissions from sources that are major for any criteria pollutant with respect to the NNSR or PSD permitting/licensing are exempt and are deemed to have conformed.

Section 176(c)(1) of the CAA (Title 40 CFR 51.853), states that a federal agency cannot approve or support any activity that does not conform to an approved SIP. Conforming activities or actions should not, through additional air pollutant emissions:

- cause or contribute to new violations of the NAAQS in any area;
- increase the frequency or severity of any existing violation of any NAAQS; or
- delay timely attainment of any NAAQS or interim emission reductions.

As noted earlier, the Hamilton Compressor Station would be located in Butler County, Ohio, which is currently designated as non-attainment for 8-hour O_3 and $PM_{2.5}$. While no other compressor stations are located in non-attainment areas, the pipeline route would cross Hendricks, Morgan, and Johnson Counties in Indiana and Warren and Fairfield Counties in Ohio, which are currently designated non-attainment Subpart 1 Basic for O_3 and non-attainment for $PM_{2.5}$. The pipeline would cross Greene and Belmont Counties, Ohio which are currently designated as maintenance for O_3 and non-attainment for $PM_{2.5}$. Also, the pipeline route would cross Shelby County, Indiana and Clinton County, Ohio, which are designated non-attainment Subpart 1 Basic for O_3. Hendricks, Morgan, Johnson, and Shelby Counties, Indiana, are all located in the same Indianapolis, Indiana AQCR. Therefore, emissions occurring in these counties are combined and compared to the threshold values. Butler, Warren, and Clinton Counties, Ohio are all located in the Cincinnati-Hamilton, Ohio-Kentucky-Indiana AQCR, and emissions are combined and compared to the threshold values. Greene, Fairfield, and Belmont Counties, Ohio are located in Dayton-Springfield, Ohio AQCR, Columbus, Ohio AQCR, and Wheeling, West Virginia-Ohio AQCR, respectively.

The O_3 Subpart 1 Basic non-attainment general conformity applicability thresholds are 100 tpy for either NO_x or VOC. The O_3 maintenance general conformity applicability thresholds are 100 tpy for either NO_x, NO_2, or VOC. The $PM_{2.5}$ non-attainment general conformity applicability thresholds are 100 tpy of $PM_{2.5}$, SO_2, NO_x (unless determined not to be a significant precursor), and VOC or ammonia (if determined to be significant precursors).

The emissions estimated to be generated from the construction of the Project in the non-attainment AQCRs were compared to the *de minimis* levels and are included in table 4.11.1-13. As shown, the total construction emissions in each of the AQCRs would be expected to be below the applicable thresholds for each pollutant and the requirements of General Conformity would not apply. In addition, the estimated annual emissions associated with the operation of the proposed Hamilton Compressor Station as shown in table 4.11.1-11 to be located in Butler County would be below the applicable thresholds for each pollutant and the requirements of General Conformity would not apply.

Table 4.11.1-13

Total Emissions by Non-attainment Air Quality Control Regions during the Construction Phase of the REX East Project

Non-attainment Air Quality Control Region	Pollutant			
	NO_x (tpy)	VOC (tpy)	SO_2 (tpy)	$PM_{2.5}$ (tpy)
Indianapolis, IN	84.53	13.23	17.3	13.10
Cincinnati-Hamilton, OH-KY-IN	97.01	17.16	18.7	15.31
Dayton-Springfield, OH	3.27	0.5	0.67	0.71
Columbus, OH	29.22	4.6	5.9	6.19
Wheeling, WV–OH	18.63	2.91	3.8	3.99
General Conformity Threshold	100	100	100	100

The construction emissions provided were based on the assumption that the compression-ignition construction equipment would be made up of over 40 percent Tier 2 technology, less than 50 percent Tier 3 technology and no Tier 4 equipment. Spark-ignited equipment was assumed to meet Phase 1 regulatory emission standards. Rockies Express has indicated it would require contractors utilizing nonroad construction equipment in the non-attainment areas of the project to use the best available nonroad construction equipment in their fleets. To ensure the protection of the non-attainment areas and in an effort to ensure that the actual project construction emissions generated in the non-attainment areas do not exceed the general conformity thresholds, **we recommend that:**

- **Prior to the start of construction, Rockies Express file with the Secretary for review and written approval by the Director of OEP the age distribution and emission control technology associated with all of its contractor's fleet equipment for the project. During construction, in its filed weekly status reports, Rockies Express shall identify the equipment used in the non-attainment areas.**

State Regulations

In addition to the federal regulations described above, Illinois, Indiana, Missouri, Nebraska, Ohio, and Wyoming have state air quality regulations. The Wyoming Department of Environmental Quality manages air quality issues in Wyoming, Nebraska Department of Environmental Quality manages air quality in Nebraska, MODNR manages Missouri's air quality, ILEPA manages air quality issues in Illinois, in Indiana air quality issues are managed by IDEM, and in Ohio air quality is managed by OEPA. Subject to EPA approval these agencies manage the statewide air permitting, compliance, and enforcement programs. The Arlington Compressor Station would be operated and be permitted under Wyoming's Permitting Requirements Standards and Regulations as described in Chapter 6, Section 3. The Bertrand Compressor Station would be authorized under Nebraska's Title 129 and would operate under conditions of its air quality permit. The Mexico Compressor Station would be authorized under MODNR 10 Code of State Regulations 10-6 which incorporates much of the federal regulatory requirements for air quality and would be authorized under the conditions of its air permit. The Blue Mound Compressor Station would be authorized under ILEPA's applicable state air regulations contained in 35 Illinois Administrative Code Subtitle B under conditions of its air quality permit. The Bainbridge Compressor Station would be authorized under Indiana's Title 326 of the Indiana Administrative Code Article 2 and under the federal air permit conditions. The Chandlersville Compressor Station would be authorized under Ohio's Revised Code for general permits Ohio Administrative Code rule 3745-31-29 and Ohio rule 3745-35-08 Permit-to-Install and Operate.

General Impacts and Mitigation

Construction Impacts

Construction of the pipeline and access roads would generate air emissions during grading, trenching, backfilling, and operation of construction vehicles along unpaved areas. The Project would use existing roads to the extent possible. Some roads used for access would be improved during construction by widening or adding drain pipes, gravel, or grading; and some new roads and road extensions would be constructed. Some roads would remain after construction to provide access to the pipeline for maintenance purposes. These activities could generate dust and particulate emissions from earth-moving activities and construction equipment engine exhaust.

Construction of the compressor stations would be performed with mobile equipment similar to that typically used for pipeline and road construction. In addition to the compressor stations, Rockies Express would construct other aboveground facilities consisting of M/R stations.

Construction would be expected to cause a minor and temporary impact to local ambient air quality as a result of fugitive dust and combustion emissions generated by construction equipment. Criteria pollutant emissions during operation of the fossil-fueled construction equipment would occur from combustion products resulting from the use of gasoline and diesel fuels, primarily NO_2, CO, VOCs, PM_{10}, small amounts of SO_2, and small amounts of HAPs (e.g., formaldehyde, benzene, toluene, and xylene) produced by the construction equipment engines. Impacts from construction equipment would be temporary and would be expected to result in an insignificant impact on air quality. Emissions from fugitive dust and construction activities would be controlled through best management practices (e.g., intermittent watering of roadways and construction areas). Table 4.11.1-13 shows the construction emissions for the non-attainment regions over which the pipeline traverses, which is below *de minimis* levels for conformity. Similar emission rates during construction are anticipated for attainment areas.

Operational Impacts

Operational emissions resulting from the Project would be associated with the operation of the six natural-gas fired compressor stations and one electric compressor station proposed by Rockies Express. Combustion emissions from these stations would mainly consist of NO_x, CO, HAPs, and VOCs with small amounts of SO_2 and $PM_{10}/PM_{2.5}$. Emission would be minimized through the use of natural gas as fuel for all compressor units, most emergency generator units, and heaters.

Each compressor station would include an emergency shut down (ESD) system, pursuant to DOT requirements. Activation of the ESD system would vent the piping (expel the natural gas) to the atmosphere in case of an emergency. The ESD would be used only in the event of an emergency. Compressor unit blowdowns would occur as needed to relieve pressure when a unit is taken offline. Natural gas blowdowns are not part of routine operation.

Tables 4.11.1-6 through 4.11.1-12 list the anticipated emissions of criteria pollutants and HAPs from the operation of each compressor station. Rockies Express has filed air permit applications or notifications for the Bertrand, Mexico, Blue Mound, Bainbridge, Arlington, and Hamilton Compressor Stations with the respective air permitting agencies. Rockies Express is completing the air permit application for the Chandlersville Compressor Station and will provide the FERC a copy of the application as recommended above. As part of their operational permitting process, emissions compliance testing would be required to ensure that the stations would be operating within their federal, state, and local permit conditions.

Rockies Express has conducted air quality modeling for NO_2 and CO using EPA's AERMOD modeling system (EPA, 2004) for the Bainbridge, Mexico, Bertrand, and Blue Mound Compressor Stations. Also, Rockies Express has provided screening analyses using EPA's SCREEN3 system for the Arlington and Chandlersville Compressor Stations. Table 4.11.1-14 contains the modeling results from the six compressor stations. The results show that the impacts from the individual compressor stations, in combination with the background concentration for each station's area, are below the NAAQS for NO_2 and CO. The Hamilton Compressor Station was not modeled since there would be no emissions from the electric driven compressor units (the primary source of emissions at a compressor station).

Operation of the aboveground meter stations and block valves would not result in substantial air emissions under normal operating conditions. Typically, only minor emissions of natural gas, called "fugitive emissions," occur from small connections at meter station and valve sites; because such emissions are very small, they are not regulated by permit or source-specific requirements.

Table 4.11.1-14

Air Quality Modeling a/ Impacts and Comparison to National Ambient Air Quality Standards for the Six Natural-Gas Fired Compressor Stations

Compressor Station	Pollutant	Averaging Period	Maximum Modeled Compressor Station Impact ($\mu g/m^3$)	Compressor Impact plus Background b/ ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
Arlington, Carbon County, Wyoming	CO	1-Hour	397.5	6,123.5	40,000
		8-Hour	278.3	3,026.7	10,000
	NO2	Annual	50.3	59.7	100
Bainbridge, Putnam County, Indiana	CO	1-Hour	229.1	2,232.8	40,000
		8-Hour	174.4	2,006.4	10,000
	NO2	Annual	3.4	65.4	100
Bertrand, Phelps County, Nebraska	CO	1-Hour	311.6	7,881.6	40,000
		8-Hour	197.8	2,527.8	10,000
	NO2	Annual	38.9	53.9	100
Blue Mound, Christian County, Illinois	CO	1-Hour	543.5	4,782.5	40,000
		8-Hour	408.7	2,012.7	10,000
	NO2	Annual	47.7	75.7	100
Chandlersville, Muskingum County, OH	CO	1-Hour	231.2	5,041.0	40,000
		8-Hour	158.0	2,448.4	10,000
	NO2	Annual	42.5	83.9	100
Mexico, Audrain County, Missouri	CO	1-Hour	330.2	2,055.2	40,000
		8-Hour	277.3	1,657.3	10,000
	NO2	Annual	19.1	24.8	100

a/ Arlington and Chandlersville based on SCREEN3 modeling; other compressor stations based on AERMOD.

b/ Background concentrations are those specified by the state agency for which the air quality modeling was conducted in support of obtaining a state air quality permit

$\mu g/m^3$ = micrograms per cubic meter

Use of the access roads for maintenance would generate occasional, minor, and short-term increases in dust similar to that generated on other unpaved roads in the area. Use of these roads by maintenance and operation personnel would have a negligible effect on air quality.

Construction of the Project would be expected to result in temporary minor impacts to air quality. Operation of the Project would be expected to result in long-term minor impacts to air quality.

4.11.2 Noise

Noise would affect the local environment during both the construction of the Project facilities and operation of each of the proposed compressor stations associated with the Project. At any location, both the magnitude and frequency of environmental noise may vary considerably over the course of the day and throughout the week. This variation is caused in part by changing weather conditions and the effects of seasonal vegetative cover. Two measures used by federal agencies to relate the time-varying quality of environmental noise to its known effect on people are the 24-hour equivalent sound level [$L_{eq}(24)$] and the day-night average sound level (DNL). The $L_{eq}(24)$ is the level of steady sound with the same total (equivalent) energy as the time-varying sound of interest, averaged over a 24-hour period. The DNL is

the $L_{eq}(24)$ with 10 decibels on the A-weighted scale (dBA) added to sound levels between the hours of 10 p.m. and 7 a.m., to account for people's greater sensitivity to sound during nighttime hours. The A-weighted scale is used because human hearing is less sensitive to low and high frequencies than mid-range frequencies. People's threshold of perception for a change in noise level is considered to be 3 dBA.

Regulatory Requirements

In 1974, the EPA published *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* (EPA, 1974). This document provides information for state and local governments to use in developing their own ambient noise standards. The EPA has determined that to protect the public from activity interference and annoyance outdoors in residential areas, noise levels should not exceed a DNL of 55 dBA. We have adopted this criterion and use it to evaluate the potential noise impact from operation of each of the proposed compressor stations.

Based on a review of state regulations, there were no applicable noise regulations identified for natural gas compressor station facilities constructed and operated in Indiana, Missouri, Nebraska, Ohio, and Wyoming. Title 35 of the Illinois Administrative Code Subtitle H, Chapter I, Part 900 and Part 901 contain requirements for noise pollution from a property-line-noise-source in Illinois. The proposed Blue Mound Compressor Station would be constructed and operated in compliance with the applicable sound emission standards and limitations for property-line-noise-source of Part 901.

In addition, no applicable local (i.e., township, city, county) noise regulations were identified for the facilities associated with this project.

Existing Noise Levels

Impacts are determined at receptors known as NSAs. NSAs include residences, schools, daycare facilities, hospitals, long-term care facilities, places of worship, libraries, and parks and recreational areas specifically known for their solitude and tranquility, such as wilderness areas. Each compressor station has been evaluated for adjacent NSAs and surrounding ambient noise levels.

The Arlington Compressor Station would be located in Carbon County, Wyoming, just north of the town of Arlington, Wyoming. The closest NSA (NSA #1) is a residence located approximately 900 feet southwest of the site center (i.e., the anticipated location where the station would be built) and other residences are located further southwest of the site center. Hoover and Keith Inc. (H&K), an acoustical consultant for Rockies Express, measured ambient sound on February 2, 2007. At the NSA sound measurement positions, the noise associated with the nearby Southern Star Compressor Station unaffiliated with the Project, contributed significantly to the measured daytime sound levels although there was also some wind-related noise. During the nighttime, the ambient levels should be approximately equal to the measured daytime levels since the ambient noise was dominated by the noise of the nearby gas pipeline facility, which probably operates 24 hours/day. Measured daytime sound levels at NSA #1 ranged from 51.3 to 52.6 dBA with a calculated DNL of 58.4 dBA.

The Bertrand Compressor Station would be located in a rural area of Phelps County, Nebraska, approximately 10 miles west-northwest of Holdrege, Nebraska and approximately 6 miles southeast of Bertrand, Nebraska. The land immediately surrounding the site is agricultural. The two closest NSAs consist of a home located approximately 1,900 feet northeast (NSA #1) and 3,800 feet northwest (NSA #2) of the site center. H&K measured ambient sound on June 6, 2007. At the NSA sound measurement positions, the noise of wind blowing in the grass/trees and the sound of birds/cattle were the observed noise sources that significantly influenced the measured daytime sound levels. Measured daytime sound

levels at NSA #1 ranged from 29.9 to 34.4 dBA with a calculated DNL of 37.8 dBA. Measured daytime sound levels at NSA #2 ranged from 35.2 to 35.7 dBA with a calculated DNL of 41.2 dBA.

The Mexico Compressor Station would be located in a rural area of Audrain County, Missouri, 6 miles northeast of Mexico, Missouri. The land immediately surrounding the site is primarily agricultural. The closest NSA is a residence (NSA #1) located approximately 1,700 feet north of the site center. Other nearby NSAs are located 2,900 feet southwest and 3,400 feet east-northeast from the site center (NSA #2 and NSA #3). H&K measured ambient sound on February 1, 2007. At the sound measurement positions near the NSAs, the noise of wind blowing in the grass/trees and the sound of birds were the observed noise sources that significantly influenced the measured daytime sound levels. At times, the noise of high-altitude aircraft and distant farm machinery were also audible. Measured daytime sound levels at NSA #1 ranged from 29.3 to 29.8 dBA with a calculated DNL of 35.5 dBA. Measured daytime sound levels at NSA #2 ranged from 30.3 to 34.4 with a calculated DNL of 38.5 dBA. NSA #3 was assumed to have the same noise level as NSA #1.

The Blue Mound Compressor Station would be located in a rural area of Christian County, Illinois, approximately 8 miles west of Blue Mound, Illinois, and approximately 18 miles southwest of Decatur, Illinois. The land immediately surrounding the site is primarily agricultural. One residence (NSA #1) is located approximately 2,100 feet south of the site center. Other nearby NSAs are approximately 1 mile or more from the site center. H&K measured ambient sound on April 6, 2006. At the NSA sound measurement positions, the noise of wind blowing in the grass/trees and the sound of birds/cattle were the observed noise sources that significantly influenced the measured daytime sound levels. Measured daytime sound levels at NSA #1 ranged from 35.8 to 44.4 dBA, with a calculated DNL of 46.6 dBA. NSAs #2 and #3 were assumed to have the same noise level as NSA #1.

The Bainbridge Compressor Station would be located in a rural area of Putnam County, Indiana approximately 1 mile south of Bainbridge, Indiana. The land immediately surrounding the site is primarily agricultural. There are a few scattered residences located around the site, and the closest NSAs consist of two residences located approximately 1,460 feet west-northwest of the site center (NSA # 1 and NSA #2). Other nearby NSAs include residences located 1,980 feet west and 3,220 feet north of the site center (NSA #3 and NSA #4). H&K measured ambient sound on January 31, 2007. At the sound measurement positions near the NSAs, the noise of distant vehicle traffic, wind blowing in the grass/trees, and the sound of birds were the observed noise sources that significantly influenced the measured daytime sound levels. At times, the noise of high-altitude aircraft and the sound of distant dogs barking were also audible. Measured sound levels at NSA #1 ranged from 36.8 to 37.6 dBA with a calculated DNL of 43.5 dBA. Measured sound levels at NSA #2 ranged from 35.9 to 37.3 dBA with a calculated DNL of 43.8 dBA. Measured sound levels at NSA #3 ranged from 37.2 to 38.3 dBA with a calculated DNL of 45.3 dBA. Measured sound levels at NSA #4 ranged from 39.4 to 42.6 dBA with a calculated DNL of 47.6 dBA.

The Hamilton Compressor Station would be located in Butler County, Ohio, approximately 12 miles northeast of Hamilton, Ohio and approximately 3 miles southeast of Middletown, Ohio. The land immediately surrounding the site is primarily industrial with relatively distant residential areas. There are a few scattered residences located around the new site of the Station, and the closest NSA consists of residences along Cincinnati-Dayton Road, located approximately 2,100 feet southeast of the Station site center. H&K measured ambient sound on October 1, 2007. At the sound measurement positions near the NSAs, the noise of vehicle traffic was the observed noise source that significantly influenced the measured daytime sound levels. At times, the noise of industrial activity, railroad activity, and insects/birds were also audible. Measured sound levels at NSA #1 ranged from 56.8 to 60.3 dBA with a calculated DNL of 58.2 dBA. Measured sound levels at NSA #2 ranged from 55.6 to 55.7 dBA with a calculated DNL of 55.6 dBA.

The Chandlersville Compressor Station would be located in Muskingum County, Ohio, approximately 7 miles southeast of Zanesville, Ohio. The closest NSAs consist of residences located between 1,100 feet to 1,300 feet from the anticipated location of the compressor building. The closest NSAs consist of residences located between 700 feet to 850 feet from the site center. H&K measured ambient sound on October 2, 2007. At the NSA sound measurement positions, the noise of wind blowing in the grass/trees and the sound of birds/cattle were the observed noise sources that significantly influenced the measured daytime sound levels. Measured sound levels at NSA #1 ranged from 45.1 to 45.4 dBA with a calculated DNL of 47.7 dBA. Measured sound levels at NSA #2 ranged from 44.1 dBA to 44.2 dBA with a calculated DNL of 47.3 dBA. Measured sound levels at NSA #3 ranged from 42.8 to 43.6 dBA with a calculated DNL of 47.0 dBA.

General Impacts and Mitigation

Construction Noise

Construction of the Project is expected to be typical of other pipeline projects in terms of schedule, equipment used, and types of activities. Construction would increase sound levels in the vicinity and the sound levels would vary during the construction period. Pipeline construction generally would proceed at rates ranging from several hundred feet to 1 mile per day. However, due to the assembly-line method of construction, activities in any one area could last from several weeks to several months on an intermittent basis. Noise associated with construction at the compressor stations would be concentrated in the vicinity of the stations. Construction equipment would be operated on an as-needed basis during those periods and would be maintained to manufacturers' specifications to minimize noise impacts.

Nighttime noise levels would normally be uneffected because most pipeline construction would take place only during daylight hours. The possible exceptions would be at the HDD sites (e.g., at the crossings of waterbodies and highways). At HDD locations, drilling equipment may operate on a 24-hour-per-day and 7-day-per-week basis. In addition to EPA's 55 DNL standard, noise level changes are categorized as follows: a 3-dBA increase is considered noticeable, a 6-dBA increase is considered clearly noticeable, and a 9-dBA increase is considered significantly noticeable. An acoustical assessment was prepared for all of the planned HDD sites with NSAs within 1 mile of HDD locations to show existing sound levels and noise levels due to HDD activity.

H&K performed detailed noise assessments that included both a site ambient sound survey and an acoustical analysis for the entry and exit points associated with each of the proposed HDD locations that have the potential to exceed 55 DNL. The NSAs, their distance and direction from each site, and the measured and estimated noise levels are summarized in table 4.11.2-1. In order to mitigate significant impacts due to HDD activity, Rockies Express has committed to using a temporary noise barrier at least 16 feet high and to ensure any diesel engines associated with HDD activities would include an adequate exhaust muffler to reduce noise levels at the nearest NSAs.

As shown in table 4.11.2-1, the noise levels greater than or equal to 55 DNL associated with the HDD activities would be significantly mitigated by implementing the recommended mitigation measures documented in the acoustical assessment report and would result in less than a 55 DNL and 9 dBA

Table 4.11.2-1

Project Locations with Predicted Horizontal Directional Drill Noise Impacts Greater than 55 DNL a/

Milepost	Location of Each HDD Site	Entry or Exist Point	Approximate Distance (feet)/Direction from the Drill Site to NSA	Estimated DNL if Noise Mitigation Not Employed	Estimated DNL If Noise Mitigation Employed	Ambient DNL	DNL of HDD plus Ambient	Increase Above Ambient
42.0	Salt River	Entry	900 ft. (SW)	58.3 dBA	48.3 dBA	40.3	48.9 dBA	8.6 dBA
42.6	Miss River	Entry	700 ft. (South)	60.7 dBA	44.2 dBA	39.0	45.3 dBA	6.3 dBA
70.6	Illinois River	Entry	1,000 ft. (NE)	58.4 dBA	50.4 dBA	47.0	52.1 dBA	5.1 dBA
202.8	Embarras River	Entry	1,000 ft. (NE)	58.9 dBA	50.4 dBA	51.2	53.8 dBA	2.6 dBA
312.3	Pennington Rd	Entry	600 ft. (East)	63.7 dBA	53.1 dBA	54.1	56.6 dBA	2.5 dBA
312.6	Pennington Rd	Exit	400 ft. (North)	57.4 dBA	47.3 dBA	43.5	48.8 dBA	5.3 dBA
340.7	Big Blue River	Entry	1,000 ft. (NNE)	58.7 dBA	50.2 dBA	50.1	53.2 dBA	3.1 dBA
421.4	Four Mile Creek	Entry	260 ft. (NW)	73.1 dBA	54.9 dBA	52.2	56.8 dBA	4.6 dBA
422.4	Seven Mile Crk	Entry	400 ft. (South)	69.0 dBA	51.7 dBA	51.9	54.8 dBA	2.8 dBA
509.0	Big Darby Crk	Entry	650 ft. (SSE)	64.9 dBA	53.9 dBA	56.9	58.7 dBA	1.8 dBA
577.0	Muskingum Riv	Entry	800 ft. (East)	58.7 dBA	48.7 dBA	48.2	51.5 dBA	3.3 dBA

a/ Hoover and Keith, 2007a.

increase above current ambient noise levels at each of the nearest identified NSAs. Additional noise mitigation measures at the proposed HDD locations, if required may include, but would not be limited to:

- temporary housing in a nearby hotel;
- compensation to landowner to mitigate inconvenience and disturbance;
- partial and/or total enclosure of the power unit;
- partial and/or total enclosure of parts of drilling rig;
- adequate muffler for engine exhaust systems; and/or
- silencer for the engine air intake system.

In section 4.3.5 we recommend Rockies Express cross the White River and Big Walnut Creek using HDD. To ensure noise from these new HDD sites, and all other HDD activities does not become significant, **we recommend that:**

- **Prior to the start of construction, Rockies Express file with the Secretary for review and written approval by the Director of OEP updated site-specific plans for any HDD entry or exit site it proposes to implement noise mitigation. The updated plans should identify any noise walls or barriers, equipment locations, equipment barriers, or any other mitigation measures.**

- **Prior to the end of the draft EIS comment period, Rockies Express should file a noise analysis, for review and written approval by the Director of OEP, for any new HDD sites (including the White River and Big Walnut Creek crossings) or any HDD sites that are relocated since the publication of the draft EIS. This analysis should identify any NSAs within one half mile of the HDD entry or exit location, and the proposed length of time HDD activities would occur. The analysis should also include background noise levels and estimated drilling noise contributions at the nearest NSAs at each HDD entry**

and exit location with NSAs within one-half mile, along with any measures Rockies Express would implement to control noise from the HDDs.

Operational Noise

During operation of the Project, potential noise impacts would be limited to the vicinity of the new compressor stations. Principal noise sources would include the air inlet, exhaust, and casing of the turbines. Secondary noise sources would include yard piping and valves. Noise from the relief valves, blowdown stacks, and emergency electrical generation equipment would be infrequent.

All compressor stations would include design measures to minimize sound generation. Noise control measures could be applied to motors and associated compressors and appropriate building materials to enclose turbines and engines would be used. Adequate mufflers could be installed for turbine exhaust systems or engine exhaust systems and silencers could be installed for the engine or turbine air intake system. Acoustical insulation for aboveground piping may be installed if necessary to meet the applicable sound criteria. An air ventilation system for electric motors designed and specified to meet stringent noise requirements may be installed. Also, unit blowdown silencers may be added to reduce noise levels.

A detailed noise assessment that included both a site ambient sound survey and an acoustical analysis was performed at each of the proposed compressor station locations. The results are shown in table 4.11.2-2.

As shown in table 4.11.2-2, the proposed compressor stations with recommended noise mitigation measures implemented are expected to comply with the FERC's 55 DNL noise limit at the nearest NSAs. The analysis for the proposed Blue Mound compressor station indicates that the noise attributable to the new station should be below the Illinois Noise Regulations. Rockies Express has indicated that if noise levels during operation of the proposed compressor stations become an issue with a resident, additional noise mitigation measures beyond those recommended for implementation would be considered.

We note that the addition of the Arlington and Hamilton Compressor Stations, where existing ambient noise levels are already at or above 55 DNL, results in an increase in the future noise levels. However, the increases shown at these two locations are all approximately 1 dBA or less, and would not be significant. Based on the analyses conducted, and the data presented above, we conclude that no significant noise impacts would occur with Project operations.

During operation of the Project, the potential noise impacts from the pipeline would be limited to the vicinity of the new valve and metering stations. Principal noise sources would include gas flow through valves and metering equipment. Such gas flow noise is typically not noticeable more than a short distance from the equipment. Underground sections of the pipeline are not a significant source of noise.

Minor short-term noise impacts are expected during the Project construction, provided that equipment is maintained to the manufacturers' specifications to minimize noise. This assessment assumes that temporary noise barriers would be installed at the HDD sites listed in table 4.11.2-1 and that mufflers would be installed on engines.

Minor long-term noise impacts are expected from compressor station operation during the life of the Project and would not result in a significant effect on the noise environment. These minor impacts would result from the normal operation of compressor station equipment, as well as from blowdown events.

Table 4.11.2-2

Project Estimated Noise Levels at Noise-Sensitive Areas Near the Proposed Compressor Stations

Location / Noise-Sensitive Area (NSA)	Ambient DNL (dBA)	L_{eq} Attributable to New Station (dBA)	DNL Attributable to New Station (dBA)	DNL Attributable to New Station and Background (dBA)	Noise Increase at NSA (dBA)
Arlington Compressor Station a/					
NSA1	58.4	47.1	53.5	59.6	1.2
Bertrand Compressor Station b/					
NSA1	37.8	34.1	40.5	42.4	4.6
NSA2	41.2	42.8	49.2	49.8	8.6
Mexico Compressor Station c/					
NSA1	35.5	36.9	43.3	44.0	8.5
NSA2	38.5	31.5	37.9	41.2	2.7
NSA3	35.5	29.8	36.2	38.9	3.4
Blue Mound Compressor Station d/					
NSA1	46.6	42.0	48.4	50.6	4.0
NSA2	46.6	31.4	37.8	47.1	0.5
NSA3	46.6	30.7	37.1	47.1	0.5
Bainbridge Compressor Station e/					
NSA1	43.5	44.0	50.4	51.2	7.7
NSA2	43.8	40.3	46.7	48.5	4.7
NSA3	45.3	40.3	46.7	49.1	3.8
NSA4	47.6	35.9	42.3	48.7	1.1
Hamilton Compressor Station f/					
NSA1	58.2	37.8	44.2	58.4	0.2
NSA2	55.6	33.3	39.7	55.7	0.1
Chandlersville Compressor Station g/					
NSA1	47.7	43.6	50.0	52.0	4.3
NSA2	47.3	42.6	49.0	51.2	3.9
NSA3	47.0	41.6	48.0	50.6	3.6

a/ Hoover and Keith, 2007b.
b/ Hoover and Keith, 2007c.
c/ Hoover and Keith, 2007h.
d/ Hoover and Keith, 2007d.
e/ Hoover and Keith, 2007e.
f/ Hoover and Keith, 2007f.
g/ Hoover and Keith, 2007g.

To ensure that noise levels from operation of the Project facilities do not adversely impact surrounding areas, therefore, **we recommend that:**

- **Rockies Express make all reasonable efforts to assure its predicted noise levels from the Arlington, Bertrand, Mexico, Blue Mound, Bainbridge, Hamilton, and Chandlersville Compressor Stations are not exceeded at nearby NSAs and file noise surveys showing this with the Secretary no later than 60 days after placing each of the Arlington, Bertrand, Mexico, Blue Mound, Bainbridge, Hamilton, and Chandlersville Compressor Stations in service. However, if the noise attributable to the operation of the Arlington, Bertrand, Mexico, Blue Mound, Bainbridge, Hamilton, or Chandlersville Compressor**

Stations at full load exceeds a DNL of 55 dBA at any nearby NSAs, Rockies Express should file a report on what changes are needed and should install additional noise controls to meet the level within 1 year of the in-service date. Rockies Express should confirm compliance with this requirement by filing a second noise survey with the Secretary no later than 60 days after it installs the additional noise controls.