3.0 ALTERNATIVES

In accordance with NEPA and the FERC policy, we identified and evaluated a range of reasonable alternatives to the proposed action to determine if they would be environmentally preferable. These alternatives include the No Action and Postponed Action alternatives, energy alternatives, system alternatives, major route alternatives, route variations, and aboveground facility site alternatives. Our analysis is based on our review of publicly available information such as aerial photographs and United States Geological Survey (USGS) topographical maps, input provided by the public and state, local, and federal agencies, information filed by Rockies Express, and site visits. We considered alternatives identified by landowners, resource agencies, and other stakeholders during the public scoping period.

The evaluation criteria for selecting potentially environmentally preferable alternatives are:

- technical feasibility and practicality;
- clear environmental advantages over the REX East Project; and
- ability to meet the Project objective of delivering up to 1.8 bcf per day of Rocky Mountain natural gas from the terminus of REX West in Audrain County, Missouri to customers located in the midwestern and eastern United States.

Recognizing that not all conceivable alternatives are technically feasible and practical is important. Our analysis had to consider existing technologies and logistics in determining whether an alternative was feasible and practical.

In reviewing an alternative, we first determined whether it would meet the stated Project objectives. Next, we analyzed the potential impacts associated with the alternative to generate a comparison of the alternative to the REX East proposal. Those alternatives that met the Project objectives, appeared to be the most reasonable technically, and appeared to have similar or lower levels of environmental impact were reviewed in detail. The results of our analysis are presented below.

3.1 NO ACTION OR POSTPONED ACTION ALTERNATIVES

The FERC can take one of the following three actions in processing applications under Section 7 of the NGA: (1) deny the requested authorization (i.e., the No Action Alternative); (2) postpone action pending further filings or study (i.e., the Postponed Action Alternative); or (3) grant the Certificate with or without conditions (i.e., the proposed action).

According to the EIA's 2006 predictions, 60 percent of the projected growth in domestic natural gas consumption through 2030 will occur east of the Mississippi River, while the Rocky Mountains and Alaska will provide most of the increase in domestic production (EIA, 2006a). Thus, satisfying the increasing gas demand in the eastern United States from these domestic sources would require additional east-west pipeline capacity.

Although it would be purely speculative and beyond the scope of this analysis to attempt to predict what actions might be taken by policymakers or end users in response to the No Action or Postponed Action Alternatives, it is likely that potential end users would: (1) attempt to make other arrangements to obtain natural gas; (2) use alternative fossil-fuel energy sources (such as fuel oil or coal) and other traditional long-term fuel source alternatives (such as nuclear power or hydroelectric power); and/or (3) use renewable energy sources, such as wind power. It is also possible that energy conservation

practices could be used to offset the demand for natural gas in markets that would be supplied by the Project.

Each of these alternative approaches to meeting the energy needs of the target market would result in some level of environmental impacts. Considered both individually and in combination, specific energy alternatives or conservation measures could either: (1) not provide the projected energy needs of the regional markets; (2) satisfy the Project objectives by providing the projected regional energy demands with equal or less environmental impact; or (3) provide the required amount of energy but result in greater environmental impacts than those associated with the Project if implemented with our recommended mitigation measures.

If the FERC denies the proposal, the short and long-term environmental impacts identified in this EIS would not occur. If the FERC postpones action on the application, the environmental impacts would be delayed; or—if the applicant decided not to pursue the Project—the impacts would not occur at all. If the FERC selects the No Action Alternative, Rockies Express would not be able to deliver up to 1.8 bcf per day of Rocky Mountain natural gas from the Mexico Compressor Station in Audrain County, Missouri to the high-demand markets in the midwestern and eastern United States, and the objectives of the Project would not be met.

3.2 ENERGY ALTERNATIVES

In evaluating energy alternatives to the Project, we considered the use of renewable energy sources, energy conservation, and renewable energy combined with energy conservation. Energy conservation strategies or renewable energy alternatives, such as wind, hydropower, municipal solid waste, solar, and wood and other biomass, are projected to have an increasing role in the country's energy needs. State regulators and the federal government are promoting energy conservation programs, aimed primarily at residential and commercial markets, through broad-based efficiency programs, demand side management, and integrated resource planning initiatives. These programs rely on economic tests of avoided energy costs to determine which designs and technologies should be implemented. If the Project were not constructed, less natural gas entering the market would result in slightly higher gas prices, which in turn would improve the economics of conservation, as well as the attractiveness of other less costly but more polluting fuels. Such effects would be small in the markets the Project would serve.

Green energy programs have been around for many years. States promote green energy through the establishment of requirements in a set of renewable portfolio standards which require a certain percentage of a utility's power plant capacity or generation to come from renewable sources by a given date. In general, public participation rates do not demonstrate a willingness to pay what are typically from $5 to $20 monthly fees to substitute green energy for energy generated via fossil-fuel combustion or nuclear reaction. According to the Department of Energy (DOE, 2006), customer participation rates have exceeded 6.5 percent in only two of the more than 500 green energy programs, and typical participation rates are below 1 percent. While energy conservation strategies or renewable energy alternatives will have an increasing role in meeting the country's energy needs, a DOE study determined that, over the next 20 years, the available mix of alternative energy sources would not replace the demand for natural gas (EIA, 2006a). The combined use of renewable energy and energy conservation programs as an alternative to the Project could help reduce the need for natural gas, but they are not sufficiently available—physically or commercially—in the market region to be a viable substitute for the Project.

Even if efficiency gains, conservation efforts, and use of renewable resources increased, it is not evident that a reduction in natural gas consumption would follow. These gains would likely be used to facilitate the reduced use of other fuels that have greater associated environmental costs. Collectively, the gains achieved through better management, increased efficiency, and renewable energy use would reduce

the energy demands by only a small fraction of the total projected energy demand in the foreseeable future. Thus, energy alternatives would not be able to satisfy the Project objective to bring up to 1.8 bcf per day of natural gas, or its energy equivalent, to the target markets.

3.3 SYSTEM ALTERNATIVES

System alternatives are alternatives to a proposed action that would make use of other existing, modified, or proposed transmission systems to meet the Project's stated objectives. A system alternative would make the construction in all or part of the Project unnecessary. Some modifications or additions to another pipeline system may be required to increase its capacity and reach the Project's intended customers, or another entirely new system may need to be constructed. The impact of a system alternative could be less than, similar to, or greater than that associated with the Project.

Producers of natural gas in the Rocky Mountains have made precedent agreements with Rockies Express to deliver up to 1.8 bcf per day of their natural gas from the Mexico Compressor Station to 17 gas distributors along the route. These gas distributors interconnect with the REX East Project in 12 locations spread across Illinois, Indiana, and Ohio. Three additional distributors have expressed interest in building additional capacity from their pipelines in Clarington, Ohio to points farther east. Figure 1.0-1 in chapter 1 shows the locations of Rockies Express' customers along the pipeline route. We reviewed the locations of the Rockies Express gas distributors in relation to existing natural gas systems. Given that the focus of the REX East Project is to service these customers and reach eastern markets, a desirable system alternative should deliver natural gas to these distributors while limiting construction of new infrastructure, and subsequent environmental impacts. In general, this requires that the interstate pipeline be proximal to its delivery points so that extensive distribution pipelines are unnecessary.

We reviewed existing natural gas systems and identified a system alternative that would utilize the existing Panhandle Eastern Pipe Line Company (PEPL) system. The REX East Project would begin at the terminus of REX West in Audrain County, Missouri. The PEPL system also connects with REX West at that point. PEPL potentially could be used to transport gas eastward as far as the Indianapolis area. In eastern Missouri, PEPL has a capacity of about 1.4 bcf per day and is currently operating at a load capacity factor of about 85 percent. Thus, PEPL only has additional capacity available for approximately 0.2 bcf per day and this system alone does not have the capacity to handle the 1.8 bcf per day that the REX East Project proposes to transport. Integrating the REX East Project with PEPL would require creating a parallel pipeline, which offers no clear advantage over the proposed action. That is, construction of a loop on the PEPL system would generate similar environmental impacts as would construction of the REX East pipeline. Additionally, the PEPL system terminates near the Indianapolis area. The majority of the Rockies Express customers (Rockies Express has 17 distributors) are located east of Lebanon in Ohio and would not receive gas under this alternative. We, therefore, do not consider PEPL a viable system alternative.

3.4 MAJOR ROUTE ALTERNATIVES

In developing the Project route, Rockies Express considered route alternatives to address environmental and constructability issues. Rockies Express first developed a base pipeline route based on maximizing collocation with existing pipeline rights-of-way as a first step toward minimizing environmental impacts. To identify routing and siting constraints, Rockies Express reviewed publicly available information—including USGS topographic maps, National Wetlands Inventory (NWI) maps, and aerial photographs taken in 2005—and completed field surveys.

Once potential constraints such as sensitive resources and population centers had been identified, Rockies Express devised route modifications to the base pipeline route and incorporated certain

modifications to create the preliminary pipeline route. Rockies Express then used the preliminary pipeline route to consult with federal and state regulatory and review agencies, farm bureaus, elected officials, landowners, and other stakeholders during open-house and Project introductory meetings in June and October 2006. As a result of these consultations and further on-the-ground civil and environmental surveys, Rockies Express considered additional route modifications to minimize environmental impacts or to avoid route constraints. The route modifications that Rockies Express considered before filing the application with the FERC on April 30, 2007 are described in appendix E, table E-1. One of these route modifications was made in Johnson County. The route was shifted south in order to reduce residential impacts. Landowners along this southern route asked the FERC to evaluate this route modification. This discussion is found in section 3.4.5.

In response to stakeholder concerns, Rockies Express adopted another alternative route into the Project route that is evaluated in this EIS. This is a re-route around Barnesville Reservoir in Belmont County, Ohio. The Village of Barnesville, U.S. Senator George Voinivich, U.S. Congressman Charles Wilson, and various citizens expressed concern over the possible contamination and damage that pipeline construction or rupture could cause to the water supply. The re-route addresses these concerns by avoiding Barnesville Reservoir and crossing Slope Creek, a tributary, 0.7 mile south (downstream) of the Reservoir. We were asked to evaluate this route variation and have added this evaluation to the EIS in section 3.4.10.

We independently reviewed the Project route to determine whether impacts could be avoided or reduced on environmentally sensitive resources, while maintaining the proposed locations of meter stations. Meter stations are placed at interconnects between the REX East Project and distribution pipelines. For our review, we used the proposed meter station locations so that distribution pipelines would not need to be increased in length to interconnect with the Project. We reviewed the pipeline segments between meter stations to determine whether the need to create new rights-of-way could be minimized by routing pipelines adjacent to existing utility rights-of-way. No major modifications to the Project route were recommended based on this review.

We also received comments from agencies, communities, landowners, and other stakeholders requesting a review of changes to the Project route. This review resulted in the definition and evaluation of ten major route alternatives and numerous route variations. The major route alternatives, evaluated in turn in the following subsections, follow different alignments for a significant length of the Project route, have been raised by communities or groups of multiple landowners, and/or are considered for the purpose of avoiding or reducing impacts to significant features. The route variations, evaluated in section 3.5, are relatively short deviations from the Project route that would potentially avoid or reduce Project impacts on specific localized resources, such as individual residences or site-specific environmental conditions.

3.4.1 Mississippi River Crossing Alternatives

During the development of the REX East Project, the crossing of the Mississippi River was initially located just south of Blackburn Island as identified by the "Preliminary Route" in figure 3.4.1-1. This crossing location would have been constructed with a single HDD under the entire Mississippi River and the Sny Levee without having to use an island. This same crossing location was raised as an alternative to Blackburn Island impacts during a public meeting on the EIS in Illinois. This route alternative would cross about 1.0 mile of steep side-sloping topography adjacent to the existing PEPL pipelines between State Route (SR) 79 and the Mississippi River in Illinios. However, based on engineering evaluations of the Preliminary Route, there would not be sufficient space available on the west side of the Mississippi River (in Missouri) to complete an HDD crossing of the Mississippi River due to the existence of residential development, four existing PEPL pipelines, a railroad track, and steep

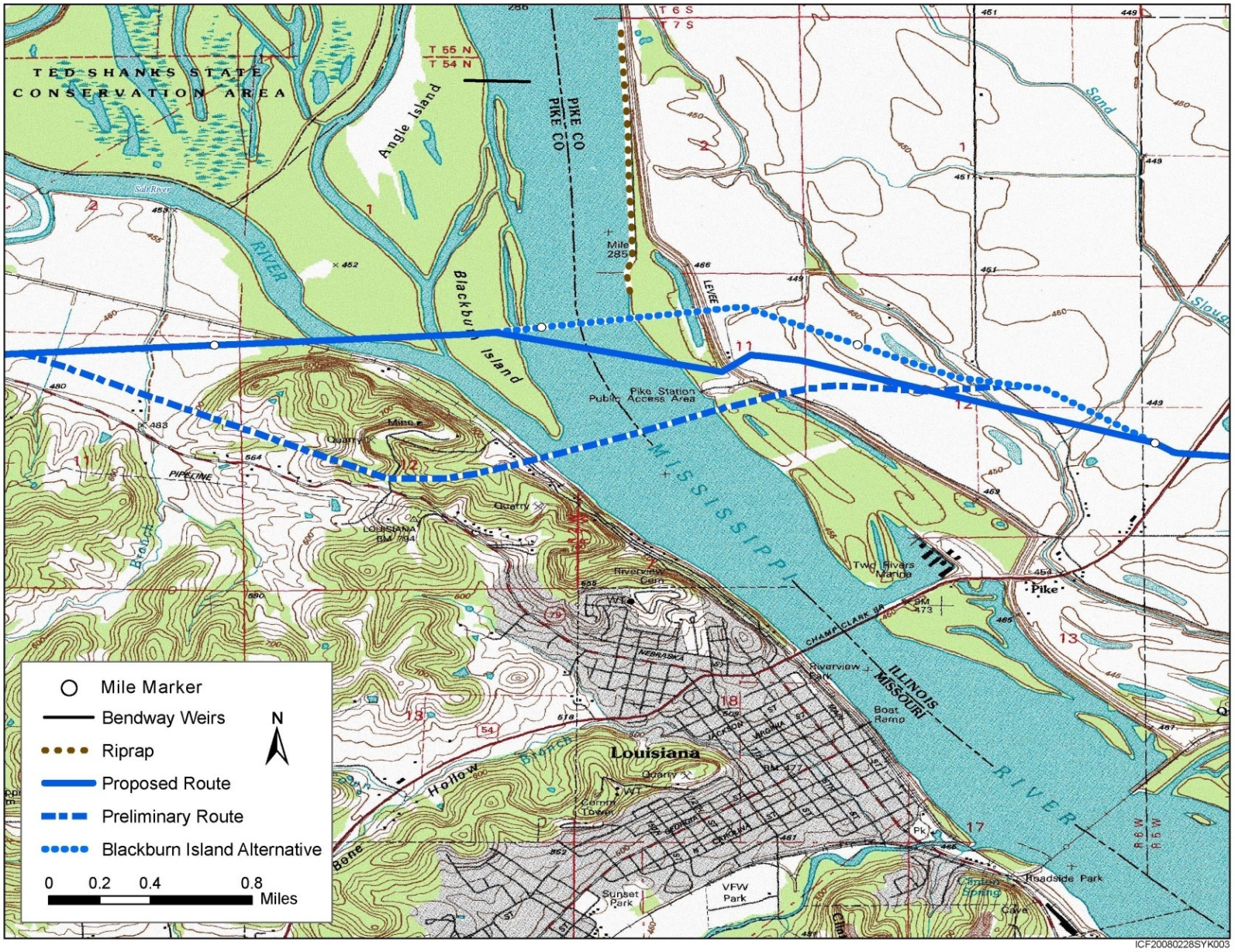

Figure 3.4.1-1

REX East Project Mississippi River Crossing Location Alternatives Near Blackburn Island

side-sloping topography. Therefore, this crossing is not considered to be feasible and is not evaluated further in this EIS.

Rockies Express has proposed to cross the Mississippi River at the confluence of the Salt River (MP 42.5) and the Mississippi River (MP 43.2) using two HDDs from Blackburn Island, as shown in figures 3.4.1-1 and 3.4.1-2. Blackburn Island is located between the two rivers and is part of the Upper Mississippi Conservation Opportunity Area (COA) owned by the COE, leased to FWS, and managed by the MDC. This operation would require clearing 5.4 acres of forested wetlands on Blackburn Island for the HDD site, staging area, and access road. Rockies Express also would dredge approximately 4,500 cubic yards from the Mississippi River on the east side of Blackburn Island to enable barge access to the island. The HDD to the west would pass underneath the Salt River, and the HDD to the east would pass underneath the Mississippi River but would exit at a point that would allow the pipeline to be installed over the Sny District Levee. Underneath the Mississippi and Salt Rivers, a minimum of 40 feet of separation between the river bottom and the Project pipeline alignment would be maintained.

FWS, COE, state agencies, and the Sny Levee District have expressed concerns regarding the proposed location of the Mississippi River crossing at Blackburn Island. FWS, COE, and state agencies expressed concern over the loss of forested habitat on Blackburn Island. Previously, Rockies Express had proposed extending the HDD to pass under and to the east of the Sny Levee. The Sny Levee District raised concerns about the potential structural impacts on the Sny Levee from the HDD passing under the levee. The Sny Levee District requested Rockies Express to terminate the HDD on the river side (west side) of the levee and then bring the pipeline up and over the top of the levee. Rockies Express conducted geotechnical studies and determined this would be technically feasible with a shift of the exit point to the south by 0.2 mile. The Blackburn Island Alternative discussion below compares the proposed route that crossed over the levee to the alternative where the route would cross under the levee. To address FWS, COE and state agency concerns over the loss of habitat on Blackburn Island, we evaluated two major route alternatives that would use other islands for the Mississippi River Crossing, as discussed after the Blackburn Island Alternative.

Blackburn Island Alternative

As shown in figure 3.4.1-1, the Blackburn Island Alternative would deviate from the Project route at MP 42.9 on Blackburn Island. The HDD would extend east beyond the levee and maximize the depth below the levee at the crossing point and the distance between the levee and the HDD exit point. At the Blackburn Island crossing, the Mississippi River is 1,800 feet wide due east from the HDD site and the exit would be located approximately 500 feet to the east of the levee. The exit point would be placed in a field. The field is 2,200 feet wide and lies between the levee and a small stream, which would allow the exit point to be adjusted based on geotechnical requirements for the drill and would provide room for the pipeline pull string. From the exit point, the pipeline route would travel southeast 1.45 miles to rejoin the Project route at MP 44.2.

Table 3.4.1-1 presents a general environmental comparison of the Project route and the Blackburn Island Alternative between MP 42.9 to MP 44.2. Both routes would be relatively similar in length and would have generally similar impacts during pipeline construction and operation. Both routes would cross two wetlands. While the Blackburn Island Alternative centerline would cross about 416 feet more wetland than the Project route, the Project route's construction right-of-way would affect about 0.1 acre more wetland area. The Blackburn Island Alternative would require five more open cut waterbody crossings than the Project route. Both routes would cross similar amounts of agricultural land, developed land, and open water, and would affect the same landowners. The Project route would cross more forested wetlands, particularly those located near the HDD exit site between the Mississippi River and Sny Levee.

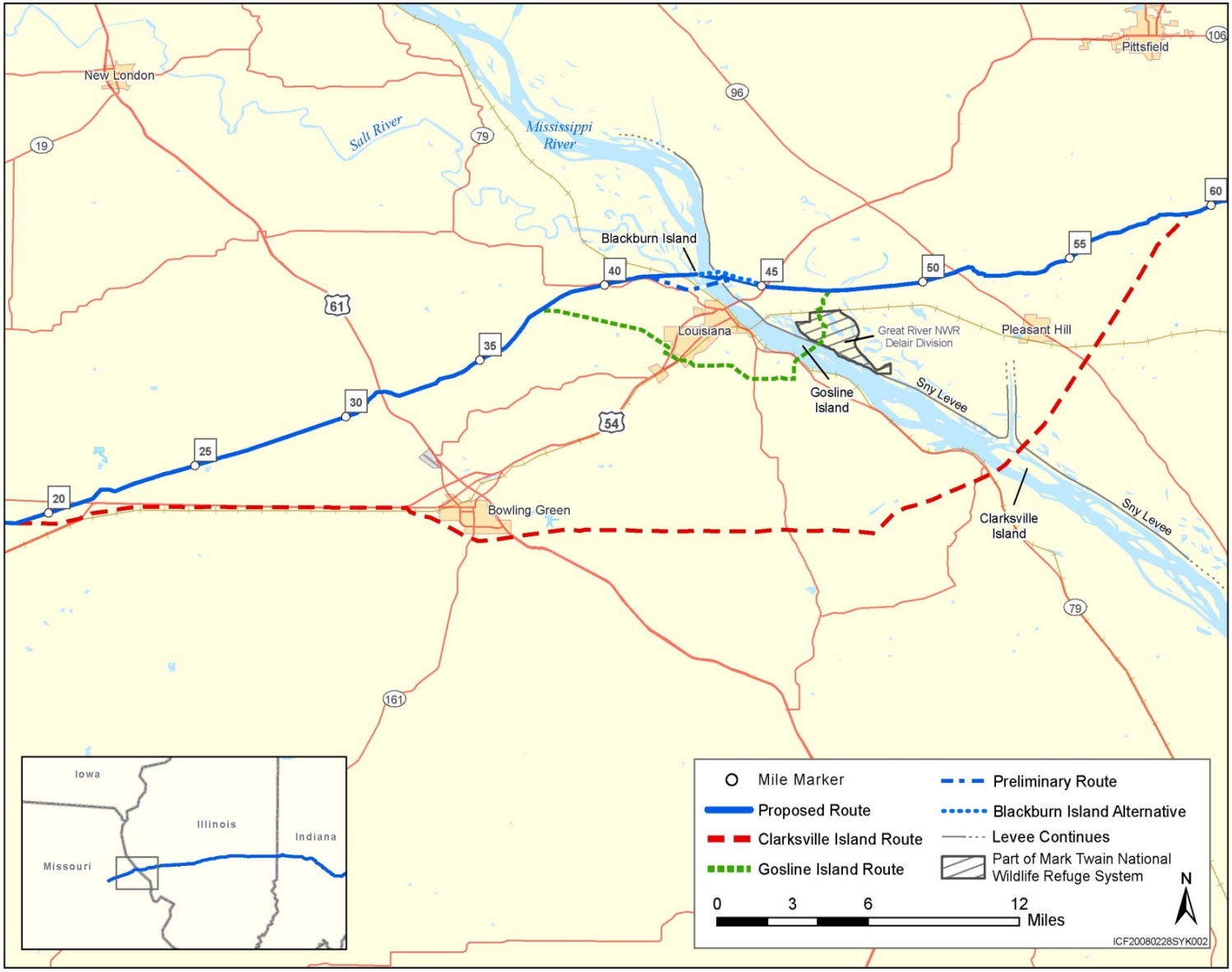

Figure 3.4.1-2

Overview of Mississippi River Crossing Alternatives

Table 3.4.1-1

Comparison of the Proposed Route and Blackburn Island Alternative (MP 42.9 to MP 44.2)

Environmental Factor	Unit	Project Route	Blackburn Island Alternative	Source
GENERAL DESCRIPTION				
Total Length	miles	1.5	1.5	Digital Route
Total Number of Wetlands	no.	2	2	Wetland delineation surveys
Total Length of Wetlands	feet	960	1,376	Wetland delineation surveys
Waterbody Crossings	no.	3	9	Wetland delineation surveys
Waterbodies Crossed by HDD	No.	1	2	
Agricultural Land Crossed	feet	4,002	3,982	USGS Land Use Land Class (LULC) data
Forest Land Crossed	feet	1,018	836	LULC data
Developed Land Crossed	feet	62	93	LULC data
Open Water Crossed	feet	115	115	LULC data

The Blackburn Island Alternative and Project route have similar environmental consequences. The Project route would reduce the number of open cut waterbody crossings but the Project route would affect more forested wetlands. However, the Sny Levee District expressed strong concerns that an HDD conducted under the levee would cause structural damage to the levee and requested the pipe be constructed over the levee. The Project route extends the drill length under the river to allow safe construction over the levee. Therefore, we do not recommend the Blackburn Island Alternative. Construction drawings and correspondence on this construction technique are included in appendix F.

Alternative Islands for Crossing the Mississippi River

We received comments that the Mississippi River crossing be relocated to use an island other than Blackburn Island. We evaluated two major route alternatives in addition to the variations discussed above. Figure 3.4.1-2 provides an overview of all the Mississippi River crossings that we evaluated. First, Rockies Express proposed a route alternative that would cross the Mississippi River at Clarksville Island, which is approximately 12 miles southeast of the Project route. This alternative would use Clarksville Island to cross the Mississippi River and is referred to as the Clarksville Island Route Alternative. Second, during our field visit in August 2007, the COE suggested an alternative crossing that was received from a landowner. The second route would cross the Mississippi River approximately 4 miles southeast of the Project route at Gosline Island. We independently analyzed this alternative, which is referred to as the Gosline Island Route Alternative.

The Clarksville Island Route Alternative (figure 3.4.1-3) would deviate from the REX East Project route at MP 17.7 and proceed eastward for 3.6 miles where it would intersect with the Illinois Central Gulf Railroad. The alternative would follow the railroad for 9.8 miles. It would then pass south of Bowling Green, Missouri for about a mile until it adjoins an electricity transmission line corridor, which it would parallel for 10.2 miles. From there, the alternative would continue eastward for 8.4 miles, crossing agricultural and forested land until it reaches the Mississippi River. Crossing the Mississippi River in this area would involve crossing Clarksville Island, three river channels, and the Sny Levee on the eastern bank. After crossing the river, the route alternative would run through open farmland and forested areas for 10.6 miles until it rejoins the Project route at MP 59.5.

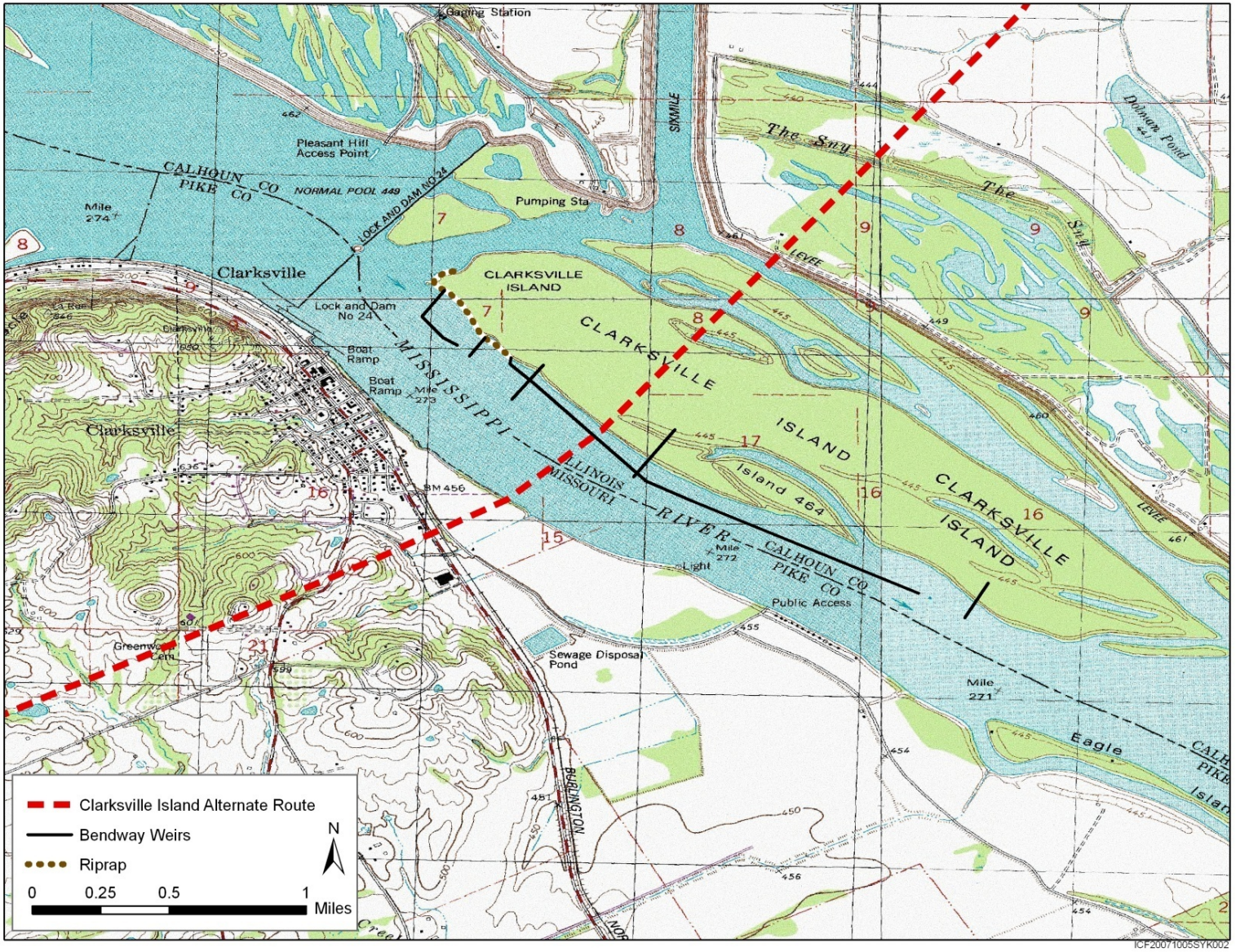

Figure 3.4.1-3

Detail of Clarksville Island Crossing Location at the Mississippi River

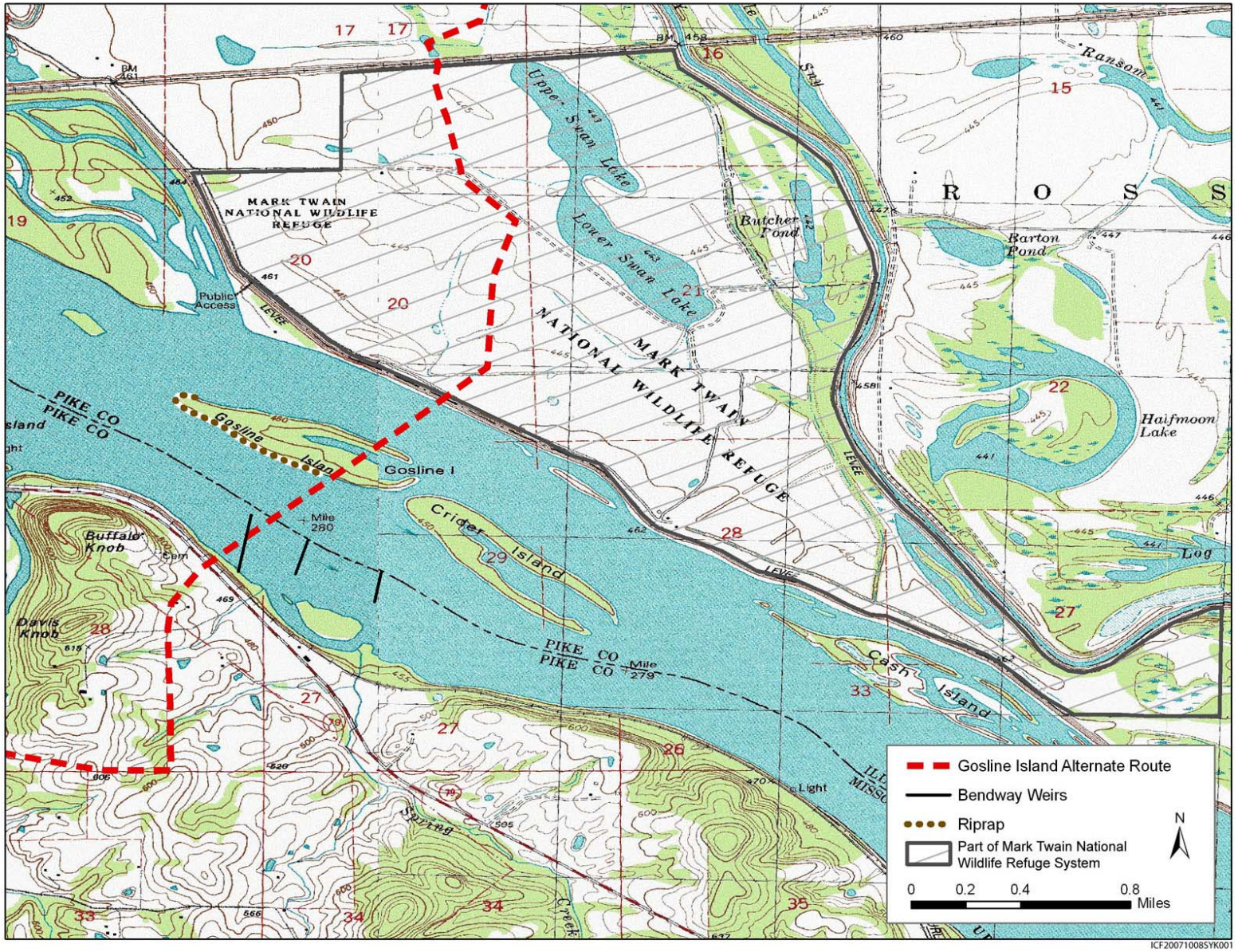

Figure 3.4.1-4

Detail of Gosline Island Crossing Location at the Mississippi River

The Gosline Island Route Alternative (figure 3.4.1-4) would deviate from the REX East Project route just before MP 38, heading southeast and proceeding approximately 4.3 miles alongside an electricity transmission line corridor before crossing Route 54 west of Louisiana, Missouri. It would continue along the transmission line corridor for 2 miles to State Highway D and proceed east toward the Mississippi River. Approximately 1 mile before passing Route 79, the route would deviate from the transmission line corridor, turn north and then northeast across the Mississippi River and Gosline Island. After crossing the Mississippi River, the route would cross the Sny Levee and pass through 2.3 miles of the Great River National Wildlife Refuge (NWR), Delair Division, which is part of the Mark Twain NWR complex, owned and managed by FWS. It would continue along mostly agricultural land in a northeast direction until it rejoins the Project route near MP 47.

The Delair Division was purchased with funds from the sale of migratory waterfowl stamps. The division lies completely within the 52-mile long Sny Agricultural Levee District and is separated from the Mississippi River by the Sny Levee. When originally acquired, the area was almost entirely cropland. Of the 440 acres currently set aside for farming, 90 acres are left idle each year to provide habitat for grassland birds. The remaining 350 acres are cooperatively farmed annually—with corn, soybeans, and winter wheat—to provide supplemental food for waterfowl. Semi-permanent and permanent waterbodies make up 480 acres of Delair, providing feeding and resting areas for waterfowl and many other wetland bird species. Water level management, mowing, and discing are used to create diverse vegetative habitat within the wetland units. FWS has commented that any proposed pipeline crossing of the refuge would require a greater level of environmental impact assessment before FWS could grant approval for such a crossing.

Table 3.4.1-2 presents a general environmental comparison of the Project route, the Clarksville Island Route Alternative, and the Gosline Island Route Alternative between MP 17.7 to MP 59.5. Based on these factors, neither the Clarksville Island Route Alternative nor the Gosline Island Route Alternative would result in a clear environmental advantage over the proposed route. The Project route crosses slightly fewer wetlands, waterbodies, and forested land than do the alternatives. The Gosline Island Route Alternative is collocated with 32.1 miles (76.6 percent) of existing powerline rights-of-way and would disturb fewer cultivated lands and protected lands than would the Project route. Protected lands include FWS NWR and State COAs. The Gosline Island Route Alternative also provides the shortest HDD crossing of the river. The Clarksville Island Route Alternative is 3.1 miles longer than the others and follows existing rights-of-ways for 20.0 miles (44.4 percent). It would affect a comparable number of wetlands, waterbodies, and forested land as the Project route.

The Sny Levee would be crossed by each route alternative. Regardless of the route, Rockies Express would follow the same COE requirements and perform all construction in accordance with an approved HDD construction and contingency plan as described above for the REX East Project route. The width of the Mississippi River and geotechnical conditions require the river to be crossed with two HDDs from an island within the river. The different crossing locations affect the length of each drill and the types of landcover that would be affected by the drill installation. At the Blackburn Island crossing, the river is 1,800 feet wide and the exit is located approximately 500 feet from the levee. The exit point would be placed in a field. The field is 2,200 feet wide and lies between the levee and a small stream, which would allow the exit point to be adjusted based on geotechnical requirements for the drill and would provide room for the pipeline pull string.

Along the Gosline Island Route Alternative, the Mississippi River is narrower and the island is located closer to the west bank of the river. The shorter HDD length reduces the risk of encountering a problem with drill installation. The HDD would cross 1,200 feet of river and the exit would be located in a crop field managed by FWS. This field would allow for adjustment of the HDD exit point location to

Table 3.4.1-2

Comparison of the Mississippi River Crossing Alternatives—Project Route, Clarksville Island Route Alternative, and Gosline Island Route Alternative (MP 17.7 to MP 59.5)

Environmental Factor	Unit	Project Route	Mississippi River—Clarksville Island Route Alternative	Mississippi River—Gosline Island Route Alternative	Source
Total Length	miles	41.9	45.0	41.9	Digital Route
Length Adjacent to Existing Right-of-Way (percent)	miles	25.4 (60.6)	20.0 (44.4)	32.1 (76.6)	Digital Route
Wetlands Crossed	miles	0.9	1.2	1.9	FWS (2007f)
Waterbody Crossings	no.	11	11	13	ESRI (2005a;c)
Cultivated Land Crossed	miles	32.9	33.2	25.8	USGS (2001)
Forest Land Crossed	miles	6.6	9.4	11.8	USGS (2001)
Commercial Land Crossed	miles	<0.1	<0.1	<0.1	USGS (2001)
Residences Within 50 Feet of Construction Work Area	no.	2 a/	4 a/	0 a/	Rockies Express, Aerial Photography
Minimum Length of HDDs (west side; east side)	feet	4,000; 4,700	3,800; 2,900	3,200; 3,500	Rockies Express; Estimated Data
Protected Land Crossed b/	miles	9.1	0.0	2.3	FWS (2007f); Rockies Express

a/ Houses could not be counted along 9 miles of the routes due to poor resolution of available imagery.
b/ Protected land includes FWS National Wildlife Refuge and State Conservation Opportunity Areas.

optimize the setback from the levee and other factors such as the location of the pipeline pull string. Our review indicates that a setback from the levee of between 650 and 850 feet would be possible. At Clarksville Island, the main river channel lies to the east. Toward the Sny Levee, the HDD would cross two small channels and forested wetlands at an approximate length of 3,000 feet from the center of the island to the levee. The HDD exit point would be approximately 800 to 1,000 feet from the levee and would be placed in a forested wetland that extends 3,700 feet from the levee. The pull string would be placed within the cleared pipeline right-of-way that continues to the northeast in order to minimize impacts to the forested area.

Rockies Express has proposed that the pipeline go over the Sny Levee to address the Sny Levee District's concerns of potential structural impacts caused by an HDD under the levee. Under the proposed Mississippi River crossing, the HDD exit would be on the bank of the river before the levee. Here the bank is 700 feet wide and can support an HDD exit. The Gosline Island and Clarksville Island Route Alternatives have less than 100 feet of land along the bank, which is insufficient to support an HDD exit.

Flooding during installation of an HDD could cause additional impacts to the islands and surface water quality. Additional discussion on this issue is included in section 4.1.3. The elevation on Blackburn Island is similar to the elevations on both Gosline and Clarksville Islands and we would expect similar flood potentials at all three locations.

Most of the wetlands on each island (Blackburn, Gosline, and Clarksville) along the Project or alternate routes are forested wetlands. The construction area on each island would encompass

approximately 5.4 acres and would clear forested wetlands on all of the islands. Based on aerial photography, Blackburn Island and Clarksville Island appear to have mature forests while the vegetation at the center of Gosline Island appears to be either at an earlier stage of maturity or at least partially comprised of herbaceous or shrubby communities. Table 3.4.1-2 shows that the Clarksville Island Route Alternative would affect approximately 0.3 more linear mile of wetlands than the Project route, and the Gosline Island Route Alternative would affect approximately one more linear mile of wetlands than the Project route.

The 4,500 cubic yards of dredging required for the Project route is assumed to be necessary at both Gosline and Clarksville Islands. At Gosline and Clarksville Islands, any dredging would have to avoid the existing riprap and bendway weirs associated with the maintained navigation channel in the Mississippi River. No such structures are located in the immediate vicinity of the Blackburn Island crossing.

The segment of the Mississippi River that contains each route alternative is located within the Mississippi Flyway, a major route for migrating waterfowl. Each island (Blackburn, Gosline, and Clarksville) that would be used as an HDD drill site is used by migratory birds. Blackburn Island is part of the Upper Mississippi COA and located adjacent to the Ted Shanks State Conservation Area. The area is generally known as the Ted Shanks Alluvial Complex and is recognized as an Important Bird Area by the National Audubon Society and BirdLife International (Jensen, 2007). Gosline Island is adjacent to the Great River NWR, which is part of the Mark Twain NWR complex, and the pipeline along this route would pass through the refuge. Clarksville Island was transferred from the Nature Conservancy to a non-profit organization, the Elizabeth Elliot Foundation, in 1982 and has remained in its natural state. Surveys for protected species along the REX East Project route, including Indiana bat surveys and mussel surveys, found no Indiana bats or mussels on or adjacent to Blackburn Island. Information is not currently available for protected species at Gosline Island or Clarksville Island and surveys for the Indiana bat, mussels, and decurrent false aster (a flowering plant) would have to be conducted to document their presence or absence. Information available from the Great River NWR documents that bald eagles and a pair of barn owls (an Illinois state endangered bird) have nested on the refuge.

Our analysis shows there is no clear environmental advantage of the alternative routes compared to the Project route. Further, with the incorporation of an aboveground crossing of the Sny Levee, Rockies Express has eliminated a major concern expressed by the Sny Levee District. The resolution of this concern would not be possible using either of the alternatives. Therefore, we have not recommended that an alternative route be adopted by Rockies Express.

3.4.2 Macon County Beltway Alternative

During the development of the REX East Project, Macon County proposed an alternative route that would reroute the pipeline in the area south of Mt. Zion adjacent to their proposed Beltway alignment (the Macon County Beltway Alternative). The Macon County Board, U.S. Congressman Timothy Johnson, the village of Mt. Zion, and various citizens expressed concerns over both environmental impacts and the impact of the Project route on the village's long-term residential development plan and the proposed Beltway alignment. The Macon County Board passed a resolution on December 13, 2007 in opposition to the project, and on February 14, 2008 passed another resolution in support of an alternative route that would parallel the proposed Beltway. Macon County is specifically concerned about the Project's impact on residential growth in areas south of Mt. Zion. They state that by collocating with the Beltway, the Project would minimize cumulative impacts to forested areas and existing homes, and lower the cost of the federally funded Beltway project by minimizing utility conflicts.

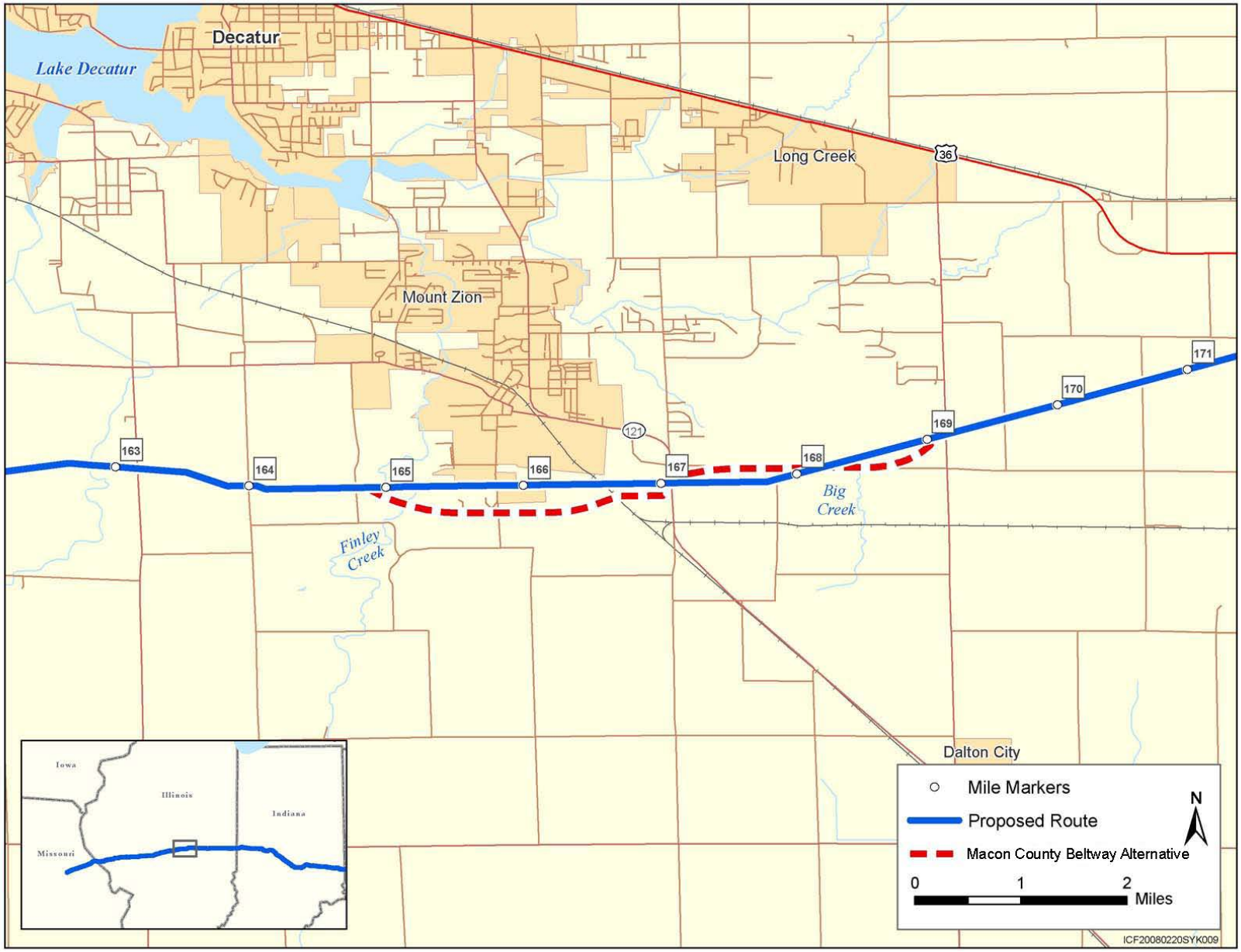

Figure 3.4.2-1

Macon County Beltway Alternative

As shown in figure 3.4.2-1, the 4.4 mile Macon County Beltway Alternative would deviate from the Project route at MP 164.6 and follow the proposed Beltway alignment for 4.4 miles until rejoining the Project route at MP. 169.0. Table 3.4.2-1 provides an environmental comparison of the Macon County Beltway Alternative and the Project route. The Project route would be 0.2 miles shorter than the alternative route and would cross slightly less developed land (0.4 mile) than the alternative route. The alternative route would avoid 0.4 mile of forest land compared to the Project route. The Project route and the Macon County Beltway Alternative would cross an identical number of waterbodies and the same length of wetlands.

Table 3.4.2-1
Comparison of the Macon County Beltway Alternative to the Corresponding Segment of the Project Route (MP 164.6 to MP 169.0)

Environmental Factor	Unit	Project Route	Macon County Beltway Alternative	Source
Total Length	miles	4.0	4.2	Digital Route
Length Adjacent to Existing Right-of-Way	miles	0	0	Field Review
Wetlands Crossed	miles	0.1	0.1	FWS, 2007f
Waterbody Crossings	no.	1	1	ESRI (2005a;c)
Cultivated Land Crossed	miles	3.0	3.3	USGS, 2001
Forest Lands Crossed	miles	0.8	0.4	USGS, 2001
Developed Land Crossed	miles	0.1	0.5	USGS, 2001
Open Land Crossed	miles	0.1	0.1	USGS, 2001

Based on the above analysis, the alternative route does not provide a clear environmental advantage over the Project route. The chief potential advantage of the route alternative would be paralleling the proposed Macon County Beltway alignment. The proposed Macon County Beltway is in the preliminary planning stage, having not yet completed its NEPA study. As such, the Beltway alignment has not been fully studied for impacts to environmental or cultural resources. Further, the alignment may continue to change. We are not aware of reasons why the Beltway cannot be safely constructed once the REX East Project is completed. Because the Macon County Beltway is still in the planning phases and subject to future modifications and Because the alternative route also does not provide a clear environmental advantage, we do not recommend this alternative be included in the Project route.

3.4.3 Wabash River Alternative

Rockies Express originally considered a route that would cross land encumbered under an NRCS Emergency Watershed Protection – Floodplain Easement (EWPP-FP) located on the west side of the Wabash River near the Town of Highland in Vermillion County, Indiana. According to NRCS policy, proposed infrastructure projects must avoid EWPP-FP easements because the agency does not have the authority to modify easement terms. Therefore, the original route was not feasible. Rockies Express developed a route alternative and incorporated it into the Project route. As shown in figure 3.4.3-1, the Project route would turn northeast from the original route around MP 242.9, cross Little Raccoon Creek at MP 245.2, and cross the Wabash River at MP 247.0 at a location that is approximately 1.6 miles north of the Wabash River crossing location that was originally considered. This crossing location would be well outside of the boundaries of the NRCS protected land.

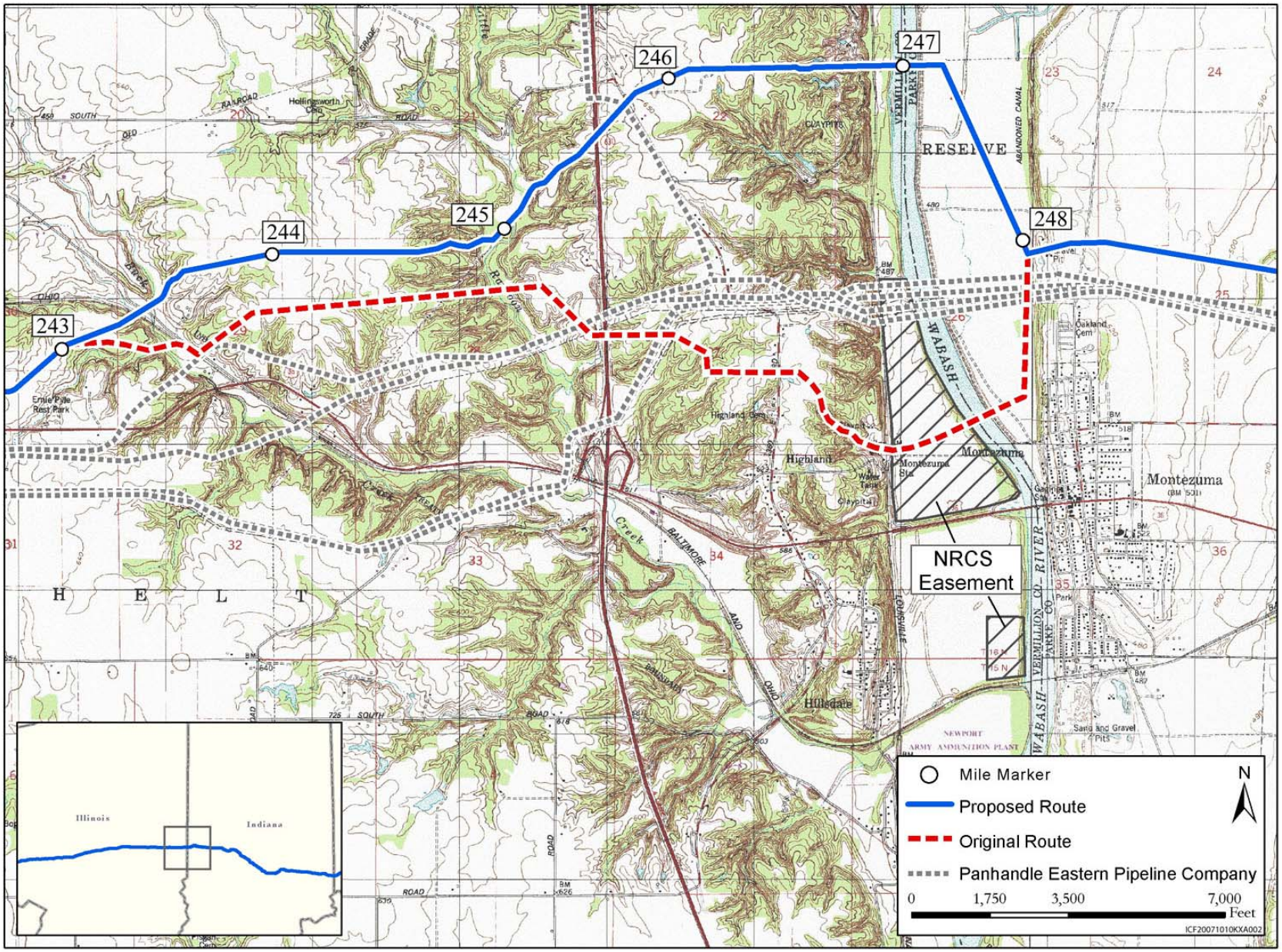

Figure 3.4.3-1

Wabash River Alternative

We examined this Project route in a site visit and evaluated the possibility of another alternative following an existing Panhandle pipeline right-of-way, shown in figure 3.4.3-1. However, we determined that this alternative is not feasible because it would also cross the land protected by the NRCS floodplain easement. Also, based on our field observations, following the existing pipeline right-of-way would not be preferable because there are residences currently abutting the right-of-way in some segments and there would be limited space to install another pipeline. Therefore, we did not identify an environmentally preferable alternative to the Project route crossing of the Wabash River.

3.4.4 Indianapolis North Alternatives

Numerous residents in the counties south of Indianapolis have requested that the FERC and Rockies Express consider an alternate route that follows the existing pipeline corridors that PEPL and TETCO use north of Indianapolis. These residents are concerned that the Project route would cause soil erosion due to construction in unstable soils and rolling terrain, damage field drainage tiles, remove valuable habitat for various wildlife including the endangered Indiana bat, and reduce the value of farm property in an area that is expected to develop in the near future. In response to these comments, we identified two specific route alternatives that would extend north of Indianapolis: Indy North 1 and Indy North 2. We asked Rockies Express to provide an analysis of Indy North 1, and based on those results, we developed and analyzed another variation, called Indy North 2. Figure 3.4.4-1 shows these major route alternatives in relation to the Project route.

The Indy North 1 Route Alternative would deviate from the Project route at MP 279.4. It would follow an existing PEPL corridor northeast, veer around Zionsville on the northwest side of Indianapolis, and then cross Little Eagle Creek. After that crossing, the alternative route would continue northeast following the existing PEPL corridor until reaching Westfield. It would then turn southeast, pass between Noblesville and Fishers, cross Fall Creek, and continue southeast until rejoining the Project route at MP 376.0. The southeastern half of the Indy North 1 Route Alternative is not collocated along an existing corridor.

The Indy North 2 Route Alternative would approximate a route recommended by many commentors. It would turn northeast from the Project route at MP 274.5 and follow an existing PEPL corridor through Putnam and Hendricks Counties on the western side of Indianapolis. Just south of Zionsville, the alternative route would turn more north-northeast, continuing to follow the existing pipeline corridor to the point where it intersects a TETCO corridor in Grant County south of Marion. It would then turn and follow the TETCO corridor southeast, skirt the eastern edge of Muncie, and continue southeast until rejoining the Project route at MP 444.0. The entire Indy North 2 Route Alternative is collocated with existing pipeline corridors.

Table 3.4.4-1 provides an environmental comparison of the Project route and the Indy North 1 and Indy North 2 Route Alternatives. As shown, Indy North 2 is the longest of the three, approximately 31.5 miles longer than the Project route and 22.6 miles longer than Indy North 1. However, Indy North 2 would be adjacent to an existing right-of-way for 100 percent of its length, compared to 6.0 percent for the Project route and 27.7 percent for Indy North 1. All three routes cross very few wetlands, with Indy North 2 crossing the least (0.90 mile) and Indy North 1 crossing the most (1.8 miles). Indy North 2 also crosses the fewest waterbodies at 64, compared to 77 waterbodies crossed by the Project route and 86 waterbodies crossed by Indy North 1. In terms of land uses and land covers, Indy North 2 would cross almost twice as much cultivated land as the other two routes and about half as much forest as the other two routes (the Project route and Indy North 1 are comparable in terms of their cultivated land and forest crossings). All three routes cross very little commercial land and are comparable from that standpoint.

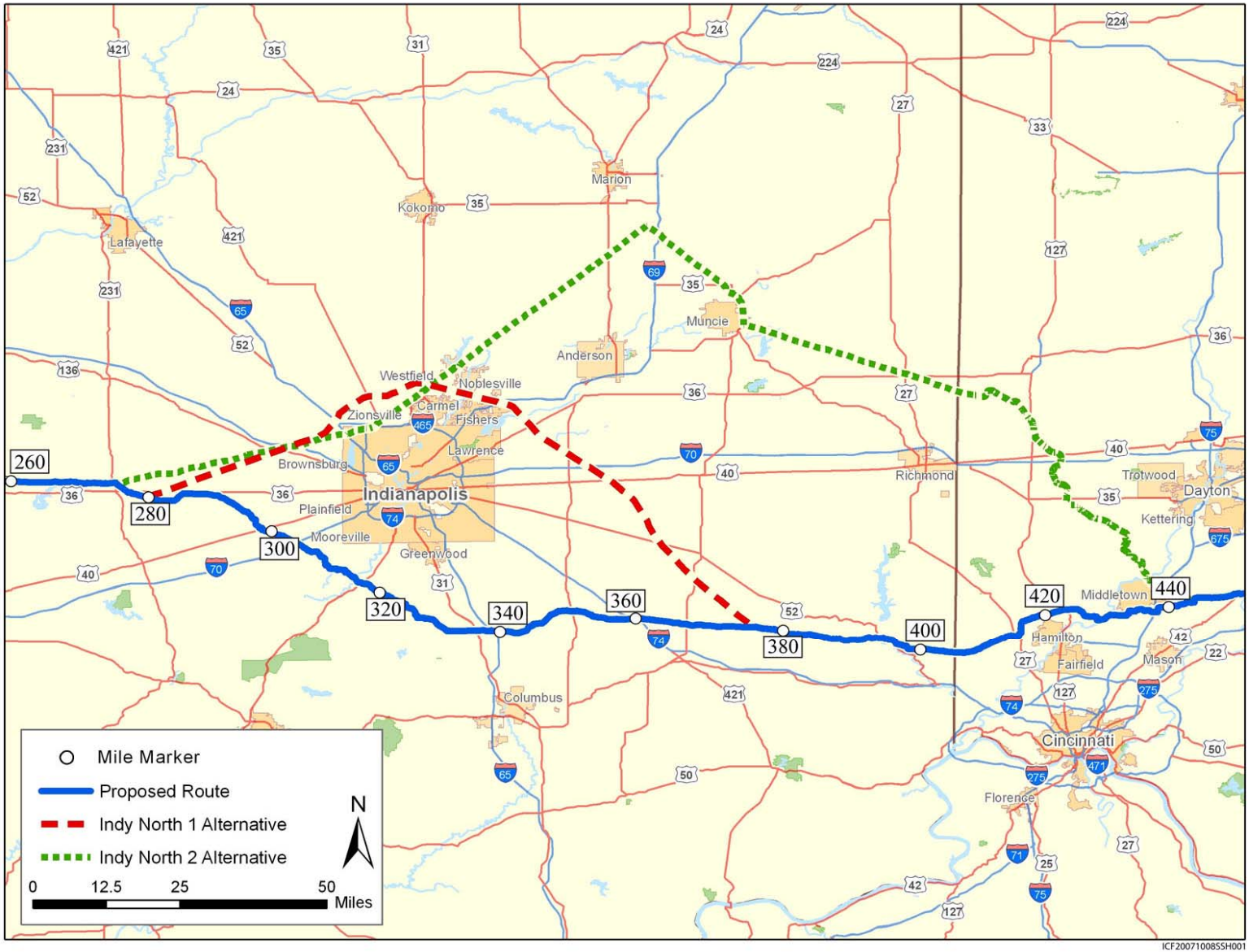

Figure 3.4.4-1

Indianapolis North Route Alternatives

Table 3.4.4-1

Comparison of the Indy North 1 and Indy North 2 Route Alternatives to the Corresponding Segment of the Project Route (MP 274.5 to MP 444.0)

Environmental Factor	Unit	Project Route	Indy North 1 Route Alternative	Indy North 2 Route Alternative	Source
Total Length	miles	161.7	170.6	193.2	Digital Route
Length Adjacent to Existing Right-of-Way (percent)	miles	9.7 (6.0)	47.3 (27.7)	193.2 (100.0)	DOE Unpublished Data (2005)
Wetlands Crossed	miles	1.6	1.8	0.9	FWS, 2007f
Waterbody Crossings	no.	77	86	64	ESRI (2005a;c)
Cultivated Lands Crossed	miles	90.0	96.7	164.7	USGS, 2001
Forest Land Crossed	miles	11.3	10.5	5.5	USGS, 2001
Commercial Land	miles	<0.1	1.3	0.8	USGS, 2001
Residences Within 50 Feet of Construction Work Area	no.	11	462	>231 a/	Rockies Express, Google Earth (2007)

a/ Houses could not be counted along 47.1 miles of the Indy North 2 Route Alternative due to poor resolution of available imagery.

The three routes are distinguished in terms of their proximity to existing residences. Based on a review of available NRCS datasets, Indy North 2 would cross 19.0 miles of residential land compared to 10.9 miles for Indy North 1 and 3.8 miles for the Project route. Recognizing that these data are current only through 2001, we evaluated the potential impacts on residences by conducting site visits and by examining recent aerial photography. Our site visits found that much of the existing pipeline corridors for Indy North 1 and Indy North 2 would abut dense housing developments. In many places, there is insufficient room to install another pipeline without significantly disrupting these existing developments. This finding is corroborated by our review of aerial photographs, which indicates that Indy North 1 and Indy North 2 would have more than 462 and 231 residences, respectively, within 50 feet of construction work areas; whereas the Project route would have 11 residences within 50 feet of construction work areas.

As noted previously, residents and other stakeholders raised four main concerns about the Project route. First, they expressed concern that the Project route would cause soil erosion due to construction in unstable soils and rolling terrain. Based on a review of soil classification data available from NRCS, approximately 24 percent of the soils crossed by the Project route between MP 274.5 and MP 444.0 are considered highly water erodable and 0.5 percent are considered highly wind erodable. The soils to the north of Indianapolis are slightly less water erodable (22 percent highly erodable for Indy North 1 and 14 percent highly erodable for Indy North 2), but are the same as the Project route in terms of wind erodibility. With respect to the issue of rolling terrain, our analysis of the topography along the three routes indicates that the terrain is slightly more undulating to the south of Indianapolis and flattens out as the routes move north, with Indy North 2 having the largest fraction of its length across relatively flat stretches.[2] However, we do not believe that these minor differences in erodibility and topography create a clear environmental advantage for either of the northern alternatives relative to the Project route. Erosion

[2] To evaluate rolling terrain, we examined variability in elevation across 1-mile segments for the entire lengths of the three alternative routes.

control measures, as specified in the Rockies Express Plan and Procedures, would be employed during construction and would minimize the erosion of soils.

Second, residents expressed concerns that the Project route south of Indianapolis would damage their field drainage tiles. All three routes would cross substantial stretches of cropland as shown in table 3.4.4-1. Regardless of the pipeline route, impacts to agricultural resources would be minimized and fields would be restored to pre-construction function. Rockies Express has developed an AIMP (see appendix I) for dealing with construction and restoration issues unique to agricultural areas. The purpose of the AIMP is to help protect, conserve, and restore agricultural lands that may be affected by construction and/or operation of the Project pipeline. Rockies Express would follow the policies outlined in the AIMP for all activities occurring on privately owned farmland. Further, to ensure that fields with drain tiles can be fully restored, we are recommending that Rockies Express 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 (see section 4.8.2).

Third, residents expressed concern that the Project route south of Indianapolis would remove valuable habitat for various wildlife including the endangered Indiana bat. More habitat areas would be affected along the Indy North alternatives, because of their greater lengths, but these impacts are similar to those that would be experienced along the Project route. The majority of all three routes cross agricultural and residential land. Species that commonly inhabit agricultural land are accustomed to habitat disturbance from farming activities and could temporarily use adjacent agricultural land until the area is restored. A portion of all three routes would cross forest land, although the Project route would cross the most (11.3 miles), Indy North 1 would cross almost as much as the Project route (10.5 miles), and Indy North 2 would cross the least (5.5 miles). Forest lands cleared by the pipeline construction may require more than 30 years to return to preconstruction conditions and would be prevented from re-establishing on the permanent right-of-way during operation of the pipeline. Forested areas also have the potential to be Indiana bat habitat. Surveys of the Project route in Pike County, Indiana found one male and one female Indiana bat within the Project right-of-way. Surveys would have to be conducted to determine the presence of Indiana bats in the forests that would be crossed by the route alternatives north of Indianapolis. Tree removal and pipeline construction methods would be done in accordance with FWS consultations and guidelines in all areas where Indiana bats are found to avoid or minimize serious impacts.

Fourth, residents expressed concern that the route south of Indianapolis would reduce the value of farm property in an area that is expected to develop in the near future. The only development currently planned along the Project route is the Disney Residential Development at MP 297.5. Although this development was platted in 1978, construction has not yet begun. We do not believe the Project route would significantly affect this development, because the total pipeline length across the development would be only 0.5 mile and because Rockies Express has sited its pipeline route along the property boundaries to minimize disturbance. Based on our current research, any other new developments near the Project route are only speculative at this time. The Indy North 1 and Indy North 2 would avoid the Disney Residential Development. However, we contacted planning staff in each of the counties that would be crossed by the alternatives and discovered that there are a number of planned developments along those routes as well. For example, Indy North 1 would be in the vicinity of two approved new developments in Boone County, Indiana; a recently approved development in Fishers in Hamilton County, Indiana; and a proposed new development in Hancock County, Indiana. Indy North 2 would come near land recently rezoned for development in Marion County, Indiana; 21 pending and approved residential subdivisions in Hamilton County, Indiana; and a new single family residential subdivision in Middletown in Warren County, Ohio. Based on these findings, we believe that either of the northern route alternatives would encounter as much or more planned developments, and would face the same issue as the Project route regarding speculative developments and associated land values.