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3.30 IRRETRIEVABLE AND IRREVERSIBLE RESOURCE LOSSES

The Mid-States Corridor provides a connection from Spencer and Dubois counties to I-69. It requires commitment of many resources. These resources are land, construction materials and manpower. Land used for construction of the proposed corridor is considered an irretrievable resource, which also includes all resources below the surface. Irretrievable resources are those that can no longer be harvested, taken or used. Irretrievable resources in the Study Area include coal, oil, limestone deposits and farmland. Irreversible resources are resources that will be permanently lost or impaired following construction.

Irreversible resource losses in the Study Area primarily include karst and cave areas, as well as agricultural productivity. In addition to direct impacts due to roadway construction, indirect impacts may affect resources as well. Indirect impacts include the use of farmland or forested land for construction of businesses, residential areas and other human development. Development will lead to increased impermeable surfaces, wastewater and waste materials that will impact the surrounding environment. A discussion of these potential impacts to major resources is provided below. Quantified descriptions of the anticipated impacts to each resource are provided in other sections of **Chapter 3**.

Some mineral resources may be irretrievable following construction of the project. Coal, oil and limestone deposits directly beneath the roadway will no longer be accessible, due to the need to ensure the structural integrity of the roadway. However, depending on the depth of the resource and the shape of the deposit, limited access to these resources may be possible adjacent to the roadway. Limestone is a particular resource of concern because Indiana accounts for approximately 60 percent of limestone production in the United States. Some alternatives cross the Mitchell Karst Plain, known for its limestone deposits. This karst plain extends across parts of Monroe, Greene, Lawrence, Martin, Orange, Crawford and Perry counties in the Study Area. Areas beneath the new roadway and associated development no longer will be available for extracting limestone.

Farmland is an important resource. Farmland losses occur due both to direct and indirect impacts. Farmland directly impacted is replaced by an impermeable surface. Moving forward, the land no longer is available for use. The 2017 Census of Agriculture identified 14.9 million acres of farmland in Indiana. That number has decreased in recent decades due to farmland being converted to other uses. The project could impact between 700 and 1,750 acres of farmland, currently farmed land and pasture, depending upon the alternative selected. However, the development of agricultural land for the long-term improvement of transportation and commerce offers significant economic advantages. While some farmland will be converted to other uses, the sustainability and longevity of economic benefits following construction more than compensate for these impacts. Benefits to the agriculture industry include better and more reliable market access, lower transportation costs and reduced costs for supplies such as seed and fertilizer.

Karst is a hilly landscape of caves and sinkholes that develops in dissolving limestone foundations. (Camp, 1999). Karst and cave resources are unique macrohabitats and microhabitats for flora and fauna, offer recreational opportunities and are a source of limestone. A primary ecological function of karst areas is to recharge underground aquifers. This is critical for groundwater supplies used for human consumption. Karst resources directly impacted by construction are irreversibly modified. This has the potential to lead to degraded water quality. Most groundwater in karst areas moves through openings in the rock. Its flow typically is faster, more concentrated and less predictable than groundwater movement in non-karst areas. It is difficult to determine the locations and flow directions

of groundwater in a karst area. The effects of spills can be rapid and unpredictable. Pollutants can travel miles underground in an unknown direction in a single day, and in a relatively undiluted state. This makes containment, cleanup and public protection challenging (Keith and Powell, 1997). However, mitigation efforts and specially designed karst feature treatments, such as detention/drainage basins, aggregate caps and sinkhole chimneys, can protect karst environments during and after construction. Alternatives M and O are located in areas where karst features are likely to be found. Added costs for karst mitigation are included in the construction cost estimates for these Alternatives.

Relative to Alternatives M and O, the Preferred Alternative, Alternative P, requires considerably less impacts to natural resources. Likewise, Alternative B and C require the least impacts to natural resources relative to the other alternatives; However, analysis indicates that B and C would have poor performance compared to the Preferred Alternative. The Preferred Alternative minimizes natural resource impacts where possible and will perform best at accomplishing the project's core goals. A more detailed analysis of the alternatives' performance can be found in **Chapter 2.6**.

The use of these resources is warranted because the project will produce an improved transportation system and encourage economic development. All efforts will be made to minimize impacts to mineral, farmland and karst habitat features. Mitigation is planned for karst impacts that cannot be avoided.