



**MID-STATES
CORRIDOR**

SCREENING OF ALTERNATIVES REPORT PURPOSE AND NEED APPENDIX

Mid-States Corridor Tier 1 Environmental Impact Study

Prepared for
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Mid-States Regional Development Authority

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1 INTRODUCTION

Purpose and Need performance measures are calculated by post-processing traffic assignments. These performance measures assess how well alternatives support goals in the project Purpose and Need. The Preliminary Alternatives analysis identified 28 alternatives (defined as combinations of route and facility type). It is not practical to run traffic assignments and conduct post-processing analyses for this number of alternatives.

To provide performance measures for all alternatives in a manageable manner, performance measures were calculated for some alternatives. Performance measures for other alternatives were calculated based upon their similarity to alternatives for which performance measures were calculated. This approach is based on the similarities of alternatives within geographic groups (families).

For example, in the Northwest Family of alternatives, traffic assignments were run for all expressway alternatives (Alternatives A, B and C). Assignments also were run for Alternative C for Super-2 and freeway facility types. The ratio of performance measures among alternatives for the expressway facility type were applied to estimate performance measures for Alternatives A and B for the Super-2 and freeway facility types. If, for example, the calculated performance measure for Alternative A were 75% of the performance measures for Alternative C for the expressway facility type, this same ratio is applied to estimate the Alternative A performance on this measure for the Super-2 and freeway facility types.

The following subsections describe these similarities, and how they were used to identify performance measures.

2 GEOGRAPHIC FAMILIES

All alternatives begin at US 231 and SR 66 in southern Spencer County, near the Natcher Bridge over the Ohio River. All alternatives then follow US 231 north into Dubois County. In southern Dubois County they serve Huntingburg and Jasper before continuing in one of three geographic directions. Alternatives are grouped into three geographic families, corresponding to the direction they proceed from central Dubois County. These families are briefly described below.

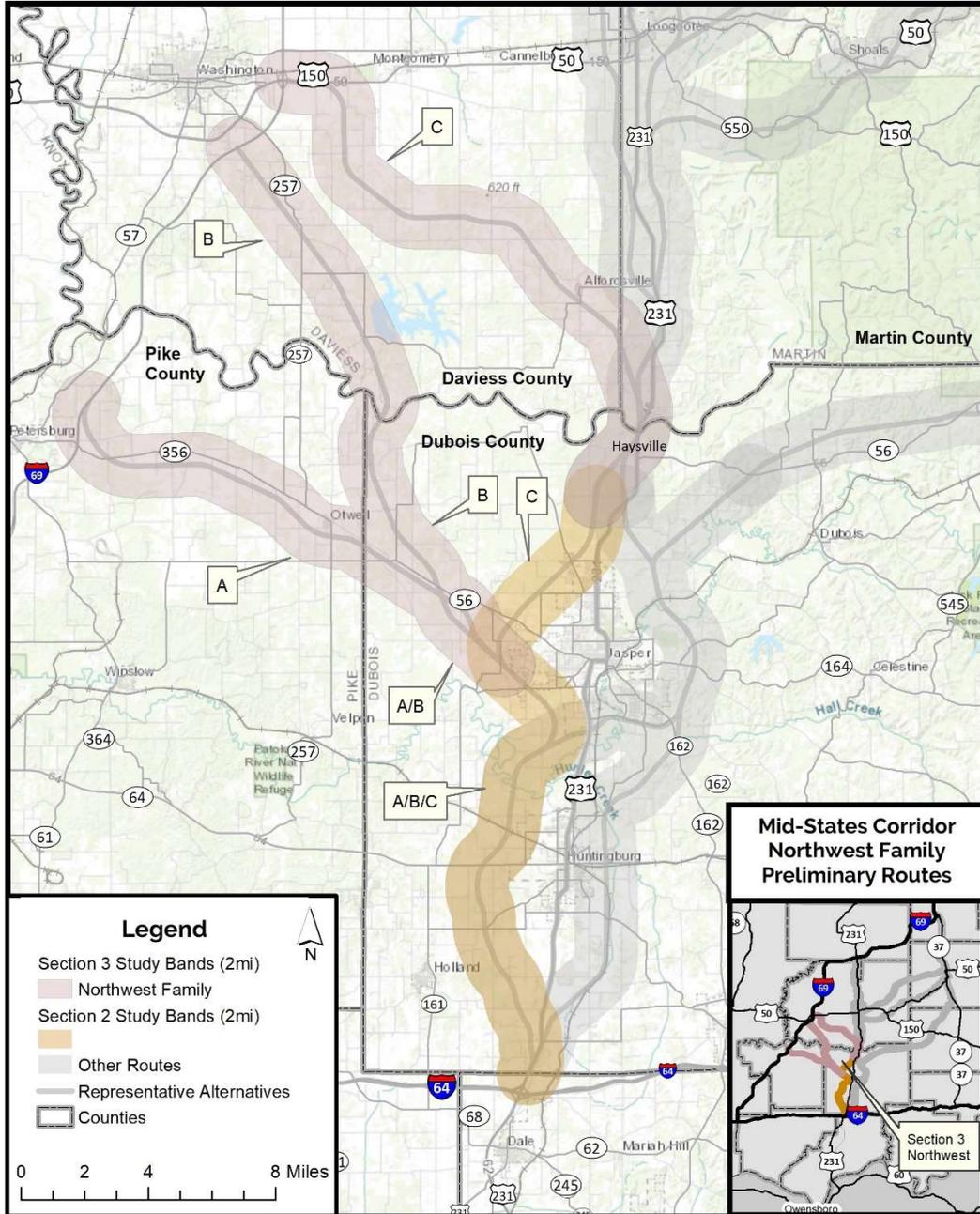
2.1 Northwest Family

Alternatives in the Northwest Family proceed northwest from central Dubois County. They end at I-69 in either Pike or Daviess county. They traverse level terrain (generally agricultural) for their entire length. Between I-64 (near the Spencer-Dubois county line) and I-69, they range between 32 and 42 miles in length.¹ **Figure 1-1** shows the Northwest Family alternatives between I-64 and I-69.

¹ These mileages ranges (as well as those cited for the North Central and Northeast families) are provided in the *Construction Costs Estimates Appendix, Overall Cost and Length Summary Table*.



Figure 2-1 – Northwest Family Alternatives



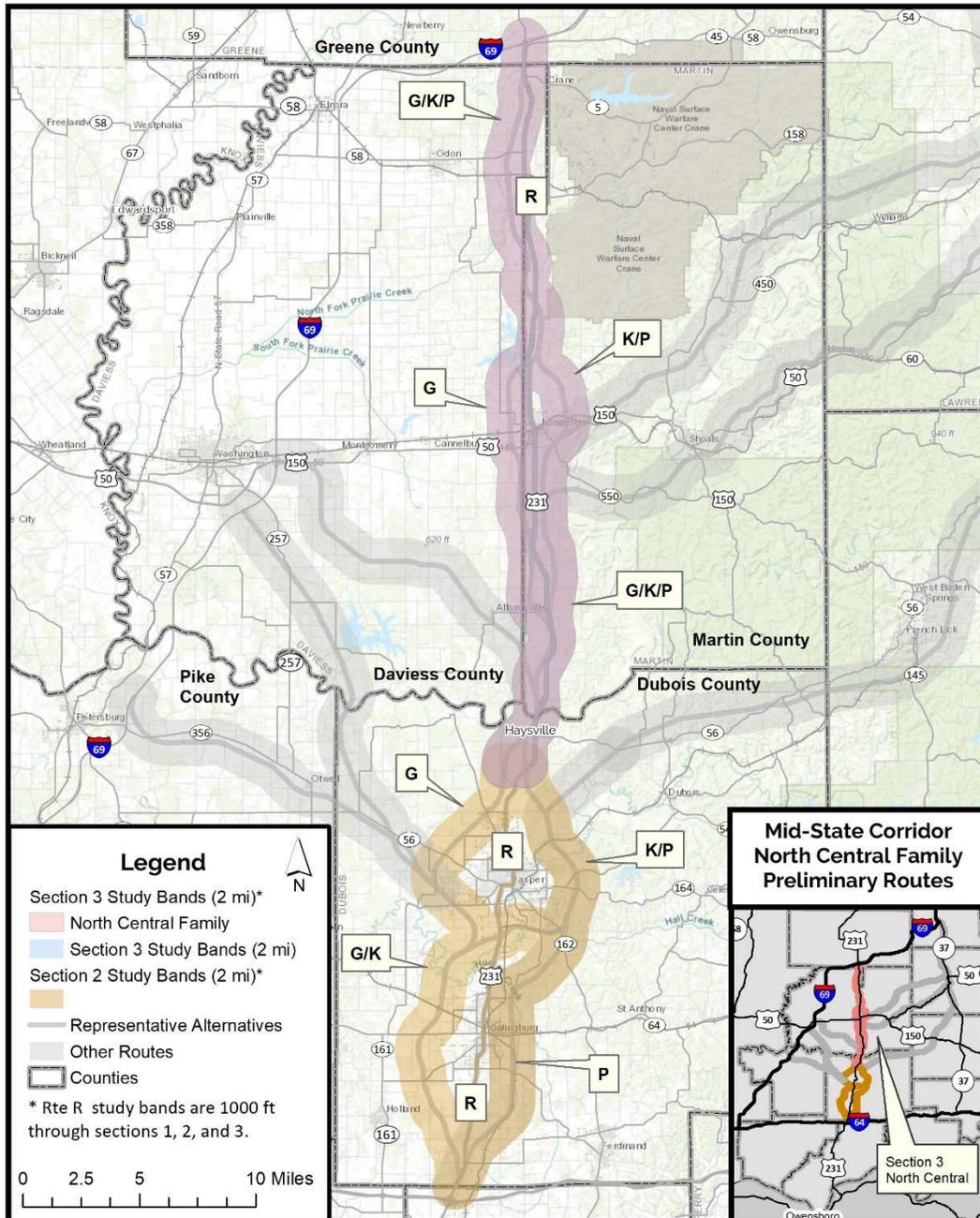


2.2 North Central Family

Alternatives in the North Central Family proceed directly north from central Dubois County. They end at I-69 in Greene County at the existing I-69 US 231 interchange near Naval Support Activity Crane (NSA Crane). They traverse level terrain (generally agricultural) for their entire length. Between I-64 (near the Spencer-Dubois county line) and I-69, they range between 51 and 56 miles in length. **Figure 1-2** shows the North Central Family alternatives between I-64 and I-69.



Figure 2-2 – North Central Family Alternatives



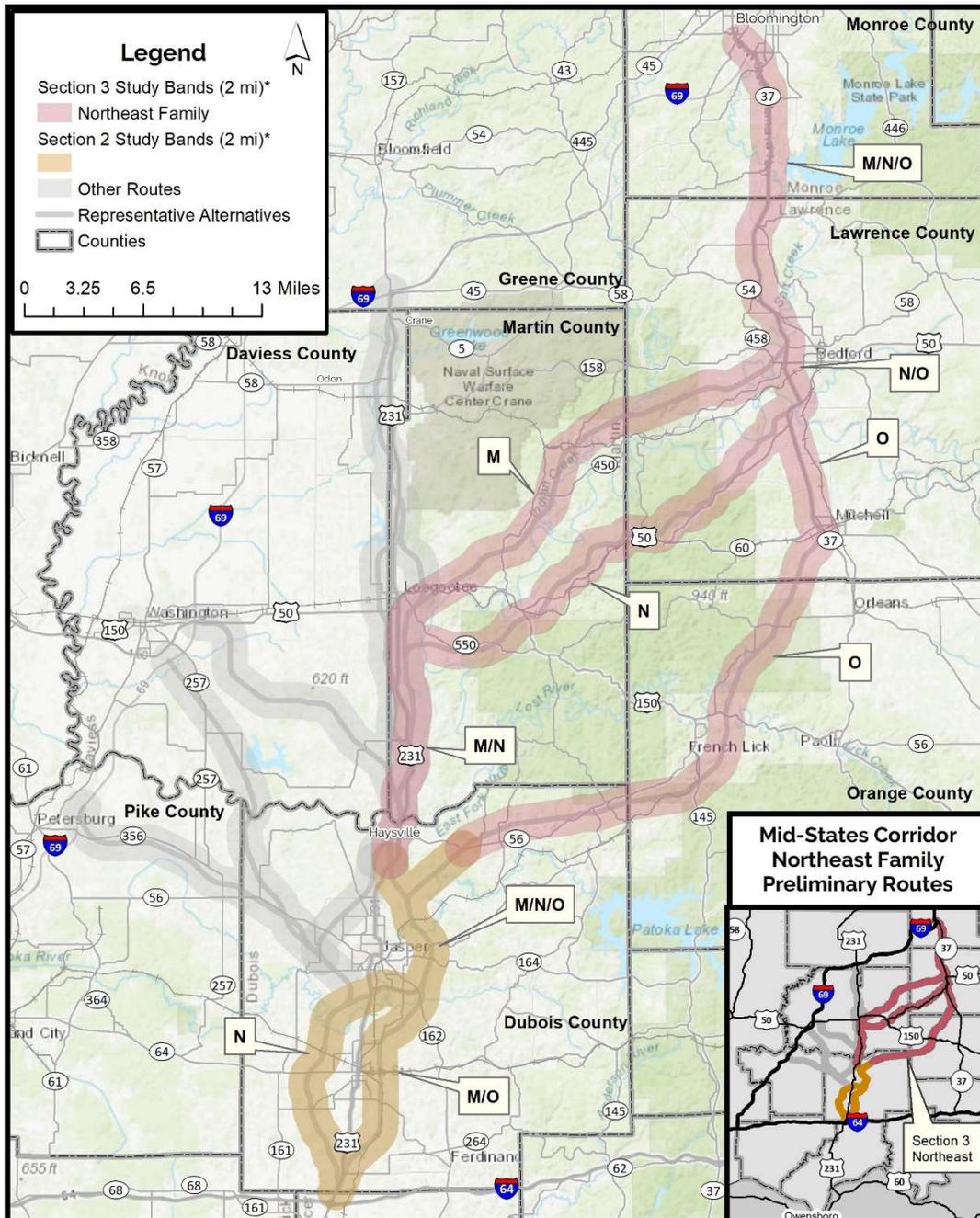


2.3 Northeast Family

Alternatives in the Northeast Family proceed directly northeast from central Dubois County. They end at SR 37 in Orange or Lawrence county, providing access to I-69 (south of Bloomington) via SR 37. They traverse level terrain (generally agricultural) through much of Dubois County. Portions of these alternatives in northeast Dubois County, as well as their routes in Martin, Orange and Lawrence counties, traverse rolling terrain. Between I-64 (near the Spencer-Dubois county line) and SR 37, they range between 52 and 63 miles in length. **Figure 1-3** shows the Northeast Family alternatives between I-64 and I-69.



Figure 2-3 – Northeast Family Alternatives





3 FACILITY TYPES

With the exception of Alternative R,² all alternatives were evaluated using three facility types. These include Super-2 arterial, expressway and freeway facilities. See the **Screening of Alternatives Report (Section 2.1)** for the characteristics of each facility type.

Higher classifications of facilities provide higher speeds and safer travel for each route. For the same route, the Super-2 arterial will have the lowest performance, and the freeway will have the highest performance. The expressway's performance will fall between the two facility types.

Within similar geographic regions (families), variation of alternative performance by facility type is assumed to be similar. Within the same family, alternatives (of all facility types) are similar in length, traverse similar terrain, and have similar northern termini.

4 RATIO APPROACH

For traffic assignments and performance measures, the expressway facility type provides a midrange value for costs, impacts and benefits for each route. Except for Alternative R, traffic assignments for all routes were made for the expressway facility type. Performance measures were calculated by post-processing the traffic assignments for the expressway facility types.

Within each of the three families, one route was selected to have traffic assignments and performance measures calculated for all three facility types. These routes include:

- Traffic assignments and performance measures were directly calculated for **Alternative C** for all three facility types in the **Northwest Family**. Alternative C represents the most direct connection to I-69 of the preliminary routes of the Northwest Family. It makes use of the existing I-69 interchange at US 50.
- Traffic assignments and performance measures were directly calculated for **Alternative P** for all three facility types in the **North Central Family**. Alternative P is anticipated to have fewer wetland impacts. It also is anticipated to have slightly fewer residential and farmland impacts by using an eastern bypass of Loogootee.
- Traffic assignments and performance measures were directly calculated for **Alternative M** for all three facility types in the **Northeast Family**. Alternative M provides the most direct route to I-69 of the three alternatives in this family. It also acknowledges resource agency feedback about avoiding managed land impacts, which are anticipated to be greater for routes further to the south.

² Alternative R is evaluated only with a Super-2 facility type. It is an upgrade of existing US 231, including the existing alignment through the cities of Huntingburg, Jasper and Loogootee. The existing alignment through these cities could not be upgraded to an expressway or freeway while maintaining appropriate design speeds.



For these three routes (Alternatives C, P and M), ratios were calculated for most performance measures. These ratios measured how performance changed by facility type for each route. These ratios were applied to the traffic assignments and performance measures to interpolate values for other alternatives in the same family.

These interpolated performance measures are provided in **Table 3-1**, **Table 3-2** and **Table 3-3** of the **Screening of Alternatives Report** for the following alternatives and facility types.

Northwest Family

- **Alternative A (Super-2 and Freeway)** based upon ratios for Alternative C
- **Alternative B (Super-2 and Freeway)** based upon ratios for Alternative C

North Central Family

- **Alternative G (Super-2 and Freeway)** based upon ratios for Alternative P
- **Alternative K (Super-2 and Freeway)** based upon ratios for Alternative P

Northeast Family

- **Alternative N (Super-2 and Freeway)** based upon ratios for Alternative M
- **Alternative O (Super-2 and Freeway)** based upon ratios for Alternative M

For two classes of measures, this ratio method was not always followed. These were measures which assessed changes in travel-time between origin-destination pairs (**Goal 1** – Accessibility to Major Business Markets and **Goal 7** – Accessibility to Intermodal Centers). These performance measures are travel time savings between travel pairs, measured in minutes. In some cases, Alternatives C, P or M showed 0 minutes of savings for expressways, but showed positive travel-time savings for expressways. In these instances, calculations of travel time savings for other alternatives in the same family were based upon professional judgment.