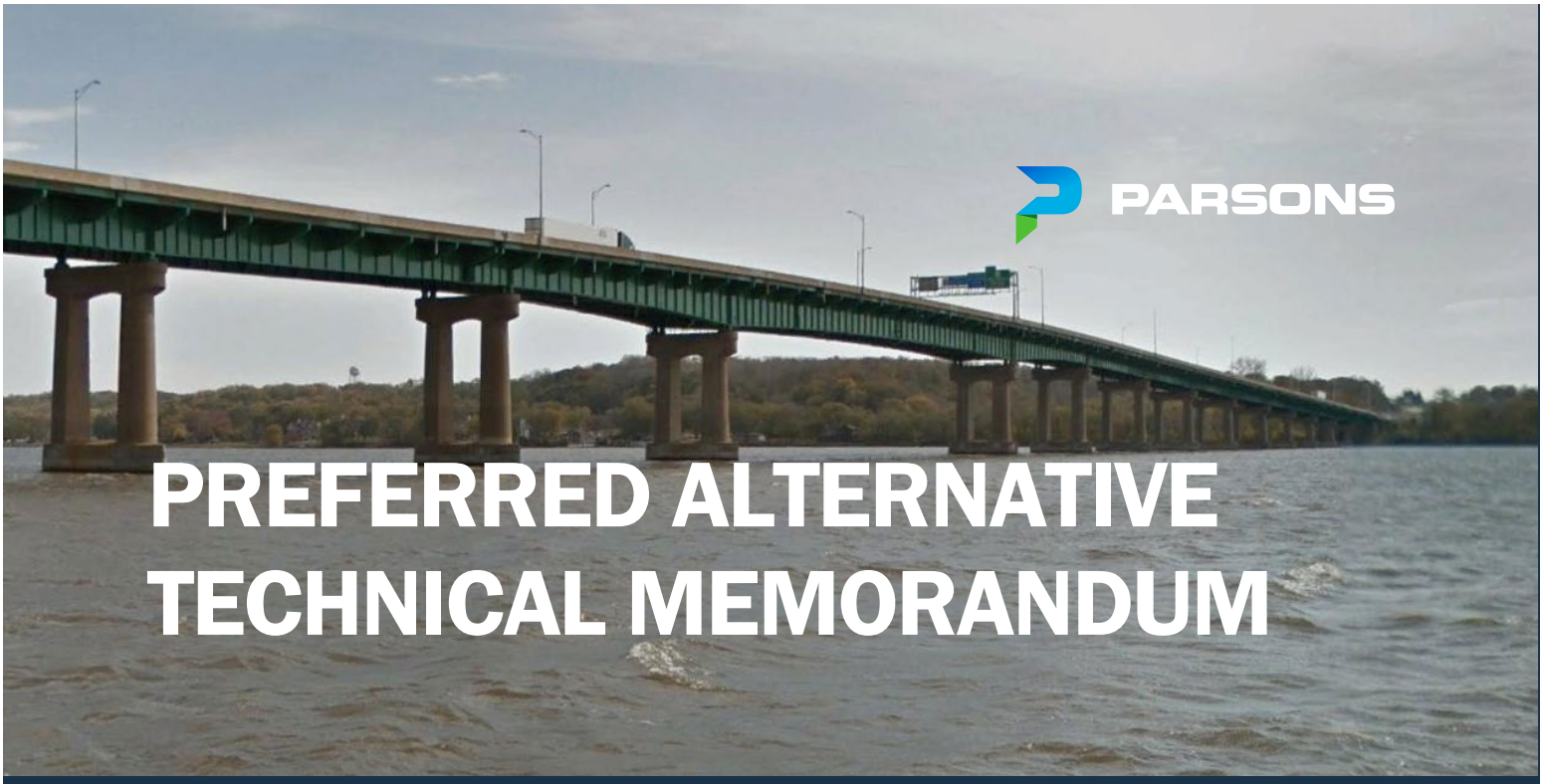

PARSONS

PREFERRED ALTERNATIVE TECHNICAL MEMORANDUM

I-80 over Mississippi River

Rock Island County, IL and Scott County, IA

IDOT District 2

November 2023

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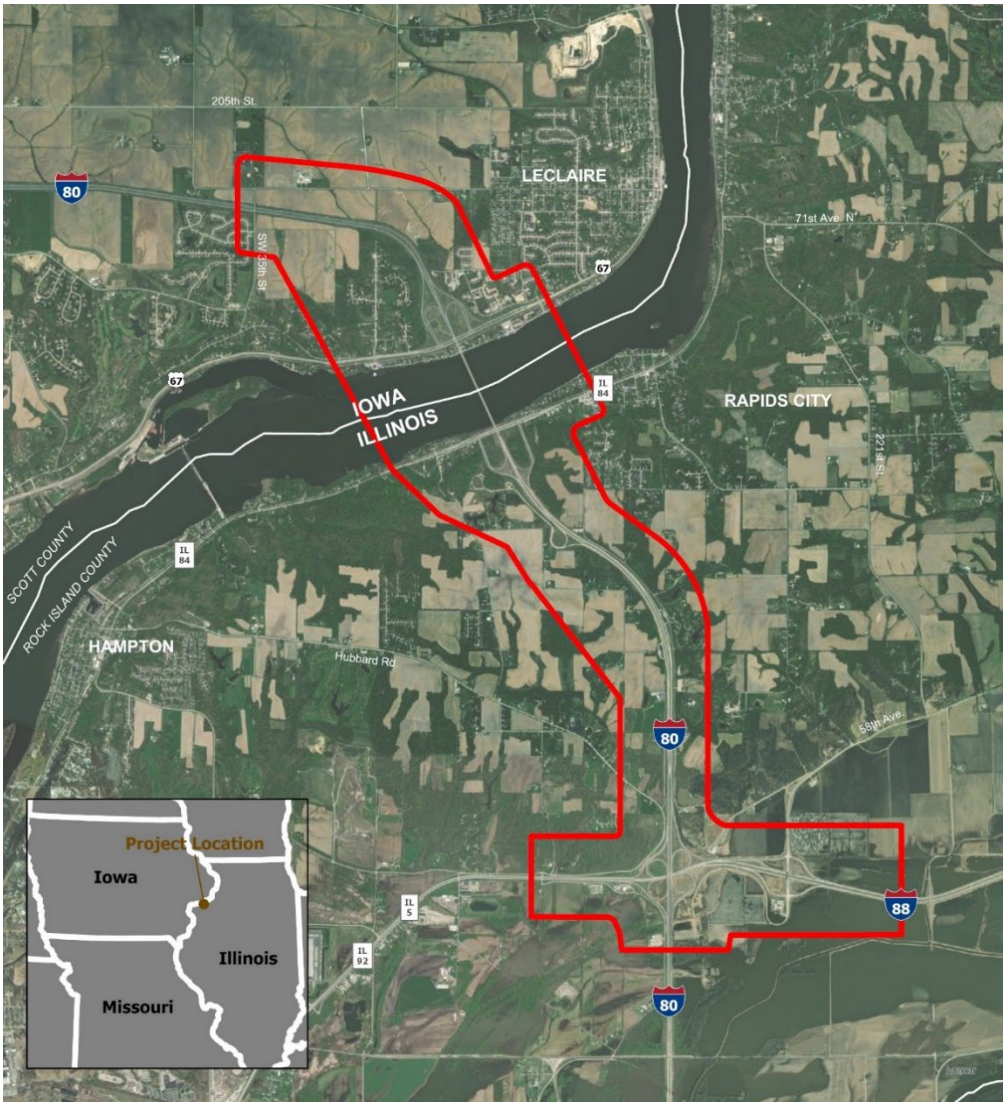
This document was prepared to coordinate the selection of the Preferred Alternative for the I-80 Mississippi River Bridge Project through the Illinois National Environmental Policy Act (NEPA)/Section 404 merger process. As the project progresses, the information provided in this document will be incorporated into the NEPA document. The I-80 Mississippi River Bridge Project study area shown in Figure 1-1 is located within Rock Island County, Illinois and Scott County, Iowa. Beginning in Illinois, the project study area encompasses the entire I-88/I-80 system interchange in all directions (i.e., eastern logical terminus): west along IL 5/IL 92 to Denhardt Road/193rd Street N, south along I-80 approximately 3,200 feet, and east along I-88 (Ronald Reagan Memorial Highway) to Old IL 2 (38th Avenue). Continuing north along I-80, the project study area includes eastbound and westbound Weigh Stations, a Rest Area (Frontage Road) for eastbound traffic, and a full interchange access to IL 84 (2nd Avenue). Along IL 84 (2nd Avenue), it extends west to 180th Street N and east to 19th Street. Continuing across the Mississippi River into Iowa, the project study area includes a full interchange access to US 67 (S Cody Road). Along US 67 (S Cody Road), it extends west to Sycamore Drive/Canal Shore Drive SW and east to Eagle Ridge Road. The project study area continues north and west along I-80 where it ends at the SW 35th Street bridge (i.e., western logical terminus). The total length of the project study area is approximately 5.8 miles. The I-80 Mississippi River Bridge Project is currently listed in the Bi-State Regional Commission 2023-2026 Transportation Improvement Program (TIP). The Illinois Department of Transportation Fiscal Year 2023-2028 Proposed Highway Improvement Program and the Iowa Department of Transportation 2023-2027 Transportation Improvement Program include funding for the I-80 Mississippi River Bridge Project through construction.

FIGURE 1-1 – PROJECT STUDY AREA



1 Purpose and Need

A *Purpose and Need Statement* was prepared in July 2020 and presented at the September 2020 NEPA/404 Merger Meeting for informational purposes. At that meeting, the agencies had no comments on the project's purpose and need. Afterwards, the purpose and need was updated in July 2021 and presented at the NEPA/404 Merger Meeting held on September 2021 for Consistency Determination. At that meeting, the agencies had no comments and provided a consistency determination on the project's purpose and need. The following are the results from the *Purpose and Need Statement*.

1.1 Project Need

Based on the analysis of bridge conditions, existing roadway geometric deficiencies, existing and future traffic conditions, and safety, the following represents the project need.

- The I-80 Mississippi River Bridge, built in 1967, is a non-redundant, two-girder system design. Based on historical experience with this structure, this bridge is susceptible to cracking. The structural cracks can quickly propagate to the point of local bridge component failure. This could, in turn, trigger immediate load restrictions and possible long-term bridge closure. Emergency lane closures due to cracking have occurred multiple times in the past.
- Costly bridge inspections are necessary to assure the integrity of the bridge. A typical biennial inspection of a redundant steel framing system looks for steel section loss due to corrosion. Obvious cracks in steel members are also noted, but inspection detail to discover small fatigue cracks is not necessarily performed since the failure of a redundant member does not cause the structure to collapse. For the I-80 Mississippi River Bridge, inspection of fracture critical members needs to be much more meticulous since member failure could lead to structure collapse. Sudden member loss due to fracture typically initiates at the tip of small fatigue cracks, thus it is important for the inspector to be satisfied these small cracks are not present. At critical locations the inspector needs to clean rusted steel to bare metal and perform dye penetrant or magnetic particle tests. Some steel members such as pins will be ultrasonic inspected. The inspection of a fracture critical structure is more labor intensive and requires staff with special skills.
- There are bridge deficiencies on the I-80 bridge over the Mississippi River, the I-80 bridges over I-88, one local road bridge over I-80, and one I-88 culvert within the project study area.
- There are three deficient curves on the I-80 mainline and 13 deficient curves associated with the US 67, IL 84, and I-88 interchanges. There are also two deficient curves associated with the I-88/Old IL 2 interchange. In addition, the ramp terminals associated with the entrance loop ramps at the IL 84 and US 67 interchanges do not meet current design standards.
- Crash trends (i.e., higher concentrations of crash numbers and/or crash types) occur at the following locations:
  - I-80/US 67 Eastbound Ramp Intersection
  - I-80 Bridge Over the Mississippi River
  - I-80/IL 84 Westbound Ramp Intersection
  - I-80 Mainline between the IL 84 Interchange and the Mississippi Rapids Rest Area Exit Ramp
  - I-80 Eastbound Exit Ramp to I-88 Eastbound

1.2 Project Purpose

Based on the project's need, the following represents the project purpose.

- Provide a structurally sound bridge over the Mississippi River.
- Improve deficient conditions on existing bridges and culvert.
- Improve roadway geometrics where they are clearly a contributing cause to safety issues.
- Improve safety on I-80 mainline and interchanges.

1.3 Performance Measures for Satisfying the Project's Purpose and Need

Based on the project purpose, the following performance measures will be used in evaluating whether project alternatives meet the project's purpose and need.

- A structurally sound bridge over the Mississippi River.
- Reduce the existing bridge/culvert deficiencies within the project study area.
- Eliminate or reduce roadway geometric deficiencies where they are a contributing cause to safety issues.
- Reduced crash rates and trends on the I-80 mainline and interchanges.

2 Alternatives Development and Analysis Technical Memorandum Summary

An Alternatives Development and Analysis Technical Memorandum was prepared in July 2022 and presented at the September 2022 NEPA/404 Merger Meeting. At that meeting, the agencies agreed with the recommended Alternatives to be Carried Forward for further evaluation in the NEPA scoping phase. The following sections are a summary of the Alternatives Development and Analysis Technical Memorandum.

2.1 Range of Reasonable Alternatives

Based on the project's purpose and need, the following range of reasonable alternatives was developed.

- No-Build: As part of the No-Build Alternative, no improvements would be made to I-80 through the study area, the existing I-80 Mississippi River bridge, and the US 67, IL 84, and I-88 interchanges other than those associated with routine and emergency repairs and maintenance.
- Transportation System Management (TSM): The TSM Alternative would include better management and operation of existing transportation facilities to improve traffic flow and enhance system accessibility and safety. Elements of a TSM Alternative would include intersection improvements such as traffic signal timing, adding/extending turning lanes and minor geometric improvements such as extending acceleration/deceleration lanes.
- Mass Transit: There is no existing mass transit service currently provided in the study area. MetroLINK operates bus services in the Quad Cities area in Illinois, In Iowa, bus service is provided by Citibus for Davenport and Bettendorf Transit. This alternative would include expanding bus service from any of these transit agencies to and along I-80 within the project area.
- Mississippi River Bridge Alternatives:

All of the bridge alternatives would include four 12-foot lanes, two 12-foot auxiliary lanes, 12-foot inside and 6-foot outside shoulders. Except for the new alignment alternatives (i.e., Alternatives 6 and 7), all of the alternatives would also include the reconstruction of the US 67 and IL 84 interchanges.

- Bridge Reconstruction
- Alternative 1 – Bridge Replacement on Existing Alignment
- Alternative 2 – Bridge Replacement East (50 feet east of the existing bridge)
- Alternative 3 – Bridge Replacement to the West (50 feet west of the existing bridge)
- Alternative 4 – New Companion Bridge East and Replacement of Existing Bridge (New westbound bridge would be constructed 20 feet east of the existing bridge and the new eastbound bridge would be constructed on the existing bridge alignment)
- Alternative 5 – New Companion Bridge West and Replacement of Existing Bridge (New eastbound bridge would be constructed 20 feet west of the existing bridge and the new westbound bridge would be constructed on the existing bridge alignment)
- Alternative 6 – Bridge Replacement on New Alignment East (Approximately 600 feet east of the existing bridge

- Alternative 7 – Bridge Replacement on New Alignment West (Approximately 2,100 feet west of the existing bridge

- I-88 Interchange Alternatives:
  - Alternative A – Expanded Cloverleaf
  - Alternative B – Expanded Cloverleaf with Outer Direct Ramp (Direct ramp is for-80 eastbound to I-88 eastbound traffic)
  - Alternative C – Expanded Cloverleaf with Direct Ramp and Old IL 2 Interchange (Direct ramp is for I-80 eastbound to I-88 eastbound traffic and the Old IL 2 interchange would be reconstructed)
  - Alternative D – Four-Level Interchange and Old IL 2 interchange (Four flyover ramps and the reconstruction of the Old IL 2 interchange)

2.2 Alternatives Evaluation and Screening

2.2.1 Level 1 Evaluation and Screening – Purpose and Need/Fatal Flaw

The following alternatives were dismissed from further evaluation because they didn't meet the project's purpose and need or had a fatal flaw. Although the No-Build Alternative would not meet the project's purpose and need, it was carried forward into the NEPA scoping phase as a baseline comparison for the build alternatives in accordance with NEPA.

- Transportation System Management
- Mass Transit
- Bridge Reconstruction (Fatal Flaw - Not feasible to widen the bridge deck on the existing piers and the re-use of the existing piers was not recommended.)

Alternatives 1 through 7 and Alternatives A through D met the project's purpose and need and did not have any fatal flaws and were carried forward for Level 2 Evaluation and Screening.

2.2.2 Level 2 Evaluation and Screening – Engineering/Environmental Impacts

All the alternatives were evaluated for environmental impacts based on secondary source data collected as part of the *Existing Conditions Technical Report*. From an engineering standpoint, all the alternatives were evaluated based on their constructability and maintenance of traffic (MOT) during construction. Tables 2-1 and 2-2 present the environmental impacts, constructability, and MOT results for the Mississippi River Alternatives and I-88 Interchange Alternatives, respectively.

TABLE 2-1 – ALTERNATIVES EVALUATION AND SCREENING SUMMARY – MISSISSIPPI RIVER BRIDGE ALTERNATIVES

Evaluation Criteria	1	2	3	4	5	6	7
Environmental Impacts							
Relocations (number)	1	3	5	1	1	15	53
Right-of-way (acres)	3	6	8	1	4	95	157
NWI Wetlands (acres)	0	0	0	0	0	0	0
Streams (number/linear feet)	4/3,965	4/3,800	5/4,756	4/3,920	5/4,575	3/2,084	9/4,208
Floodplains/Floodways (acres)	15/2	15/2	17/3	17/2	18/3	15/3	15/2
Potential Indiana Bat and NLEB Forested Habitat (acres)	31	38	40	31	32	66	70
Public Parks/Recreation Areas/Section 4(f) Resources (number)	1	1	1	1	1	1	1
Historic and Archaeological Resources/Section 106 Resources (number)	1	1	1	1	1	1	0
Special Waste Sites (number)	0	0	0	0	0	0	2
Prime Farmland Soils (acres)	3	4	11	2	4	91	128
Community Facilities and Services (number)	0	0	0	0	0	0	2
Environmental Justice Populations (number of EJ census block groups)	1	1	1	1	1	0	1
Engineering							
Constructability	Less Favorable	More Favorable	More Favorable	Less Favorable	Less Favorable	More Favorable	More Favorable
Maintenance of Traffic during Construction	Greatest Impacts	Least Impacts	Least Impacts	Moderate Impacts	Moderate Impacts	Least Impacts	Least Impacts

Most Environmental Impacts/Highest Cost

Least Environmental Impacts/Lowest Cost

TABLE 2-2 – ALTERNATIVES EVALUATION AND SCREENING SUMMARY – I-88 INTERCHANGE ALTERNATIVES

Evaluation Criteria	A	B	C	D
Environmental Impacts				
Relocations (number)	3	3	3	2
Right-of-way (acres)	21	23	55	36
NWI Wetlands (acres)	4	3	3	1
Streams (number/linear feet)	1/391	1/298	3/1,591	3/2,016
Floodplains/Floodways (acres)	7/0	11/0	32/0	30/0
Potential Indiana Bat and NLEB Forested Habitat (acres)	14	13	15	6
Public Parks/Recreation Areas/Section 4(f) Resources (number)	1	1	1	0
Historic and Archaeological Resources/Section 106 Resources (number)	0	0	0	0
Special Waste Sites (number)	2	2	2	2
Prime Farmland Soils (acres)	21	23	55	36
Community Facilities and Services (number)	0	0	0	0
Environmental Justice Populations (number of EJ census block groups)	0	0	0	0
Engineering				
Constructability	More Favorable	More Favorable	More Favorable	Less Favorable
Maintenance of Traffic during Construction	Least Impacts	Least Impacts	Least Impacts	Moderate Impacts

Most Environmental Impacts/Highest Cost

Least Environmental Impacts/Lowest Cost

2.2.3 Public and Agency Input

On February 14, 2019, IDOT presented the I-80 Mississippi River Bridge PEL Study project introduction/overview at the NEPA/Section 404 merger meeting for information purposes.

On April 6, 2020, 481 project kick-off letters were distributed to stakeholders representing local, state, and federal agencies, public officials, and private organizations introducing them to the PEL study and inviting them to the virtual public meeting.

On April 22, 2020, IDOT conducted a virtual public meeting for the project to provide a project introduction, identify the preliminary project purpose and need, and to obtain input from the public. There were 621 people that attended the public meeting, and 125 comments/questions were submitted during the meeting.

Notable comments and questions received during the public meeting focused on the following:

- Substandard shoulders
- Bridge too narrow
- Not enough space to get around accidents
- Low sides of bridge are a problem
- Lack of height of bridge makes it scary
- Ramps too short, difficult to merge
- Too much truck traffic
- Expand to three lanes each way

- More lanes
- Safety of vehicles and structure
- Pedestrian accommodations needed (multiple)
- No funds for pedestrian accommodations/car only bridge (multiple)
- Safety for property owners during construction
- Impact of construction on business/economy
- Access to LeClaire/Rapids City during construction
- Ease of access a problem
- Need well-lit exits/entrances with clear signage
- Consider tolling

Approximately 20 comments were received after the meeting which generally touched upon the same topics listed above.

On September 10, 2020, IDOT presented the project purpose and need at the NEPA/Section 404 merger meeting for information purposes. No comments were provided by the resource agencies at this meeting.

On September 9, 2021, IDOT presented the purpose and need to the NEPA/Section 404 merger meeting for consistency determination. At that meeting, the agencies had no comments and agreed with the project's purpose and need.

IDOT established a website for the project (https://www.i80mississippibridge.com/). The website contains project information and documents. Comments can be submitted through the project website. Following the public meeting comment period, one additional comment was received at the project website regarding the construction procurement method.

On May 11, 2022, IDOT conducted a second virtual public meeting for the project to present the range of reasonable alternatives that were developed and evaluated based on their ability to meet the project's purpose and need, environmental impacts, and engineering issues such as constructability and maintenance of traffic during construction. There were 408 people that attended the public meeting, and 111 comments/questions were submitted during the meeting.

Notable comments and questions submitted during the public meeting focused on the following: (Note: For the more common comments and comments that indicated support or opposition to an alternative or option, the number of comments submitted is provided in parentheses.)

- Support the Bison Bridge* (22 comments)
- Oppose the Bison Bridge (2 comments)
- Oppose Alternative 1 (4 comments)
- Support Alternatives 2 and 3 (1 comment)
- Oppose Alternative 6 (1 comment)
- Pedestrian and bicycle accommodations (6 comments)
- Noise impacts (5 comments)
- Options to retain and reuse the existing bridge
- Traffic impacts and cost of detours
- Government agency coordination
- Impacts of alternatives
- Timing of construction
- Wider bridge center span for river traffic
- Canal Shore Drive impacts during construction
- Alternative evaluation criteria
- Cost of alternatives
- Location of new bridge
- Changes in study area
- Compensation and disruptions for property owners
- Interchange at SW 35th Street

- Consideration of economic development
- Influence of Corps of Engineers

*The Bison Bridge is a concept that is being proposed by the Bison Bridge Foundation that would involve repurposing the existing I-80 bridge over the Mississippi River using private funding to create a national park for bison. It would also provide pedestrian and bicycle access across the river. In April 2022, the Illinois House of Representatives passed a resolution (HR 0699) urging "the Governor and the Secretary of the Department of Transportation to develop plans for the new I-80 bridge structure that includes the incorporation of the Bison Bridge structure." Please note that the project's purpose and need and range of the reasonable alternatives that received a consistency determination from federal and state agencies does not consider the development of the existing structure as a bison park as this potential use cannot be used to mitigate any impacts to environmental resources that currently exist in the project area. Therefore, the concept is not included in this Alternatives Development and Analysis Technical Memorandum and is not considered a project alternative.

In addition to the 111 comments submitted during the public meeting, 266 comments were submitted from May 11 to May 25. Table 2-3 presents the number of comments that supported or opposed an alternative.

TABLE 2-3 – NUMBER OF COMMENTS THAT SUPPORT OR OPPOSE AN ALTERNATIVE

Alternative	Support	Oppose
Alternative 1	0	10
Alternative 2	3	0
Alternative 3	3	1
Alternative 4	10	0
Alternative 5	7	0
Alternative 6	1	5
Alternative 7	0	16

Other notable comments included the following:

- Support the Bison Bridge (124 comments)
- Oppose the Bison Bridge (32 comments)
- Support pedestrian and bicycle accommodations (24 comments)
- Noise impacts (5 comments)

2.2.4 Recommended Alternatives to be Carried Forward for Further Evaluation in the NEPA Scoping Phase

Table 2-4 summarizes the alternatives analysis described in this document and identifies the recommended Alternatives to be Carried Forward for further evaluation in the NEPA phase.

TABLE 2-4 – RECOMMENDED ALTERNATIVES TO BE CARRIED FORWARD

Alternative	Level 1 Screening	Level 2 Screening			Alternatives to Be Carried Forward
	Meets Purpose and Need/Fatal Flaw	Environmental Impacts	Constructability	MOT	
No-Build Alternative	No	Retained as baseline alternative throughout NEPA.			Yes
Transportation System Management Alternative	No				No
Mass Transit Alternative	No				No
Build Alternatives					
Mississippi Bridge Alternatives					
Bridge Reconstruction Alternative	Fatal Flaw				No
Alternative 1 - Bridge Replacement on Existing Alignment	Yes	Lower/Similar Impacts	Less Favorable	Greatest Impacts	No
Alternative 2 - Bridge Replacement East	Yes	Lower/Similar Impacts	More Favorable	Least Impacts	Yes
Alternative 3 - Bridge Replacement West	Yes	Lower/Similar Impacts	More Favorable	Least Impacts	Yes
Alternative 4 - New Companion Bridge East and Replacement of Existing Bridge	Yes	Lowest/Similar Impacts	Less Favorable	Moderate Impacts	Yes
Alternative 5 - New Companion Bridge West and Replacement of Existing Bridge	Yes	Lower/Similar Impacts	Less Favorable	Moderate Impacts	Yes
Alternative 6 - Bridge Replacement on New Alignment East	Yes	Higher Impacts	More Favorable	Least Impacts	No
Alternative 7 - Bridge Replacement on New Alignment West	Yes	Highest Impacts	More Favorable	Least Impacts	No
I-88 Interchange Alternatives					
Alternative A - Expanded Cloverleaf	Yes	Lower/Similar Impacts	More Favorable	Least Impacts	Yes
Alternative B - Expanded Cloverleaf with Outer Direct Ramp	Yes	Lower/Similar Impacts	More Favorable	Least Impacts	Yes
Alternative C - Expanded Cloverleaf with Direct Ramp and Old IL 2 Interchange	Yes	Highest Impacts	More Favorable	Least Impacts	No
Alternative D - Four-Level Interchange and Old IL 2 Interchange	Yes	Lowest/Higher Impacts	Less Favorable	Moderate Impacts	Yes

The following is a brief summary explaining the reasons why alternatives were either eliminated or carried forward for further evaluation during the Level 2 Screening phase.

Alternative 1

Although Alternative 1 would generally have lower or similar impacts compared to the other bridge alternatives, it was eliminated from further evaluation due to the impacts to travelers that would be associated with the 38-mile detour during the four-year closure of the bridge during construction.

Alternative 2

Alternative 2 was recommended to be carried forward for further evaluation because it would result in lower or similar impacts compared to the other bridge alternatives, be more favorable with regard to constructability, and have the least impacts to traffic during construction,

Alternative 3

Alternative 3 was recommended to be carried forward for further evaluation because it would result in relatively similar impacts to Alternatives 1, 2, 4, and 5 and substantially less impacts to several resources compared to Alternatives 6 and 7, be more favorable with regard to constructability, and have the least impacts to traffic during construction,

Alternative 4

Alternative 4 was recommended to be carried forward for further evaluation because it would result in the lowest impacts or similar impacts compared to the other bridge alternatives, Although Alternative 4 would be less favorable with regard to constructability and have moderate impacts to traffic during construction, it would not be to the level that would warrant its dismissal from further evaluation.

Alternative 5

Alternative 5 was recommended to be carried forward for further evaluation because it would result in lower or similar impacts, except for streams, compared to the other bridge alternatives, Although Alternative 5 would be less favorable with regard to constructability and have moderate impacts to traffic during construction, it would not be to the level that would warrant its dismissal from further evaluation.

Alternative 6

Alternative 6 was eliminated from further evaluation because it would result in the second highest impacts to several resources and that these impacts would be considerably higher than all the bridge alternatives except Alternative 7.

Alternative 7

Alternative 7 was eliminated from further evaluation because it would result in the highest impacts to several resources and that these impacts would be considerably higher than all the bridge alternatives.

Alternative A

Alternative A was recommended to be carried forward for further evaluation because it would result in lower or similar impacts to the other interchange alternatives, be more favorable with regard to constructability, and have the least impacts to traffic during construction,

Alternative B

Alternative B was recommended to be carried forward for further evaluation because it would result in lower or similar impacts to the other interchange alternatives, be more favorable with regard to constructability, and have the least impacts to traffic during construction,

Alternative C

Alternative C was eliminated from further evaluation because it would result in the highest or second highest impacts to several resources compared to the other interchange alternatives.

Alternative D

Although Alternative D would result the highest or second highest impacts to a few resources, it would also result in the lowest impacts to a few resources compared to the other interchange alternatives. It is also the only interchange alternative that would not impact a Section 4(f) resource. Although Alternative D would be less favorable with regard to constructability and have moderate impacts to traffic during construction, it would not be to the level that would warrant its dismissal from further evaluation. As a result, Alternative D was recommended to be carried forward for further evaluation.

3 Evaluation of Alternatives Carried Forward for Further Evaluation in the NEPA Phase

Following the completion of the Alternatives Development and Analysis Technical Memorandum, more detailed designs were developed and environmental field studies conducted on the alternatives to be carried forward for further evaluation in the NEPA phase. This more detailed information was then used to evaluate the alternatives carried forward in order to identify a Preferred Alternative for both the I-80 Mississippi River Bridge (MRB) and the I-88 interchange. These Preferred Alternatives were then combined to present the environmental impacts, constructability, maintenance of traffic, and construction costs for a single Preferred Alternative for the entire project. The following information summarizes the results of this evaluation.

3.1 Environmental Impacts

Tables 3-1 and 3-2 summarize the impacts for the I-80 MRB alternatives and the I-88 interchange alternatives, respectively. The following sections provide a brief discussion of these impacts and a comparison of the alternatives. The No-Build Alternative would not result in any environmental impacts.

TABLE 3-1 – I-80 MISSISSIPPI RIVER BRIDGE ALTERNATIVES CARRIED FORWARD IMPACTS

Evaluation Criteria	2	3	4	5
Environmental Impacts				
Residential Relocations (number)	6	3	5	2
Commercial Relocations (number)	1	0	1	1
Residential Parcels Impacted -Non-Relocations (number)	5	10	5	8
Commercial Parcels Impacted -Non-Relocations (number)	3	1	2	1
Right-of-way (acres)	23	17	13	14
Delineated Wetlands (acres)	1.20	0.81	0.99	0.66
Streams (number/linear feet)	7/6,348	7/7,948	7/5,998	7/6,155
Floodplain (number/acres)	3/11	3/13	3/9	3/11
Floodways (number/acres)	2/28	2/31	2/22	2/22
Threatened and Endangered Species (number)	4*	4*	4*	4*
Forested Habitat (Potential Indiana Bat and NLEB Habitat) (acres)	37	33	33	28
Public Parks/Recreation Areas/Section 4(f) Resources (number) (i.e., Great River Trail)	1	1	1	1
Impacts Mississippi Rapids Rest Area (Yes/No)	No	Yes	No	Yes
Historic and Archaeological Resources/Section 106 Resources (number)	2	2	2	2
REC Site (Illinois)/EDR Site (Iowa)/(number)	4/4	3/3	4/3	4/3
Prime Farmland Soils (acres)	17	17	10	13
Community Facilities and Services (number)	0	0	0	0
Environmental Justice Populations (number of EJ census block groups)	1	1	1	1
Engineering				
Constructability	• Shorter schedule • 4 stages • River bridges built concurrently	• Shorter schedule • 4 stages • River bridges built concurrently	• Longer schedule • 6 stages • River bridges built consecutively	• Longer schedule • 6 stages • River bridges built consecutively
Maintenance of Traffic during Construction	• Shorter schedule • 1 shift of river bridge traffic	• Shorter schedule • 1 shift of river bridge traffic	• Longer schedule • All traffic to operate on new westbound bridge while eastbound bridge is constructed • 2 shifts of river bridge traffic	• Longer schedule • All traffic to operate on new eastbound bridge while westbound bridge is constructed • 2 shifts of river bridge traffic
Estimated Construction Cost Comparison**	1.00	1.14	1.05	1.09

Most Environmental Impacts/Highest Cost

Least Environmental Impacts/Lowest Cost

*Federally endangered Higgins' eye mussel and northern long eared bat, Illinois threatened monkeyface, and Illinois and Iowa threatened butterfly mussels

**Construction cost is presented as a ratio compared to the least cost option. These costs reflect the value to replace the existing bridge and adjust the ramp connections to IL 84 and US 67 and do not account for contingency, margin, escalation, environmental mitigation, and right-of-way.

TABLE 3-2 – I-88 INTERCHANGE ALTERNATIVES CARRIED FORWARD IMPACTS

Evaluation Criteria	A	B	D
Environmental Impacts			
Residential Relocations (number)	0	0	0
Commercial Relocations (number)	3	3	0
Right-of-way (acres)	23	22	61
Delineated Wetlands (acres)	11.43	9.96	2.02
Streams (number/linear feet)	1/570	1/545	3/3,093
Floodplain (number/acres)	1/39	1/36	1/124
Floodways (number/acres)	0/0	0/0	0/0
Threatened and Endangered Species (number)	0	0	0
Forested Habitat (Potential Indiana Bat and NLEB Habitat) (acres)	10	9	8
Public Parks/Recreation Areas/Section 4(f) Resources (acres) (i.e., Amowa Forest Preserve)	2	2	0
Historic and Archaeological Resources/Section 106 Resources (number) (Sites listed on the NRHP)	0	0	0
REC Sites (number)	10	10	6
Prime Farmland Soils (acres)	23	22	61
Community Facilities and Services (number)	0	0	0
Environmental Justice Populations (number of EJ census block groups)	0	0	0
Engineering			
Constructability	Simpler Construction	Simpler Construction	More complicated construction due to four flyover ramps
Maintenance of Traffic during Construction	Simpler MOT	Simpler MOT	More complicated MOT due to four flyover ramps
Estimated Construction Cost Comparison*	1.00	1.26	4.00

Most Environmental Impacts/Highest Cost

Least Environmental Impacts/Lowest Cost

*Construction cost is presented as a ratio compared to the least cost option These costs reflect the value to construct these alternatives and do not account for contingency, margin, escalation, environmental mitigation, and right-of-way.

3.1.1 Residential Relocations

I-80 MRB Alternatives

Alternative 5 would result in the lowest number of residential relocations (2) while Alternative 2 would result in the highest number of residential relocations (6) (See Table 3-1 and Appendix A, Figures A-1 to A-4).

I-88 Interchange Alternatives

None of the alternatives would result in residential relocations.

3.1.2 Commercial Relocations

I-80 MRB Alternatives
Alternative 3 would not result in any commercial relocations while Alternatives 2, 4, and 5 would result in one commercial relocation (See Table 3-1 and Appendix A, Figures A-1 to A-4). The one commercial relocation is located in LeClaire and is the Markman Peat corporate office, which is a manufacturer and wholesale distributer of soils, decorative rock, and mulch.

I-88 Interchange Alternatives
Alternative D would not result in any commercial relocations while Alternatives A and B would result in three commercial relocations (See Table 3-2, and Appendix B, Figures B-1 to B-3). These commercial relocations include Arnold Car and Truck Equipment, an unnamed building that includes five garages that appear to be for rent, and a building that is part of the Muddy Water MX Park, which is a motocross track. The unnamed building is near the Arnold building and has the same owner, but it is located on a separate parcel and appears to have a separate use.

3.1.3 Right-of-way

I-80 MRB Alternatives
Alternative 4 would require the least right-of-way (13 acres) while Alternative 2 would require the most right-of-way (23 acres) (See Table 3-1 and Appendix A, Figures A-1 to A-4).

I-88 Interchange Alternatives
Alternative B would require the least right-of-way (22 acres) while Alternative D would require the most right-of-way (61 acres) (See Table 3-2 and Appendix B, Figures B-1 to B-3).

3.1.4 Delineated Wetlands

I-80 MRB Alternatives:
Alternative 5 would have the least wetland impacts (0.66 acre) while Alternative 2 would have the most wetland impacts (1.20 acres) (See Table 3-1 and Appendix A, Figures A-5 to A-8).

I-88 Interchange Alternatives
Alternative D would have the least wetland impacts (2 acres) while Alternative A would have the most wetland impacts (11 acres) (See Table 3-2 and Appendix B, Figures B-4- to B-6).

3.1.5 Streams

I-80 MRB Alternatives
All the alternatives would impact the same number of streams (7) but Alternative 4 would have the least impacts to linear feet of streams (5,998 linear feet) while Alternative 3 would have the most impacts to linear feet of streams (7,948 linear feet) (See Table 3-1 and Appendix A, Figures A-5 to A-8).

I-88 Interchange Alternatives
Alternative B would have the least impacts to streams (1 stream/545 linear feet) while Alternative D would have the most impacts to streams (3 streams/3,093 linear feet) (See Table 3-2 and Appendix B, Figures B-4 to B-6).

3.1.6 Floodplains/Floodways

I-80 MRB Alternatives
All the alternatives would impact the same number of floodplains (3) and floodways (2). Regarding the acreage of impacts to floodplains, Alternative 4 would have the least impacts (9 acres) while Alternative 3 would have the most impacts (13 acres). For floodways, Alternatives 4 and 5 would have the least impacts (22 acres) while Alternative 3 would have the most impacts (31 acres) (See Table 3-1 and Appendix A, Figures A-5 to A-8).

I-88 Interchange Alternatives
Alternative B would have the least impacts to floodplains (1 floodplain/36 acres) while Alternative D would have the most impacts to floodplains (1 floodplain/124 acres) (See Table 3-2 and Appendix B, Figures B-4 to B6). None of the alternatives would impacts floodways.

3.1.7 Threatened and Endangered Species

I-80 MRB Alternatives
Based on mussel surveys conducted in 2020 and 2021, three live federally endangered Higgin's eye, one live Illinois state threatened monkeyface, and eight live Illinois and Iowa state threatened butterfly were identified in the project area. Given the bridge design of the four I-80 MRB alternatives, it is anticipated that impacts to these species would be similar.

Other than impacts to forested habitat that represents potential habitat for the federally endangered Indiana bat and northern long-eared bat (NLEB) (See Section 3.1.8), no other state or federal threatened and endangered species are expected to be impacted by any of the I-80 MRB alternatives. Following the selection of a Preferred Alternative, a Biological Assessment (BA) will be prepared to more specifically determine the impacts to the federally endangered Higgin's eye, identify conservation measures, and obtain a Biological Opinion (BO) from the U.S. Fish and Wildlife Service (USFWS). Impacts to Indiana bat and northern long eared bat will also be included in the Biological Assessment. Impacts to forested habitat which represents potential habitat for the federally endangered Indiana bat and NLEB are discussed in Section 3.1.8. Coordination with Illinois Department of Natural Resources and Iowa Department of Natural Resources regarding impacts to the Higgin's eye, monkeyface (Illinois only), and butterfly mussels will also occur after the selection of the Preferred Alternative as well.

I-88 Interchange Alternatives
Forested habitat within the project area represents potential habitat for the federally endangered Indiana bat and federally threatened NLEB (See Section 3.1.8). No other state or federal threatened and endangered species are expected to be impacted by any of the I-88 interchange alternatives.

3.1.8 Forested Habitat - Potential Indiana bat and Northern Long-Eared Bat Habitat

I-80 MRB Alternatives
Alternative 5 would have the least impacts to forested habitat (28 acres) while Alternative 2 would have the most impacts to forested habitat (37 acres) (See Table 3-1 and Appendix A, Figures A-9 to A-12).

I-88 Interchange Alternatives
Alternative D would have the least impacts to forested habitat (8 acres) while Alternative A would have the most impacts to forested habitat (10 acres) (See Table 3-2 and Appendix B, Figures B-7 to B-9).

3.1.9 Public Parks/Recreation Areas/Section 4(f) Resources

I-80 MRB Alternatives
All the alternatives would perpendicularly cross the Great River Trail that runs along the north side of IL 84. The crossing would be via a bridge, and there would be no permanent Section 4(f) use (See Table 3-1 and Appendix A, Figures A-1 to A-4). However, during construction, it is anticipated that the trail may need to be closed for periods of time. It is anticipated that this impact will be considered no use - temporary occupancy or *de minimis*.

Alternatives 2 and 4 would avoid impacting the Mississippi Rapids Rest Area while Alternatives 3 and 5 would impact the rest area (See Table 3-1 and Appendix A, Figures A-1 to A-4). Note that although the Mississippi Rapids Rest Area is publicly owned (i.e., IDOT) and includes picnic benches, a playground, and an overlook of the Ohio River, it is not considered a Section 4(f) resource because it's primary use is an I-80 rest area and not recreation.

I-88 Interchange Alternatives
Alternative D would not impact any public parks, recreation areas, or any other recreational Section 4(f) resources while Alternatives A and B would have the same impacts to the Amowa Forest Preserve (2 acres) (See Table 3-2 and Appendix B, Figures B-1 to B-3). The Rock Island County Forest Preserve District recently acquired approximately 82 acres of land in the northwest quadrant of the I-88 interchange for the preserve and is currently planning on providing a parking lot off of Hubbard Road, creating a 20 acre prairie, and primitive hiking and mountain biking trails. The project team has been and will continue to coordinate with the Forest Preserve. Given the total size of the preserve, 2 acres of impacts, which would be a linear strip of undeveloped land along the existing I-88 interchange right-of-way, would represent approximately 2 percent of the preserve. Access to the future parking lot would be maintained. During final design, additional efforts would be made to further reduce impacts to the preserve. Based on the anticipated impacts and coordination with the Forest Preserve, it is anticipated that the impacts would be *de minimis*.

3.1.10 Historic and Archaeological Resources/Section 106 Resources

I-80 MRB Alternatives
None of the alternatives would impact any sites on the National Register of Historic Places (NRHP). In Illinois, the Historic Resources Inventory conducted by IDOT found no above-ground sites that warranted further evaluation for NRHP eligibility. Based on a database review from the Illinois State Archaeological Survey, there is one archaeological site that would potentially be impacted by all the alternatives (See Table 3-1). Avoidance or additional surveys are recommended for this archaeological site.

In Iowa, historic architecture and archaeological surveys were conducted along the I-80 corridor within the project area for another Iowa DOT project that identified one archaeological site, which would not be impacted, as being eligible for listing on the NRHP. The survey also identified the railroad that parallels the Mississippi River and crosses under the I-80 bridge as being eligible for the NRHP. The railroad would be impacted by the project. (See Table 3-1). However, some areas from the I-80 MRB project area fell outside the limits of that survey. As a result, the Iowa DOT completed additional historic architecture and archaeological surveys for those areas. Based on these surveys, four additional archaeological sites were found but are recommended as not eligible for the NHRP. One additional architectural site was identified as eligible for the NRHP, but this site would not be impacted by the project. The Iowa DOT submitted a letter to the State Historic Preservation Office (SHPO) on June 13, 2023 requesting their concurrence on the findings on the surveys, which includes a determination of No Adverse Effect. On July 13, 2023, the Iowa SHPO concurred with the No Adverse Effect finding.

Per Iowa DOT and IDOT policy, the archaeological sites are not shown on any figures. Note that any impacts to historic sites that are listed on or eligible for the NRHP would also have to be evaluated as a Section 4(f) resource.

I-88 Interchange Alternatives
None of the alternatives would impact any sites listed on the NRHP (See Table 3-2). Although the Historic Resources Inventory conducted by IDOT identified four above-ground properties that warranted evaluation for NRHP eligibility, none of the alternatives would impacts these properties.

3.1.11 Recognized Environmental Conditions (REC) Sites/Environmental Data Resources (EDR) Sites

I-80 MRB Alternatives
Alternative 3 would impact the least number of REC and EDR sites (3 REC sites and 3 EDR sites) while Alternative 2 would impact the most REC and EDR sites (4 REC sites and 4 EDR sites) (See Table 3-1 and Appendix A, Figures A-13 to A-16). Note: A Preliminary Environmental Site Assessment (PESA) was conducted in Illinois to identify REC sites while an EDR data search was conducted in Iowa to identify potential hazardous material sites (i.e., referred to in this report as EDR sites). Three of the EDR sites are SPILLS sites (i.e., initial report of an incident) and one is an Emergency Response Notification System (ERNS) site (i.e., a reported release of oil and hazardous substances).

I-88 Interchange Alternatives
Alternative D would impact the least number of REC sites (6) while Alternatives A and B would impact the most REC sites (10) (See Table 3-2 and Appendix B, Figures B-10 to B-12).

3.1.12 Prime Farmland

I-80 MRB Alternatives
Alternative 4 would have the least prime farmland impacts (10 acres) while Alternatives 2 and 3 would have the most prime farmland impacts (17 acres) (See Table 3-1 and Appendix A, Figures A-9 to A-12).

I-88 Interchange Alternatives
Alternative B would have the least prime farmland impacts (22 acres) while Alternative D would have the most prime farmland impacts (61 acres) (See Table 3-2 and Appendix B, Figures B-7 to B-9).

3.1.13 Community Facilities and Services

I-80 MRB Alternatives
None of the alternatives would result in direct impacts to community facilities and services (See Table 3-1). All the alternatives would improve access and safety within the project area for emergency responders. During construction, there will be a need for temporary roadway and ramp closures. The exact extent of these closures is not known at this time. However, it is anticipated that closures associated with Alternatives 4 and 5 will be longer in duration than with Alternatives 2 and 3 due to the more complex maintenance of traffic required with Alternatives 4 and 5.

I-88 Interchange Alternatives
None of the alternatives would result in direct impacts to community facilities and services (See Table 3-2). All the alternatives would improve access and safety within the project area for emergency responders. In addition, during construction, no long-term roadway/ramp closures that would require detours or reductions in travel lanes that could increase traffic congestion are anticipated that would negatively impact emergency responders.

3.1.14 Environmental Justice Populations

I-80 MRB Alternatives
All the alternatives would traverse the same census block group (Census Tract 204, Block Group 2) that has been identified as an environmental justice population (See Table 3-1 and Appendix A, Figures A-1 to A-4). This block group was identified as an environmental justice population because the minority population is 10 percentage points higher than the minority population in the Davenport-Moline-Rock Island IA-IL MSA. However, the section of the block group that would be impacted is a narrow strip of undeveloped land west of the I-80 bridge between IL 84 and the Mississippi River. The impacts would be either a new bridge being built over the land and/or the existing bridge being replaced or removed. Based on these impacts, none of the alternatives would result in disproportionately high and adverse impacts to environmental justice populations.

Additional census information has been provided in Appendix C. This includes data for Rock Island County, Scott County, Rapids City, LeClaire, and the project-area census block groups. No part of the project area is located in Rapids City, but data for Rapids City is provided for context. All alternatives are located within the same census block groups, and therefore, the demographics are the same for each alternative. This data is consistent with the information developed during the Planning and Environment Linkage phase of the study (i.e., only Census Tract 204, Block Group 2 stands out as a block group where there is a potential environmental justice population). Minority populations in the project area census block groups are lower than at the county level, with the exception of Census Tract 204, Block Group 2). Median household income and percent owner occupancy is higher in the project-area block groups than at the county level. Percent persons below poverty level and percent unemployed are lower in the project-area block groups than at the county level. Rock Island County and two of the project-area census block groups experienced a decline in population between 2010 and 2019. Over the same period, Scott County, LeClaire, Rapids City, and two of the project-area census

block groups experienced an increase in population. Limited English Proficiency (LEP) ranged from 0.6 percent to 5.1 percent in the project-area census tracts.

I-88 Interchange Alternatives
None of the alternatives would impact environmental justice populations (See Table 3-2). Additional census information has been provided in Appendix C. This includes data for Rock Island County and the project-area census block groups. All alternatives are located within the same census block groups, and therefore, the demographics are the same for each alternative.

3.2 Constructability and Maintenance of Traffic

3.2.1 CONSTRUCTABILITY

I-80 MRB Alternatives
When comparing the alternatives, it was determined that Alternatives 4 and 5 would be less favorable than Alternatives 2 and 3 from a constructability standpoint (See Table 3-1) because they would involve a longer and more complex construction staging process. For Alternatives 4 and 5, construction of the new I-80 bridges would occur in two different stages. First, a new bridge would be constructed parallel to the existing bridge. The close proximity of the new bridge to the existing bridge may place additional constraints on pier locations, as the construction of the piers for the first new bridge would take place near the piers of the existing bridge while traffic is on that bridge. If the upstream/downstream separation of the proposed and existing piers is less than 25 feet, then it may be necessary to shift the location of the new piers away from the existing piers to a less optimal position. Once construction is complete, traffic would be shifted to the new bridge and the existing bridge would then be demolished. The new bridge, which is designed for one-way traffic, would need to be temporally modified to accommodate two-way traffic during construction, which would include a temporary concrete barrier in the median and substandard shoulder widths. This would also include the construction of temporary median crossovers and ramps at each end of the bridge. Following the demolition of the existing bridge, a second new bridge would then be constructed on the existing alignment. Once the second bridge is complete, traffic would be shifted so that there is one-way traffic on each bridge, which would require removing the temporary two-way traffic modifications to the first new bridge so that it can accommodate one-way traffic. Based on the more complex construction staging process, the construction of Alternatives 4 and 5 could take approximately two more years than Alternatives 2 and 3.

I-88 Interchange Alternatives
When comparing the alternatives, it was determined that Alternative D would be less favorable than Alternatives A and B from a constructability standpoint because it would involve the construction of four flyover ramps within the existing interchange (See Table 3-2).

3.2.2 MAINTENANCE OF TRAFFIC

I-80 MRB Alternatives
When comparing the alternatives, it was determined that Alternatives 2 and 3 would have the least impacts to maintenance of traffic (MOT) because they would not require staged construction of the new bridges where traffic is switched back and forth between bridges. Alternatives 4 and 5 would have moderate impacts to MOT because it would require staged construction as described in Section 3.2.1, which would require two more years of MOT. In addition, from a safety perspective, the two-way traffic for Alternatives 4 and 5 would temporarily be shifted over for approximately two years to the new one-way bridge, which would have substandard shoulder widths (less than existing conditions) because the new one-way bridge would be narrower than the existing two-way I-80 bridge. Shifting both directions of I-80 traffic over to the new one-way bridge would also include the use of temporary barrier which is inferior to permanent barrier in the event of a major crash and would require one direction of travel to cross over the median to get into the counter-flow direction across the bridge, and then cross back over the median again after crossing the bridge. This would also decrease safety for Alternatives 4 and 5 during the estimated two years of construction required to build the second bridge.

I-88 Interchange Alternatives
When comparing the alternatives, it was determined that Alternatives A and B would have the least impacts to MOT because they would not involve the construction of four flyover ramps within the existing interchange like Alternative D, which would have moderate impacts to MOT.

3.3 Estimated Construction Cost Comparison

*(**Note**: Cost information provided in this document considered preliminary construction costs only and did not consider contingency, margins, escalation, environmental mitigation, and right-of-way. The cost information developed was only intended to determine differentiation amongst alternatives and is subject to change. Construction cost is presented as a ratio compared to the least cost option.)*

I-80 MRB Alternatives
Alternative 2 would have the lowest construction cost and was assigned a cost factor of 1.00 while Alternative 3 would have the highest construction cost. Alternative 3 would cost approximately 14 percent more than Alternative 2 and was assigned a cost factor of 1.14 (See Table 3-1).

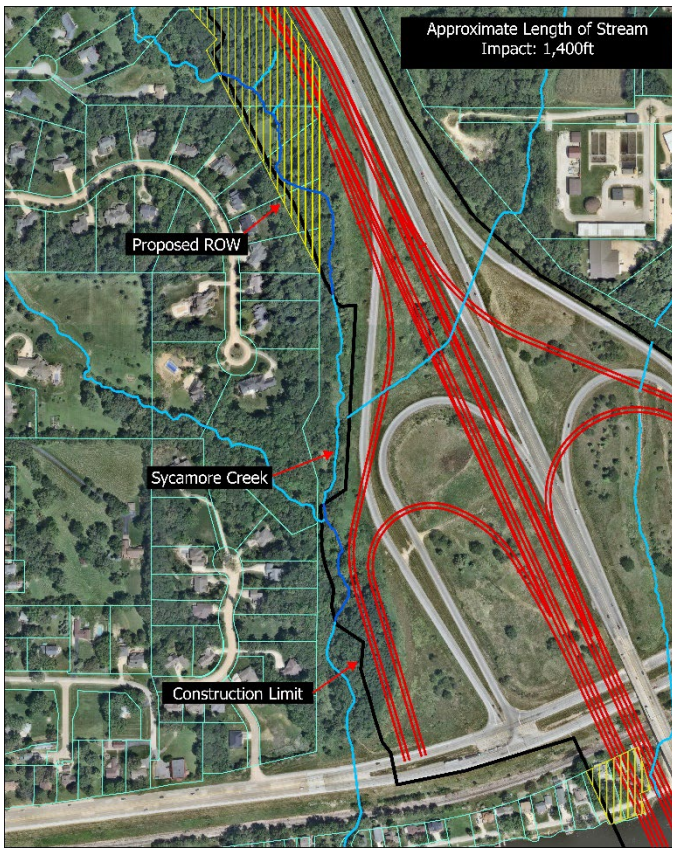
I-88 Interchange Alternative
Alternative A would have the lowest construction cost and was assigned a cost factor of 1.00 while Alternative D would have the highest construction cost. Alternative D would cost approximately 300 percent more than Alternative A as was assigned a cost factor 4.00 (See Table 3-2).

4 Identification of the Preferred Alternative

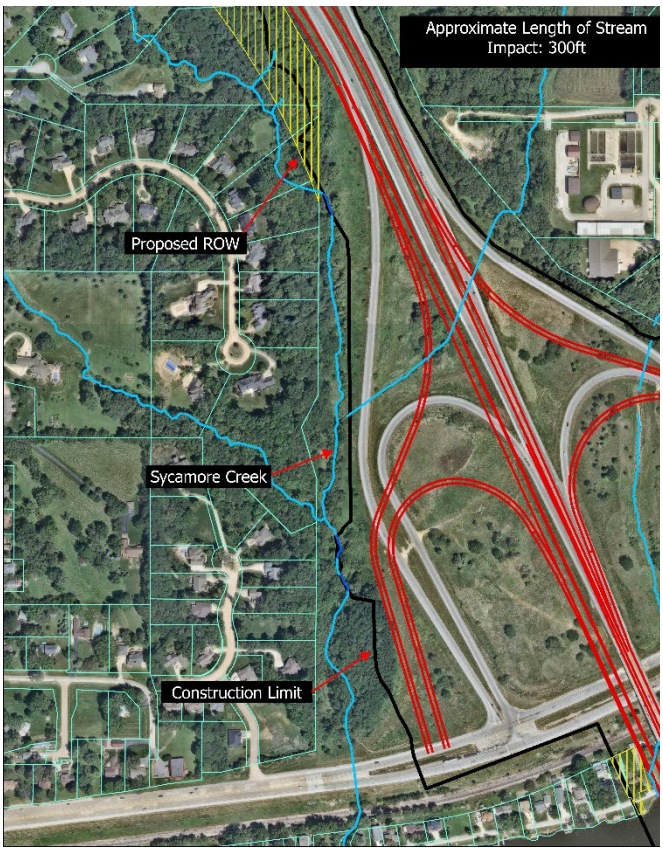
4.1 I-80 MRB Alternatives

I-80 MRB Alternatives
As shown on Table 3-1, Alternatives 4 and 5 would generally have lower overall environmental impacts than Alternatives 2 and 3. The primary reason is that Alternatives 4 and 5 would use the existing I-80 bridge alignment and right-of-way more than Alternatives 2 and 3. Alternatives 2 and 4 (alternatives that shift I-80 to the east) had more residential relocations, commercial property impacts, and wetland impacts than Alternatives 3 and 5 (alternatives that shift I-80 to the west). The additional residential relocations associated with Alternatives 2 and 4 are primarily associated with the shifting of the IL 84 interchange westbound ramps to the east. For Alternatives 3 and 5, these ramps stay relatively in the same location and, therefore, avoid impacting these residences. No other impacts in the other environmental categories listed in Table 3-1 were identified as differentiators between the alternatives. In some categories, impacts would be greater when shifting east with Alternatives 2 and 4 (e.g., forested habitat), and in some categories, impacts would be greater when shifting west with Alternatives 3 and 5 (e.g., streams). Because of the greater residential relocations, commercial property impacts, and wetland impacts associated with Alternatives 2 and 4 and because there were no other differentiators between the alternatives with regard to environmental impacts, it was determined that Alternatives 2 and 4 should not be selected as the Preferred Alternative. Therefore, from there, the focus was deciding between Alternatives 3 and 5. These two alternatives would have three total relocations (three residential relocations with Alternative 3 and two residential relocations and one commercial relocation with Alternative 5). In all the other environmental categories, except special waste, Alternative 5 would have the same or fewer impacts than Alternative 3, including less impacts to Sycamore Creek and less impacts to other residential properties in Iowa (See Figure 4-1). Alternative 5 would impact approximately 1,100 feet less of Sycamore Creek (1,400 feet with Alternative 3 versus 300 feet with Alternative 5) and would result in fewer impacts to the back yards of the adjacent residential development. Additionally, as noted in Section 3.1.9, Alternative 3 and Alternative 5 would both impact the Mississippi Rapids Rest Area (See Figure 4-2). A retaining wall would be required to avoid impacts to the rest area building. Since Alternative 3 would result in a wider new footprint, an additional retaining wall would be required to avoid impacting the access road. In all, approximately 1,900 more feet of retaining wall would be required with Alternative 3 when compared to Alternative 5. For these reasons, Alternative 5 is viewed as a better alternative from an environmental perspective.

FIGURE 4-1 – POTENTIAL IMPACTS AT SYCAMORE CREEK



ALTERNATIVE 3 BRIDGE REPLACEMENT WEST



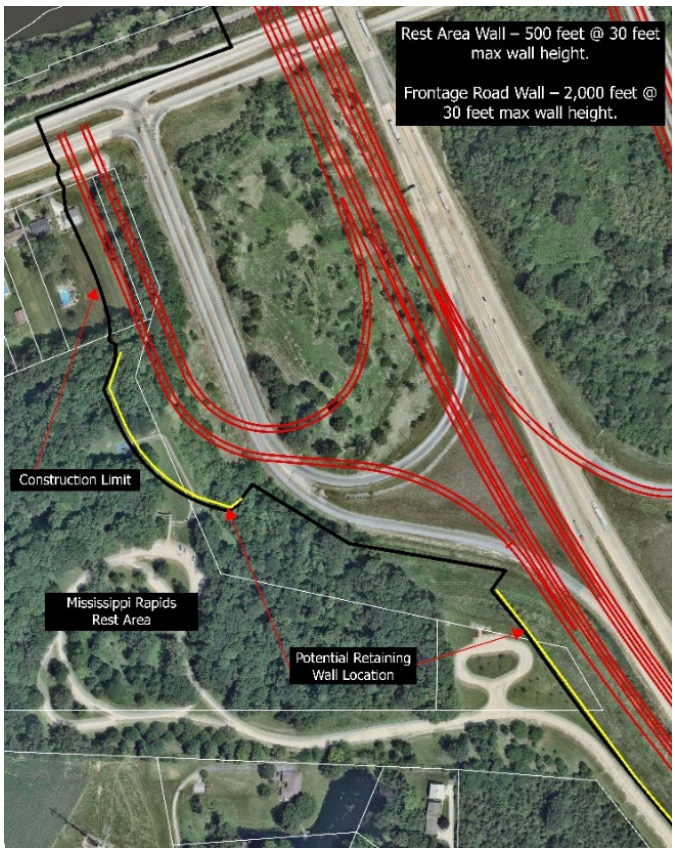
ALTERNATIVE 5 COMPANION BRIDGE WEST

The use of the existing bridge alignment with Alternative 5, however, would result in more constructability issues and maintenance of traffic impacts than Alternative 3. Ultimately, though, it was determined that since these constructability and maintenance of traffic issues associated with Alternative 5 would be temporary, they would be more acceptable than the greater permanent environmental impacts associated with Alternative 3. As a result, Alternative 5 is recommended as the Preferred Alternative for the I-80 MRB.

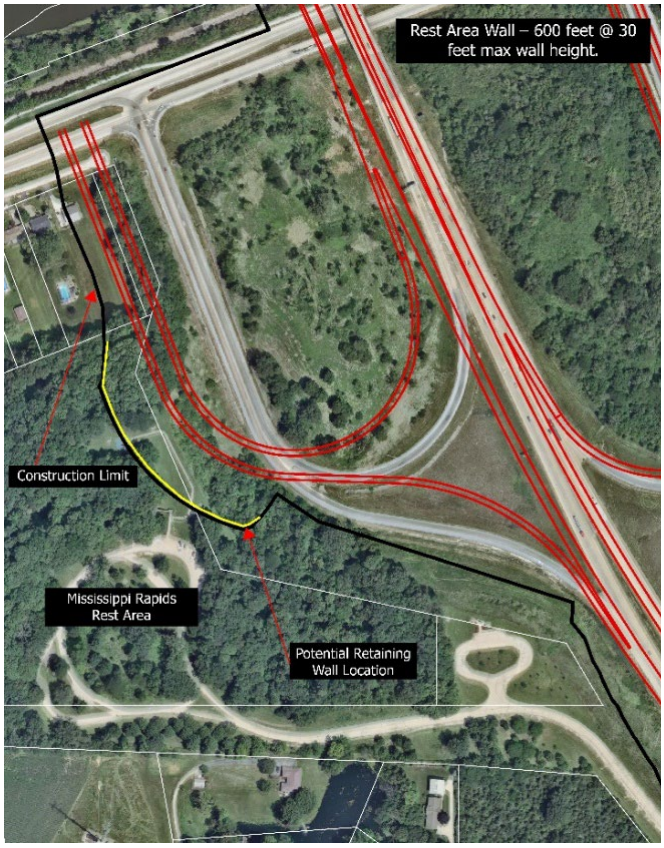
As the project advances, the Preferred Alternative will be evaluated further to determine if impacts can be minimized, including:

- Considering slope and ditch modifications to eliminate the one business relocation.
- Considering slope modifications adjacent to Sycamore Creek to minimize or avoid impacts to this stream.
- Evaluating the proposed design adjacent to the Mississippi Rapids Rest Area to determine if impacts can be minimized.
- Evaluating potential construction scenario and staging options to minimize construction duration.

FIGURE 4-2 – POTENTIAL IMPACTS TO MISSISSIPPI RAPIDS REST AREA



ALTERNATIVE 3 BRIDGE REPLACEMENT WEST



ALTERNATIVE 5 COMPANION BRIDGE WEST

4.2 I-88 Interchange Alternatives

Alternative D is not recommended as the Preferred Alternative because the construction cost would be four times more than Alternative A and approximately three times the cost of Alternative B. It would also have more than two times the impacts to right-of-way and prime farmland, more than three times the impacts to floodplains, and more than five times the impacts to linear feet of streams compared to Alternatives A and B. Finally, Alternative D is considered less favorable with regard to constructability and would have more MOT impacts compared to Alternatives A and B. Although Alternative D represents an avoidance alternative for the Amowa Forest Preserve and would have the least wetland impacts, the significantly higher construction cost and impacts to several other resources would not make it a feasible and prudent avoidance alternative in accordance with Section 4(f) and Section 404 guidelines. Due to the significant difference in design and associated impacts between Alternative D and Alternatives A and B, any design modifications to Alternative D to try and reduce costs and impacts to make them more comparable to Alternatives A and B would have negligible results. As discussed in Section 3.1.9, the project team has been and will continue to coordinate with the Forest Preserve. During final design, additional efforts would be made to further reduce impacts to the preserve. Based on the anticipated impacts from Alternatives A or B and coordination with the Forest Preserve, it is anticipated that the impacts would be *de minimis*.

When comparing Alternatives A and B, Alternative B overall would result in the same or lower environmental impacts than Alternative A. Although the construction cost for Alternative B would be approximately 26 percent higher than Alternative A, primarily due to the I-80 eastbound to I-88 eastbound flyover ramp, it would eliminate the loop ramp for that same movement that is provided by Alternative A. Due to the crash trends that were associated with the existing loop ramp for that movement (i.e., seven trucks either overturned or ran off the road), it was determined that the additional cost for

with the flyover ramp was warranted because it would improve safety more so than the loop ramp associated with Alternative A. As a result, Alternative B is recommended as the Preferred Alternative for the I-88 interchange.

4.3 Preferred Alternative

After Identifying a Preferred Alternative for the I-80 MRB (i.e., Alternative 5) and I-88 interchange (i.e., Alternative B), both alternatives were combined to create a single Preferred Alternative for the entire project called Preferred Alternative 5B. The combined impacts associated with Preferred Alternative 5B are presented in Table 4-1.

TABLE 4-1 – PREFERRED ALTERNATIVE

Evaluation Criteria	I-80 MRB Alternative 5	I-88 Interchange Alternative B	Preferred Alternative 5B
Environmental Impacts			
Residential Relocations (number)	2	0	2
Commercial Relocations (number)	1	3	4
Right-of-way (acres)	14	22	36
Delineated Wetlands (acres)	0.66	9.96	10.62
Streams (number/linear feet)	7/6,155	1/545	8/6,700
Floodplain (number/acres)	3/11	1/36	4/47
Floodways (number/acres)	2/22	0/0	2/22
Threatened and Endangered Species (number)	4	0	4
Forested Habitat (Potential Indiana Bat and NLEB Habitat) (acres)	28	9	37
Public Parks/Recreation Areas/Section 4(f) Resources Great River Trail (number)/Amowa Forest Preserve (acres)	1/NA	NA/2	1/2
Impacts Mississippi Rapids Rest Area (Yes/No)	Yes	NA	Yes
Historic and Archaeological Resources/Section 106 Resources (number)	2	0	2
REC Sites (Illinois)/EDR site (Iowa) (number)	4/3	10/NA	14/3
Prime Farmland Soils (acres)	13	22	35
Community Facilities and Services (number)	0	0	0
Environmental Justice Populations (number of EJ census block groups)	1	0	1
Engineering			
Constructability	• Longer schedule • 6 stages • River bridges built consecutively	Simpler Construction	N/A
Maintenance of Traffic during Construction	• Longer schedule • All traffic to operate on new eastbound bridge while westbound bridge is constructed • 2 shifts of river bridge traffic	Simpler MOT	N/A

APPENDIX A

I-80 MISSISSIPPI RIVER BRIDGE ALTERNATIVES FIGURES

FIGURE A-1: ALTERNATIVE 2 – BRIDGE REPLACEMENT EAST (RELOCATIONS, SECTION 4(F), AND ENVIRONMENTAL JUSTICE)

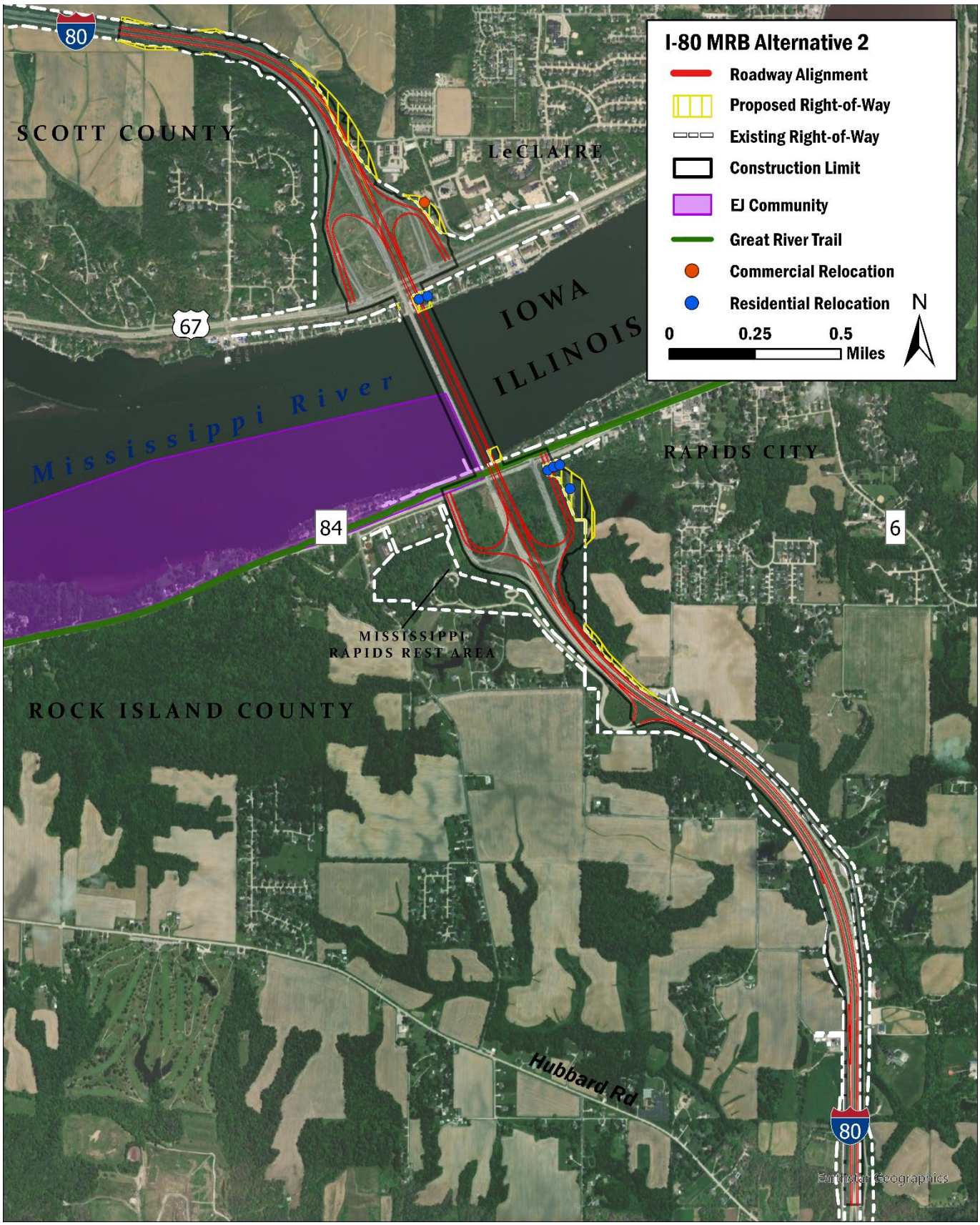


FIGURE A-2: ALTERNATIVE 3 – BRIDGE REPLACEMENT WEST (RELOCATIONS, SECTION 4(F), AND ENVIRONMENTAL JUSTICE)

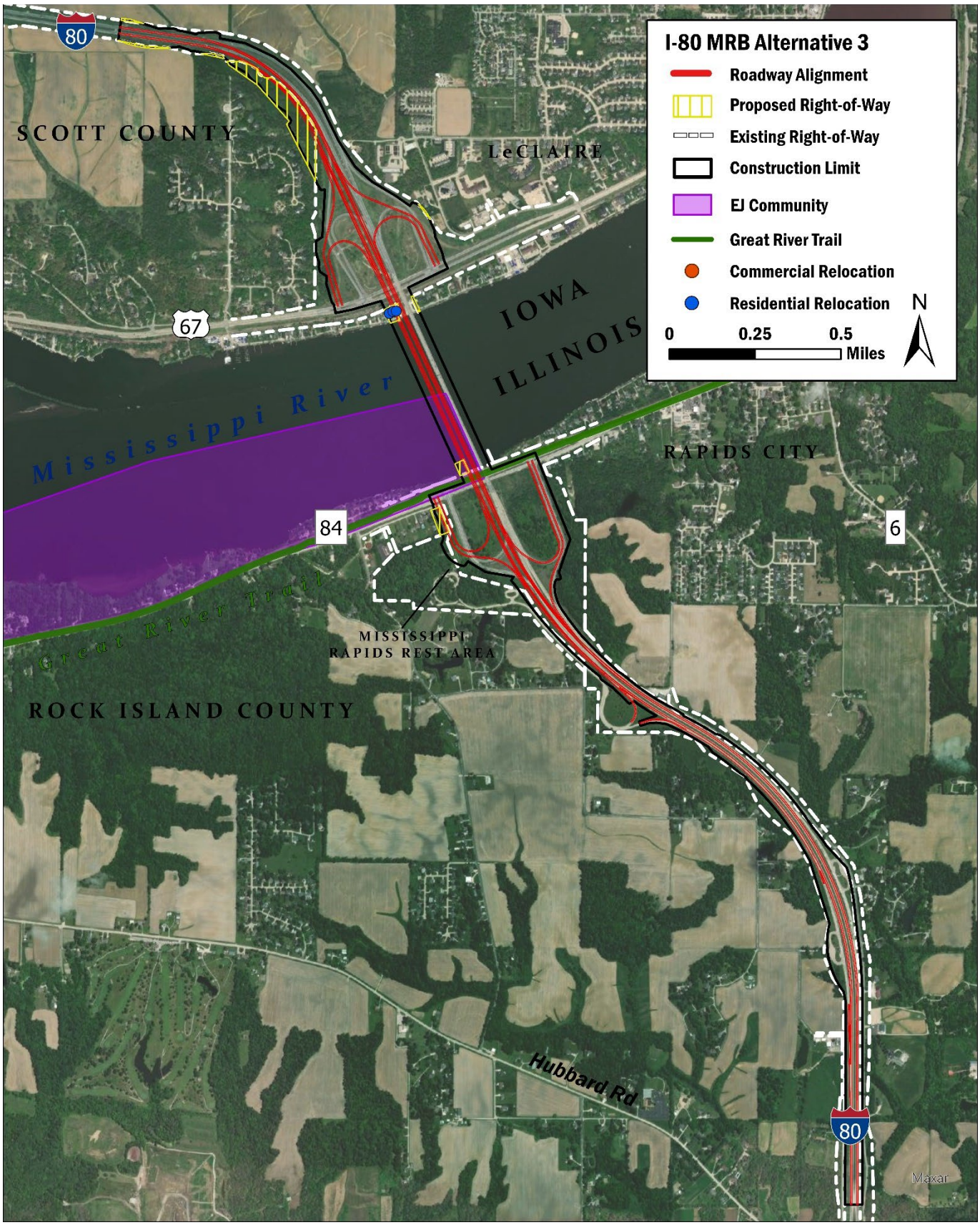


FIGURE A-3: ALTERNATIVE 4 – NEW COMPANION BRIDGE EAST AND REPLACE EXISTING (RELOCATIONS, SECTION 4(F), AND ENVIRONMENTAL JUSTICE)

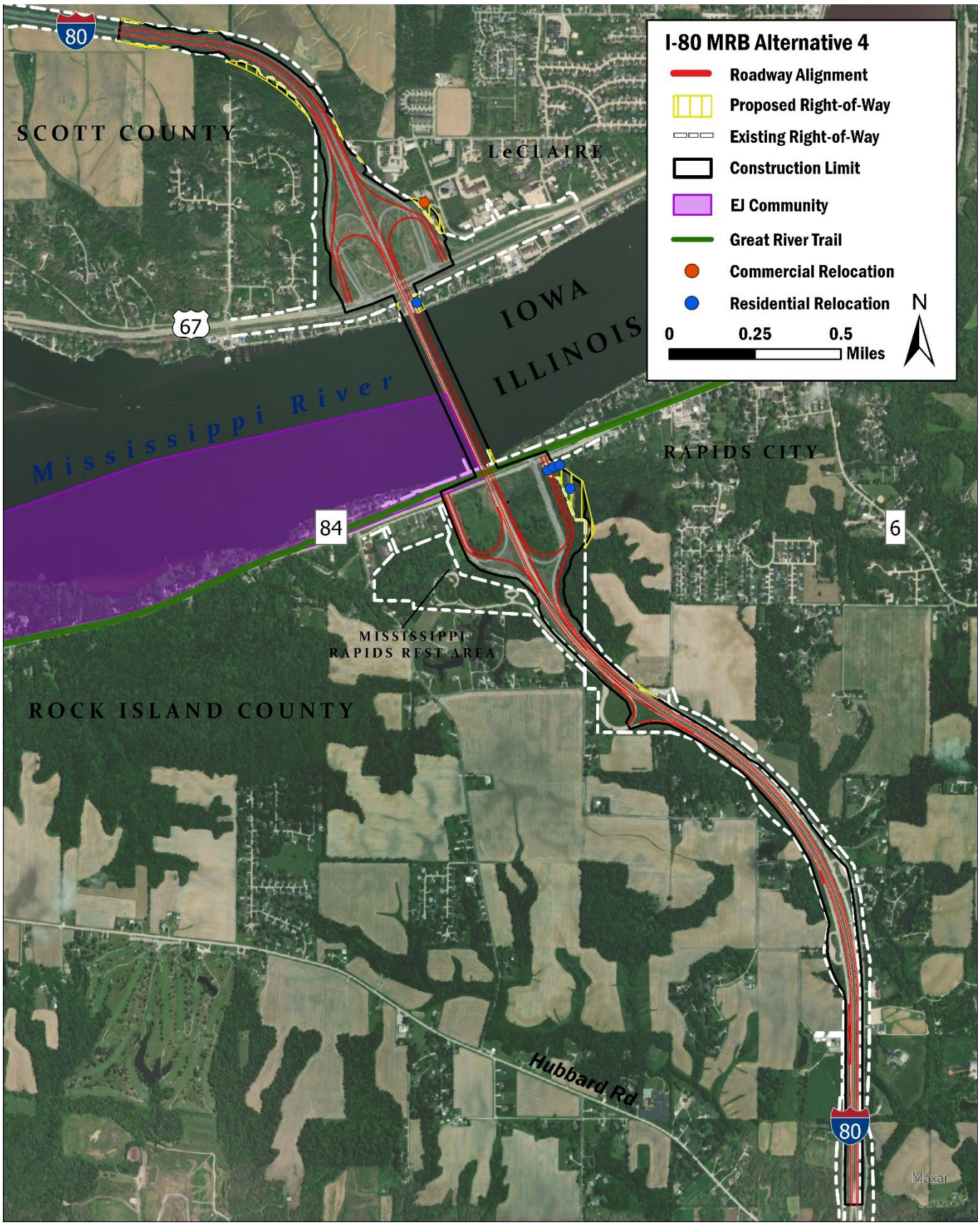


FIGURE A-4: ALTERNATIVE 5 – NEW COMPANION BRIDGE WEST AND REPLACE EXISTING (RELOCATIONS, SECTION 4(F), AND ENVIRONMENTAL JUSTICE)

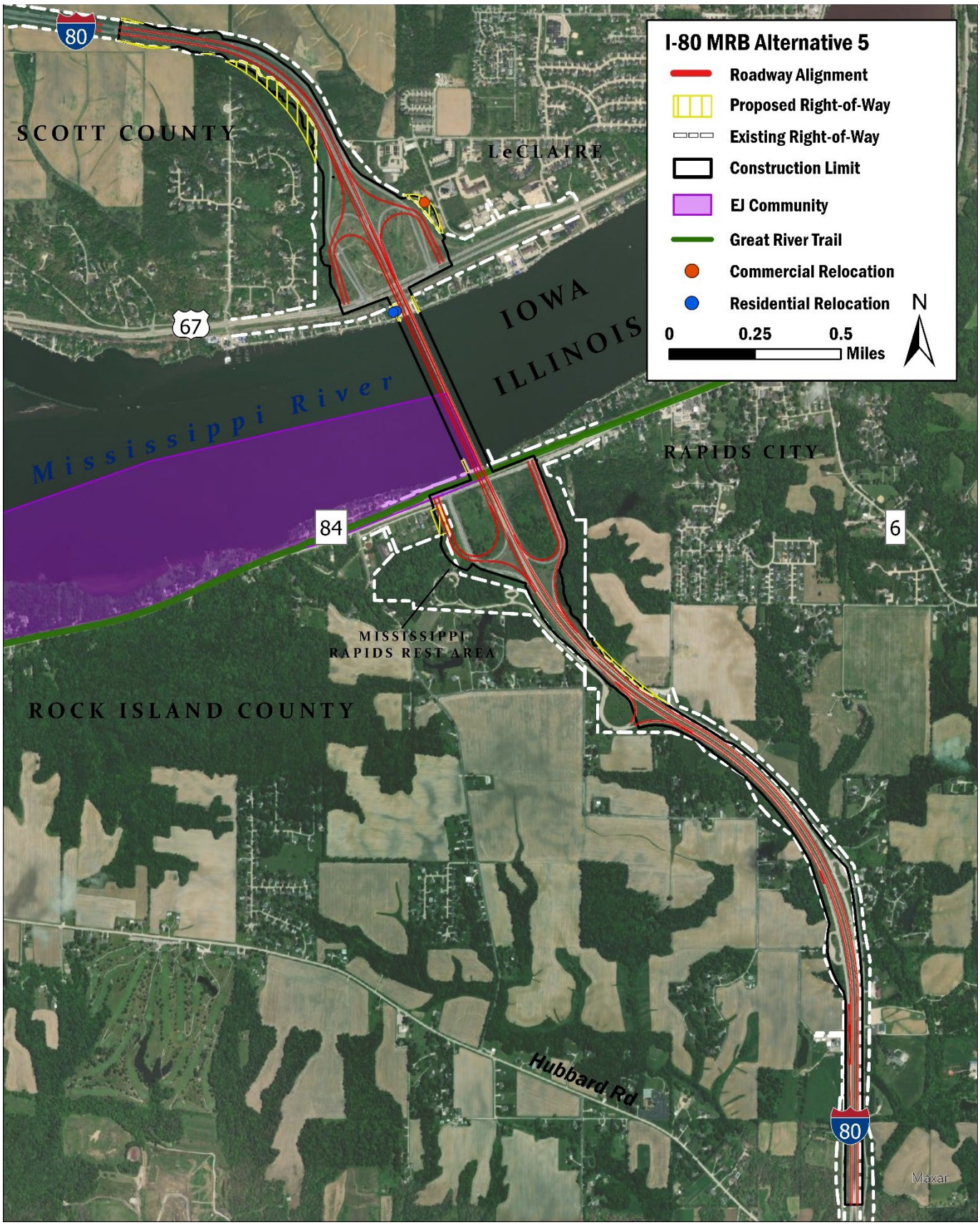


FIGURE A-5: ALTERNATIVE 2 – BRIDGE REPLACEMENT EAST (STREAMS, WETLANDS, FLOODPLAIN, AND FLOODWAY)

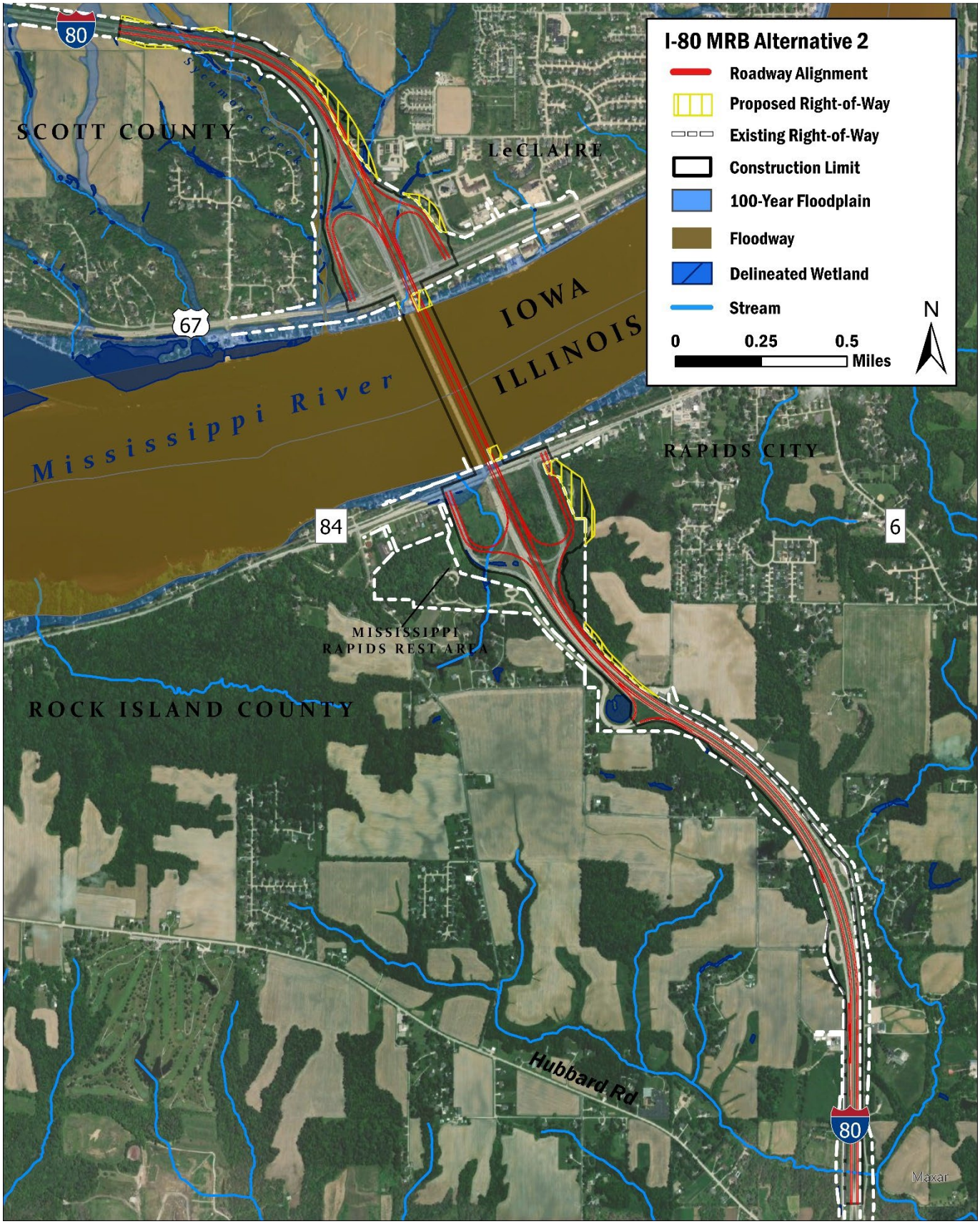


FIGURE A-6: ALTERNATIVE 3 – BRIDGE REPLACEMENT WEST (STREAMS, WETLANDS, FLOODPLAIN, AND FLOODWAY)

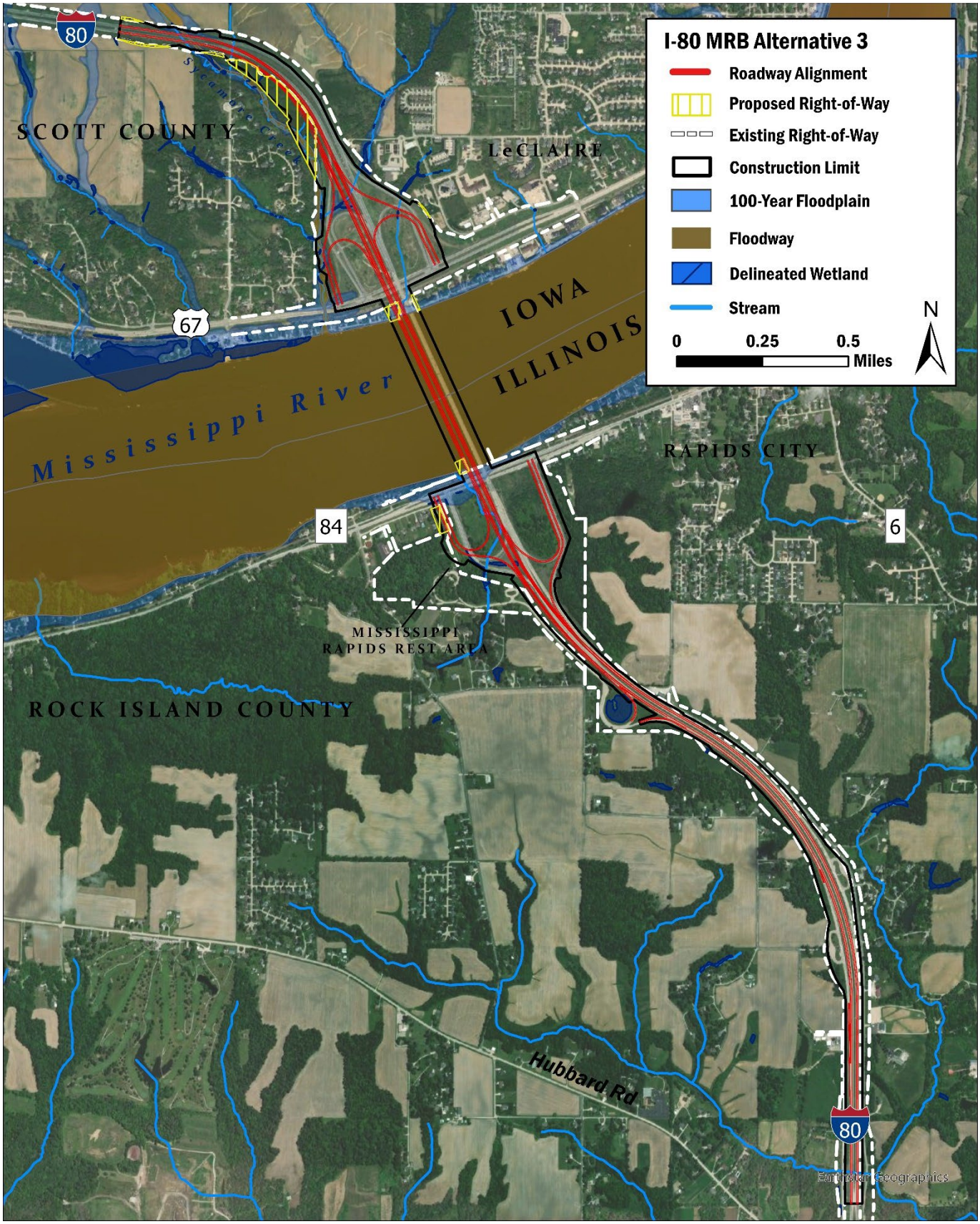


FIGURE A-7: ALTERNATIVE 4 – NEW COMPANION BRIDGE EAST AND REPLACE EXISTING (STREAMS, WETLANDS, FLOODPLAIN, AND FLOODWAY)

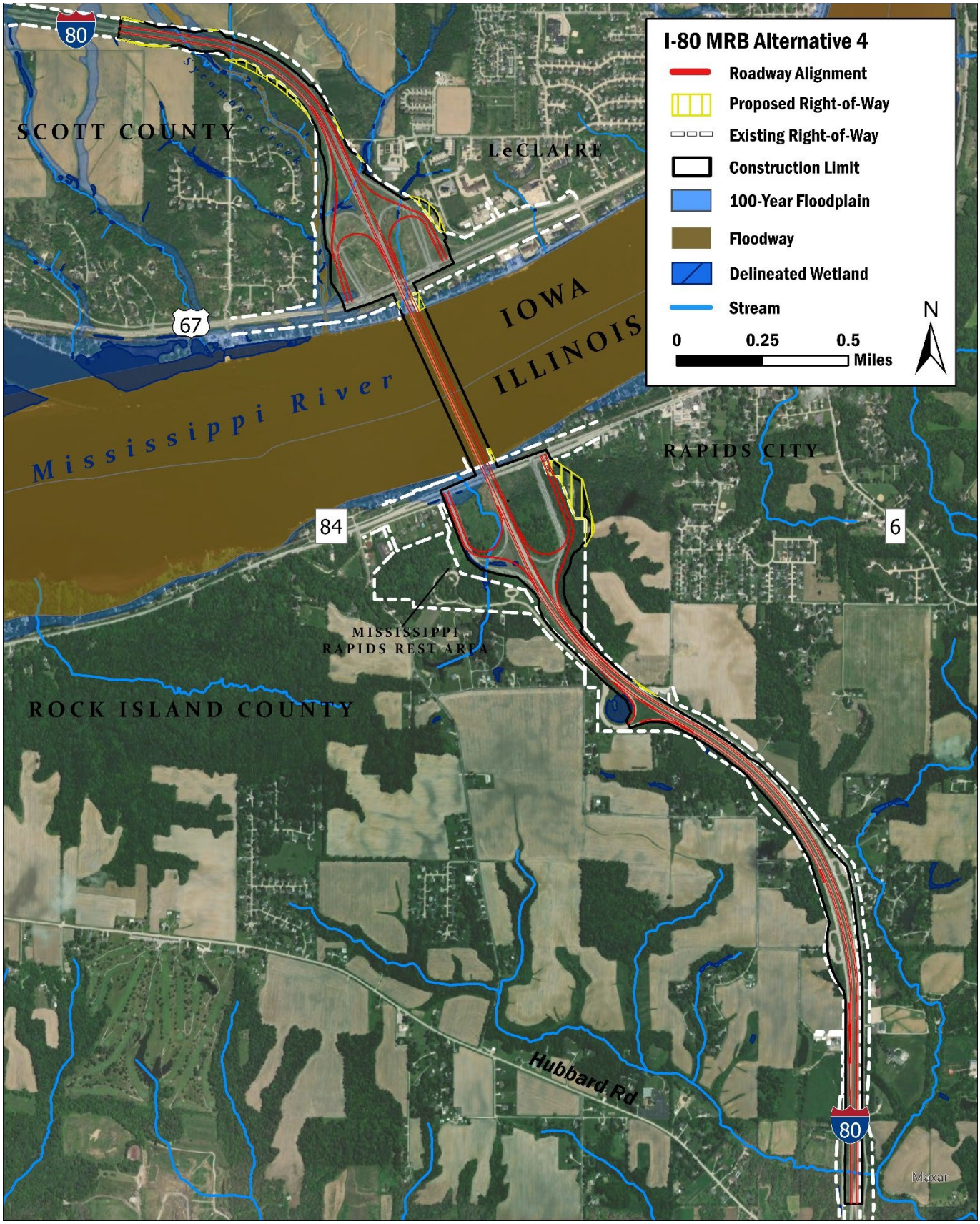


FIGURE A-8: ALTERNATIVE 5 – NEW COMPANION BRIDGE WEST AND REPLACE EXISTING (STREAMS, WETLANDS, FLOODPLAIN, AND FLOODWAY)

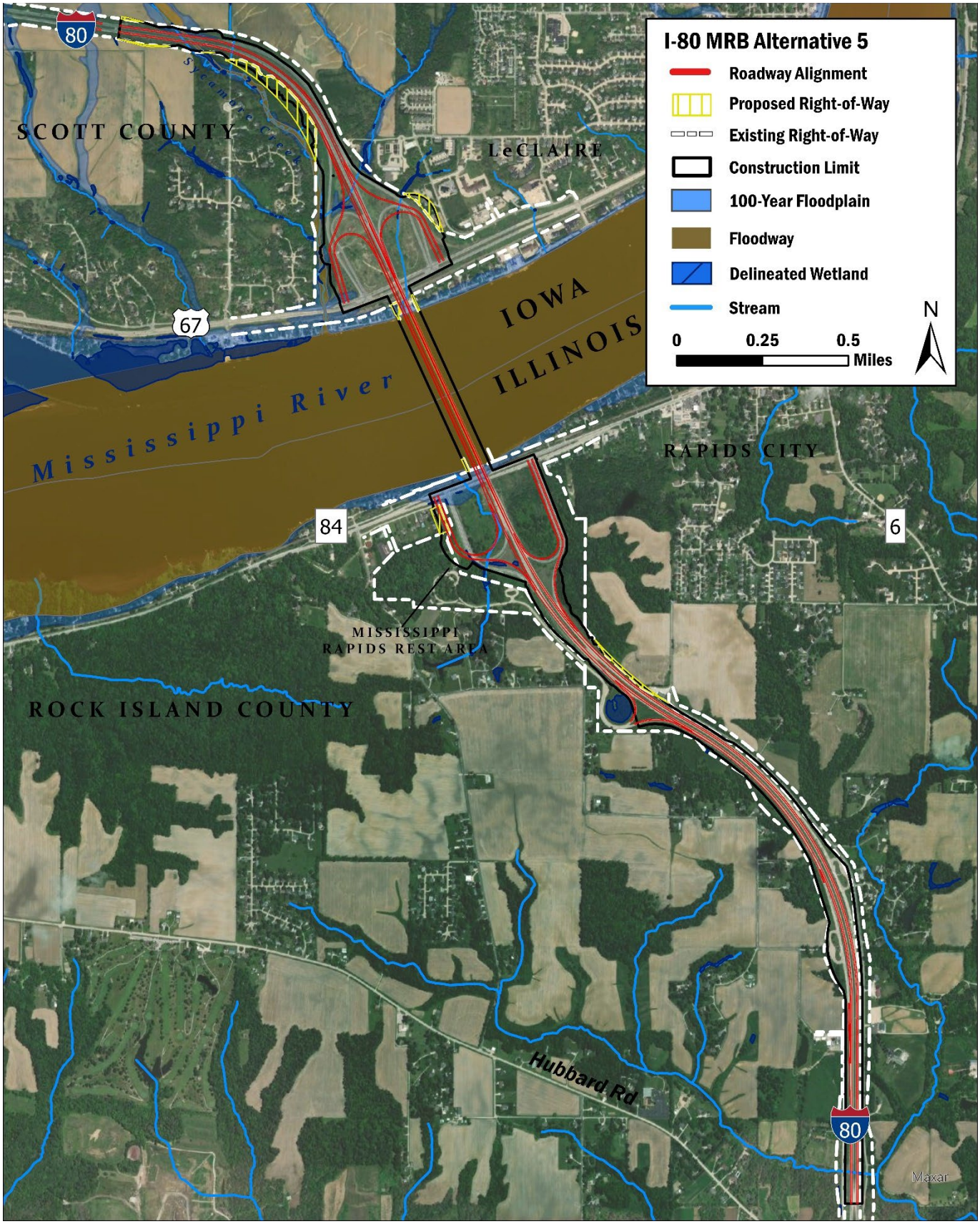


FIGURE A-9: ALTERNATIVE 2 – BRIDGE REPLACEMENT EAST (FORESTED HABITAT AND PRIME FARMLAND)

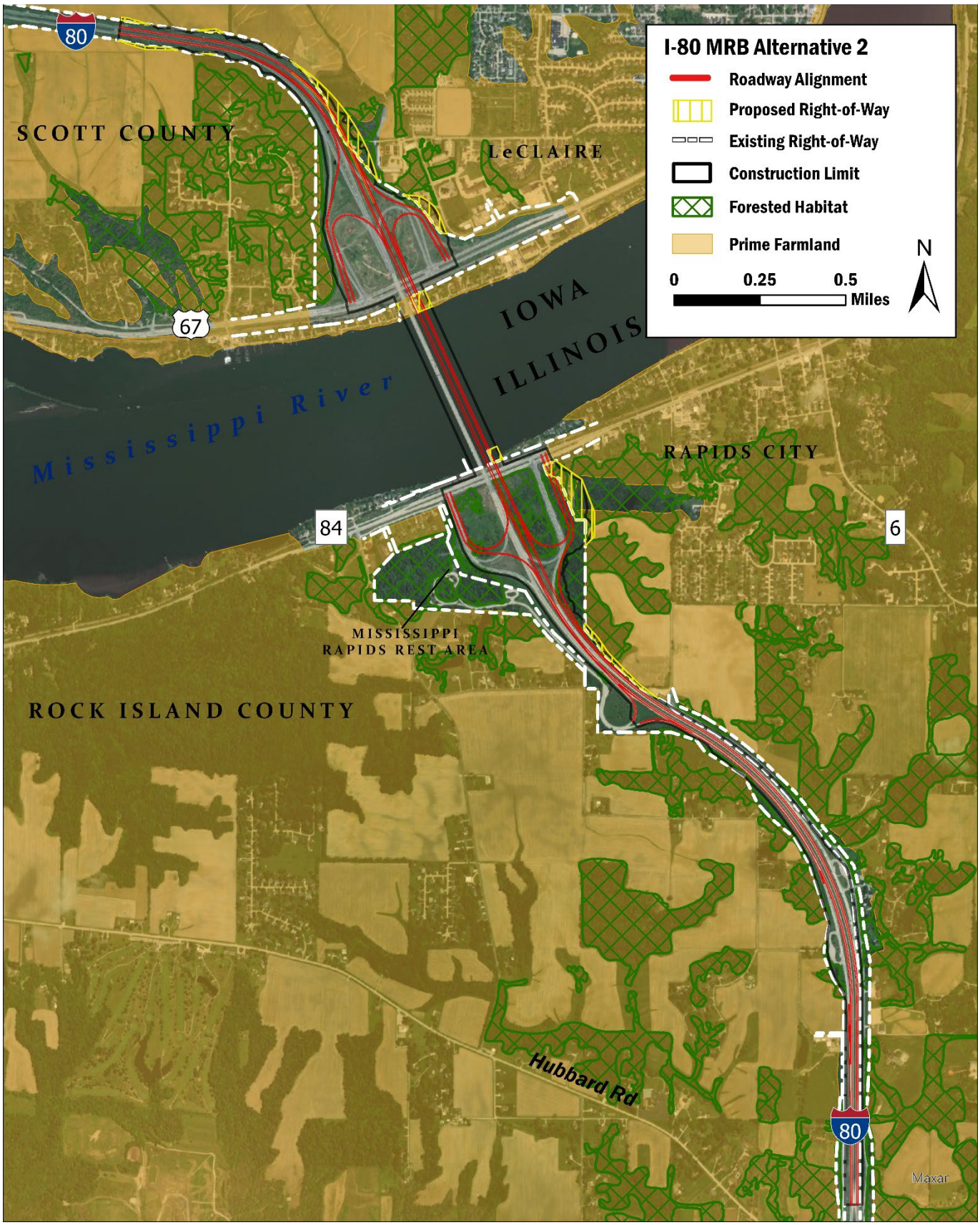


FIGURE A-10: ALTERNATIVE 3 – BRIDGE REPLACEMENT WEST (FORESTED HABITAT AND PRIME FARMLAND)

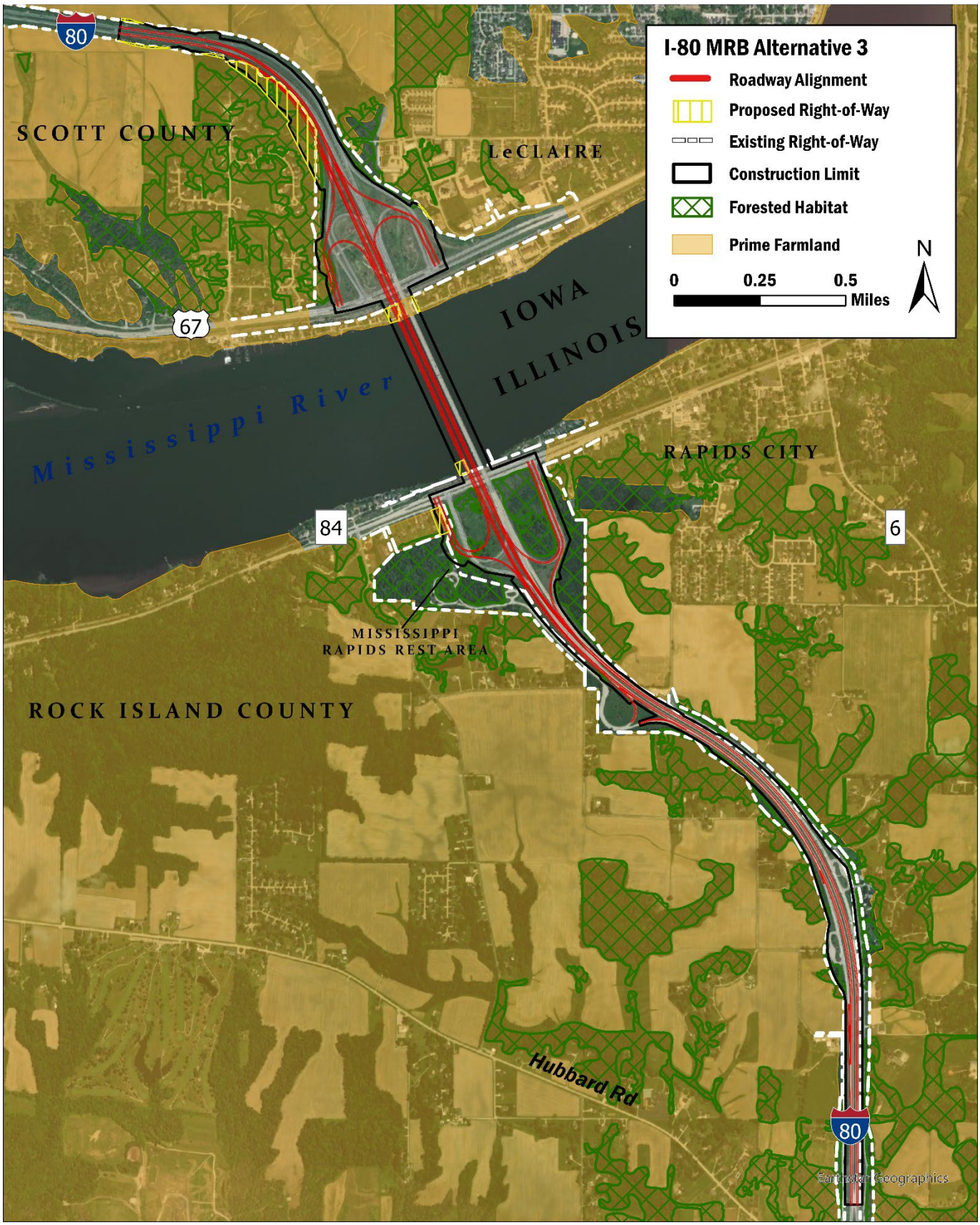


FIGURE A-11: ALTERNATIVE 4 – NEW COMPANION BRIDGE EAST AND REPLACE EXISTING (FORESTED HABITAT AND PRIME FARMLAND)

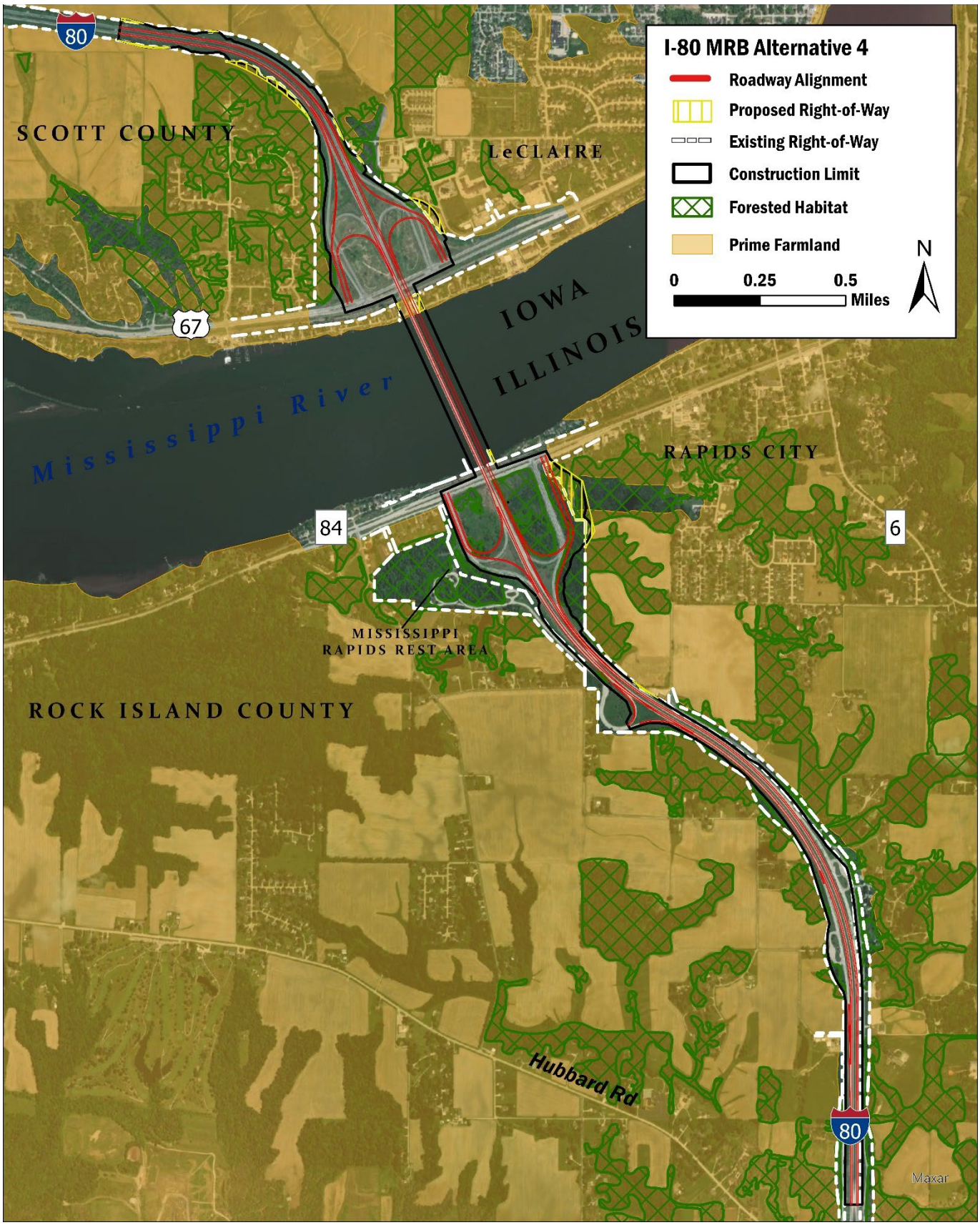


FIGURE A-12: ALTERNATIVE 5 – NEW COMPANION BRIDGE WEST AND REPLACE EXISTING (FORESTED HABITAT AND PRIME FARMLAND)

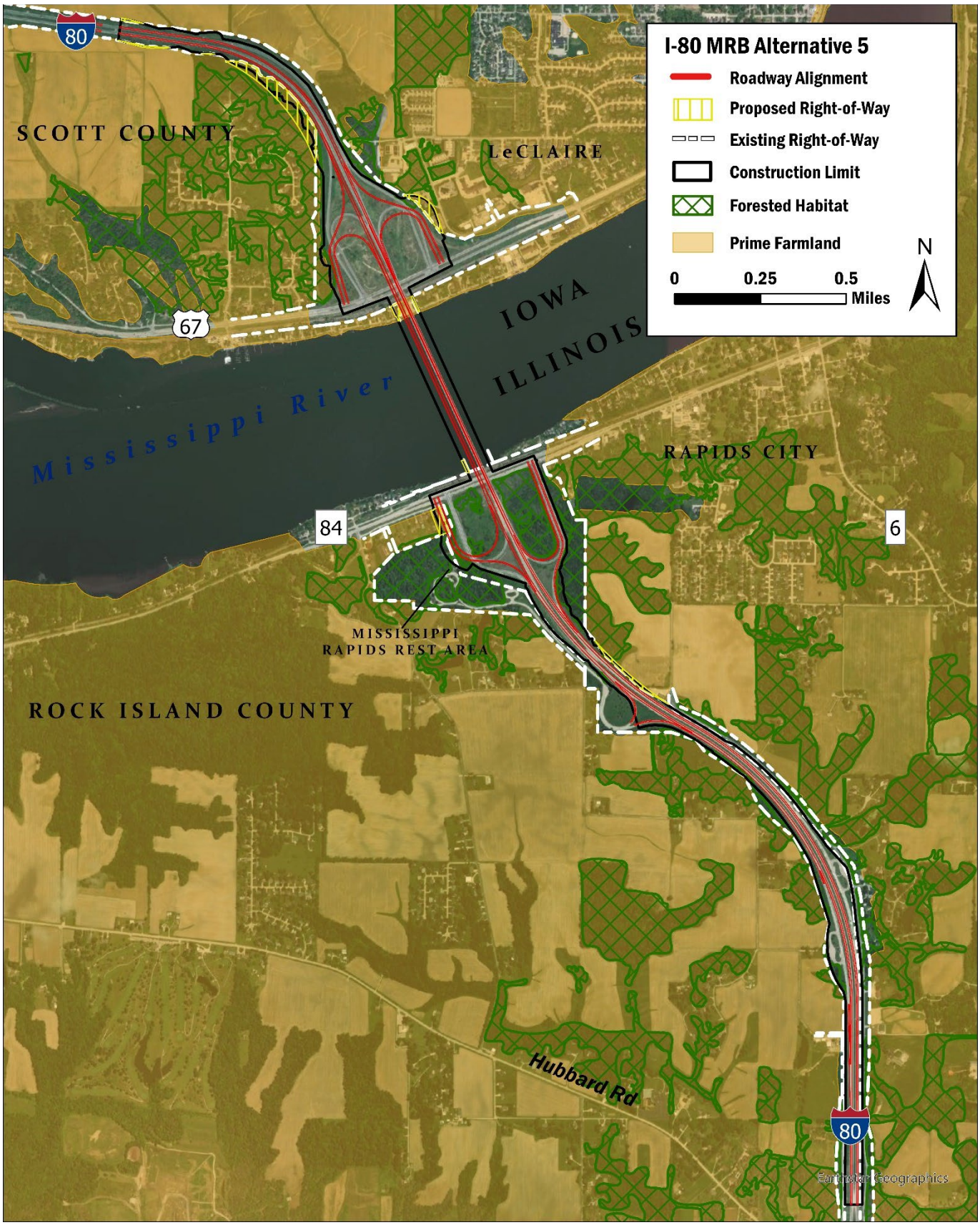


FIGURE A-13: ALTERNATIVE 2 – BRIDGE REPLACEMENT EAST (SPECIAL WASTE)

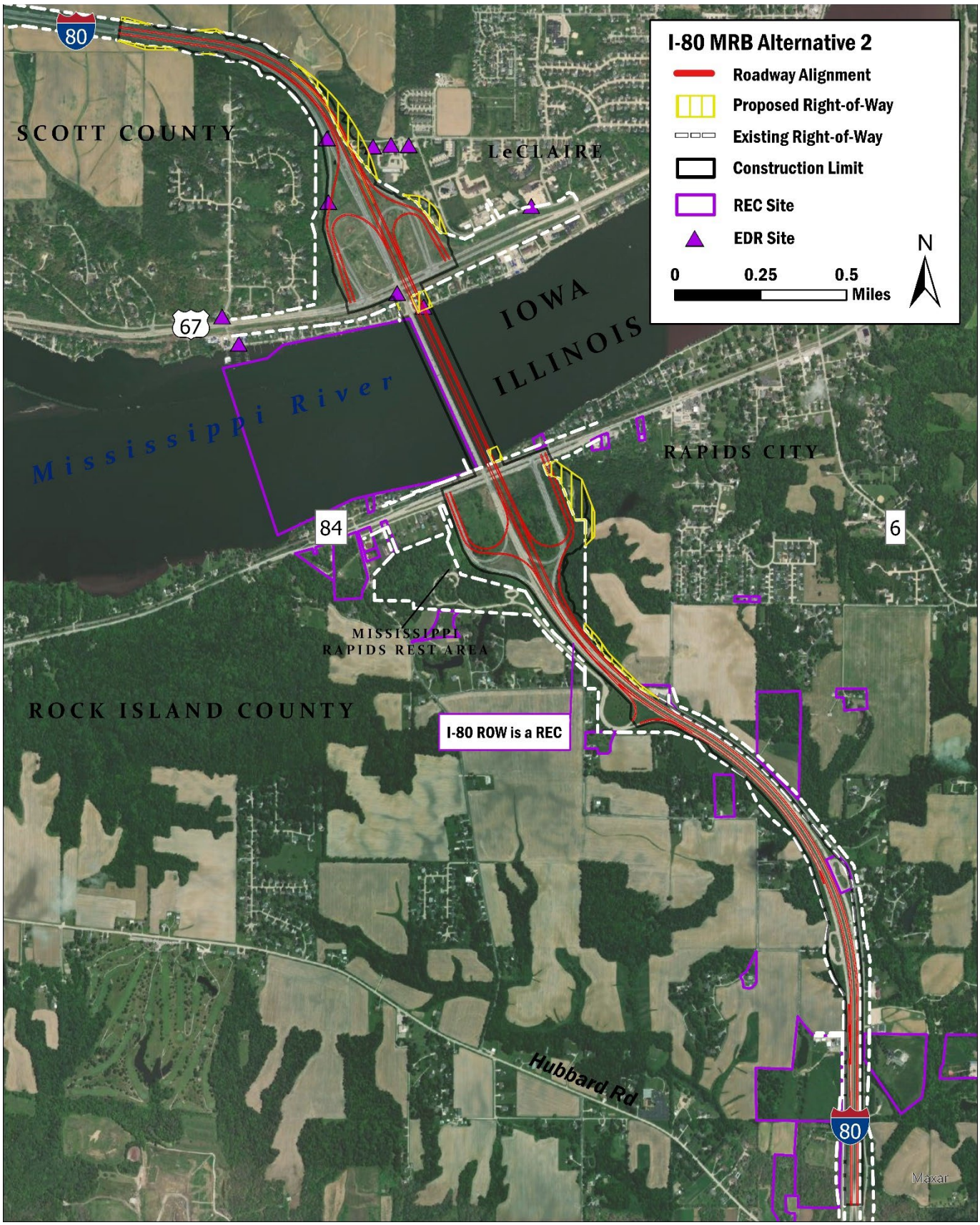


FIGURE A-14: ALTERNATIVE 3 – BRIDGE REPLACEMENT WEST (SPECIAL WASTE)

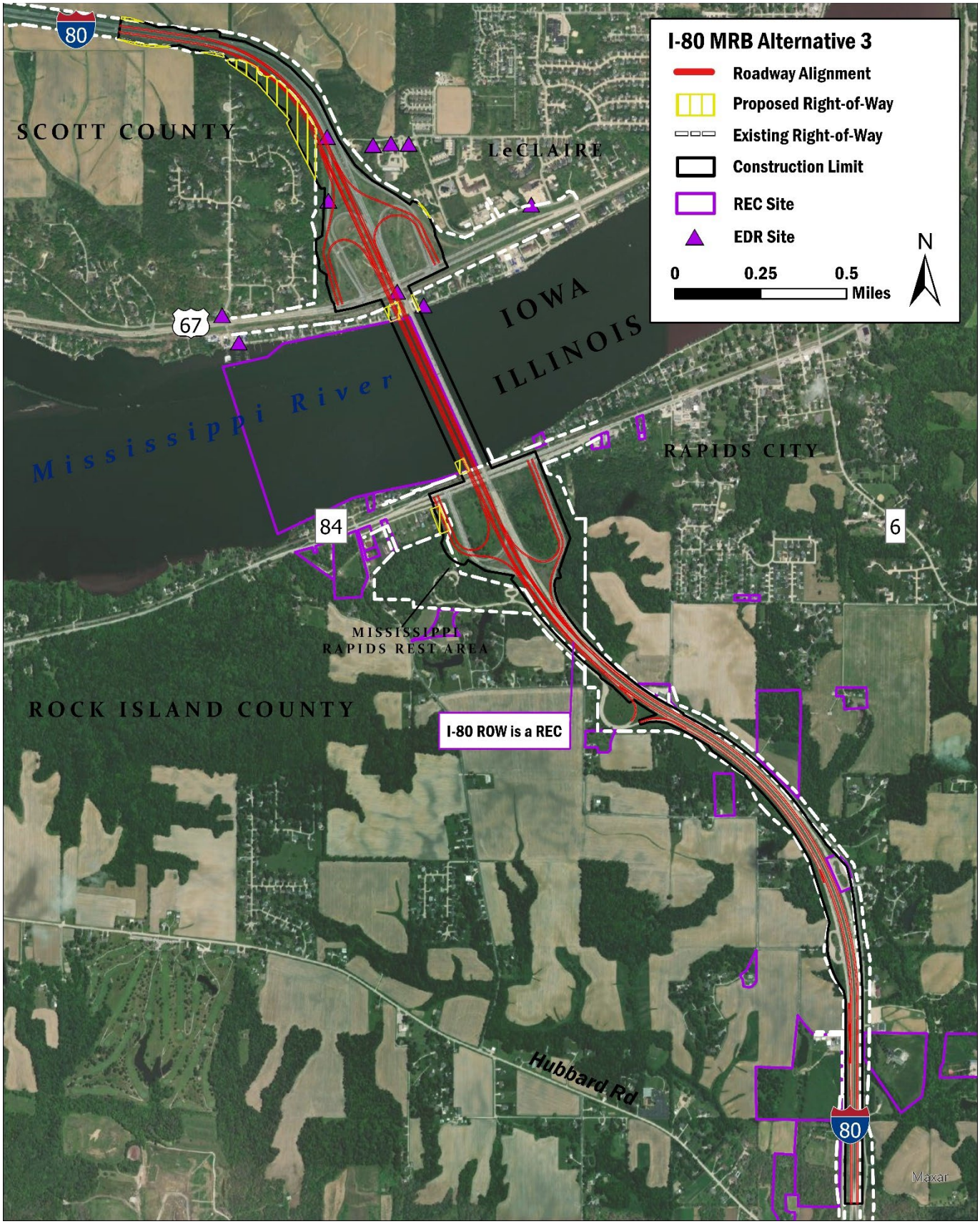


FIGURE A-15: ALTERNATIVE 4 – NEW COMPANION BRIDGE EAST AND REPLACE EXISTING (SPECIAL WASTE)

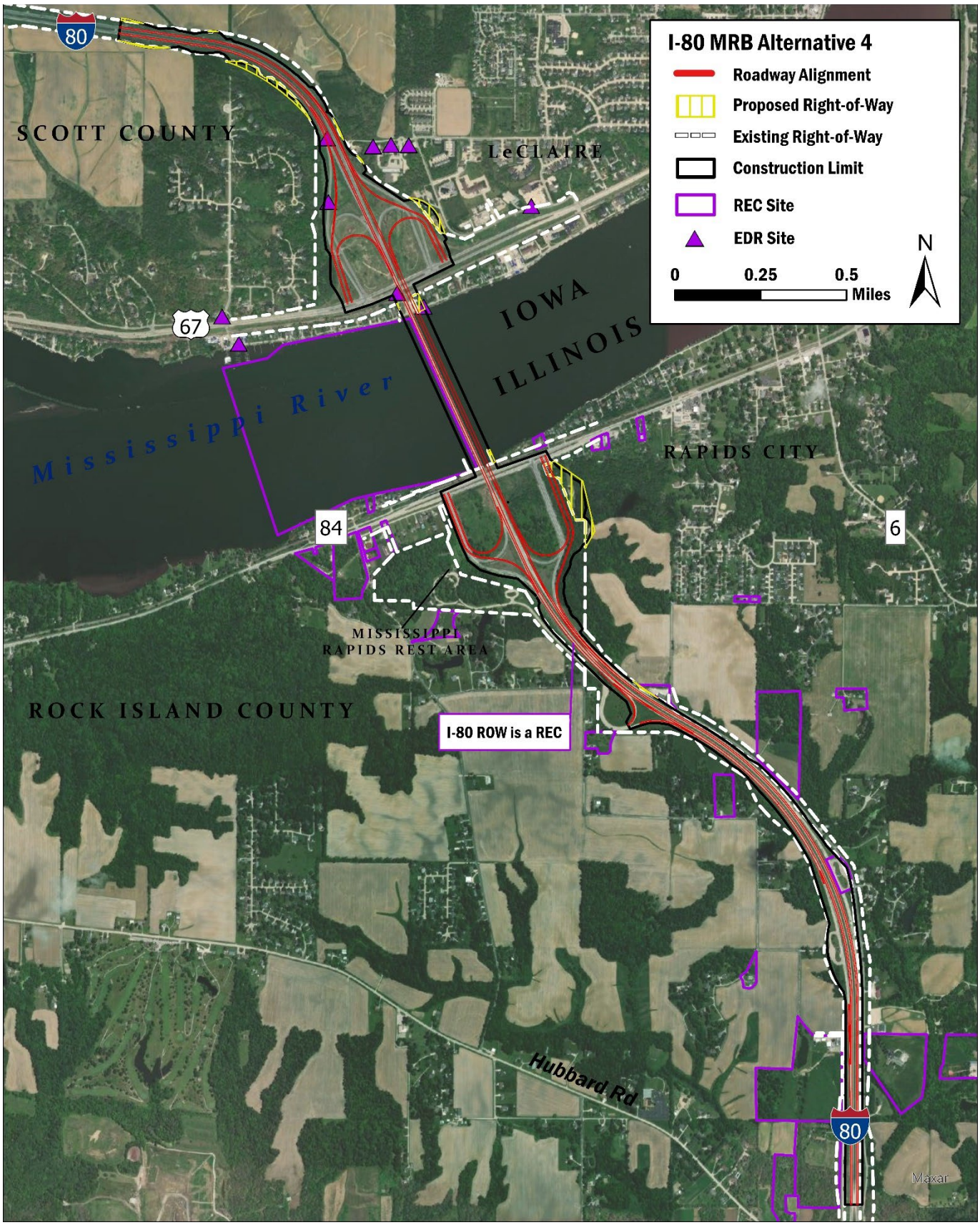
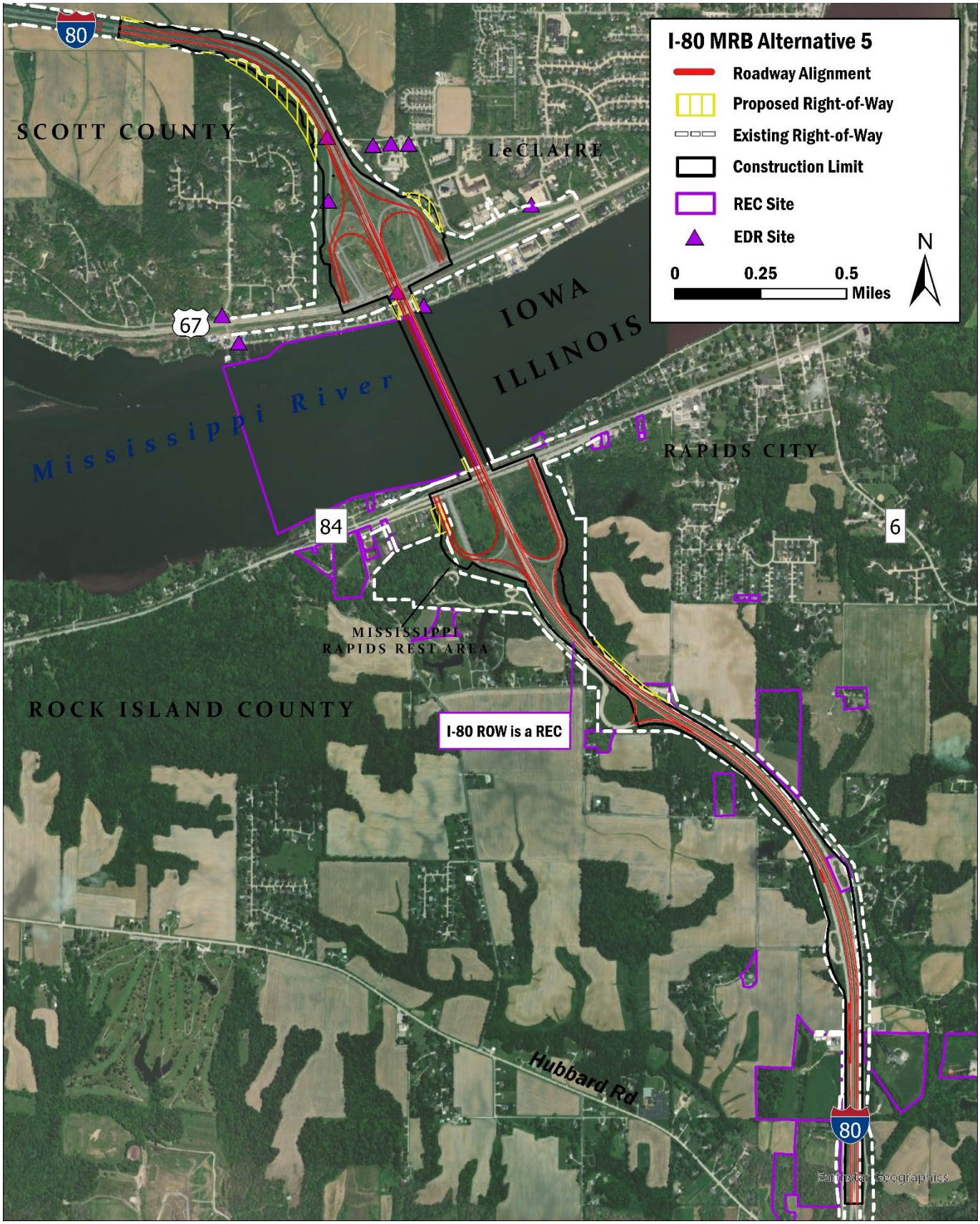


FIGURE A-16: ALTERNATIVE 5 – NEW COMPANION BRIDGE WEST AND REPLACE EXISTING (SPECIAL WASTE)



APPENDIX B

I-88 INTERCHANGE ALTERNATIVES FIGURES

FIGURE B-1: ALTERNATIVE A – EXPANDED CLOVERLEAF (RELOCATIONS, SECTION 4(F), AND ENVIRONMENTAL JUSTICE)

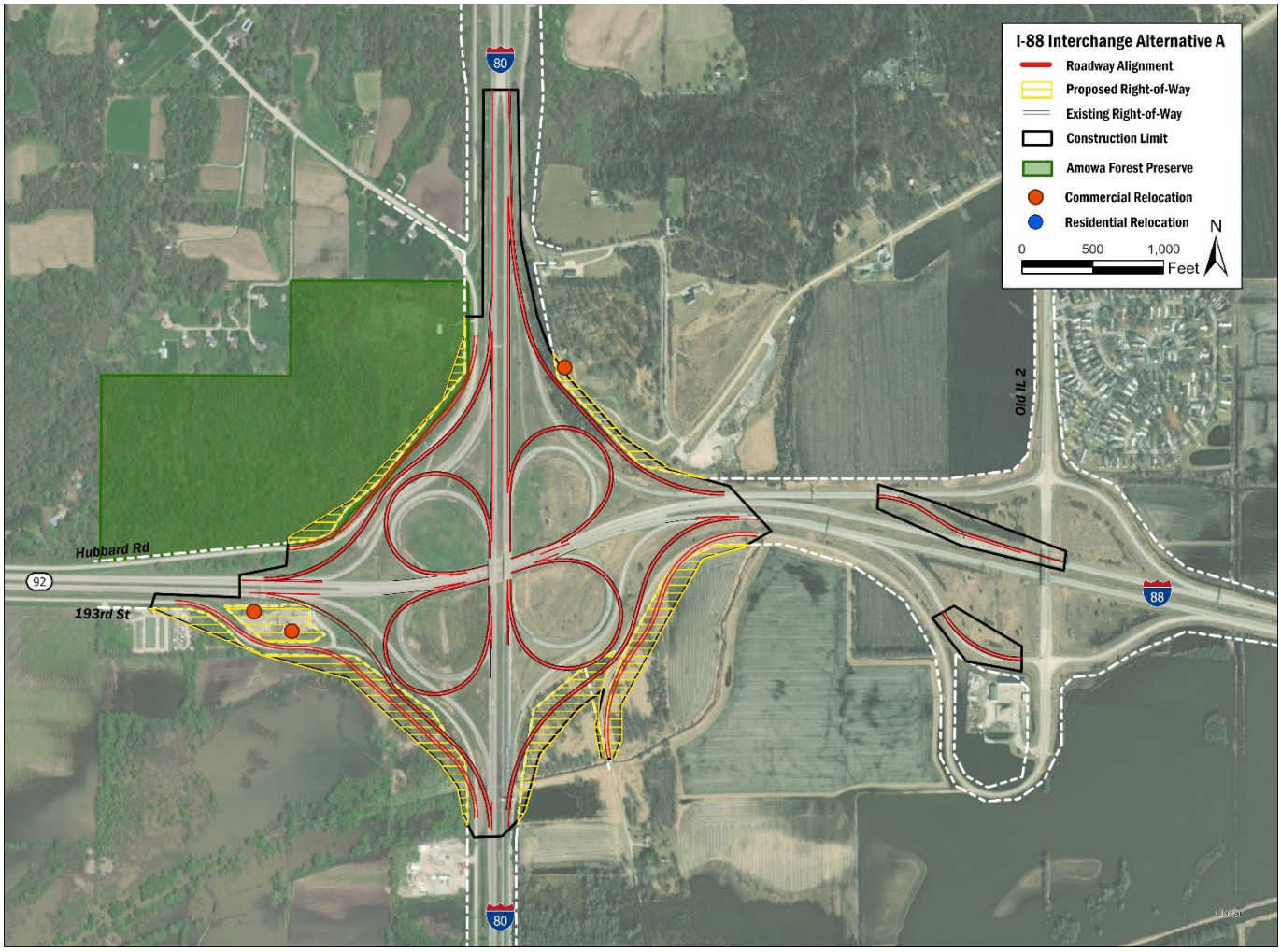


FIGURE B-2: ALTERNATIVE B – EXPANDED CLOVERLEAF WITH OUTER DIRECT RAMP (RELOCATIONS, SECTION 4(F), AND ENVIRONMENTAL JUSTICE)

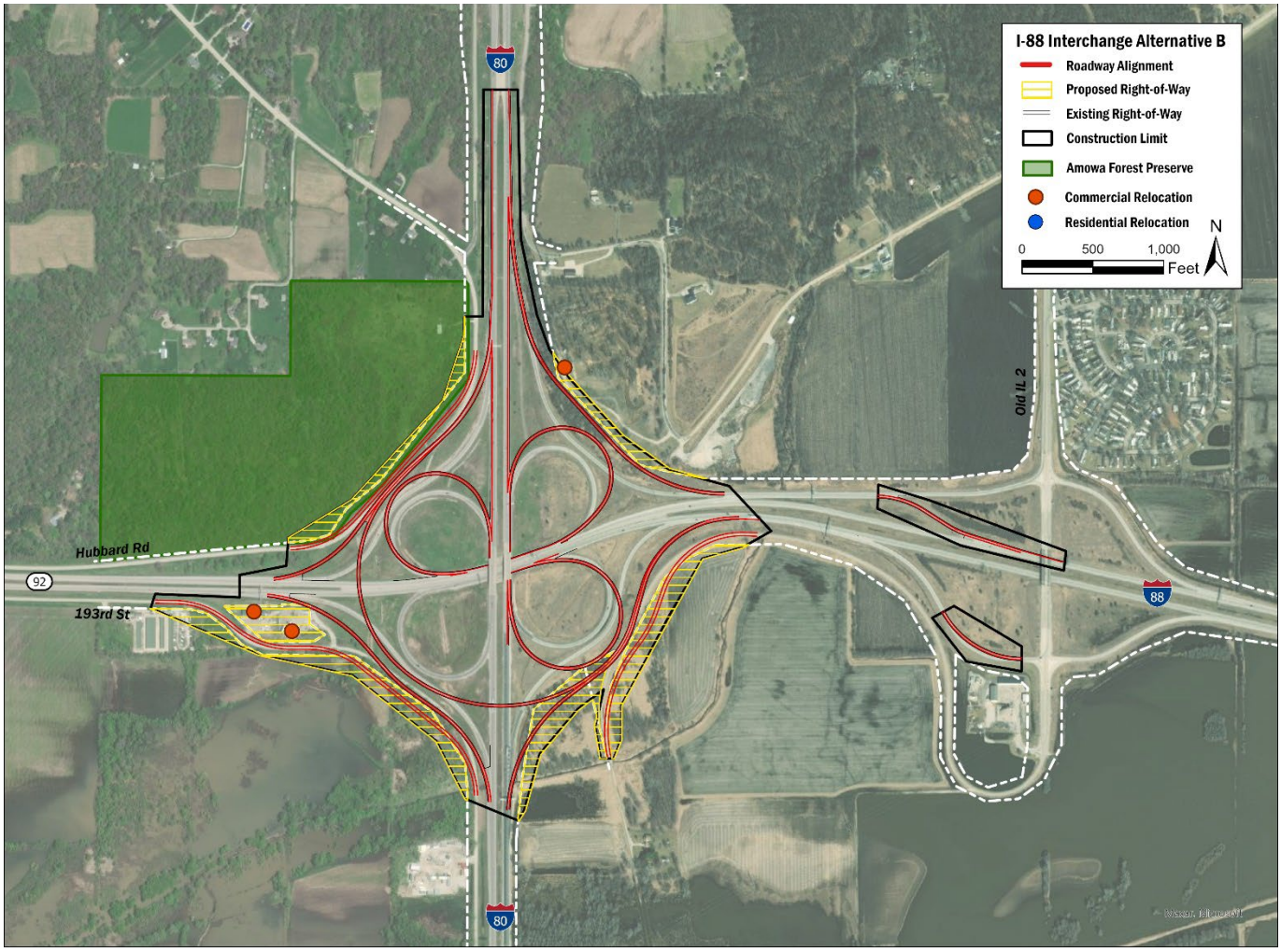


FIGURE B-3: ALTERNATIVE D – FOUR-LEVEL INTERCHANGE AND OLD IL 2 INTERCHANGE (RELOCATIONS, SECTION 4(F), AND ENVIRONMENTAL JUSTICE)

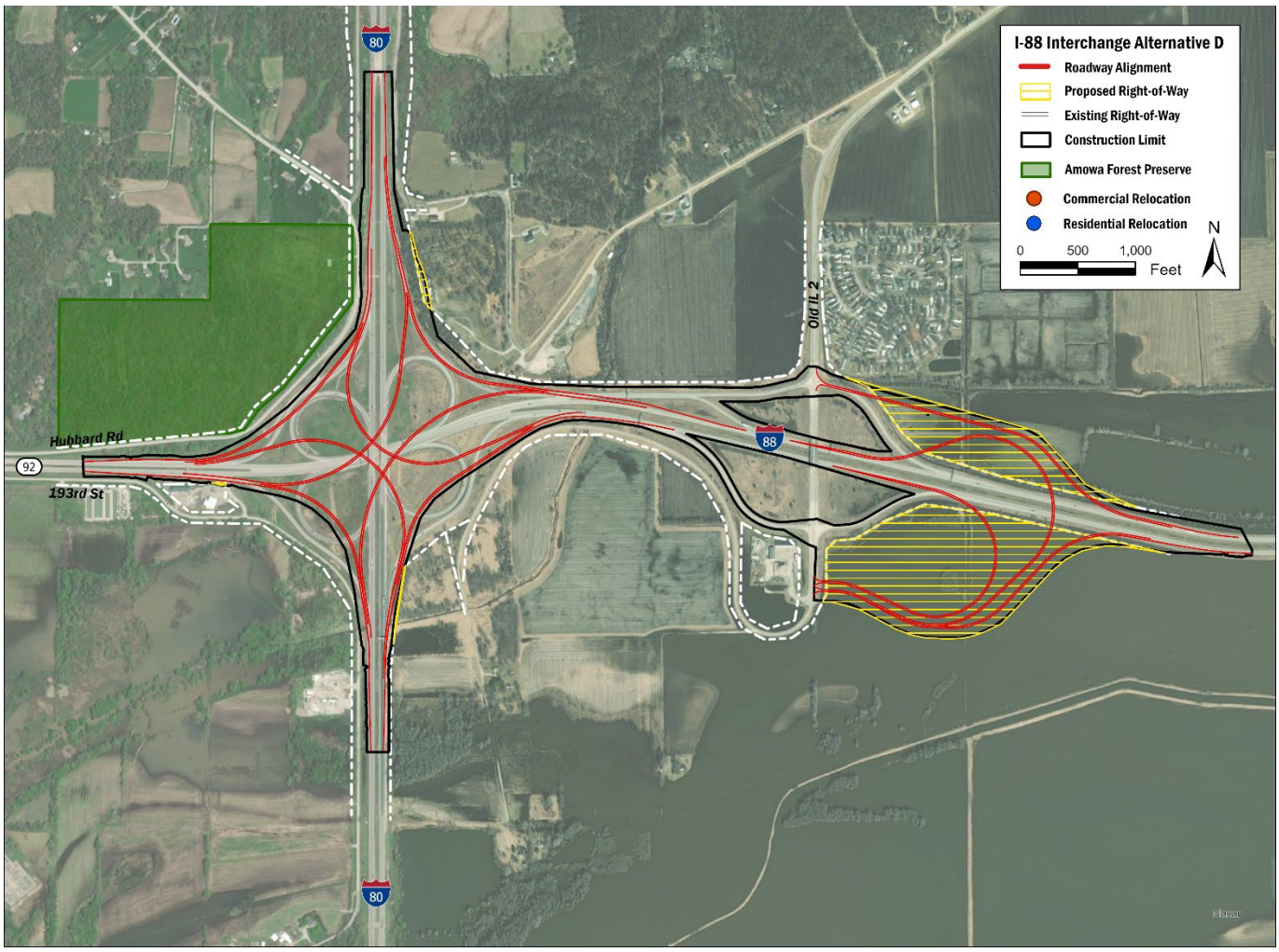


FIGURE B-4: ALTERNATIVE A – EXPANDED CLOVERLEAF (STREAMS, WETLANDS, FLOODPLAIN, AND FLOODWAY)

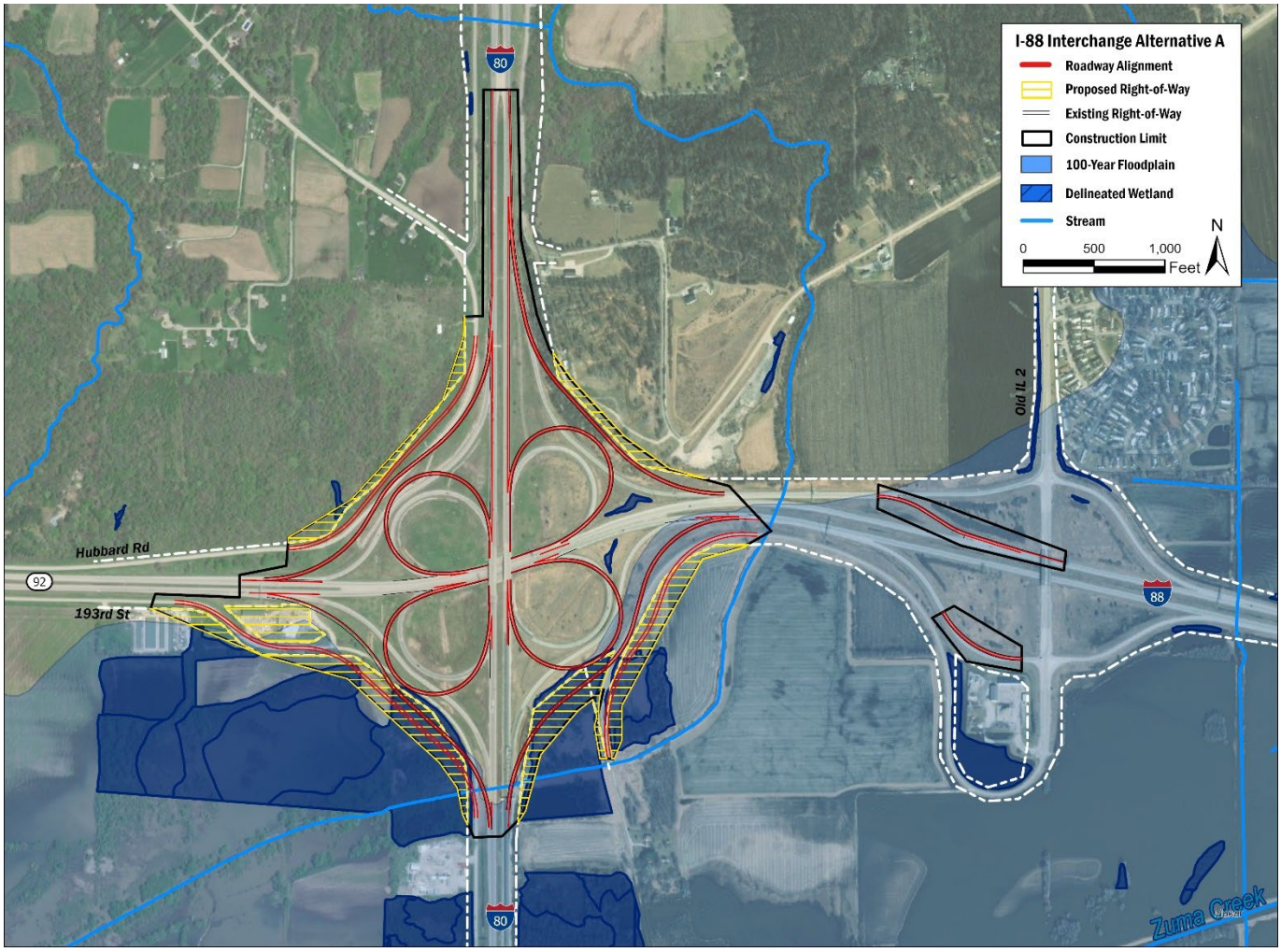


FIGURE B-5: ALTERNATIVE B – EXPANDED CLOVERLEAF WITH OUTER DIRECT RAMP (STREAMS, WETLANDS, FLOODPLAIN, AND FLOODWAY)

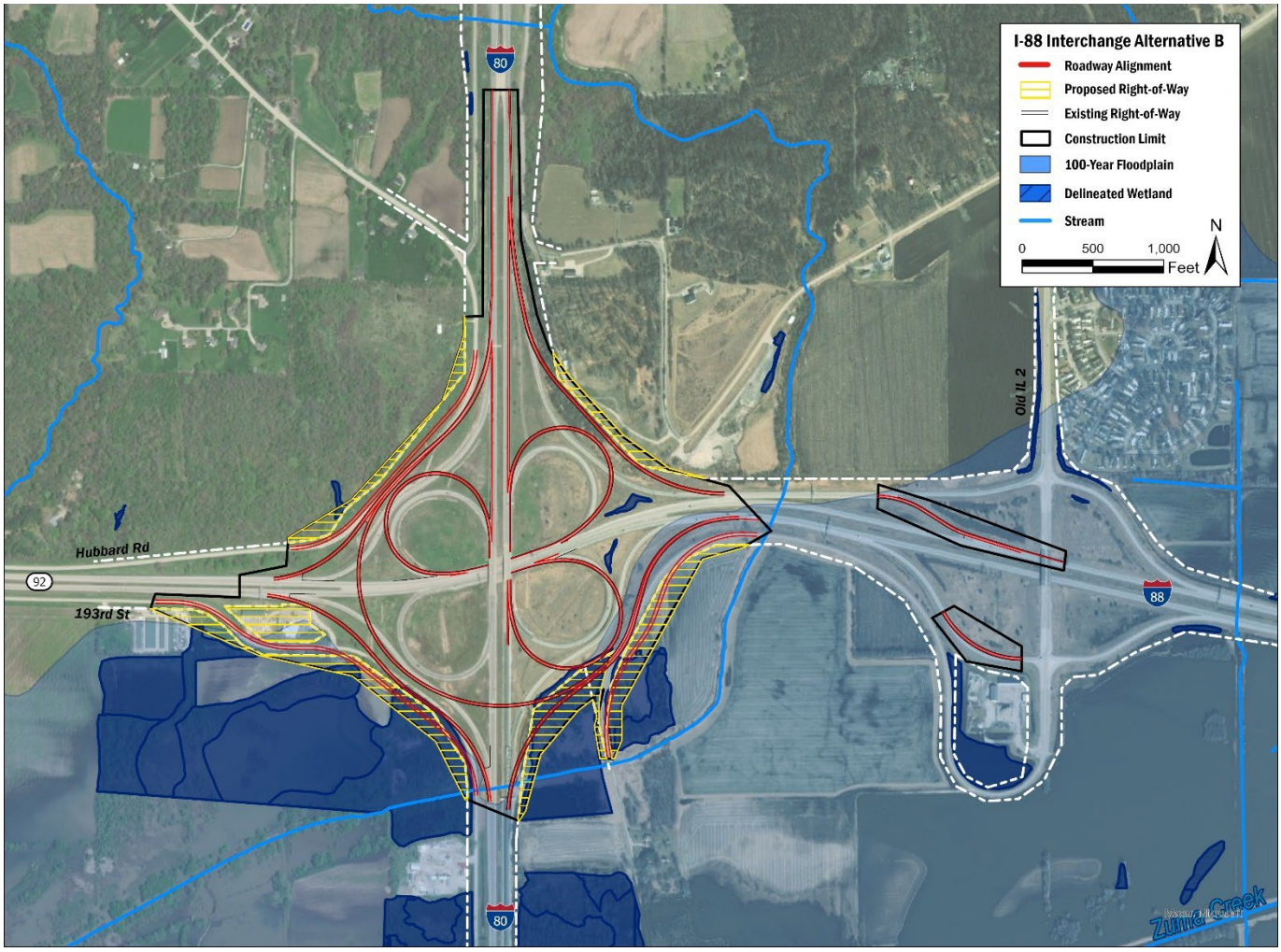


FIGURE B-6: ALTERNATIVE D – FOUR-LEVEL INTERCHANGE AND OLD IL 2 INTERCHANGE (STREAMS, WETLANDS, FLOODPLAIN, AND FLOODWAY)

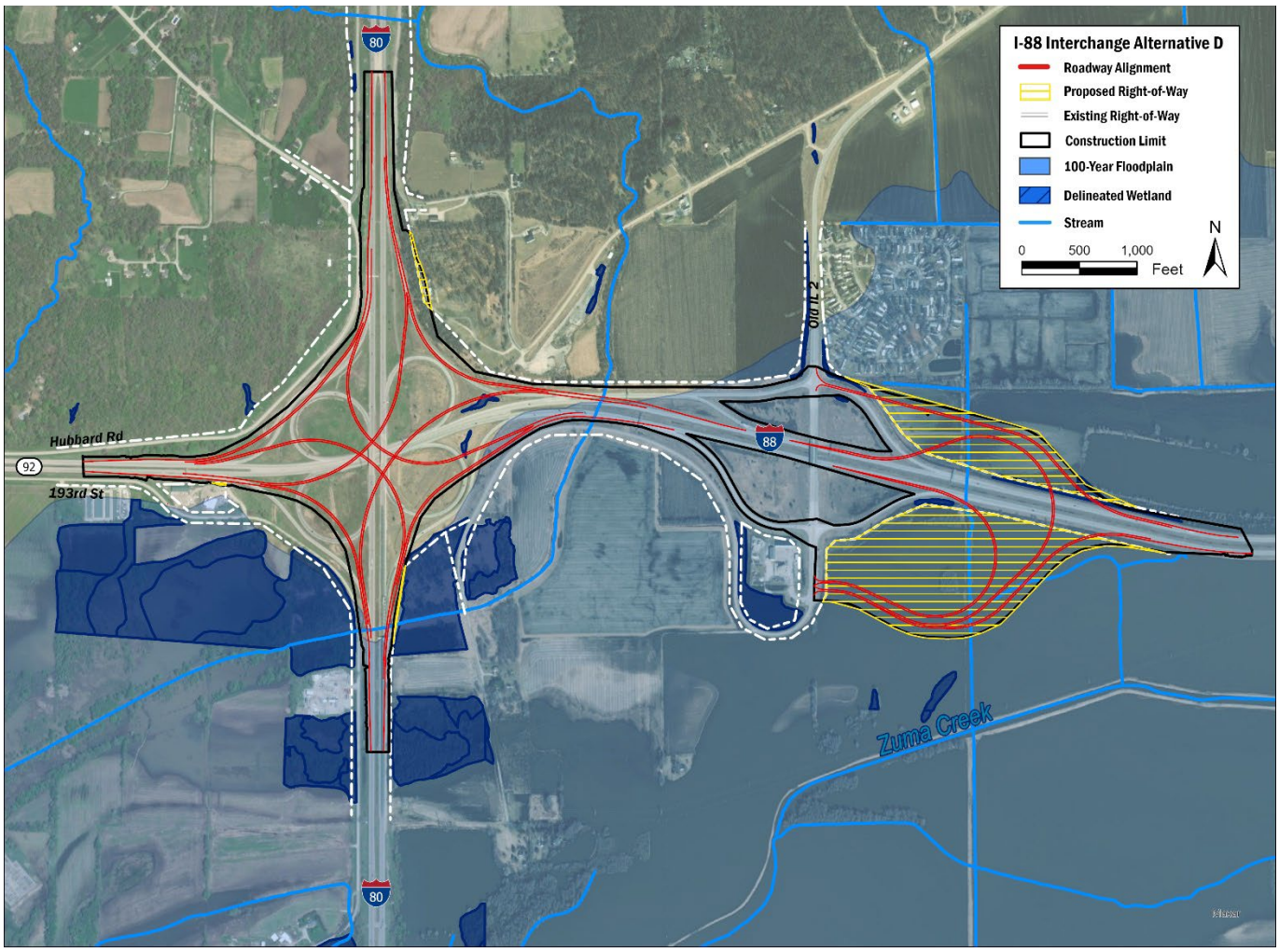


FIGURE B-7: ALTERNATIVE A – EXPANDED CLOVERLEAF (FORESTED HABITAT AND PRIME FARMLAND)

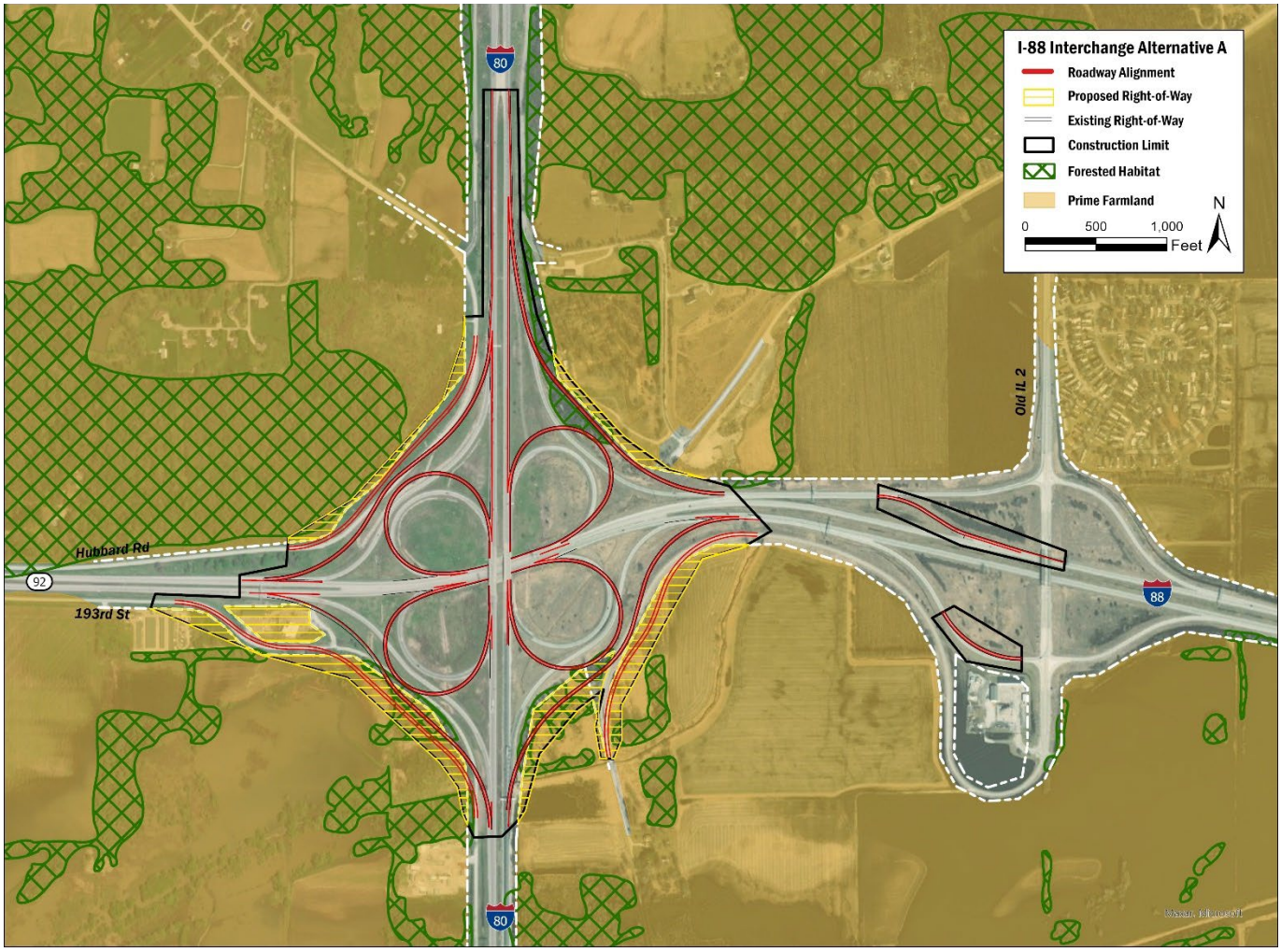


FIGURE B-8: ALTERNATIVE B – EXPANDED CLOVERLEAF WITH OUTER DIRECT RAMP (FORESTED HABITAT AND PRIME FARMLAND)

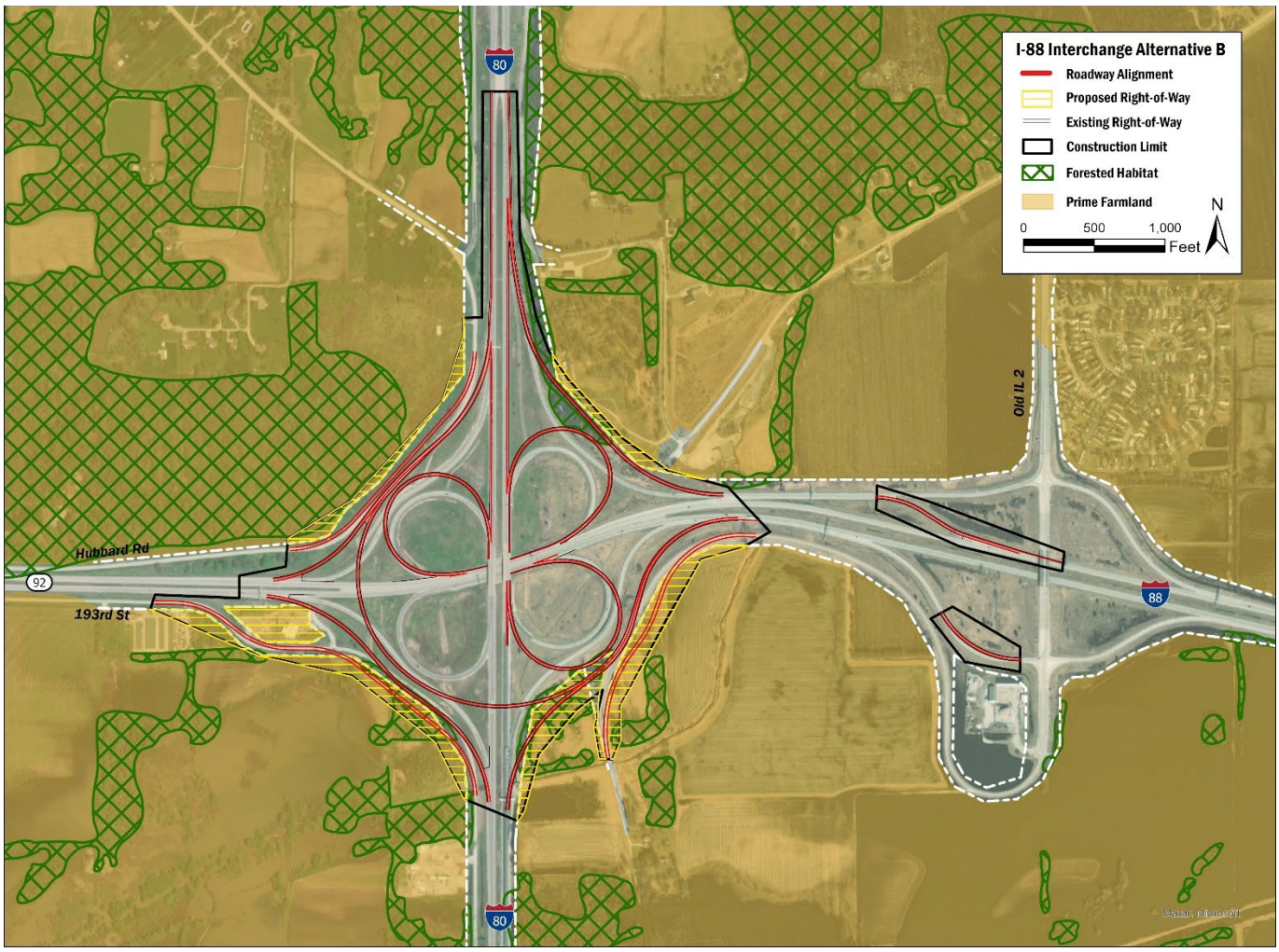


FIGURE B-9: ALTERNATIVE D – FOUR-LEVEL INTERCHANGE AND OLD IL 2 INTERCHANGE (FORESTED HABITAT AND PRIME FARMLAND)

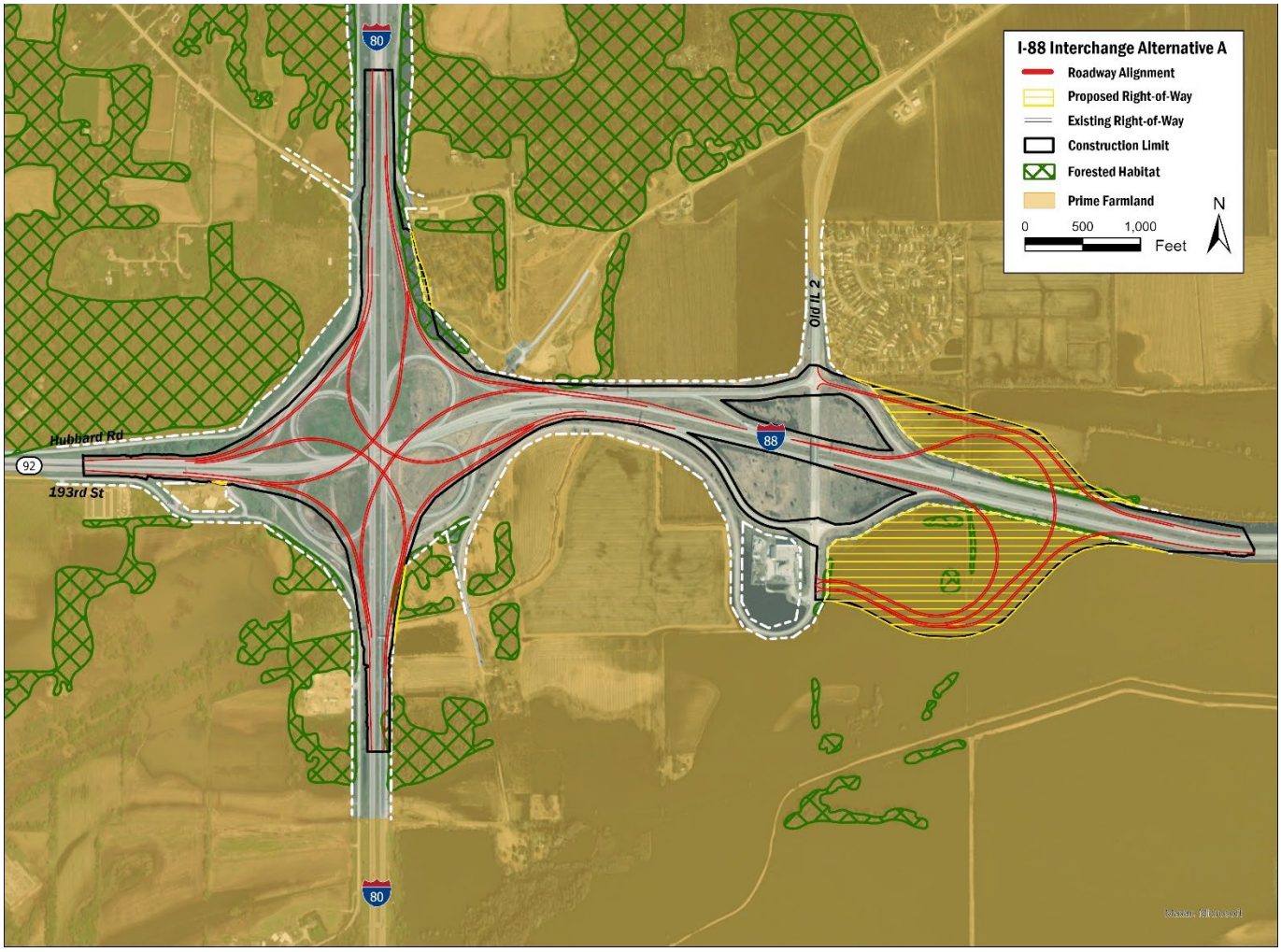


FIGURE B-10: ALTERNATIVE A – EXPANDED CLOVERLEAF (SPECIAL WASTE)

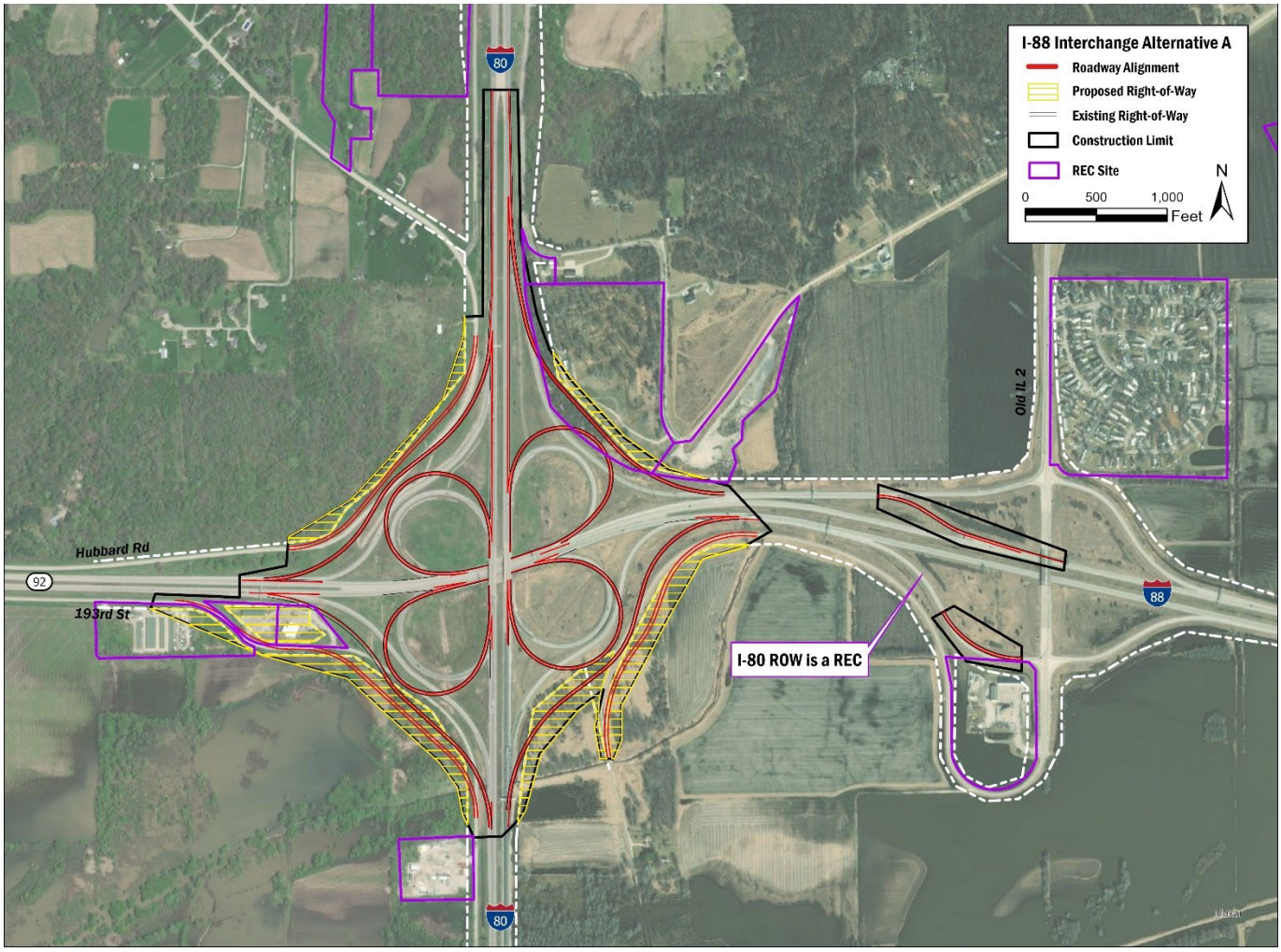


FIGURE B-11: ALTERNATIVE B – EXPANDED CLOVERLEAF WITH OUTER DIRECT RAMP (SPECIAL WASTE)

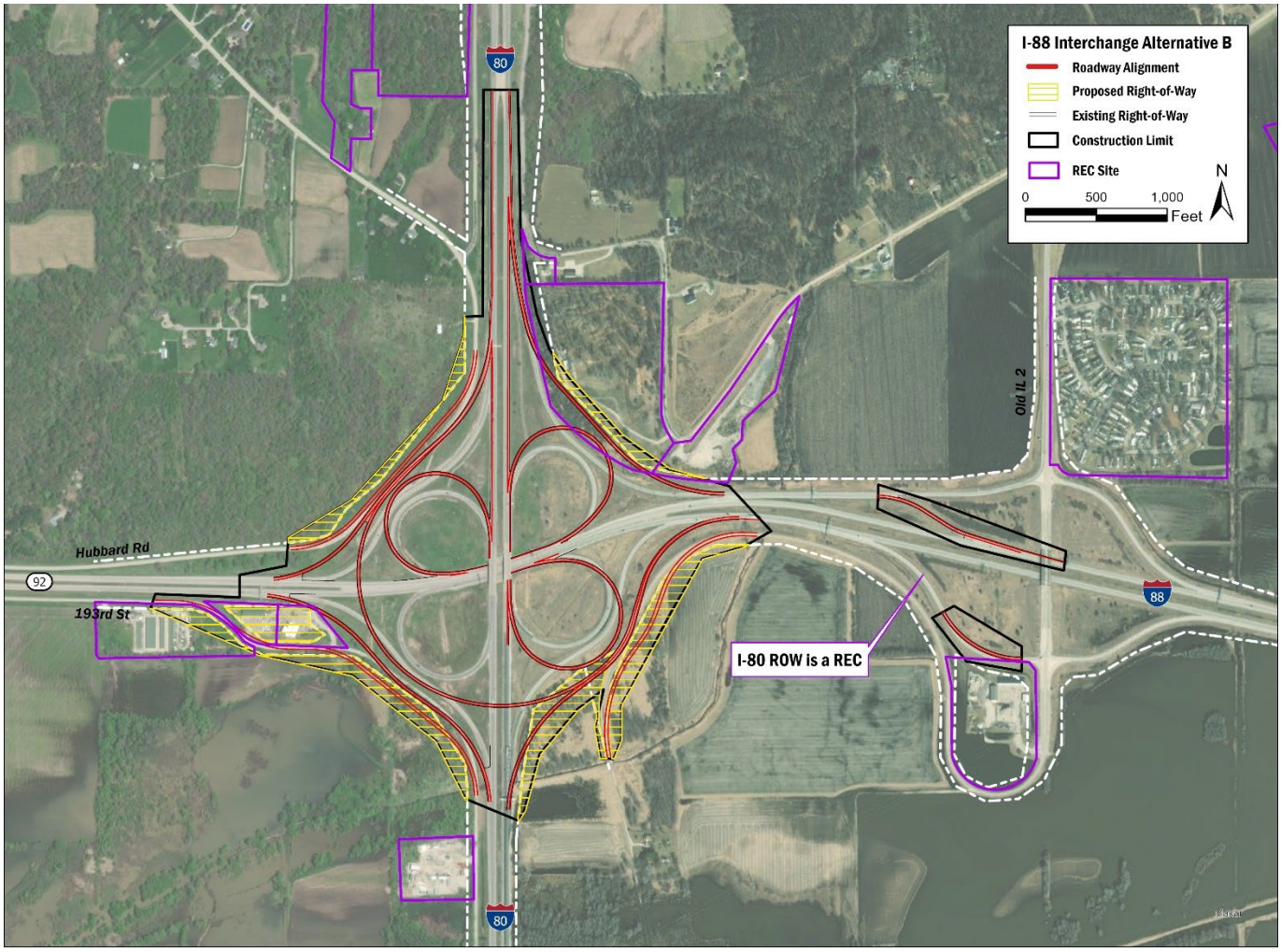
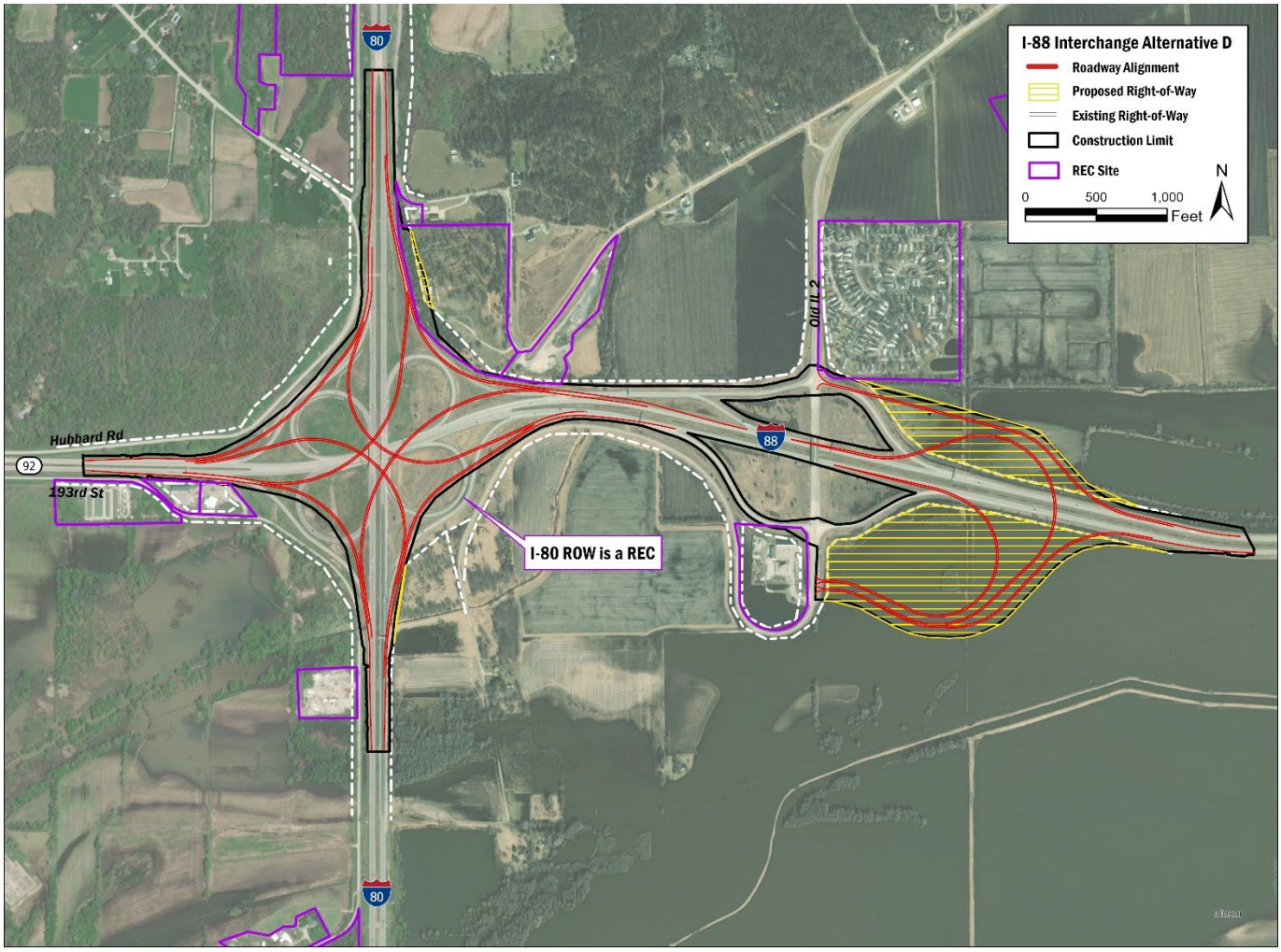


FIGURE B-12: ALTERNATIVE D – FOUR-LEVEL INTERCHANGE AND OLD IL 2 INTERCHANGE (SPECIAL WASTE)



APPENDIX C

CENSUS INFORMATION

TABLE C-1 – POPULATION

Area	2010	2019	Percent Change
I-80 Mississippi River Bridge Alternatives			
Rock Island County	147,546	143,873	-2.5%
Rapids City	959	1,065	11.1%
Census Tract 201, Block Group 5	1,760	1,816	3.2%
Census Tract 204, Block Group 2	2,217	2,488	12.2%
Census Tract 204, Block Group 5	1,132	1,059	-6.4%
Scott County	165,224	172,446	4.4%
LeClaire	3,765	3,971	5.5%
Census Tract 101.02, Block Group 3	1,699	1,692	-0.4%
I-88 Interchange Alternatives			
Rock Island County	147,546	143,873	-2.5%
Census Tract 201, Block Group 5	1,760	1,816	3.2%
Census Tract 202, Block Group 3	787	576	-26.8%
Census Tract 204, Block Group 5	1,132	1,059	-6.4%

Source: US Census Bureau, 2019 ACS 5-Year Estimates Detailed Tables. Total Population (Table ID: B01003). 2010: DEC Summary File 1. Total Population (Table ID: P1)

TABLE C-2 -- RACIAL AND ETHNIC COMPOSITION (PERCENT OF POPULATION)

Area	White Alone	Black or African American Alone	Some Other Race Alone	Hispanic or Latino	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone
I-80 Mississippi River Bridge Alternatives							
Rock Island County	71.79%	9.84%	0.11%	12.85%	0.29%	2.52%	0.04%
Rapids City	95.21%	0.00%	0.00%	2.07%	0.00%	1.69%	0.00%
Census Tract 201, Block Group 5	91.85%	2.75%	0.00%	1.93%	0.83%	0.99%	0.00%
Census Tract 204, Block Group 2	54.58%	30.99%	0.00%	9.49%	0.00%	0.52%	0.00%
Census Tract 204, Block Group 5	94.81%	1.51%	0.00%	3.68%	0.00%	0.00%	0.00%
Scott County	79.97%	7.45%	0.15%	6.72%	0.23%	2.71%	0.02%
LeClaire	96.45%	0.28%	0.00%	0.00%	0.00%	0.00%	0.00%
Census Tract 101.02, Block Group 3	94.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
I-88 Interchange Alternatives							
Rock Island County	71.79%	9.84%	0.11%	12.85%	0.29%	2.52%	0.04%
Census Tract 201, Block Group 5	91.85%	2.75%	0.00%	1.93%	0.83%	0.99%	0.00%
Census Tract 202, Block Group 3	94.97%	0.00%	0.00%	2.43%	0.00%	1.91%	0.17%
Census Tract 204, Block Group 5	94.81%	1.51%	0.00%	3.68%	0.00%	0.00%	0.00%

Source: US Census Bureau, 2019 ACS 5-Year Estimates Detailed Tables. Hispanic or Latino Origin by Race (Table ID: B03002)

TABLE C-3 – INCOME, UNEMPLOYMENT, AND OWNER OCCUPANCY

Area	Median Household Income	Percent Persons Below Poverty Level	Percent Unemployed	Percent Owner Occupied
I-80 Mississippi River Bridge Alternatives				
Rock Island County	$54,858	14.0%	4%	68%
Rapids City	$75,536	11.5%	2%	92%
Census Tract 201, Block Group 5	$69,115	6.7%	3%	84%
Census Tract 204, Block Group 2	$71,761	7.1%	2%	76%
Census Tract 204, Block Group 5	$89,250	4.4%	2%	100%
Scott County	$61,183	12.1%	2%	69%
LeClaire	$86,250	3.6%	2%	80%
Census Tract 101.02, Block Group 3	$94,875	3.4%	0%	86%
I-88 Interchange Alternatives				
Rock Island County	$54,858	14.0%	4%	68%
Census Tract 201, Block Group 5	$69,115	6.7%	3%	84%
Census Tract 202, Block Group 3	$39,783	18.6%	4%	86%
Census Tract 204, Block Group 5	$89,250	4.4%	2%	100%

Source: US Census Bureau, 2019 ACS 5-Year Estimates Detailed Tables. Median Household Income in the Past 12 Months (In 2019 Inflation – Adjusted Dollars) (Table ID: B19013), Poverty Status of Individuals by Living Arrangement (Table ID: B17021), Employment Status for the Population 16 Years and Over (Table ID: B23025), Tenure (Table ID: B25003)

TABLE C-4 – LIMITED ENGLISH PROFICIENCY (LEP)

Area	LEP %
I-80 Mississippi River Bridge Alternatives	
Census Tract 201 (in Rock Island County, IL)	1.0%
Census Tract 204 (in Rock Island County, IL)	5.1%
Census Tract 101.02 (in Scott County, IA)	0.6%
I-88 Interchange Alternatives	
Census Tract 201 (in Rock Island County, IL)	1.0%
Census Tract 202 (in Rock Island County, IL)	6.1%
Census Tract 204 (in Rock Island County, IL)	5.1%

Source: US Census Bureau 2014 – 2018 ACS 5-Year Estimates. People That Speak English Less Than “Very Well” in the United States.

FIGURE C-1: CENSUS TRACT BLOCK GROUPS IN I-80 MISSISSIPPI RIVER BRIDGE PROJECT AREA