

## **CHAPTER 3. IOWA MRT ROUTE ANALYSIS**

While many potential routes were adequate for inclusion in the recommended routing of the Mississippi River Trail, some areas of Eastern Iowa did not contain adequate road facilities for bicycle lanes. Because of this, a number of gaps in the potential trail appeared. An assessment system was created to ensure that all potential gaps were accounted for, and gaps were then filled with either on-road bicycle lanes or off-road bicycle trails.

### **Suitability Assessment of Potential On-Road Routes Required to Fill Gaps**

The Iowa MRT Advisory Committee recommended on-road bicycle lanes rather than the more expensive off-road trails, so each corridor was analyzed for its suitability for a bicycle lane. This was done through four methods: (1) bicycle level of service (BLOS) study, (2) a shoulder improvements study, (3) field reviews, and (4) public input.

BLOS and bicycle compatibility index represented a data-driven effort to design the Iowa portion of the MRT with the concept of bicyclist comfort and safety in mind. While both provide a good measure for bicycle lanes, the MRT Advisory Committee chose to use BLOS rather than BCI because BLOS seemed to be more relevant for rural roads. The League of Illinois Bicyclists and the Chicagoland Bicyclist Association (2002) derived the BLOS used for MRT planning. BLOS is used to evaluate the potential safety and comfort of the cyclist. The BLOS scale ranges from A (extremely high compatibility) to F (extremely low compatibility); however, MRT trail planners and advisors determined the lowest acceptable BLOS for the MRT could be a level of C.

BLOS uses roadway data to determine whether a paved corridor is suitable for an on-road bicycle lane. Important roadway data used in the BLOS calculation include number of lanes, lane width, paved shoulder width (where the bicycle lane would be placed), AADT counts, percentage of heavy vehicles, and speed limit.

### **Route Evaluation and Mapping Using GIS**

Geographic information systems (GIS) were used to compile all information about the MRT to create the recommended route. First, project area maps were made using base geographic information for the 10 counties. After this, attribute maps of trail amenities and areas of trail development concern were created. These maps included trail amenities such as recreation areas, campgrounds, points of interest, hotels and motels, and other services. Indicators used to assess areas of trail development concern included such things as topography and railroad lines. Then, the BLOS analysis was performed within GIS to graphically display the BLOS rankings of individual corridors to make safe decisions on trail placement. To further analyze the safety of the potential routing, a shoulder improvements analysis was performed to determine each corridor's feasibility to carry a bicycle lane after adding paved shoulders. The recommended route was chosen by

comparing results from the above-listed analyses. For more information on the GIS analysis, refer to Appendix A.

### **Alternatives Available to Fill in Gaps**

The Mississippi River Trail is mostly composed of bicycle lanes, on-road bicycle facilities that could be constructed on paved shoulders. When road corridors were found to be unsuitable for bicycle lanes, off-road bicycle trails were another option to fill in gaps. However, many existing, programmed and planned bicycle facilities have been included in the recommended MRT, which reduced the need to build a large number of new off-road bicycle trails. The following bicycle trails and lanes can also be seen in Figures 3.1–3.10, the recommended Iowa MRT routings by county.

#### *Existing Routes to Incorporate*

Existing trail and bicycle lane facilities were given top priority in the recommended routing, and every attempt was made to include these in the MRT. There are a number of existing urban trails in Eastern Iowa, especially in larger cities along the river. Specifically, there is potential for the Mississippi River Trail to include existing urban trails in the cities of Dubuque, Clinton, Bettendorf, Davenport, and Muscatine. In addition to the existing urban trails, the Heritage Trail, a 26-mile, limestone trail extending from Dyersville to north of Dubuque (Trails from Rails 1999) is an important trail connection to the MRT. Finally, an existing bicycle lane from Montrose to Keokuk on County Road X28 completes the final section of the Iowa MRT.

#### *Programmed Routes to Incorporate*

Potential for further trail connections also exists with Eastern Iowa programmed trails and bicycle lanes. Many of these programmed trails are within urban areas, especially in the Quad-Cities area. For instance, a new riverfront trail system is being developed in Riverdale, Bettendorf, and Davenport that will ultimately connect segments of trail in this area. Also, an expansion of the Heritage Trail in Dubuque County is being developed that will connect the trail to downtown Dubuque and to the Mines of Spain. Another important link in the recommended Mississippi River Trail is the programmed bicycle lane on Highway 26 from Lansing to New Albin, the connection to the Minnesota MRT section.

#### *Planned Routes to Incorporate*

Bicycle routes planned for future development are also significant to the MRT alignment. These routes include urban trails, county trails, and bicycle lanes. Notable planned urban trails include the trail expansion plan for Clinton, which may create future additional trail facilities along the recently constructed Mill Creek Parkway. The Quad-Cities area has planned additional trail facilities in the cities of Buffalo, Princeton, and Le Claire. Also,

the cities of Marquette and McGregor have secured Vision Iowa funds for the development of an intercity bicycle trail, tentatively named the Trail of Two Cities. This trail will be invaluable to the MRT; its inclusion will take the MRT off the unsuitable corridor of State Highway 76 in and near Marquette and McGregor. In addition to these urban trails, the cities of Burlington, Fort Madison, and Keokuk are in the process of planning their urban trail systems.

### *Remaining Gaps*

Although important links in the MRT have been established with existing, programmed, and planned bicycle facilities, there remain gaps where there must be new bicycle facilities constructed to complete the recommended trail. These bicycle facilities are recommended as either on-road bicycle lanes or off-road bicycle trails.

### Remaining Gaps to Be Filled with On-Road Bicycle Lanes

The following is a list of gaps to be filled with on-road bicycle lanes after utilizing existing and programmed bicycle facilities to create portions of the recommended MRT. These routes can be seen in Figures 3.1–3.10, the recommended alignment of the Iowa MRT by county. However, it must be noted that these gaps do not include gaps within municipal boundaries, only those in rural areas.

- *Lansing to State Highway 364:* After the recommended MRT ends on State Highway 26 at Lansing, it can continue south on County Road X52 to the city of Clayton. After Clayton, the Iowa MRT can be routed south on State Highway 364 until its junction with State Highway 76. At this point, there is a gap in the MRT, because Highway 76 has been deemed unsuitable for bicycle lanes in the BLOS and shoulder improvements studies; an off-road trail will need to be built here.
- *State Highway 340 to Sageville:* After the aforementioned gap on State Highway 76, the MRT can safely resume as bicycle lanes south on State Highway 340, south of the city of McGregor. The MRT may then route on County Road X56 after it meets Highway 340 near Pikes Peak State Park. The MRT may continue on X56 until the city of Guttenberg, where it can then be routed on U.S. Highway 52 until the city of Millville, where it can be routed onto County Road C9Y. It may continue on C9Y until just after the city of Millville, where it may be routed on State Route 90 E1/Reigler Road, then Haberkorn Road on County Road C65 to the city of Sherrill. After Sherrill, the MRT may be routed back on C9Y, or Sherrill Road to Mud Lake Road, to the city of Sageville. The only viable route to exit Sageville to the south is State Highway 3. At this point, there is a gap in the MRT since Highway 3 has been deemed unsuitable for bicycle lanes in the BLOS and shoulder improvements studies; an off-road trail will also need to be built here.
- *Dubuque to Clinton:* After the gap on State Highway 3, the MRT can then use the Heritage Trail extension through Dubuque as previously described. The trail extension is projected to terminate south of the Mines of Spain, south of

- Dubuque. From here, the MRT may be routed west on State Route 88 E3/Olde Massey Road, to its intersection with U.S. Highway 52. The MRT can be routed south on U.S. 52 until about the city of Sabula; BLOS and shoulder improvements studies have shown that segments of U.S. 52 from Sabula to Clinton are not suitable for bicycle lanes. Therefore, the southbound MRT must leave U.S. 52 at County Road Z40 in Jackson County. It continues on Z40 through the city of Miles and into Clinton County, where it is then routed east on County Road E44. From there, the MRT is routed south on County Road Z50 through the city of Andover; then, it is routed east on County Road E50. When E50 intersects U.S. Highway 67, the MRT takes U.S. 67 south to the north city limits of Clinton.
- *Clinton to Princeton:* Because U.S. Highway 67 immediately south of Clinton and U.S. Highway 30 west of Clinton were found not suitable to carry bicycle lanes, the recommended MRT is recommended to exit Clinton on County Road F12 west. This routing may bypass some downtown Clinton bicycle trails, but it is by far the safest route in the area. From F12, the MRT continues south on County Road Z36, through the city of Low Moor to near the Scott County border, where it continues south on U.S. 67 through the cities of Princeton and Le Claire to Bettendorf. The cities of Princeton, Le Claire, and Bettendorf have existing, programmed, or planned bicycle facilities within municipal boundaries, so the recommended MRT could be intermittently routed on these facilities, rather than on U.S. 67.
  - *Buffalo to Muscatine:* The Quad-Cities area has many existing, programmed, or planned bicycle facilities that the recommended MRT will utilize. After the recommended MRT is routed through the Quad-Cities, it will resume westbound out of the city of Buffalo on State Highway 22. From this point, the recommended MRT can take advantage of Wildcat Den State Park by turning north onto State Route 77 E1/Wildcat Den Avenue in Muscatine County. Then, it will turn west onto New Era Road, and then south on Sweetland Road. Finally, at the intersection with Highway 22, the trail will continue to the city of Muscatine by heading west on Highway 22. Portions of this route are currently used and endorsed by Muscatine County cyclists.
  - *Muscatine to Burlington:* The recommended MRT will exit the city of Muscatine going south on County Road X61. It will continue south on X61 into Louisa County, then switch to State Route 7402/E Avenue. This is currently an unpaved road but is scheduled for paving within the next five years. From here, the Iowa MRT will continue south back onto X61. The trail will then continue south on State Highway 99 where it intersects X61. The recommended MRT will continue on Highway 99 through Des Moines County, to the city of Burlington. However, due to the extensive levees in this area, future versions of the Iowa MRT could include bicycle trails built on levees.
  - *Burlington to Fort Madison:* The recommended MRT will exit the city of Burlington going south on Summer Street/County Road X62. When X62 intersects U.S. Highway 61, the MRT will continue south on U.S. 61 into Lee County. The route will continue west on 178th Street/County Road J48, and then south on 330th Avenue/County Road X38. From here, the recommended MRT will rejoin U.S. 61 before heading into the city of Fort Madison. U.S. 61 in this

- area may not be a safe route for bicycle lanes in the future; it is a four-lane divided highway with speed limits at 65 mph. However, at this time, there are no other solutions for this gap. A recommended possible solution to this gap in the future could be the construction of an off-road bicycle trail, or the use of levee trails to route the MRT away from U.S. 61.
- *Fort Madison to Montrose:* The recommended MRT will exit the city of Fort Madison on U.S. Highway 61, and then route south on County Road X23, or 263rd Avenue. From here, the MRT will follow U.S. 61 south to State Route 404 east into the city of Montrose. Like the gap from Burlington to Fort Madison, this gap may need to be rerouted once U.S. 61 is expanded to a four-lane divided facility in the future. Area officials have examined the possibility of installing a bicycle facility along the U.S. 61 expansion, but possible alignments of such a facility have not yet been explored. If there is no possibility of U.S. 61 bicycle accommodations, then potential solutions south of Fort Madison may be to build levee trails and other off-road trails to replace segments where U.S. 61 is recommended for the MRT.

#### Remaining Gaps to Be Filled with Off-Road Bicycle Trails

If the BLOS and shoulder improvements studies leave gaps in the recommended MRT that cannot be filled with bicycle lanes, another alternative is to plan and construct off-road bicycle trails to fill the gaps. These trails can be seen in Figures 3.2 and 3.3, the recommended routing of the Iowa MRT in Clayton and Dubuque Counties.

- *State Highway 364 to State Highway 340:* As seen in Figure 3.2, the cities of Marquette and McGregor are located along State Highway 76, an unsuitable route for bicycle lanes due to high levels of heavy truck traffic. Because of this, all effort was made to keep the MRT off this undesirable corridor. The Trail of Two Cities, a planned trail between Marquette and McGregor, is a better alternative; however, because Highway 76 extends well beyond the municipal boundaries of both Marquette and McGregor, it is unlikely that the use of the Trail of Two Cities would permit the MRT to completely avoid Highway 76. Consequently, an off-road trail should be constructed to join State Highway 364 to the planned Trail of Two Cities, and another off-road trail should be constructed to join the Trail of Two Cities to State Highway 340.
- *Sageville to the Heritage Trail:* As seen in Figure 3.3, the city of Sageville is located on State Highway 3, a corridor that is not suitable for bicycle lanes. The Heritage Trail is located less than a mile from where the MRT would junction Highway 3. Because this is a short distance, an off-road trail should be constructed along Highway 3 to connect the MRT on County Road C9Y to the Heritage Trail.

## **Recommended Alignment Maps and Jurisdictional Responsibilities**

The recommended alignments for the Mississippi River Trail contain road segments needing various levels of improvements to adequately carry bicycle lanes. In addition, there are many trail projects to include in the MRT; some trails are complete and ready for inclusion, while some trails are yet to be constructed. This section features maps of individual counties within the study area, highlighting the recommended alignment of the Mississippi River Trail, as well as necessary projects required to complete the trail, and the jurisdiction of each roadway project recommended for improvements for the MRT.

The recommended MRT alignment by county is shown in Figures 3.1–3.10. These maps not only show the recommended trail route, but also divide the corridors and trails in the recommended routing by each section’s project status. The term “project status” is used to describe the level of completion of each corridor and how much work each corridor needs until it is adequate for inclusion in the Mississippi River Trail recommended alignment. The project status groups are divided into bicycle trail projects and bicycle lane projects. To describe the current status of each project, the bicycle lane projects and bicycle trail projects are classified by existing trails or lanes, programmed trails or lanes, planned trails or lanes, and trails or lanes to build. Existing trails or lanes refer to existing bicycle trails or road segments with at least a 6-foot-wide paved shoulder that is ready for bicycle lanes. These trails and lanes are referred to as “existing” because they are ready for inclusion in the Mississippi River Trail with no or very little additional work. Programmed trails or lanes refer to trail projects or roadway shoulder paving projects that have been planned and have been programmed for funding. Programmed trails or lanes will be completed in a short period of time and will soon be ready for inclusion in the MRT. Planned trails, however, have been planned by municipalities, counties, or the state but have not yet been programmed for funding. Because these projects have not yet been funded, they will be completed in a longer period of time than programmed projects. The recommended alignment of the Iowa MRT does not contain any planned roadway shoulder paving projects. The remaining projects on the recommended Iowa MRT alignment that are not existing trails or lanes, programmed projects, or planned projects, are classified as trails or lanes to build. The bicycle lane or trail projects that need to be built have not been planned, nor have any programmed funding.

The agencies responsible for the development of the Iowa portion of the Mississippi River Trail include the Iowa DOT, county governments, and municipal governments. The Iowa MRT plan does not specifically address trail development processes for municipal governments but rather focuses on development for state and county agencies. These agencies have created the existing bicycle lanes and trails, have created funding programs for the programmed projects, and have created the planned projects. However, to fully develop the Mississippi River Trail in Iowa, these agencies must work to plan for and fund the remaining bicycle lanes and trails projects. Figures 3.11–3.20 display the jurisdictional split along the Iowa MRT by county. County jurisdiction is generally found on county roadway shoulder paving projects and county off-road trail projects, while the Iowa DOT has jurisdiction on state and U.S. highway shoulder paving projects.

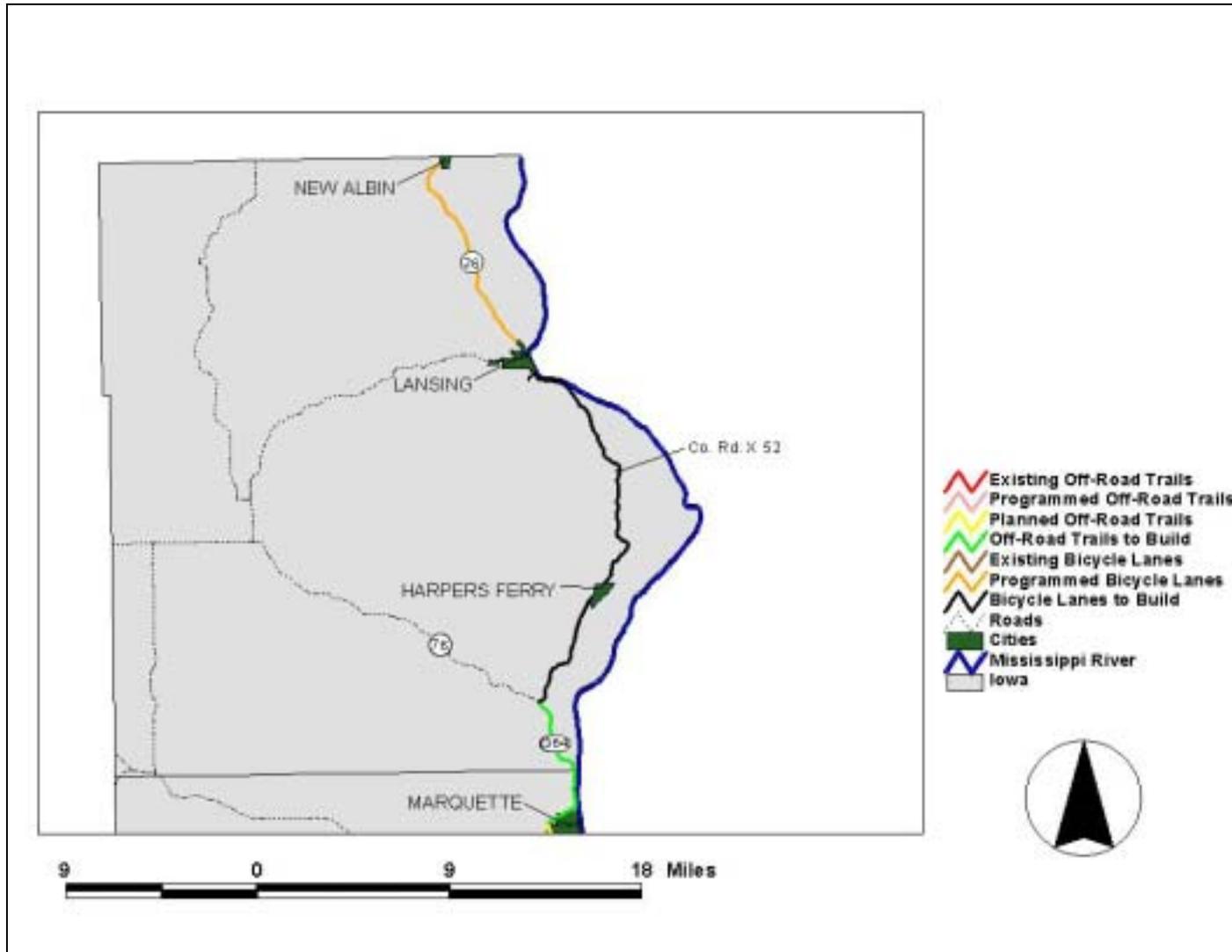


Figure 3.1. Recommended MRT Alignment and Project Status: Allamakee County

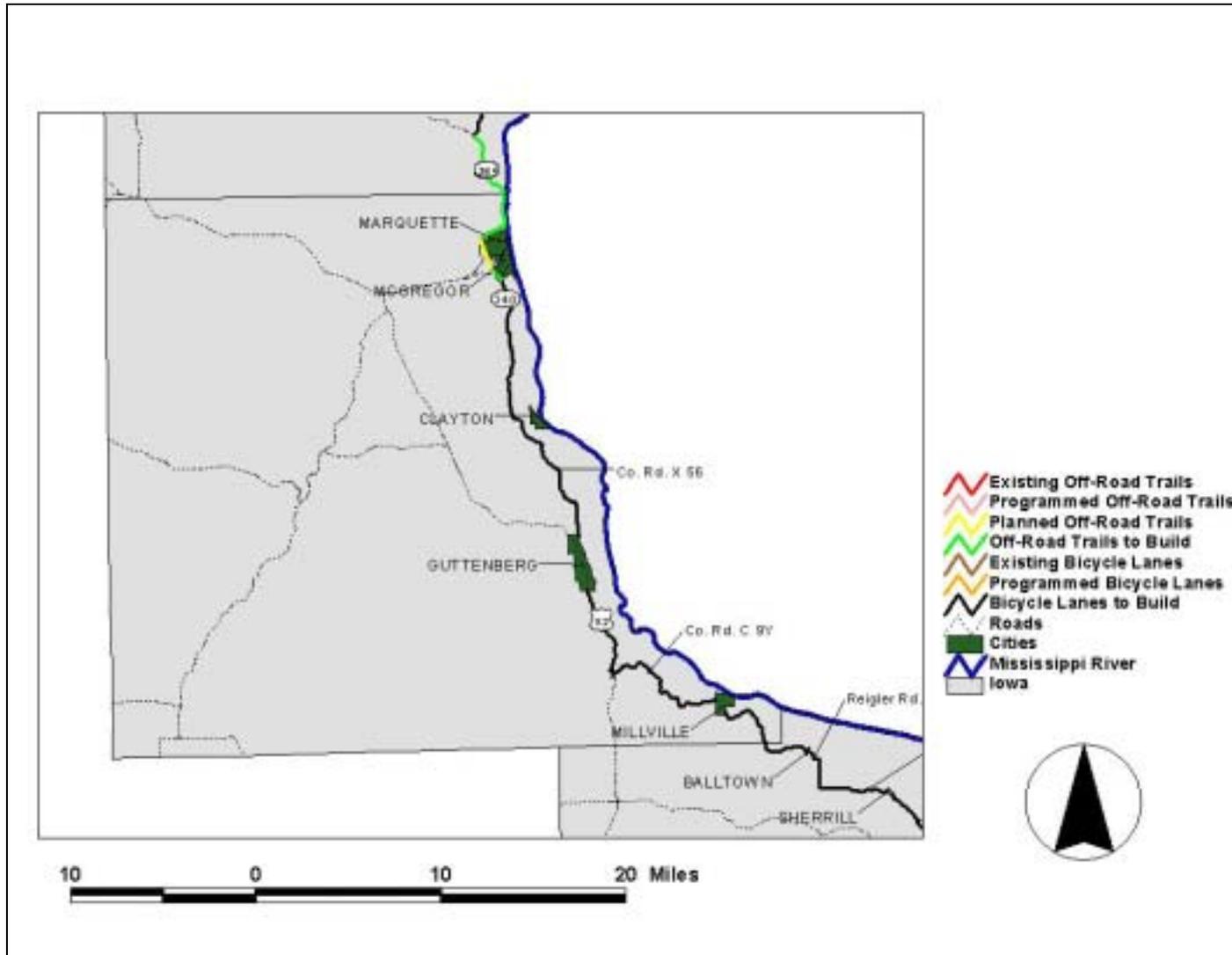


Figure 3.2. Recommended MRT Alignment and Project Status: Clayton County

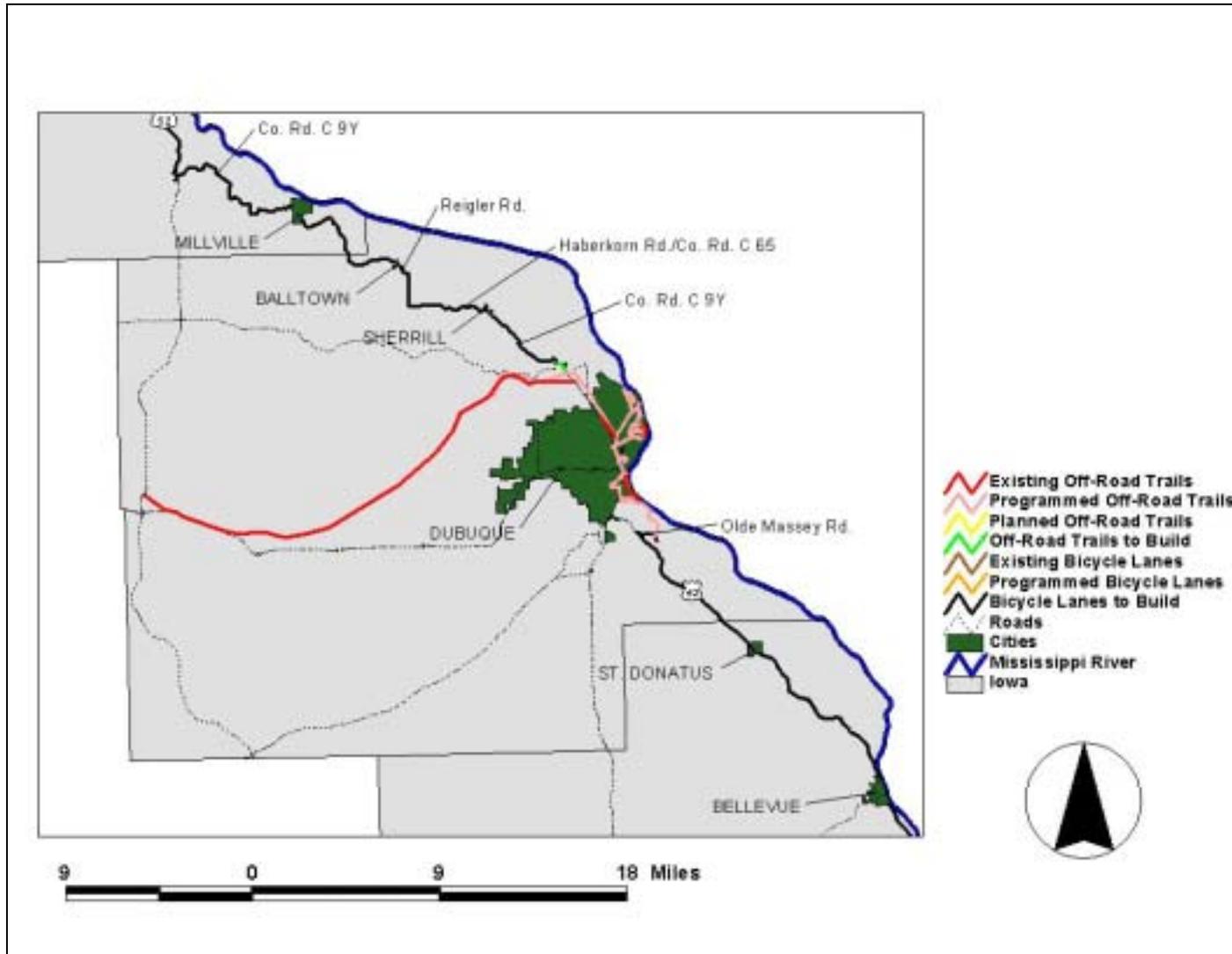


Figure 3.3. Recommended MRT Alignment and Project Status: Dubuque County

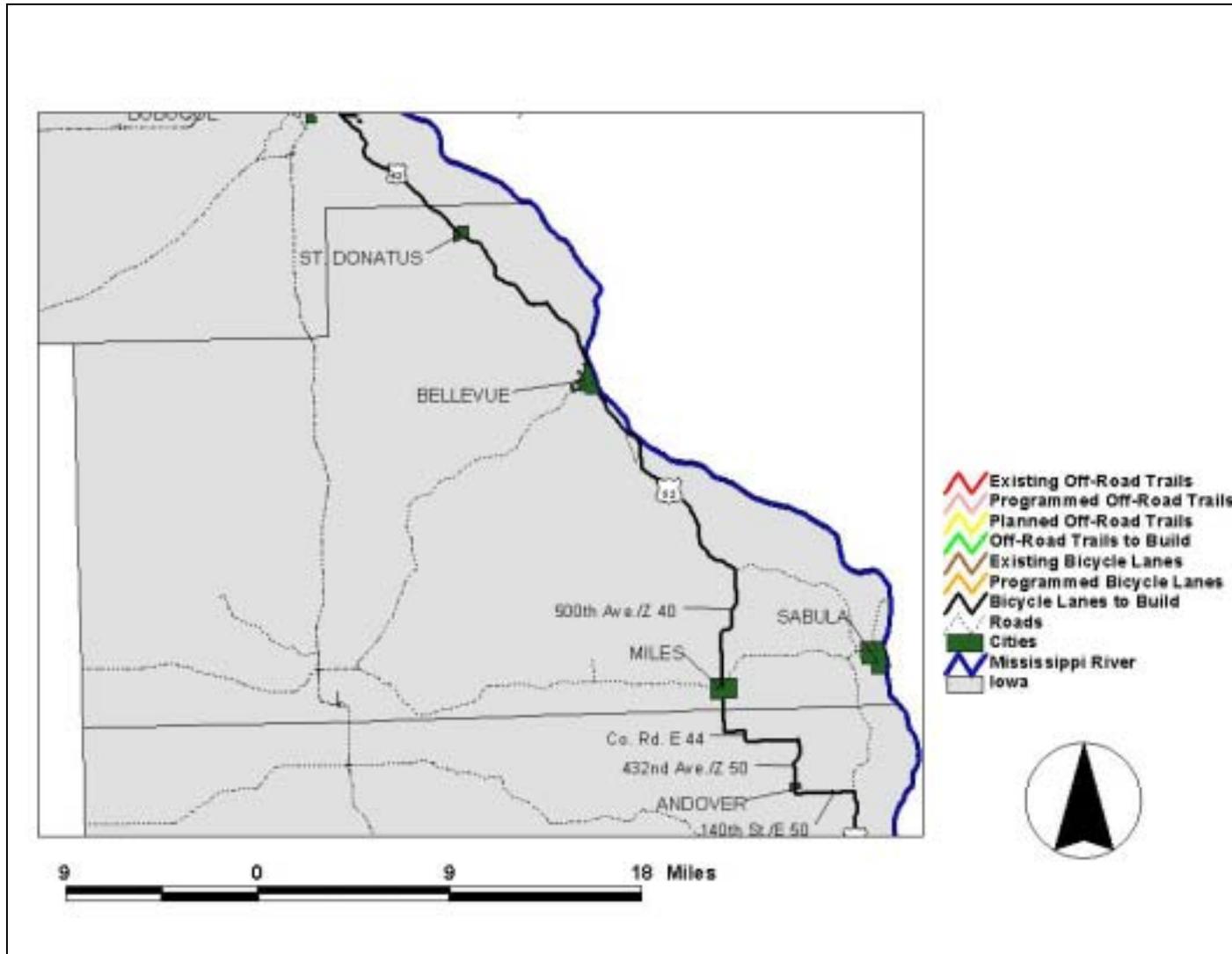


Figure 3.4. Recommended MRT Alignment and Project Status: Jackson County

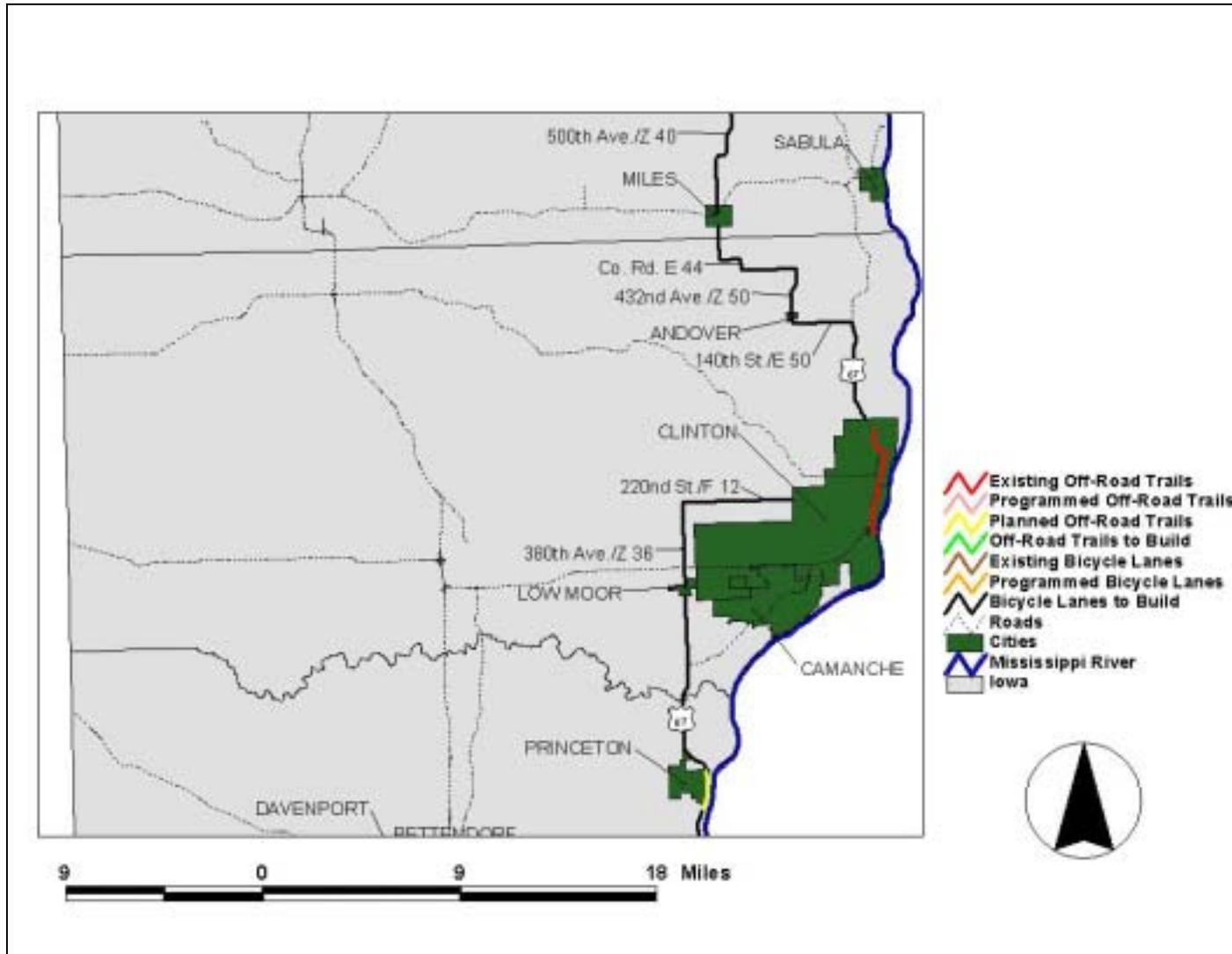


Figure 3.5. Recommended MRT Alignment and Project Status: Clinton County

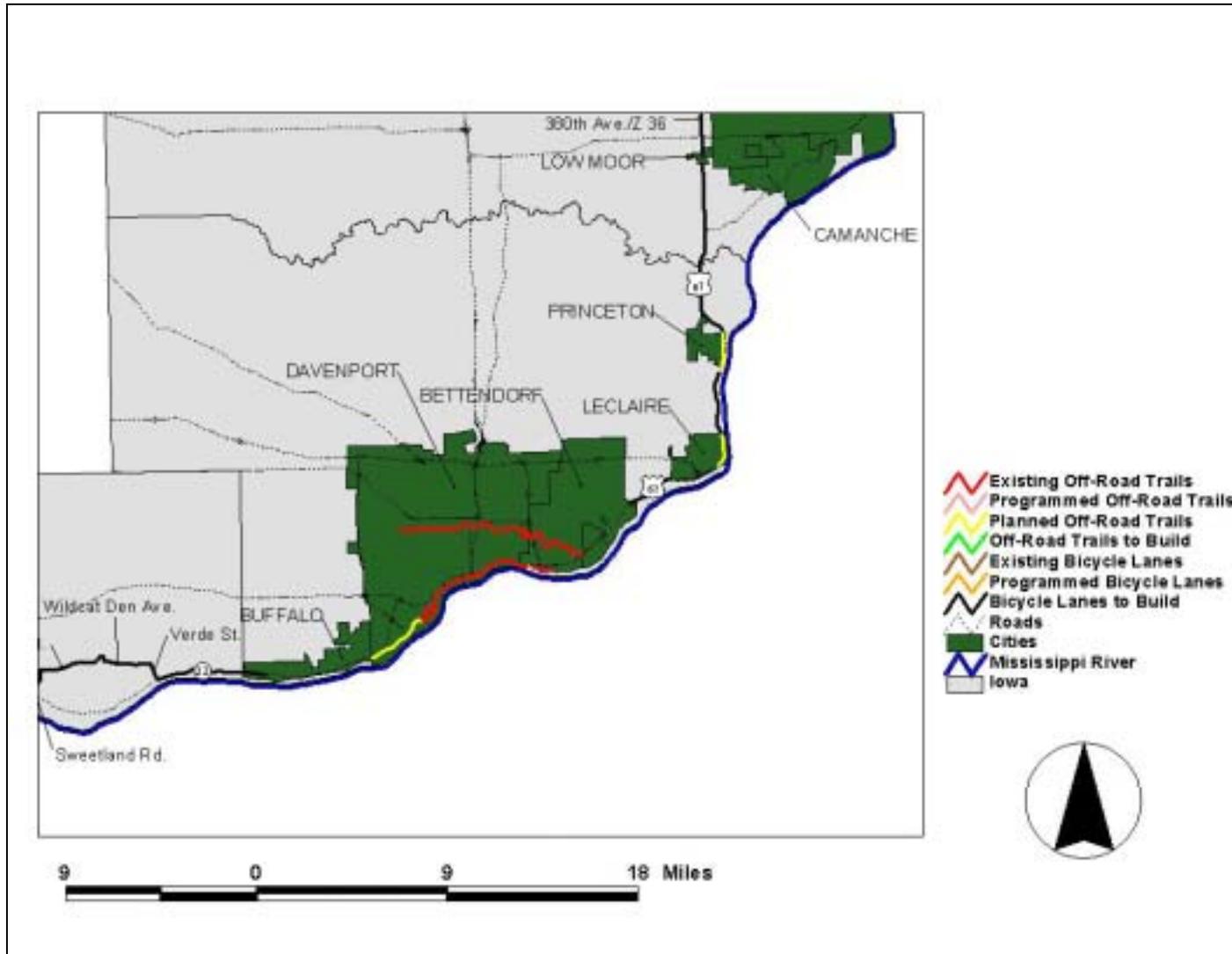


Figure 3.6. Recommended MRT Alignment and Project Status: Scott County

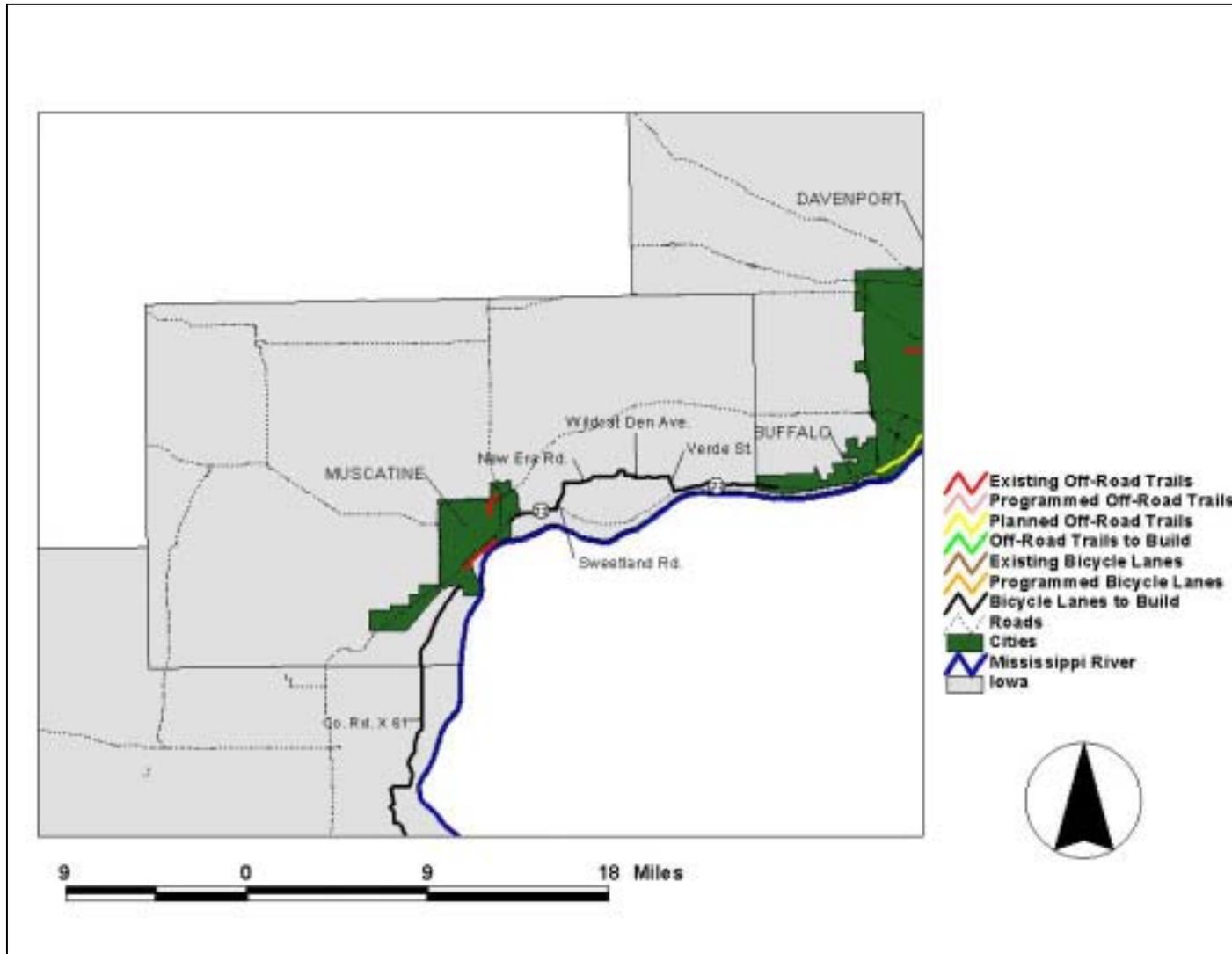


Figure 3.7. Recommended MRT Alignment and Project Status: Muscatine County

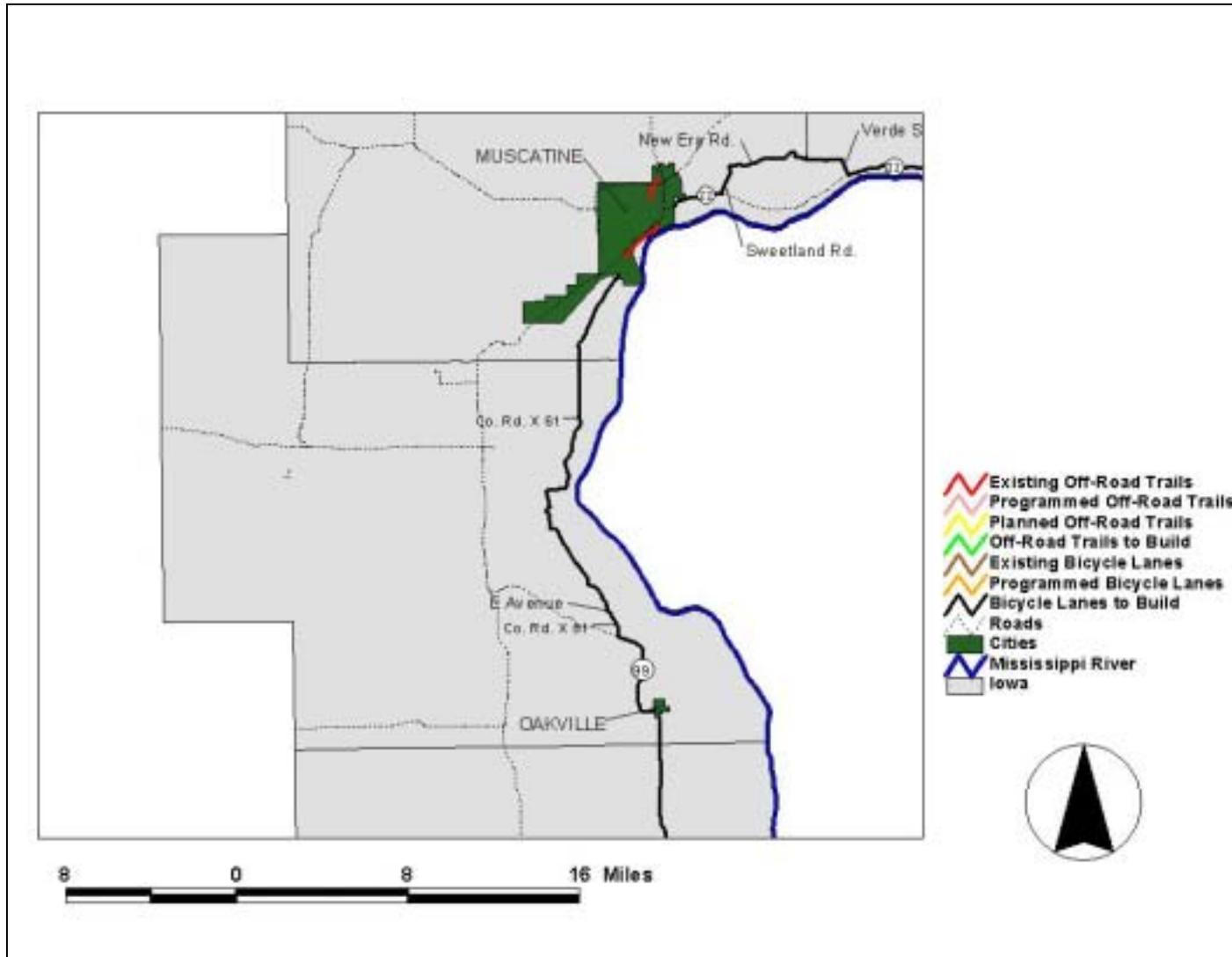


Figure 3.8. Recommended MRT Alignment and Project Status: Louisa County

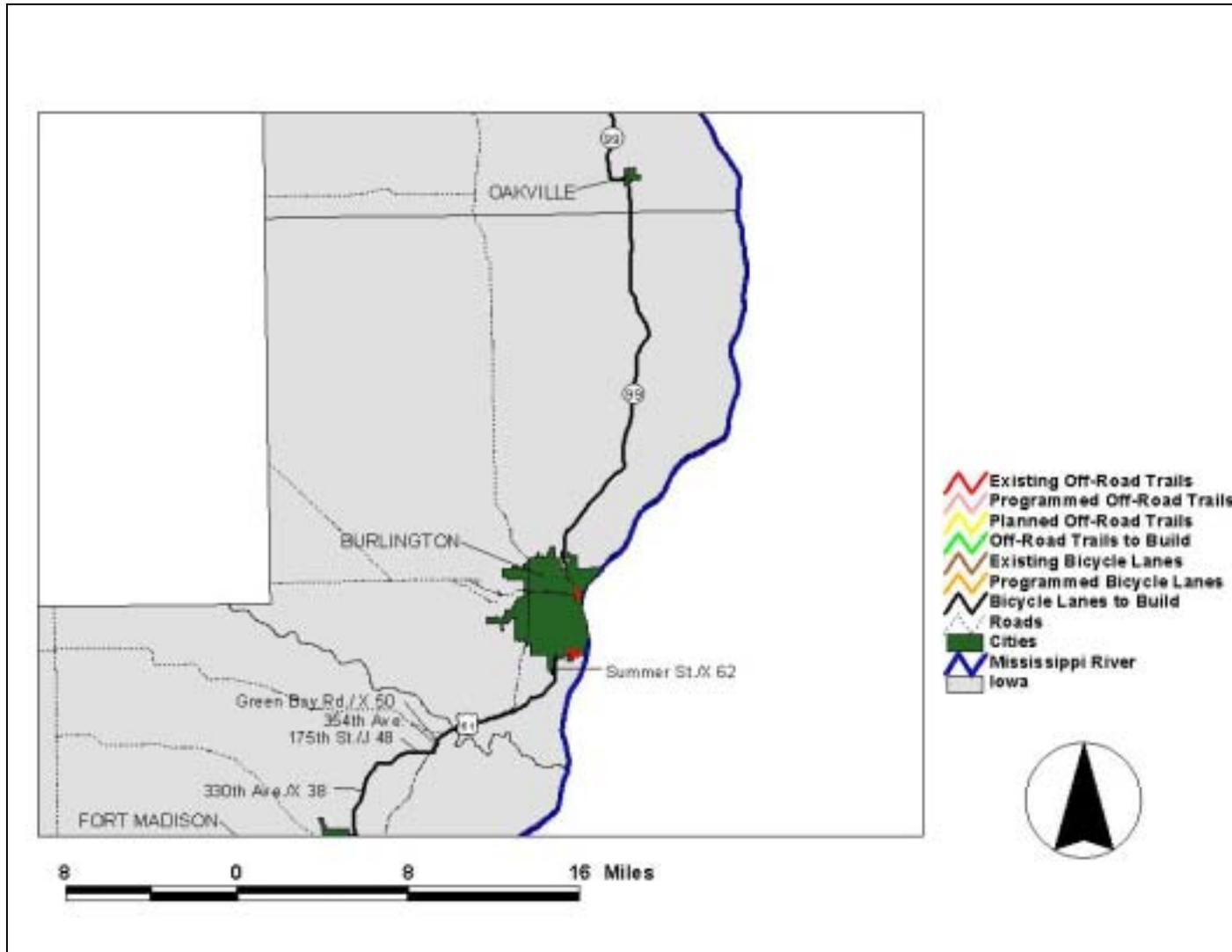


Figure 3.9. Recommended MRT Alignment and Project Status: Des Moines County

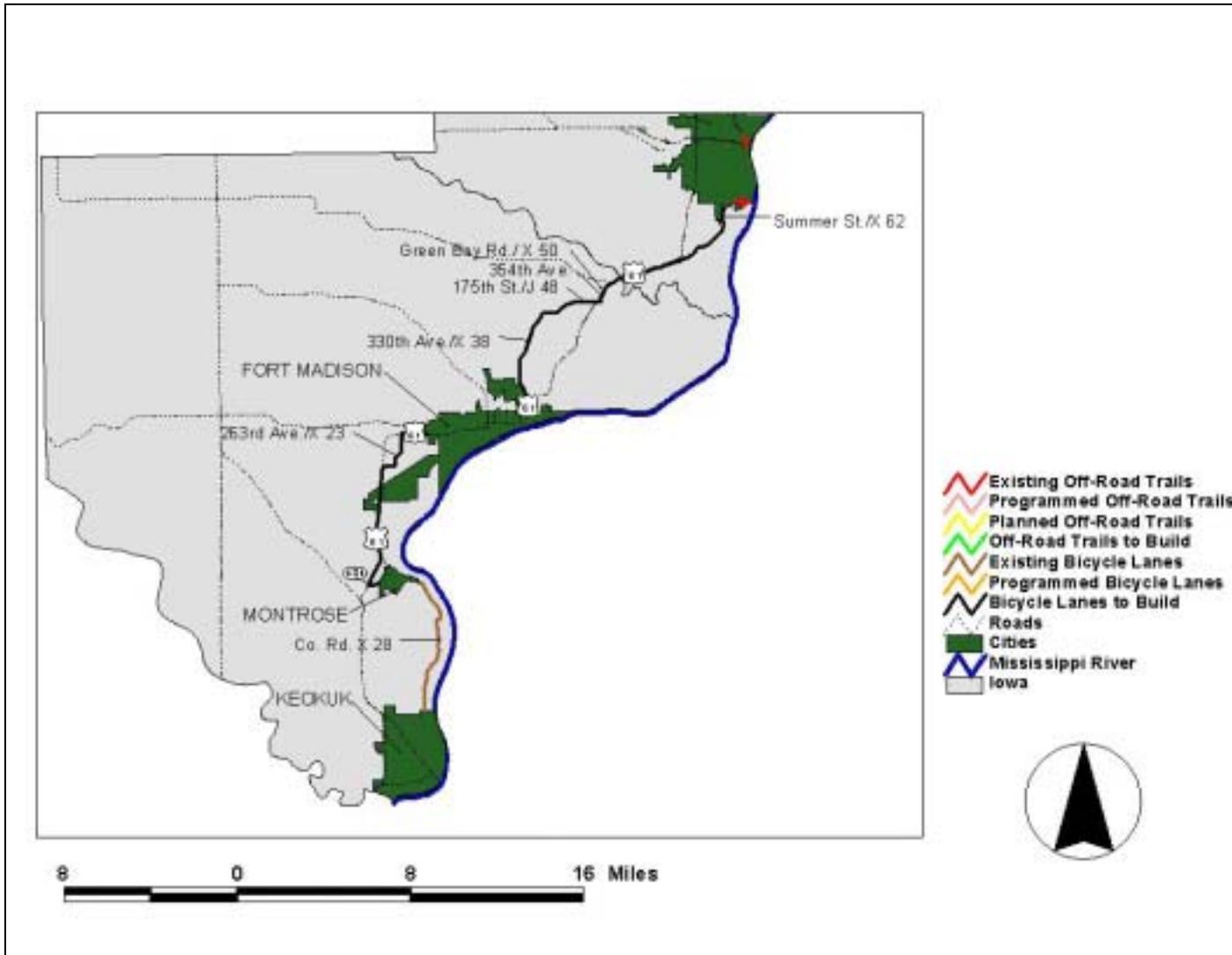


Figure 3.10. Recommended MRT Alignment and Project Status: Lee County

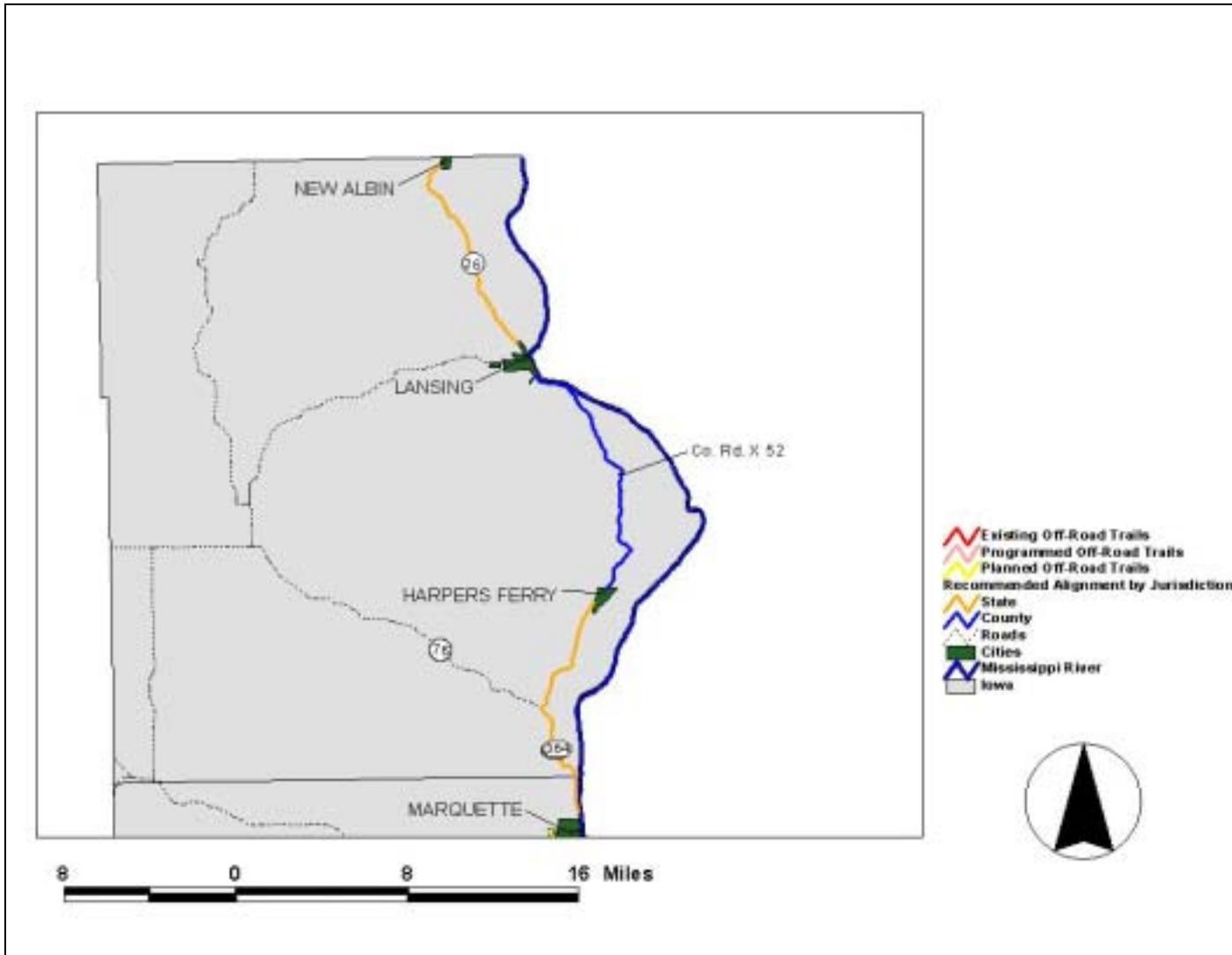


Figure 3.11. Recommended MRT Alignment by Jurisdiction: Allamakee County

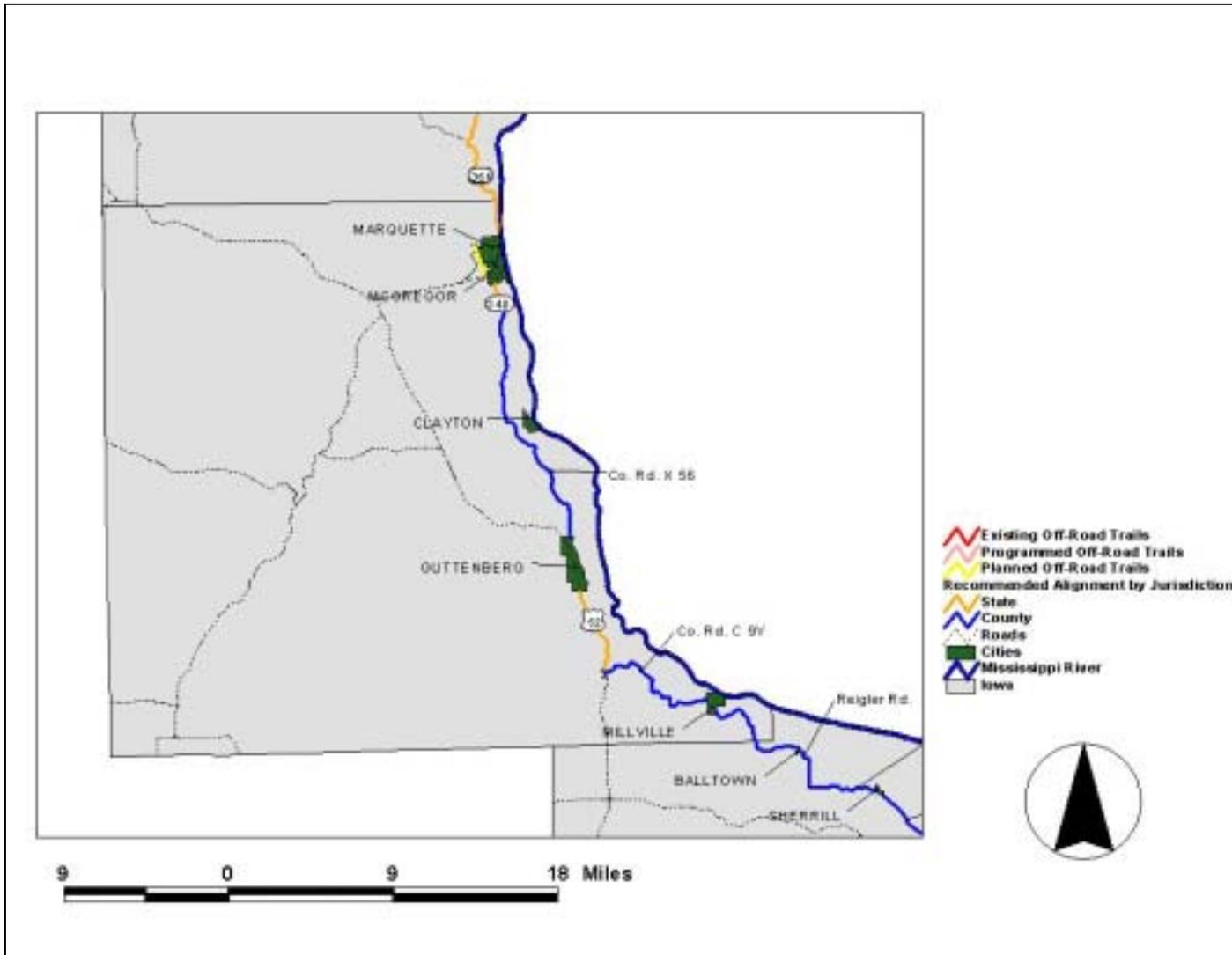


Figure 3.12. Recommended MRT Alignment by Jurisdiction: Clayton County

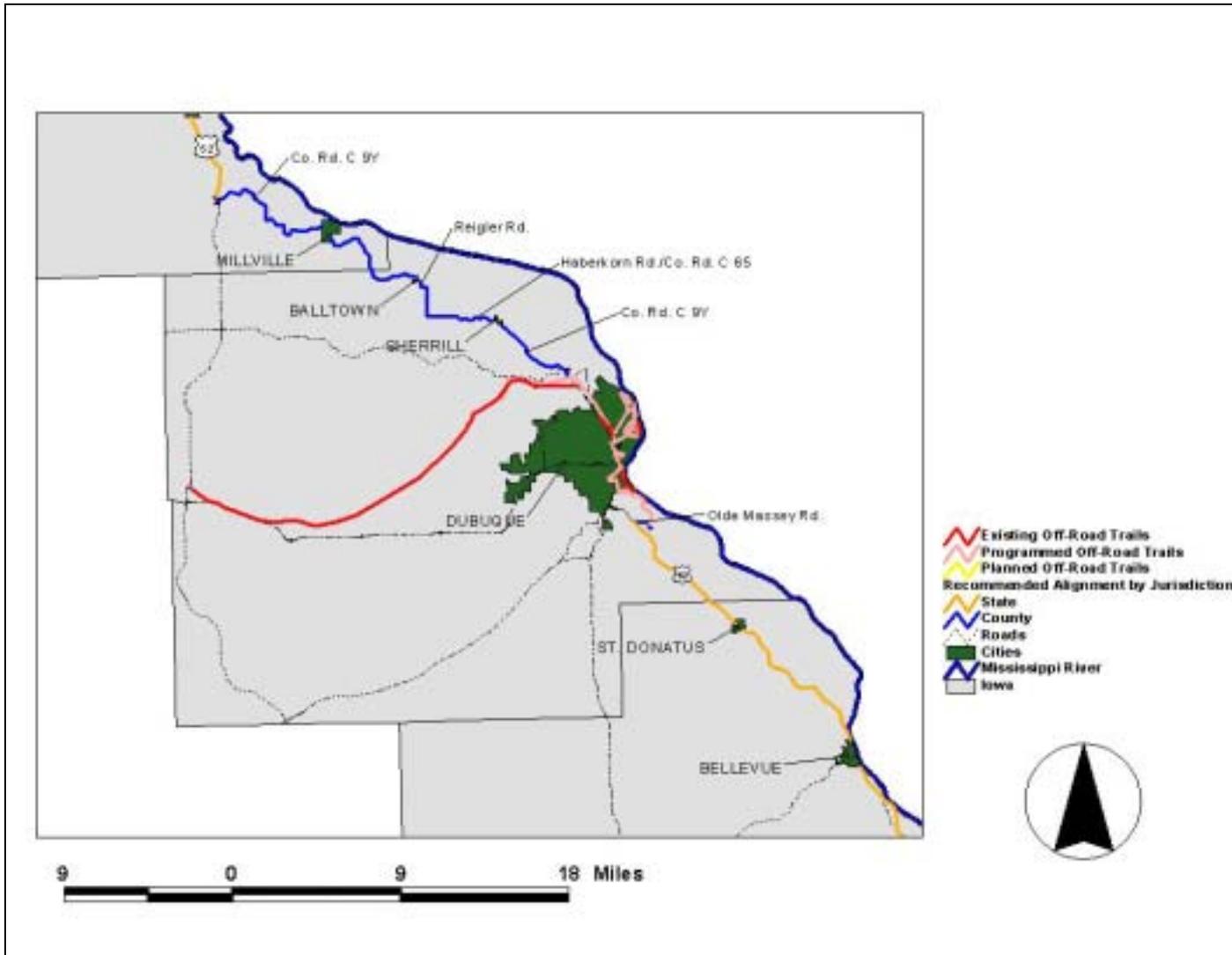


Figure 3.13. Recommended MRT Alignment by Jurisdiction: Dubuque County

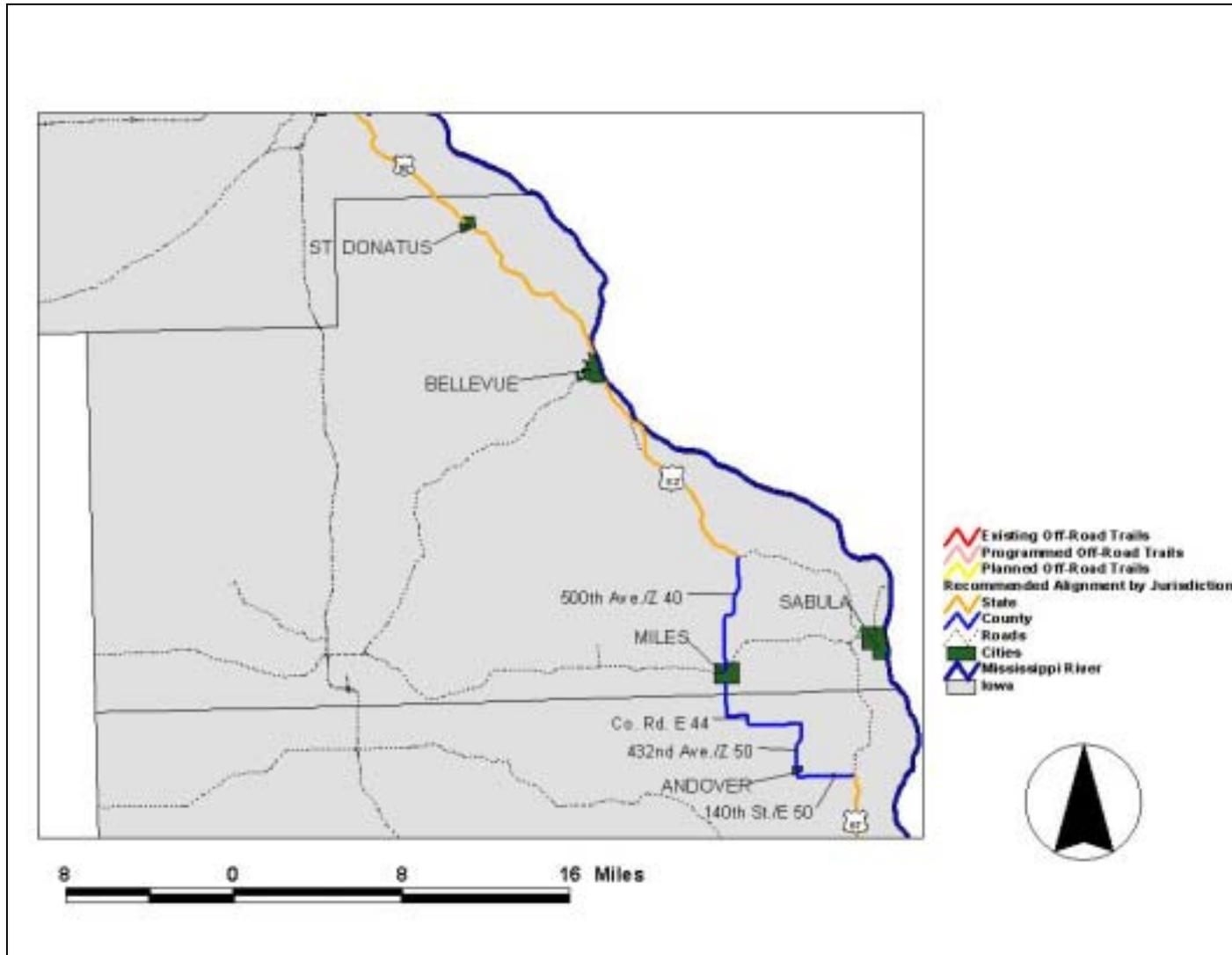


Figure 3.14. Recommended MRT Alignment by Jurisdiction: Jackson County

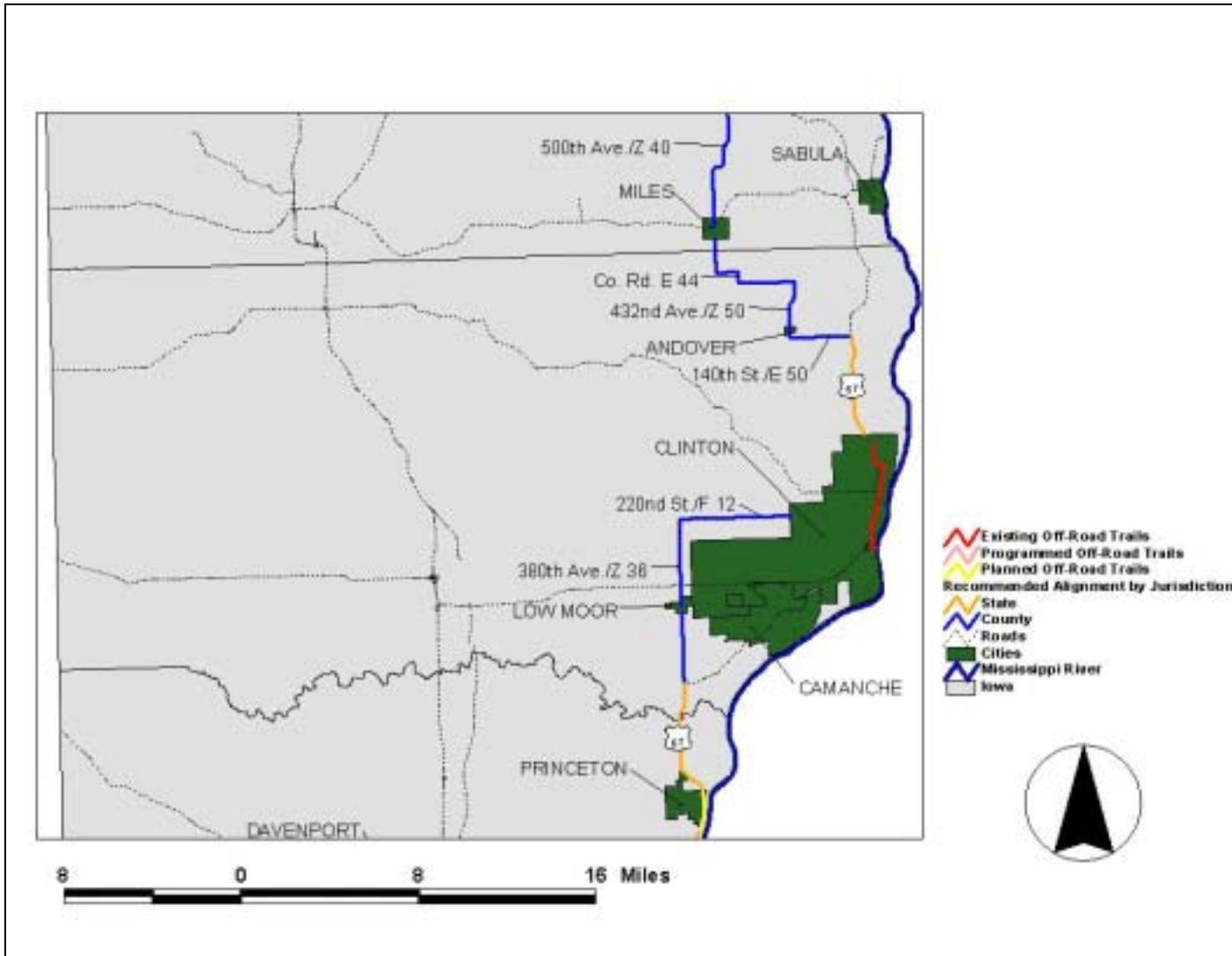


Figure 3.15. Recommended MRT Alignment by Jurisdiction: Clinton County

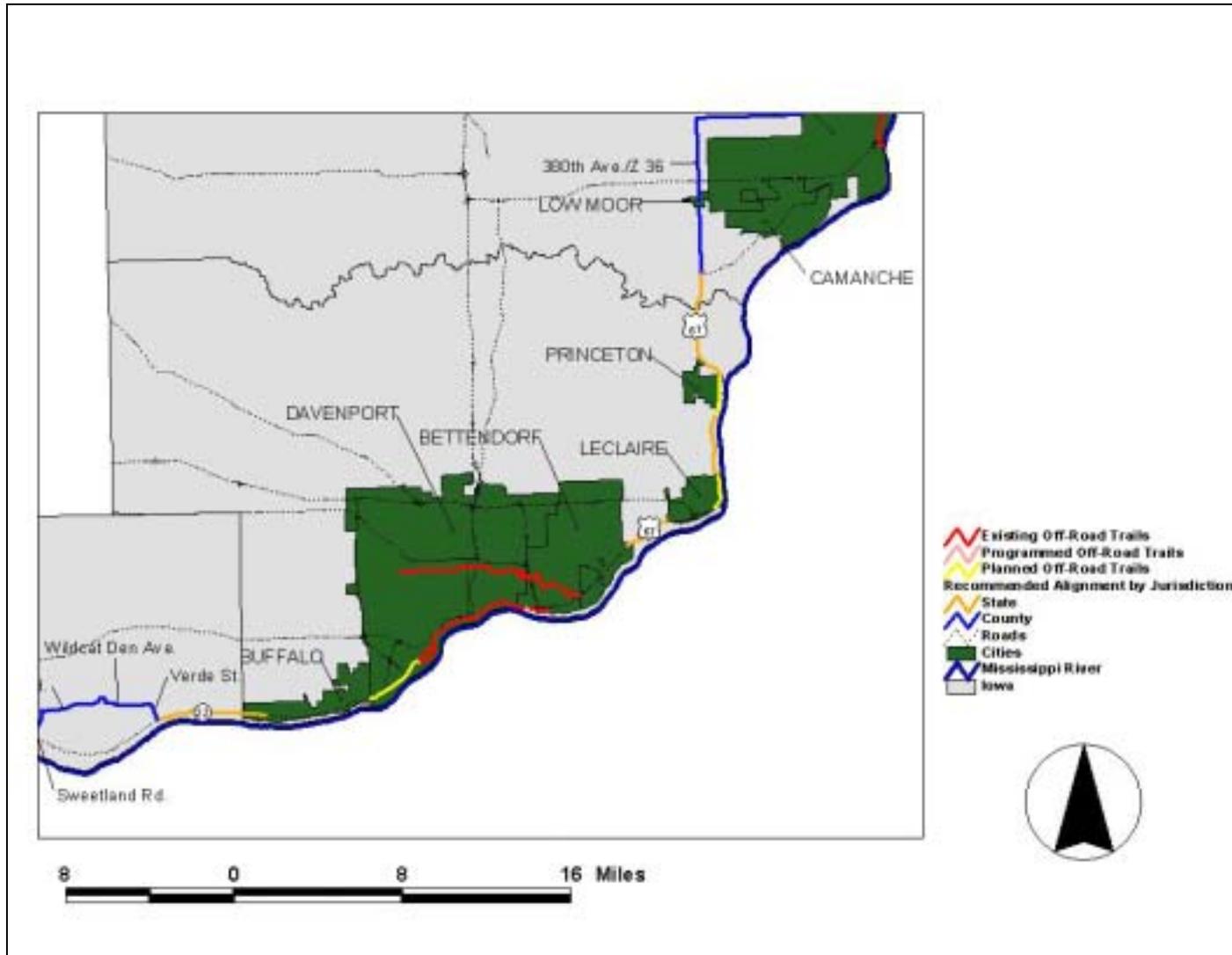


Figure 3.16. Recommended MRT Alignment by Jurisdiction: Scott County

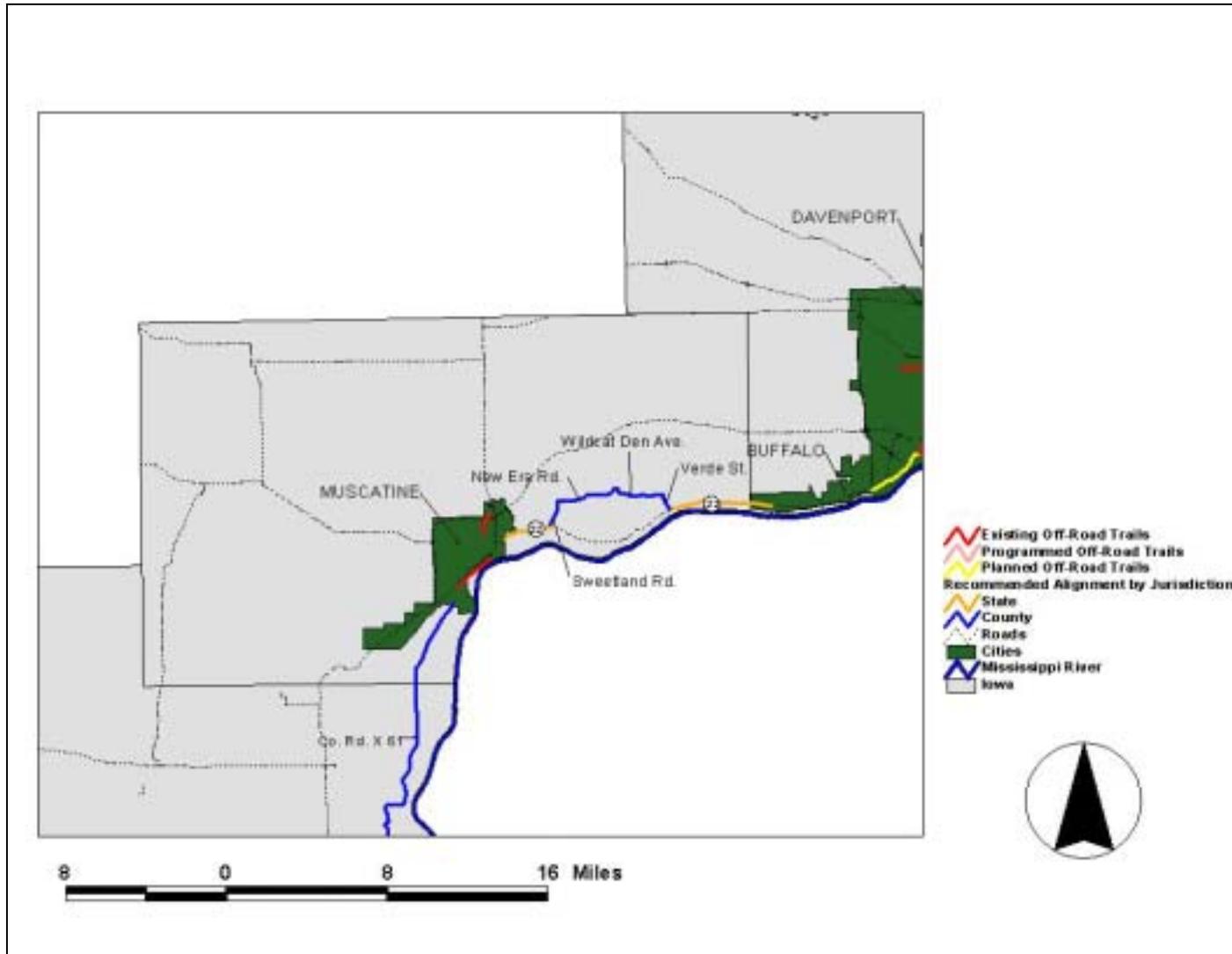


Figure 3.17. Recommended MRT Alignment by Jurisdiction: Muscatine County

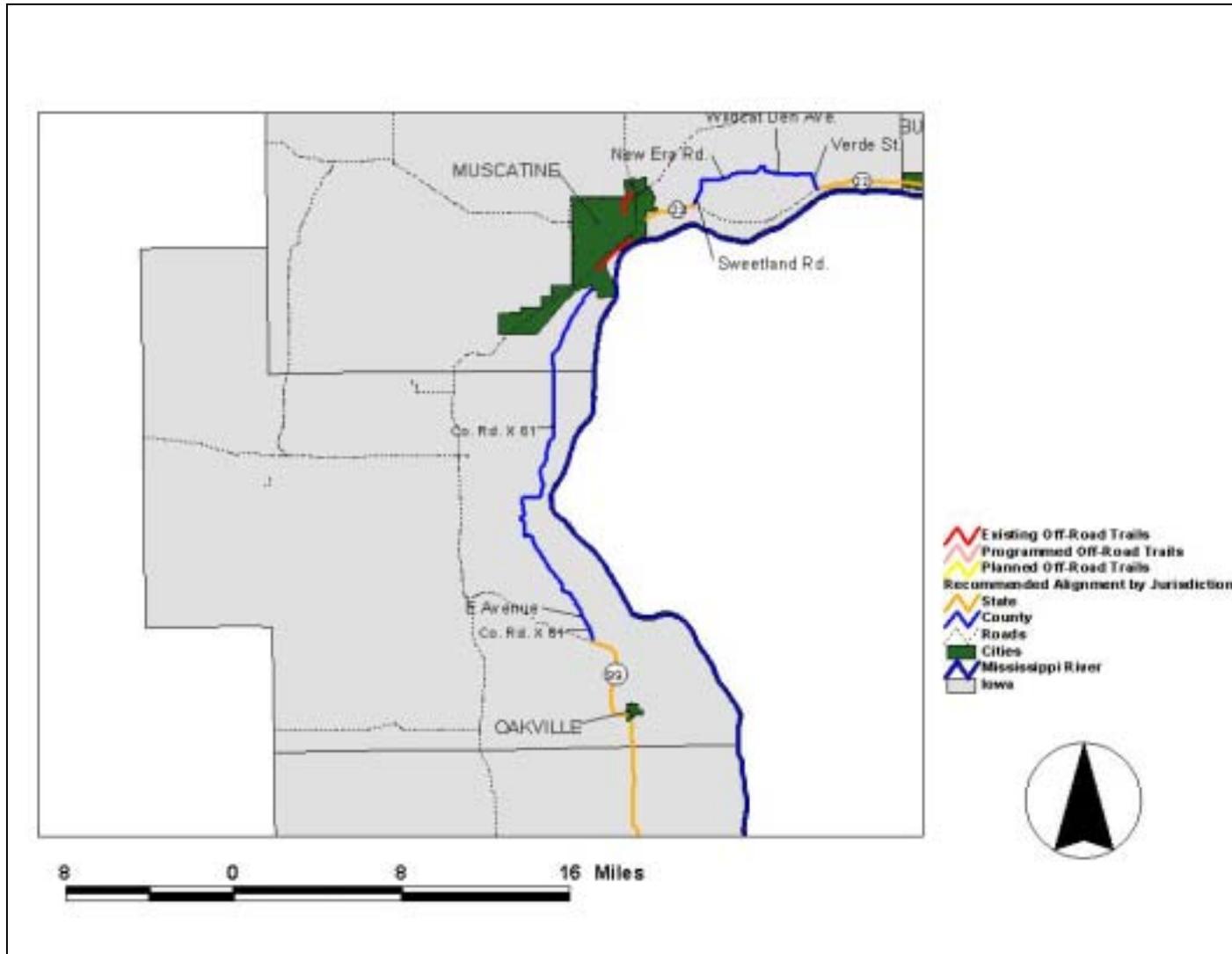


Figure 3.18. Recommended MRT Alignment by Jurisdiction: Louisa County

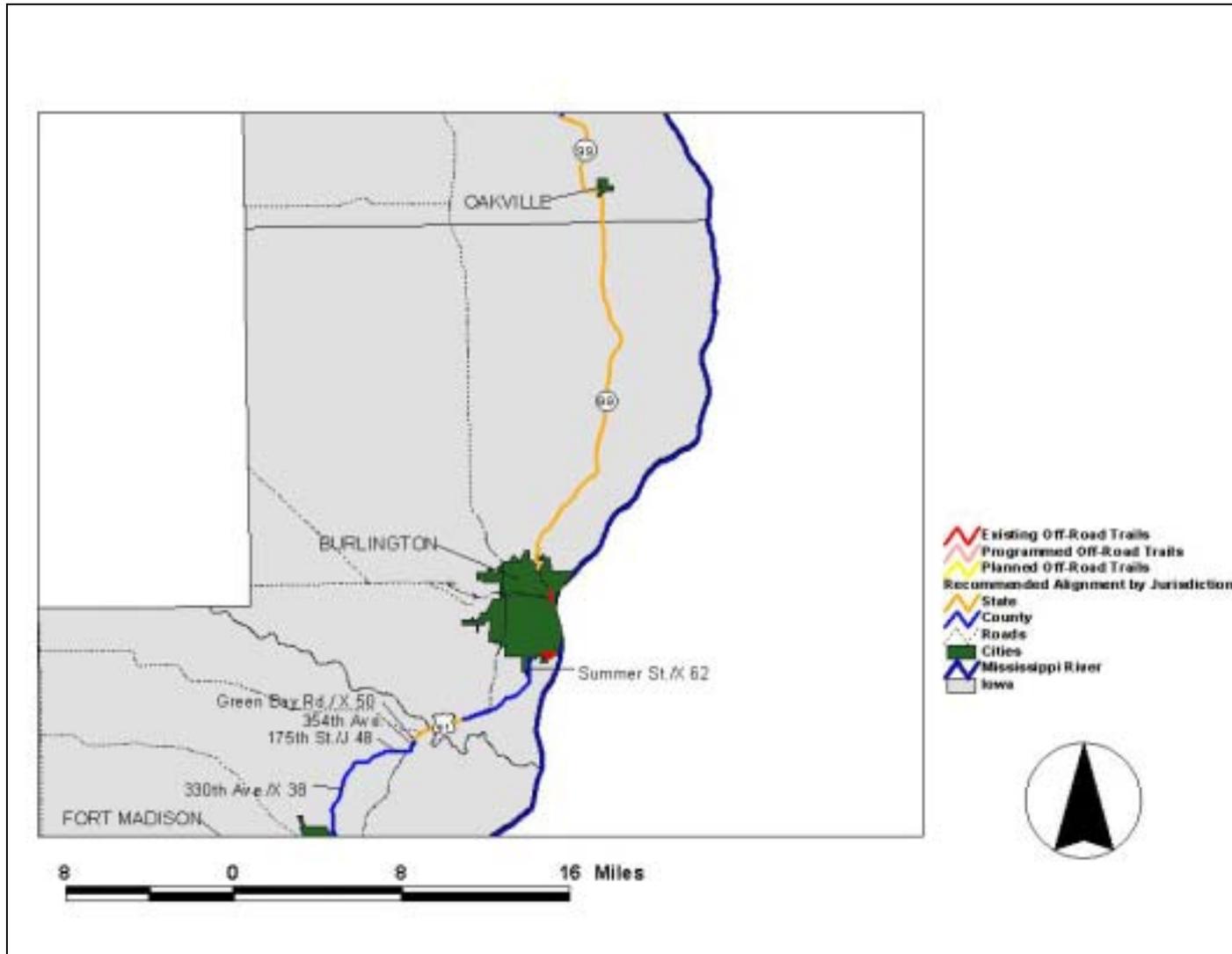


Figure 3.19. Recommended MRT Alignment by Jurisdiction: Des Moines County

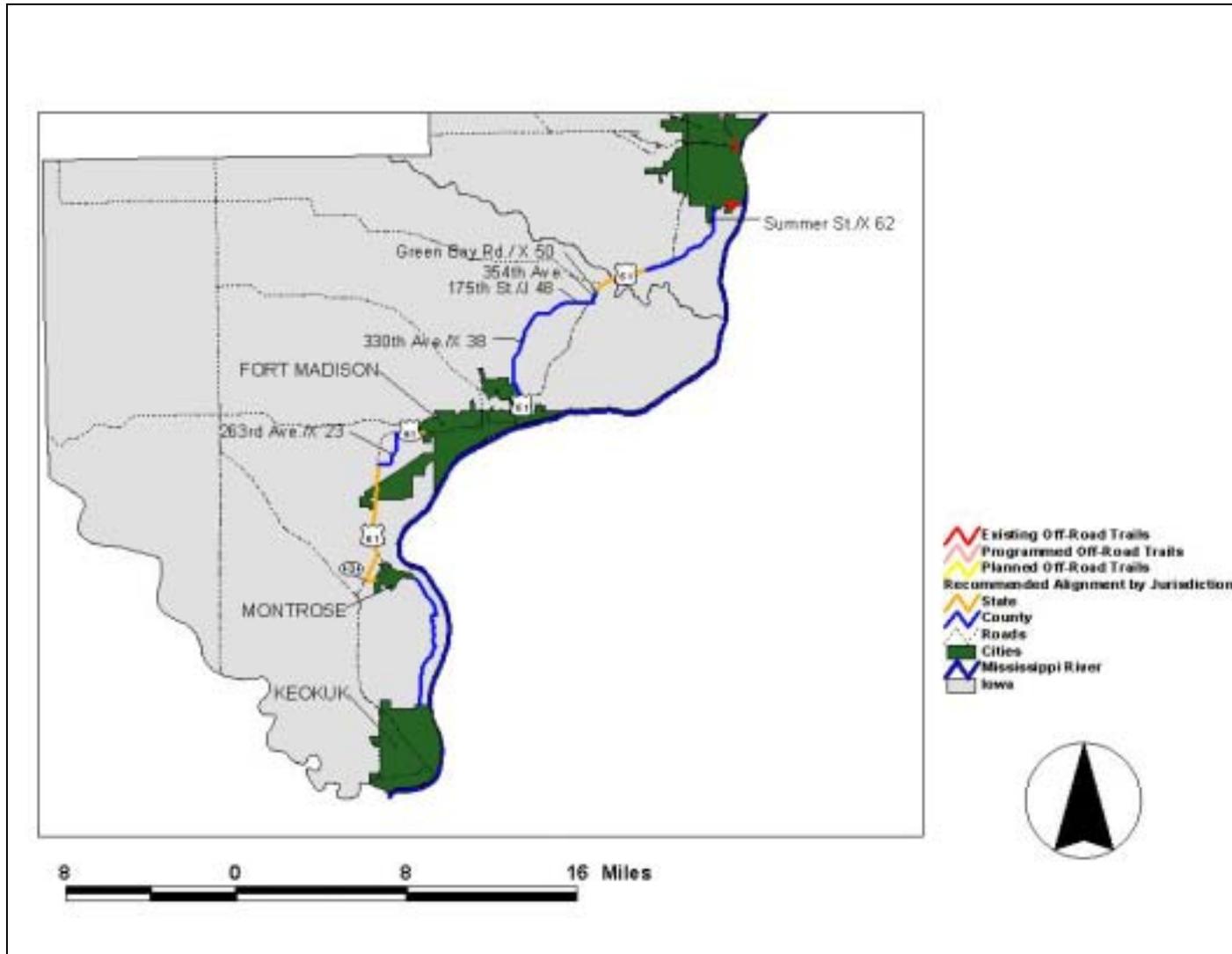


Figure 3.20. Recommended MRT Alignment by Jurisdiction: Lee County