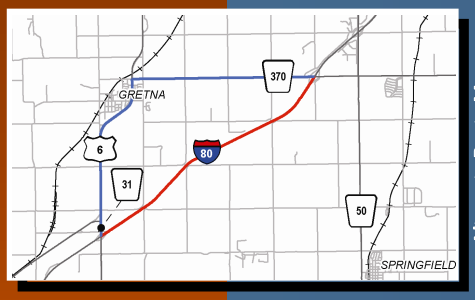
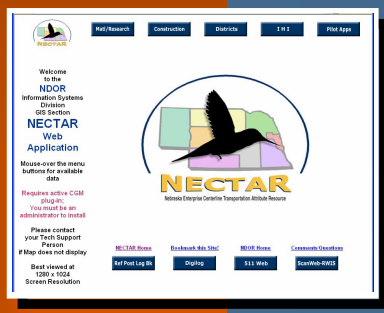
NDOR
Nebraska
Department of Roads

Nebraska Statewide Interstate and Expressway Alternate Route Study



Alternate Route Map



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INTRODUCTION

PURPOSE AND OBJECTIVES

As part of a comprehensive statewide transportation systems management program, the Nebraska Department of Roads (NDOR) is addressing incident management on the state primary system through a number of means:

- Development and deployment of the 511 traveler information program accessed through dialing 5-1-1 anywhere in the state.
- Development and deployment of the Traveler Information Portal (TIP) web site, which is also referred to as 511 on the web.
- Designation of Interstate and Expressway alternate routes to be activated in case of an incident.
- Coordination with metro area freeway incident management plans.

The purpose of this report is to document the process, methods, assumptions, and results of the coordinated alternate route assessment for the state Interstate and Expressway systems. The initial assessment was limited to Interstates and Expressways, because while they represent a relatively small fraction of the NDOR mileage (8.9 percent), roadways in these categories carry almost 50 percent (49.8 percent) of the vehicle miles of travel. Thus, through focusing efforts on the Interstate and Expressway system, the higher volume routes and those routes accommodating longer trips are addressed first.

The study has been divided into four primary phases:

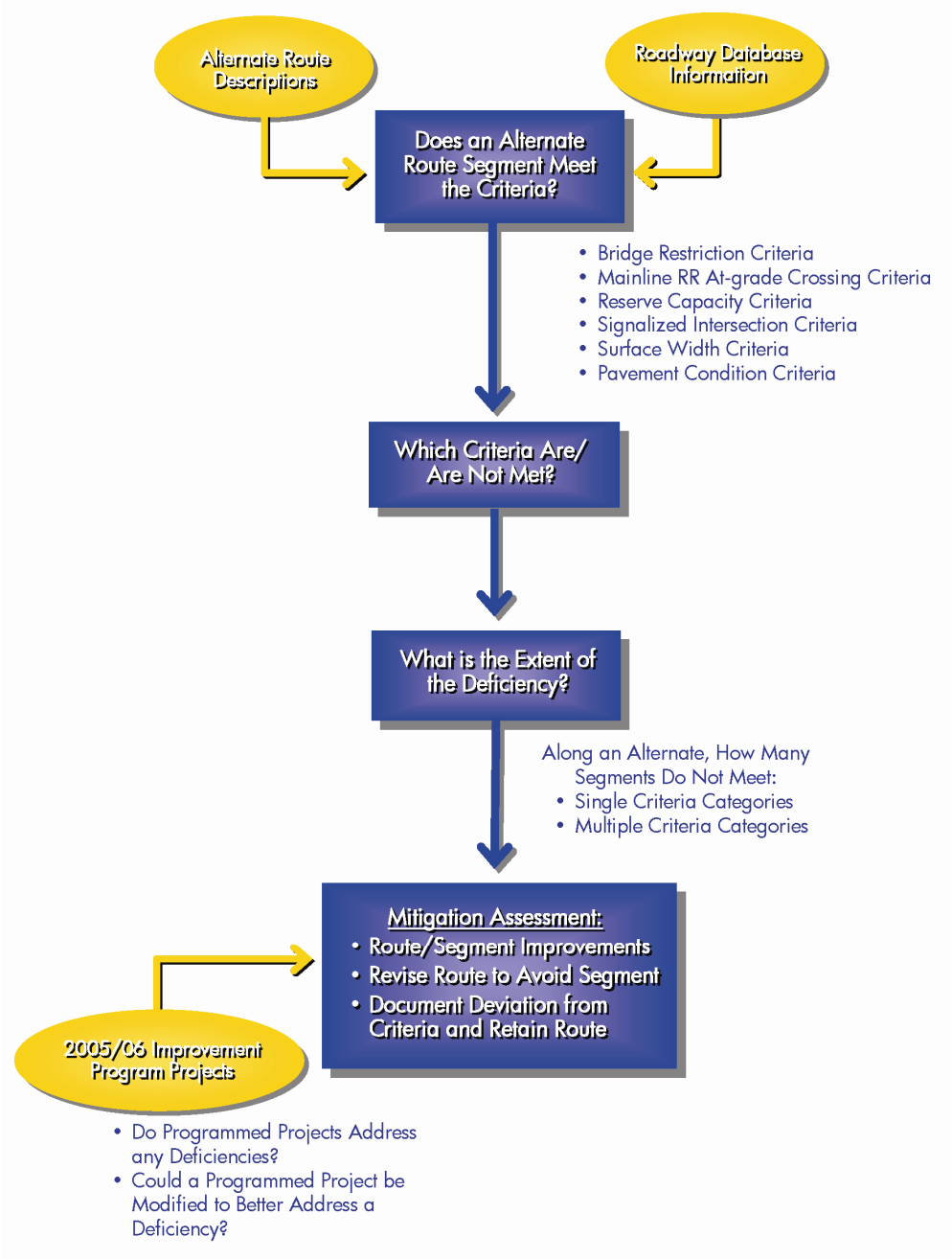
- Documentation of alternate routing assessment and route selection process/methods presently being completed or planned in other states and/or in specific areas. This step has been titled the "best practices" assessment.
- Development of a set of alternate route selection criteria for use throughout Nebraska.
- Application of the Nebraska alternate route evaluation criteria to the preliminary alternate routes established by each of the districts and:
  - Determination of improvements that may need to be made in the system in order to meet the minimum criteria.
  - Identification of secondary alternates to the district-generated preliminary alternate routes in order to avoid "deficient" routes.
- Document a set of Interstate and Expressway alternate route maps and distribution parameters for the various organizations that would deploy the plans (NDOR Districts, State patrol, County Sheriff, etc.).

Study participants used the best practices assessment data as a source of information for developing a set of alternate route assessment criteria for use in this study.

The generalized study flow of the route assessment is displayed in Figure 1 and is outlined in the following bulletpoints:

- Using the information from the best practices assessment, NDOR design standards, and personal expertise, representatives from various divisions of the NDOR developed a preliminary set of alternate route evaluation criteria. Additional information on this process and the criteria is included in the Alternate Route Evaluation Criteria Selection section.
- Apply the alternate route assessment criteria to the routes that comprise the district-generated initial alternate routes.
- Identify and document which segments of the district-generated initial alternate routes did not meet the NDOR selection criteria. It should be noted if a segment of a route does not meet the criteria threshold, it does not immediately result in dismissal of the segment nor would it trigger a request for providing improvements along the segment. At this point in the assessment the desired product is simply a list of segments that do and/or do not meet the identified alternate route assessment criteria.

FIGURE 1: ALTERNATE ROUTE EVALUATION PROCESS



- Conduct a mitigation assessment. Segments of the initial candidate alternate routes that currently do not meet the alternate route selection criteria were reviewed to determine:
  - If improvements to the segment were included in the current 6-Year Transportation Improvement Program (TIP).
  - The significance of the deficiency. Selected criteria were identified as more critical in assessment of the initial set of alternate routes than others. For example, a route segment with a structurally deficient bridge would be addressed differently than a route segment that approached but did not entirely meet the minimum threshold for surface width.
  - The appropriate action. Alternatives include:
    - Eliminating the deficient segment and selection of a different route.
    - Improving the segment to meet the selection criteria.
    - Selecting the route even though all of the criteria have not been satisfied.
- Prepare preliminary alternate route maps for each segment of each route and provide the maps to the districts and central office for comment.
- Revise the maps as needed based on comments received from the districts and/or central office.

STUDY PARTICIPANTS

Assessment of the candidate alternate routes is managed through the Business Technology Support (BTS) Division of the NDOR. As part of a larger program for establishing a statewide network of alternate routes, an internal Alternate Route Working Group has been formed. In addition to the BTS Division, the working group brings together representatives from:

- Bridge Division
- Rail and Public Transportation Division
- Information Technologies
- Roadway Design Division
- Traffic Division
- Districts

The remainder of this document is divided into sections that address:

The best practices assessment.

- Development of the alternate route selection assessment criteria.
- The route assessment and determination of actions.

BEST PRACTICES REVIEW

As part of the process of developing a statewide Interstate and Expressway alternate route plan, the Nebraska Department of Roads desired to gain an understanding of the alternate routing practices of other transportation departments, both state and metropolitan area. Through researching practices in other areas the Department will have at their disposal information that will:

- Be used in assistance of preparing a set of tested and defensible criteria for selecting alternate routes.
- Allow the Department to provide regional continuity in the alternate route selection process in conditions where adjacent states have, or are, conducting a similar evaluation.
- Provide the Department with ideas that have not been discussed locally to this point, but have been researched by other departments.

This section highlights methods and criteria upon which other agencies have based their selection of alternate routes and evacuation routes. The subsections that follow provide documentation of the criteria currently being applied, or are proposed as part of a developing alternate routing system. Each of the subsections of the Case Study Review are arranged to provide a summary of each of the United States and Canadian agencies covered in the practices review. The level of detail included in each of the reviews varies because the complexity and/or available documentation from the various agencies ranges from detailed characteristics (desirable shoulder widths, lane widths on diversion route, etc.) to a simple list of design characteristics reviewed in evaluating an alternate route.

As a summary tool a matrix of the locations reviewed is provided. Listed in the final subsection is a synopsis list of all potential evaluation criteria that have been applied by surveyed agencies and additional criteria identified by URS staff.

The highlighted cases offer various approaches to the selection of candidate alternate routes and criteria-based evaluation. Some agencies identified "desirables" in an alternate route and others augmented their desirables list with potential "deal breakers". In many of the case studies the agencies conceded that there is no perfect choice route, so trade-offs will have to be made in order to determine the optimal alternative route.

Criteria ranged from the condition of roadways and signing on the candidate alternate route; to the effect increased volume will have on air quality and whether local political administrators will support the alternate route plan. Many locations differ in the number of options available for candidate alternate routes. Often times the alternate routes are located in sparsely populated areas with few paved routes that could reasonably accommodate diverted Interstate traffic. In these situations, many of the criteria for evaluation and selection become less critical.

CASE STUDY REVIEW

Documented in the following section are summaries of the program criteria or evaluation measures for selected agencies and multiple agency coalitions or associations. Most of the cases deal with establishing alternate routes on existing roadways, however a few also identify criteria for newly constructed roadways.

I-95 CORRIDOR COALITION

The I-95 Corridor Coalition has a program to determine optimal detour routes. It is the belief of the Coalition that the traffic operating conditions on the detour route are the key to a successful program. If there is an incident on the Interstate mainline and motorists are sent to a more congested or less suitable roadway, it may diminish their confidence in the process the next time there is need for activation of the alternate route plan.

The Coalition takes a more pragmatic approach by establishing that incidents can happen anywhere, and the choices for alternative routes are not always ideal. They feel that establishing a set of "desirables" in a route is not necessarily realistic. The I-95 Corridor Coalition took the task of developing a list of route "deal breakers" or criteria that will eliminate a route alternative from consideration. If any of these following criteria are met, the candidate route will be eliminated from further consideration:

- Roadway height restrictions (low bridges) in place.
- Width restrictions.
- Weight restrictions on roadways or bridges along the potential alternate route.
- Construction zones (short term adjustment to route).
- Toll facilities – In general other DOTs have been sensitive to diverting motorists from a "free" route to a toll road ("pay") route.

INDIANA DEPARTMENT OF TRANSPORTATION

The Indiana DOT used several criteria to rate alternate route options. Some of the criteria are considered "time sensitive" criteria such as school zones (which require lower speeds during certain hours of the day) or routes that are impacted by recurring events (i.e. the route also provides access to an entertainment venue). No specific evaluation threshold for the criteria was noted, which implies that all of the criteria were considered together, and while trade-offs were considered, specific weighting or criteria preference were not incorporated. The criteria have been grouped as follows:

- Alternate Route Roadway Characteristics:
  - Shoulder width (a minimum width was not provided).
  - Lane width (a minimum width was not provided).
  - Bridge height clearances (a minimum height was not provided).
  - Traffic signal corner radii.
  - Weight restrictions.
  - Pavement condition (a definition of substandard was not provided).
  - Signing condition – Is there adequate way finding along the alternate route itself, or will a substantial improvement be required to better ensure that unfamiliar motorists can reasonably navigate the route?
  - Pavement marking condition.
- Alternate Route System Characteristics:
  - Coordination of traffic signals on the route (coordination would be desirable).
  - Adequacy of highway lighting.
  - Availability of instrumentation (ITS components) along route.
- Alternate Route Effectiveness:
  - Total detour distance.
  - Estimated travel time on alternate route versus primary route (a maximum difference metric was not provided).
  - Duration for which the alternate route will be needed.
  - Alternate route level of service.
  - Number of left turns required and the quality of the left turn facilities along the potential alternate route.
  - Ability to temporarily restrict parking along the alternate route (if parking is currently provided).
- Alternate Route Features (positive and negative):
  - At-grade rail crossings (the level of rail traffic was included but a formula for exposure or maximum acceptable rail volume was not provided).
  - At-grade rail crossings with warning device (quality of warning device incorporated).
  - At-grade rail crossings without warning device (identified as a negative to the potential alternate route).
  - The presence of school zones and speed restrictions (identified as a negative to the potential alternate route).
  - Proximity of major traffic generators (factory, theatre, mall).
  - Lift bridges (identified as a negative to the potential alternate route).

  - Tunnels with hazardous material restrictions (identified as a negative to the potential alternate route).
- Alternate Route Miscellaneous Criteria
  - Local ordinances against through truck movements.
  - Local noise ordinances.
  - Local hazardous material restriction ordinances.
  - Nearby land uses which generate high pedestrian activity.
  - Drainage problem areas.
  - Objections from local political administrators.
  - Major recurring events near route – festivals, concerts, sporting events.

New Jersey DOT Traffic Operations North

The New Jersey DOT uses a checklist when planning their diversion routes. Their goal is to develop an alternative route that accommodates both passenger and commercial vehicles, but if needed, separate routes could be developed for trucks and autos. An effort is made to avoid areas near police, fire and first aid buildings as well as schools and hospitals. It was noted, however, that the most feasible route will include these activities and therefore there is no "deal breaker", simply criteria that carry more weight. The following is excerpted from the NJDOT Traffic Operations North "Diversion Route Check List":

1. Diversion routes should be field verified for feasibility using the following criteria:
   - Can the potential diversion road handle ALL traffic (cars and trucks)?
   - Check turning radii on the diversion route to ensure trucks can be accommodated.
   - Does route abut a hospital, a school or emergency services facilities? (If the identified route is the only feasible route, it would be identified as an alternate route – if other are available, the route could be eliminated).
2. Note all signalized intersections and the agencies that maintain them (i.e., state, county, local municipality, developer, etc):
   - Note all intersections with traffic control devices as well as the type of device it is (i.e., stop or yield sign).
3. Check for height clearances (minimum height criteria were not provided).
4. Check for weight restrictions on bridges or roads. If a weight restriction has been posted on a roadway as a means of addressing noise complaints or heavy truck complaints, but the road affords the best route, then for the emergency the road may be used.
5. Check and note where manual direction of traffic is needed. This would be a police officer or fire police.
6. Check and verify the phone number for each police department.
7. Any road that has a county route designation, note it after the local street name in the text.

Wisconsin DOT District 1

District 1 of the Wisconsin DOT has a comprehensive list of eleven criteria for evaluating potential alternate route options. All eleven of the criteria were used to develop a list of candidate alternate routes. Once the candidate alternate routes were established, a physical inventory of the routes was conducted, and the data was used to rank each of the routes on a scale of 5 (excellent) to 1 (not recommended). The eleven criteria used for selecting alternate routes are as follows:

- Use state highways whenever possible.
- Where state highways are not available, WisDOT will work with the local communities and will follow the Long Truck Route rules to establish alternate routes.
- Avoid alternate routes with weight restrictions.
- Minimize the use of alternate routes that have at-grade railroad crossings, especially if there is a high number of trains on the railroad line.

- Avoid alternate routes that have height restrictions due to underpasses or low bridge clearance.
- Use alternate routes that carry traffic in the same general direction as the Interstate. Avoid alternate routes that will carry traffic in the opposite direction of the intended travel for more than one mile.
- Avoid alternate routes traversing communities with multiple signals (4-6 or more) along the route.
- Minimize use of alternate routes through residential areas.
- Minimize use of alternate routes that require to make 90 degree turns.
- Consider alternate route options at all interchanges.
- Minimize the length of the alternate route segments.

The following are the ten data points that were collected for each of the candidate alternate routes:

- Length
- Traffic Control
- Pavement Condition
- Speed limit
- Design Type
- Capacity Constraints*
- Number of lanes
- Geometrics
- Access Type
- Traffic Flow

* - Capacity constraints are considered as:

1. Changes in roadway geometry or topography.
2. Bridge, rail or water crossing.
3. Potential safety hazard, including height/weight restrictions, poor sight distance, or reduced visibility.

Each alternate route candidate was ranked from 5 (excellent) to 1 (not recommended) based on the collected data points. The following provides examples for each level on the ranking scale:

5) Excellent – 2 or 4 lane roadway section with limited access points, good pavement conditions and shoulder widths, low/medium existing traffic volumes, few capacity constraints and/or no improvements needed.

4) Good – 2 or 4 lane roadway section with good/adequate pavement conditions and shoulder widths, low/medium existing traffic volumes, few capacity constraints, and/or few minor improvements needed.

3) Fair – 2 lane roadway section with adequate pavement conditions, low/medium traffic volumes, few capacity constraints, and/or several minor improvements needed.

2) Poor – 2 lane roadway section with adequate/poor pavement conditions, medium/high traffic volumes, many capacity constraints, and/or major improvements needed.

1) Do not Recommend – Route has many capacity constraints and/or safety hazards that can not be realistically improved to accommodate heavier traffic volumes.

WISCONSIN DOT DISTRICT 3

District 3 of the Wisconsin DOT has an alternate route plan for Trunk Highway (TH) 41 running from Oshkosh through the Fox Cities to Green Bay. The purpose of the plan was to determine alternate routes that can be used when it is necessary to divert traffic from TH 41 due to a major incident – defined as "an event that is expected to block at least two lanes of traffic for one hour or more". In the process of evaluating the alternate route candidates for this plan, several roadway characteristics were identified. These include:

- Average daily traffic on the potential diversion route.
- Number of lanes on the diversion route (a specific criteria that tied the relationship of volume to lanes was not included).
- Speed limit.
- Intersection control.
- Is the diversion route a divided roadway?

- Are there separate turn lanes available?
- Pavement condition.
- Is there a known recurring bottleneck along the potential diversion route?
- Other key observations:
  - Nearby land uses?
  - Bridge/tunnel along route?
  - Is it a one-way road?
  - Pedestrian level along route?

Routes were eliminated from consideration for several reasons including: roadways that run through residential areas, routes that provide poor connectivity to TH 41, streets that are narrow, routes that are congested to the point where they could not reasonably accommodate the diverted traffic, routes that pass through a school zone, and routes susceptible to recurring train delays.

The analysis of each alternate route candidate, or roadway segment was accomplished based on existing traffic conditions, the impact of diverted peak hour traffic, and the resulting measures of effectiveness for the alternate roadway segment. Statistics compiled for each roadway segment include:

- One-way volume.
- Peak hour volume (identified as 9.1 percent of the daily volume).
- Peak hour capacity along the potential diversion route.
- Available capacity (reserve capacity) along the potential diversion route.
- Level of diverted traffic.
- Number of vehicles below or above capacity.
- Volume-to-capacity ratio along potential diversion route following implementation (minimum thresholds for operations were not identified).

Based on the inventory and statistical analysis, recommendations were made for each candidate segment of roadway. If the recommendations were to not use a segment as an alternate route, the reason – such as lack of capacity, the existence of bottleneck locations, poor connection to TH 41, etc – was identified in the plan.

DES MOINES AREA I-235 PROJECT

The Iowa DOT has identified alternate routes during this improvement project along I-235 through the Des Moines metro area. The intent of the plan was to identify diversion routes for construction period route closures. Several criteria were identified as being more significant than others; these criteria are listed below:

- 16 feet of vertical clearance – if the minimum clearance is not met, the route is not considered.
- Does the route go by a school – If yes, the route may be eliminated.
- Roads with a high number of curves are less desirable.
- Try to keep traffic on the highest possible classification of roadway (principal arterials over minor arterials, minor arterials over collectors).
- Bridges with a high efficiency rating are preferred.
- Pavements with a high condition index are preferred.
  - Otherwise, establish that repair will be necessary at a later date.
- Be sure that all turns have large enough radii for heavy vehicles.
  - It was often difficult to meet this criterion.
- Be certain to stay off roads with current or near future construction projects.

In the documentation, certain criteria, such as those dealing with height restrictions, proximity to a school or longer-term construction on other routes, were identified as more critical to selecting an appropriate route relative to others such as pavement condition and turning radii. It was characterized as a few tires rolling over a curb is more acceptable than diverting 600 vehicles per hour past an elementary school.

ARIZONA DOT, CANAMEX CORRIDOR

The Arizona DOT and the Maricopa Association of Governments are designating a specific route for the

CANAMEX Corridor. This is a to-be-constructed or improved corridor that will provide a bypass, primarily for commercial vehicles, of the Phoenix metropolitan area. As the proposed route is a new facility, most of the desired roadway characteristics will be available with the creation of a new roadway or reconstruction of an existing roadway. The criteria used in establishing the concept, however, can be applied in reverse and applied in the alternate route determination concept. The ten evaluation criteria employed are listed below:

- Cost.
- Travel time comparison:
  - Peak hour and off-peak times.
- Length of the diversion route.
- Level-of-service on the diversion route:
  - Percentage of total miles for the route exceeding ADOT level of service criteria for urban and rural roadways under existing conditions.
  - Percentage of total miles for the route exceeding LOS D under 2020 conditions.
- Proximity to freight terminals:
  - Percentage of total miles for each route alternative located within or adjacent to areas with trucking and warehouse facility densities of greater than 0.41 sites per square mile.
- Constructability.
- Safety:
  - Based on truck-involved crash frequency over a given time period.
- Environmental impacts.
- Title VI and Environmental Justice Impacts.
- Major community impacts:
  - Positive economic impacts for areas near the route.
  - Negative impacts to residential areas.

CAMBRIDGE, ONTARIO ROUTE SELECTION

The Cambridge Area Route Selection Study report evaluates alternative alignments for routes in southern Ontario. This report provides information on not only criteria, but also important points regarding evaluation methodology. Some of these important points include:

- The methodology must hold up against public inquiry.
- Simple methods are more readily conveyed than complex methods and the easier a method is to understand, the better chance it will be accepted.
- Complex figures and tables often turn off the public.

Since this report evaluates alternatives for routes that will be constructed or necessitate major improvements, many of the criteria (such as the ability to accommodate alternate modes – bus, bicycles – measured as the proximity to potential passengers and cycling trails) may not pertain to the process the Nebraska Department of Roads is undertaking. Therefore, only a handful of the relevant criteria are presented as follows:

- Potential for disrupting neighborhoods:
  - Qualitative description.
- Distance of travel:
  - Measured in travel time and mileage.
- Emergency response time from locations on the alternate route:
  - Measured from regional model as average speed.
- Impact on fish, wildlife, wetlands and vegetation:
  - Qualitative description such as minor, moderate or significant.
- Air and noise quality impact:
  - Measured from regional model output.
- Rail crossings:
  - Measured as number of daily occurrences.
- Delays due to high traffic areas:
  - Identified by locating segments with recurring congestion.

Evaluating the alternatives using these criteria used a net effects analysis, and the development of reasoned arguments, in order to outline the advantages and disadvantages of each alternative alignment. Thus, a completely analytic process was not applied.

GEORGIA DOT INCIDENT MANAGEMENT PROGRAM

The Georgia DOT has developed alternate routes for every interchange on every Interstate highway in the state. Each district is charged with producing their own alternate route plans, and the results are available to all GDOT maintenance and operations personnel via a website.

The alternate route plans are developed by the Area Engineers for each interchange that lies in their area. The routes are selected on the basis of the following:

- Local Knowledge – It is generally believed that the Area Engineer knows their roads better than most anyone in the area. Considering all the pros and cons for each segment allows the engineer to come up with a sound alternative.
- Pavement Condition Inventory – Area Engineers inspect and create an annual record of pavement conditions for the roads within their jurisdiction. This database is used in the route selection process.
- Restrictions – Certain restriction criteria exist, most notably are height, weight and width restrictions that will eliminate a given route from consideration.
- Riding the Route – In order to be certain of the alternative route selection, the Area Engineer will drive most alternate routes to make sure there are no major constraints for any diverted vehicles.

A separate project in the Atlanta Metro area includes the selection of alternate routes, posting fixed signage on both the primary and secondary routes, and preprogramming portable changeable message signs that can be deployed during the incident management process. This will provide pre-determined alternative routes that allow traffic a more orderly path, reducing delay and secondary incidents on the alternate route. A concession is made in the report noting that there are often few very good alternative routes for the primary routes, so active diversion will be difficult to do effectively.

GDOT does not get into the specifics of alternative route selection and evaluation for this project, but does outline the process for the project as follows:

- Identify Corridors – Identify the specific corridors that are in most need of special event routing and traveler information.
- Develop Maps – Develop rendered maps of the routing plans. Make them available on reference cards to be distributed in card from or via the Internet.
- Trailblazers – Install permanent trailblazer guide signs at key locations to guide traffic being diverted on alternate routes.
- Temporary Changeable Message Signs – Create a strategy for rapid deployment of portable message signs to crucial locations for the purpose of providing current travel information.
- Outreach Media – Prepare and distribute information to the media and public through traveler information displays and other key locations.
- Traffic Signal Timing Response – Establish preset traffic adaptive diversion timing plans on specific route so that they can be implemented if an incident occurs where diversion is necessary and traffic needs to be moved more efficiently.

NCHRP SYNTHESIS 279

This report prepared for the Transportation Research Board identifies many valuable points regarding the development and evaluation of an alternate route plan. Some of these points are listed below, followed by evaluation criteria that were identified.

- Alternate routes are key traffic management tools for minimizing the effect of unplanned events on major or principal arterial roadways including:
  - Crashes and cargo spills.
  - Fires, bridge collapses, industrial accidents.
  - Severe weather or other types of catastrophe.
- The planning process should include many different stakeholders to broaden the ability to identify available resources and potential conflicts.

- Planning should include where and how much traffic may be diverted as well as when diverting will result in benefits to motorists.
- The predominant restrictive criteria include:
  - Proximity of the alternate route to the primary route.
  - Ease of access to/from the alternate route.
  - Safety (established through review of crash records) on the alternate route.
  - Any height, weight, width or turning restrictions.
  - Number of travel lanes on the alternate route.
  - Congestion induced on the alternate route during active diversion.
  - Number of controlled intersections and the type of traffic control.
  - Travel time on the alternate route.
  - Pavement conditions along the potential diversion route.
  - Percentage of heavy vehicles that would be rerouted.
  - Grades on the alternate route.
  - Type of land uses adjacent to the potential diversion route:
    - Existence of schools and hospitals along the route.
    - Proximity to residential developments adjacent to the potential diversion route.
  - Availability of services along the route (fuel, rest stops, food, lodging).
- Also important are the methods and resources available for informing and guiding motorists on both the primary and alternate routes:
  - Police.
  - Portable or permanent changeable message signs.
  - Portable or permanent highway advisory radio.
  - Temporary or permanent detour signing.
  - Media.
  - Signal timing strategies.
  - High occupancy vehicle (HOV)/toll lane management or elimination.
  - Temporary parking restrictions.

Omaha–Council Bluffs Incident Management

The Omaha–Council Bluffs Traffic incident Management Operations Manual explains alternate route selection and evaluation. It presents several factors to be used in the initial selection of potential alternate routes. These factors are shown as follows:

- Distance traveled on the alternate route prior to reentry to the primary road.
- Classification of diversion route roadway.
- Type of nearby land uses (residential, commercial or industrial) and in particular the proximity of schools and hospitals.
- Complexity of route – number of turns and nearby traffic generators.
- Types of traffic generators on the route – shopping mall, convention center, theatre.
- Number of at-grade rail crossings.

Once candidate alternate routes have been identified they are evaluated. The document suggests site visits be made, and a video of the alternate route be taken. The alternate route evaluation criteria are presented below:

- Grades along the potential route and number of hills (lesser change is desired).
- Number of turns (fewer turns are desired).
- Shoulder widths (wider shoulders are more desirable).
- Volume of commercial traffic to be diverted.
- Existing traffic volumes.
- Width of travel lanes (wider lanes are more desirable).
- Number of curves (a more linear roadway is desired).
- Load limits on bridges and roadway – weight restrictions.
- Vertical clearance height of overhead structures – height restrictions.
- Turning radii to accommodate commercial trucks.

- Number of school crossings (zero tolerance when possible).
- Pavement condition.
- Number of at-grade rail crossings (zero tolerance when possible).
- Number of intersections without turn lanes.
- Signing to guide motorists back to the primary roadway.
- Number of service stations and other amenities.
- Speed limit (consistency is desirable).
- Is the potential diversion route a bus route?
- Planned construction (zero tolerance when possible).
- Number of special events that impact this route.
- Availability of and space for placement of temporary traffic control devices.

Cleveland/Lorain ITS Deployment Study

The Cleveland/Lorain guide to diversion routes prioritizes choices for where traffic should be diverted as follows:

1. Limited Access Highway to Limited Access Highway.
2. Major Arterial Roadway to Limited Access Highway.
3. Limited Access Highway to Major Arterial Roadway.
4. Major Arterial Roadway to Major Arterial Roadway.

This document also provides a list of criteria, which would most likely **eliminate** a roadway from consideration as an alternative route, keeping in mind that in some cases concessions must be made when an optimal route is not available. These "deal breaker" criteria are as follows:

- Substandard roadway alignment or geometrics.
- Lack of shoulders.
- Residential area abutting the potential route.
- Schools or hospitals abutting the potential route.
- Heavy pedestrian traffic along the potential route.
- Active at-grade railroad crossings along the potential route.
- Substantial change in speed limits along various segments of the potential alternate route or relative the original route.
- Circuitous route.
- Roads that are currently in need of resurfacing and/or reconstruction.
- No traffic signals to control or use to artificially increase capacity for diverted traffic.

The document also conveys the importance of having a system for communicating the alternate route to the motorist well in advance of the incident.

Dubuque and Clinton, Iowa Alternative Route Planning

The East Central Intergovernmental Association (ECIA) in northeast Iowa has prepared alternate route plans for the Dubuque area and is presently doing the same for the Clinton area, which is situated to the south on the Mississippi River. The process used by the ECIA identifies candidate alternative routes by gathering stakeholders together so that agencies affected by the diversion are provided the most influence in determining what the appropriate route will be.

For Dubuque, the stakeholders included representatives of the city engineer's office, the county engineer's office, local fire personnel, local city and state police personnel and other emergency management personnel. Based on local knowledge, first hand experience, and taking into consideration what will work best for all involved, candidate alternate routes were identified. In order to determine the feasibility of the routes, the ECIA evaluated the routes using a traffic simulation model to make sure the diverted traffic did not overwhelm the chosen path. The most favored alternate route that had available capacity was chosen for each situation.

An ECIA representative indicated that it is important to get stakeholders on board with the plan, and that is most easily done when they are involved:

> "If the people who are using the route are the ones who created it, they will have confidence in and buy into the plan".

Other Agencies

For several state DOTs, the incident management and alternate route planning responsibilities are handled by each of the districts or regions. Each of Colorado's six regions has an incident management plan, but no specific alternate route plan, with the exception of the Eisenhower Tunnel.

The South Dakota DOT has no formal approach to alternate route planning. They use more of a reactive method, although they have identified emergency contacts, and the locations from where they will mobilize their portable message signs to locations identified by District staff.

The Kansas DOT has a different situation. With an extensive "grid" system even in rural areas, and available roads parallel to primary routes, the alternate route solution is much easier to determine. The state has an agreement where if a state highway is closed for a given time and traffic is diverted onto a county or municipal road, financial compensation is provided to the county or municipality based on the duration of the diversion and/or the volume and type of traffic that was added to the roadway. Although the funds are intended for use in making repairs to the roadway, the agency is not required to use it for that purpose, and can transfer the funding into their general fund.

One strategy used is to move traffic to the second best alternate route. The idea behind this is that motorists with local knowledge will use the best alternate route, while the passers through, and less familiar motorists will take the suggested diversion. This strategy divides the diverted traffic onto two roadway groups minimizing the impact to the primary alternate route. In many areas however, it is difficult to identify one viable alternate route, so this strategy is less appealing.

Summary

The case studies and matrix identify that there are many different ways to look at evaluating an alternate route candidate. The range of possible criteria is broad, and they cover many categories from roadway characteristics, to operation, effectiveness, safety, and the impacts to the areas nearby. There are several criteria that show up in most of the cases. These criteria deal with:

- The condition and geometrics of the candidate alternative.
- Any vehicle restrictions, height, weight, number of axles, etc.
- The type of traffic control on the roadways, with a preference towards signal control.
- Safety concerns; at-grade rail crossings, construction zones, etc.

One key to consider from the information provided is that there is inconsistency in criteria applied. Alternate route amenities found to be desirable in one location where used in other locations to eliminate routes from consideration. For example, Wisconsin DOT District 1 avoids routes with a high number of signalized intersections, while the criteria applied in the Cleveland/Lorain case assume that traffic signal control is desirable in order increase corridor capacity. This document simply presents the criteria and methods used previously by other agencies so that the NDOR and its other stakeholders can determine what is appropriate for their situation.

TABLE 1: ALTERNATE ROUTE CASE STUDY SUMMARY MATRIX

Case Study	Criterion								
	Geometric Conditions	Roadway Characteristics	Vehicle Restrictions	Safety & Other Capacity Constraints	Impacts	Route Operation	Amenities	Effectiveness	Miscellaneous
I-95 Corridor Coalition			Height, width and weight restrictions	Stay away from routes with current or potential construction activities					Keep alternative routes away from toll facilities
Indiana DOT	Shoulder and lane width; pavement, striping and signage condition; presence of problem drainage areas		Height, weight and hazmat restrictions; turning radii at traffic signal; is the roadway a truck route?	Number of left turns on alternate route; at-grade rail crossings (# and quality of warning devices); lift bridges; tunnels	School zones; major traffic generators; noise ordinances	Potential for coordination of traffic signals; availability of guidance along route; available ITS components	Highway lighting availability	Detour distance; travel time; LOS; prep work needed to get alternate route ready	Objections from local political administrators; major events near route (concert, sporting event)
New Jersey DOT Traffic Operations North		Capacity of route; types of traffic control; county roads vs. trunk highways	Truck turning radius; height clearance; weight restrictions		Schools or hospitals near route	Who operates the traffic signals? Is police control of intersections required?			If necessary, will use two different routes for passenger and commercial traffic
Wisconsin DOT District 1	Number of lanes; geometrics; pavement condition	State highways when possible; long truck route rules; speed limit; traffic control; capacity constraints	Height and weight restrictions	At-grade rail crossings (train frequency); visibility and sight distance; water crossings	Don't pass through residential areas	Avoid routes with many signals, and many 90 degree turns		Avoid routes that go in the opposite direction for more than one mile	Consider options at all interchanges, and minimize the length of the route
Wisconsin DOT District 3	Pavement condition; number of lanes; is the roadway divided? Are there separate turn lanes?	Are roadways one way? speed limit; ADT; traffic control; roadway capacity		Is there an identified bottleneck location? Bridge/tunnel					Route is analyzed based on the impact of peak-hour performance with diverted traffic
Des Moines Area I-235 Project	Pavement condition index; avoid roads with many curves and grade changes		Height restrictions; bridge efficiency rating; truck turning radius	At-grade rail crossings	Schools near route				Stay off other construction routes
ADOT CANAMEX Corridor (creation of a bypass route)				Level of truck-related crashes	Potential positive economic impacts for nearby areas; negative impacts to residential areas		Access to freight terminals	Length of alternate route; travel time; LOS	Involves new or reconstruction of existing roadways to create a truck bypass
Cambridge, Ontario Area (new or reconstruction of alternate alignments)				Emergency response time to locations on route; at-grade rail crossings	Potential for disrupting neighborhoods; impacts on fish, wildlife, wetlands and vegetation		Accommodate alternate modes of transportation	Distance of travel; delays due to congestion	Must be convincing to the public; simple methods are conveyed easier than complex methods
Georgia DOT	Annual pavement condition inventory		Height, weight, and width restrictions			Use trailblazer signage, temporary changeable message signs and adjusted traffic signal timing to move traffic more efficiently	Various ITS components		Area engineers identify routes using local knowledge, and often ride routes to confirm; all routes are available via website

Case Study	Criterion								
	Geometric Conditions	Roadway Characteristics	Vehicle Restrictions	Safety & Other Capacity Constraints	Impacts	Route Operation	Amenities	Effectiveness	Miscellaneous
NCHRP Synthesis 279	Number of lanes; pavement conditions; grades	Number and type of controlled intersections	Height, weight, and width restrictions	Driveability of alternate route	Proximity to residential developments; types of nearby land uses; any schools and hospitals	Level of congestion introduced onto the alternate route; methods of conveying detour information	Availability of services (fuel, rest stops, food, lodging)	Proximity of the alternate route to the primary; ease of access; travel time	Percentage of heavy vehicles to reroute; means of communicating with the public
Omaha - Council Bluffs	Grades and notable hills; number of turns and curves; shoulder width; pavement condition	Roadway classification; available turn lanes; speed limit	Weight and height restrictions; turning radii issues	At-grade rail crossings	Nearby land uses; high traffic generators; any schools and hospitals	Signing to guide motorists; availability of and space for temporary traffic control devices	Service stations and other amenities; bus routes	Travel distance prior to reentry; complexity of route	Volume of heavy vehicles to reroute; planned construction on route; special events nearby
Cleveland/Lorain, Ohio (identification of 'deal breakers')	Substandard roadway alignment or geometry; lack of shoulders	Stay on limited access highways if possible; substantial change in speed limits		At-grade rail crossings	Nearby residential areas, schools or hospitals; areas of heavy pedestrian traffic	Circuitous routes; no traffic signals to control or increase capacity for diverted traffic			Roadways requiring resurfacing or reconstruction
Dubuque and Clinton, Iowa Alternative Route Planning		Is the route able to handle the increased volume?							Stakeholders identify candidate routes through local knowledge and expertise

ALTERNATE ROUTE EVALUATION CRITERIA SELECTION

OVERVIEW

A workshop with NDOR Division/District representatives was held on June 17, 2005. The purpose of the workshop was to:

- Review the results of the best practices assessment conducted to document selection criteria and processes employed in other areas.
- Review the range of alternate route evaluation criteria that could be used in the NDOR assessment.
- Narrow the range of criteria to those that will be employed in the initial assessment.

As part of the workshop overview discussion, participants were encouraged to identify as many criteria as they thought necessary to conduct a robust analysis. As the analysis is statewide and is required to be completed in a relatively short time frame, only those criteria that incorporate data that is currently maintained, or could readily be incorporated into, NDOR databases and could be imported into the Nebraska Enterprise Centerline Transportation Attribute Resource (NECTAR) system (a GIS-based information display system) would be used in the current assessment. The study team did not want to place too many restrictions on the initial discussion of evaluation criteria as the route selection could change over time, if it is warranted. If additional data would need to be collected or if a process for incorporating a dataset into NECTAR would need to be established in order to allow a criterion to be brought in to the evaluation, the actions required to allow the adjustment to happen could be provided as a recommendation of this study.

The workshop was structured as a facilitated open discussion with input requested from each of the participants. To ensure that all participants were afforded an opportunity to provide their input, the meeting facilitator called on each of the participants individually and they were allowed time to provide their input. Comments and information provided by each participant was documented on a tablet and displayed such that all participants could review the material as the discussion went along.

The initial round of individual input resulted in definition of what was referred to as the "universe" of possible route evaluation criteria. Following the initial round of discussion, the focus shifted from defining a broad range of ideas to pulling from the universe those critical determinant criteria and those criteria for which information is readily available or could relatively easily be made available in a database compatible format. The product of this portion of the discussion was the Committee Recommended Alternate Route Evaluation Criteria and were the criteria employed through the first round of the district-generated alternate route assessment.

ALTERNATE ROUTE EVALUATION CRITERIA WORKSHOP PARTICIPANTS

The following were participants at the June 2005 Alternate Route Development Workshop:

- Richard Ruby, District Engineer – District 1
- Les O'Donnell, District Engineer – District 6
- Ellis Tompkins, Rail & Public Transportation
- Steven Garbe, Operations and Intelligent Transportation
- Dick Genrich, GIS Section
- Kristi Van Ooyen, Bridge Division
- Dan Waddle, Traffic Section
- Jon Ogden, Operations and Intelligent Transportation
- Michael Niedermeyer, GIS Section

- Jim McGee, Operations and Intelligent Transportation
- Marcella Ganow, Operations and Intelligent Transportation

UNIVERSE OF CRITERIA DOCUMENTED

Listed in the following bulletpoints is the universe of potential criteria discussed at the workshop. The number in parentheses represents the number of participants that discussed the criterion:

- Bridge restrictions including (4):
  - Overhead clearance limits.
  - Narrow cross section (Narrow was not defined).
  - Structural deficiencies.
  - Posted weight restrictions.
  - Truss bridges (Presence of a truss bridge on a potential route should exclude it).
- Mainline (BNSF and/or UPRR) at-grade railroad crossings (3):
  - If a grade separated crossing is along a potential route that would be a neutral or a positive (Neutral assumed that the crossing would not impact the effectiveness of the alternate route, but if the alternate route bridge over/over the railroad is affected, the presence of the railroad would be a negative).
  - If the crossing is at-grade, it would be a negative.
  - For non-mainline routes, the number of trains per day would need to be factored into the equation before a determination as to the potential for impacts could be provided.
- Reserve capacity on the alternate route candidate (2): The ability of the route to reasonably accommodate the diverted traffic should be considered in the process.
- Lane width on the alternate route. It would be desirable to use routes with 11 or 12 foot lanes.
- Signalized intersections along the alternate route (2): Signalization would be thought of as a negative aspect in that as traffic is added to the intersection, traffic control personnel may be required to manually operate the signal (an added coordination and staffing issue).
- Presence of surfaced shoulder (3): A minimum width metric should be added to this criterion.
- Maintenance and construction activities on the alternate route (2): When the dynamic element is added to the system, the ability to account for construction projects should be incorporated. During the construction period it would not likely be acceptable to divert traffic from the Interstate through a construction project.
- Similar type section to the "closed" route (1).
- Operations and maintenance impacts on the local community of added traffic from the "closed" route.
- Access to emergency responders (1).
- ITS equipment availability and proximity to assist in traveler information (1): It is likely that the plan would include a traveler information component. If the route is not readily accessible with the physical components of the information system, should it be selected?
- Pedestrian and/or school crossings along the alternate route (a negative criteria) (1): The Department has a database identifying those crossing locations that are signalized, but no others.
- Pavement condition on the alternate route (1).
- Speed limits along alternate route (1): Placing high speed through traffic on a low speed route will likely result in an undesirable condition.
- Functional classification difference between the primary route and the diversion route (1): Initially, the alternate routes reviewed will be limited to state routes.

Committee Recommended Alternate Route Evaluation Criteria

From the universe of criteria identified, the following "shortlist" of candidate evaluation/screening criteria was identified:

- Structures along the route should exceed the following measures of effectiveness:
  - Overhead clearance (≥ 16 feet)
  - Cross section (≥ 24 feet)
  - No structural deficiencies (as defined & coded by Bridge Division)
  - No posted weight restrictions
  - Not a truss bridge (Structure Type 10)
- The route does include mainline (BNSF and/or UPRR) at-grade railroad crossings.
- The alternate route has a reasonable level of reserve capacity. The vast majority of the potential alternate route mileage will be on rural, two-lane highways. For these routes a threshold of approximately 5,000 vehicles per day on a two-lane route was established. It should be noted that diverting the entire volume from any segment of the Interstate would result in over capacity conditions on a two-lane alternate route. The lowest volume segment of the Interstate carries approximately 6,600 vehicles per day and if diverted to a two-lane route would approach/exceed the acceptable service volume of a two-lane route. Thus, the conclusion from development of this criterion threshold is that it is expected that traffic operations on alternate routes would reflect conditions at or over the capacity of a two-lane route.
- No signalized intersections along the alternate route. It was generally concluded that adding substantial levels of traffic to signalized intersections would result in more active traffic management needs than with unsignalized intersections. This condition is primarily due to the idea that the current timing/phasing plans reflect observed/estimated flows and the added volume from implementation of the diversion plan would not likely be consistent with current flow patterns. Thus, traffic operations at signalized intersections would likely drop off substantially.
- The route provides adequate surface width. The criteria are a combination of:
  - Minimum lane width threshold of 11 feet.
  - Minimum paved shoulder width of 4 feet on either side.
- Pavement condition on the alternate route. Minimum threshold of an NSI rating of 60 and a maximum rutting of 13 mm.
- Visual inspection of the "complexity" of the alternate route determined by the number of intersections traversed, the number of intersections requiring a turn, length of alternate route, etc.

In addition to the evaluation criteria, a list issues to be resolved at another time was developed during the workshop. The list of unresolved issues included:

- As part of implementation of the alternate route plan, how will staff limitations be incorporated into the process?
- The proximity of the alternate route to a county shop/yard may be a key real world criterion. Can they be mapped?
- Can construction projects be mapped in relatively real time?
- Short-term/long-term closures—should be defined.

District-Generated Alternate Route Candidates

Overview

As a precursor to the Alternate Route Study, representatives from each of the eight NDOR districts were requested to develop a set of alternate routes for the Interstate and Expressway system segments within their district. As part of that effort, documents containing the following were developed by each district:

- Summary of the Interstate road closure policy.
- Maps or written descriptions delineating alternate routes for specific Interstate and Expressway closures.
- List of the First Class cities in the district.
- A general summary of the standard closure/alternate route activation procedures for each of the district traffic operations centers. The range of equipment and coverage of traffic management devices/infrastructure varies by district and is reflective of the need, physical limitations of providing detection/dissemination equipment and funding.

The maps generated by each of the districts were the primary source for the candidate alternate route alignments to be evaluated through the study. Mapping was not provided for District 7 and District 8. These districts do not have any mileage designated as Interstate or Expressway, which was the focus of the request by the central office for the districts to prepare the concepts.

Candidate Alternative Routes

For most of the districts very few, if any, specific criteria for selecting a corridor as a segment of an alternate route were identified. The consistent criteria for each were that all candidate routes were NDOR roadways and the districts attempted to select as direct an alternate between two points as possible. In selected locations limiting the alternates to state highways resulted in substantially longer alternate routes. This was the case when a closer or more direct county route was not included in the universe of alternatives (simply because it was a county route and not an NDOR route).

While the general product generated by each of the districts is similar, slightly different approaches were used in defining alternate routes. Outlined below are several of the distinct differences in route definition:

- District 1: For segments of the Expressway and other state highway system routes that were targeted as the closed route, similar east-west or north-south alternate routes were identified. For example, if Nebraska Highway 2 were closed between US 75 in Nebraska City to Nebraska Highway 67 north of Dunbar, all east-west Nebraska Highway 2 traffic would be re-routed to Nebraska Highway 67 to Nebraska Highway 128 to US 75 and back to Nebraska Highway 2. Closure of a segment of I-80 reflected a different philosophy of developing separate eastbound and westbound direction alternate routes.
- District 2: Common east-west and north-south alternates were identified for the Expressway and state highway system segments identified as closed due to an incident, weather, etc. for both short and long-term events. For the Interstate system, a primary and a secondary alternate route were identified when two logical and reasonable alternates where available. If only one logical alternate exists, only one was identified. Additionally, if it was logical and feasible to separate eastbound from westbound and northbound from southbound traffic, unique alternates were identified. In most cases, however, common east-west and north-south routes were identified.
- District 3: There is a relatively limited amount of Expressway mileage and no Interstate

mileage in District 3. Alternate routes developed for Expressway routes used common east-west and north-south corridors to carry Expressway traffic during a closure.

- District 4: For Interstate and Expressway routes in the district, common east-west and north-south alternates were developed.
- District 5: The district-provided alternate routes include a combination of a single and multiple secondary corridors to a closed Interstate or Expressway route. It was assumed that detoured east-west and north-south vehicles would use the same routes as opposed to be divided into a unique routes for north or south and unique routes for east or west.
- District 6: Unique routes were identified for short-term (less than two hours) and long-term (more than two hours) closures of I-80 through the district. For short-term closure routes identical corridors were selected as diversion routes for eastbound and westbound traffic. For long-term closures, unique eastbound and westbound routes were selected so as to separate traffic by direction to reduce the impacts of the higher traffic volumes on the two-lane routes.

Assessment of District-Generated Alternate Routes

Background

The documented process for conducting the alternative analysis included a step where each of the district-generated candidate routes was compared to the evaluation criteria developed by the Alternate Route Working Group. As part of the process, intermediate presentations of the results were held with the Alternate Route Working Group and a Department senior management group comprised of the Deputy Directors and selected division heads and staff. As part of the intermediate review process, discussions were held as to whether the on-going alternate route study would provide input to an operations program or would it be providing input to a capital improvement program. The conclusion of this discussion was that the goal of the study should be to provide input to an operations plan and that it is unlikely that a statewide funding plan to support an alternate route program would be a product. As the focus of the study is intended to support an operations program that would likely be deployed intermittently, the criteria defined through the Working Group may be more conservative than required to allow reasonable operations. Thus, several of the Working Group evaluation criteria were modified to reflect a more operations focus for the program. The criteria modified include:

- Minimum Roadway Width: Threshold criteria established through the Alternate Route Working Group discussion reflected minimum lane width of 11 feet and a minimum paved shoulder width of four feet. The combination of the two criteria would reflect a minimum paved surface width of 30 feet (22 feet of travel lane and eight feet of paved shoulder). A 30 foot paved surface is not consistent with a typical two-lane cross section constructed by the Department. Thus, the minimum paved surface width criterion was modified to 28 feet, which is consistent with Department design policies.
- Pavement Condition: Minimum thresholds for surface rutting and Nebraska Serviceability Index (NSI) were established as less than 13 mm and a rating of more than 60, respectively. Through meetings with the Department senior staff and follow up discussions relative to the candidate alternate route mileage below these thresholds, it was concluded that these criteria would not likely be used in determining whether a candidate route is acceptable or not. The thresholds reported reflect values that trigger NDOR resurfacing projects and that in any one year a portion of the state mileage would likely fall below the threshold. The goal would be to address these routes as the conditions approach the thresholds, but funding constraints do not allow all mileage can be rehabilitated prior falling below the identified thresholds. The routes would be addressed in the relative near future after falling below the thresholds if they could not be addressed as the thresholds are approached. Thus, any specific segment of a route should not be below the threshold for an extended period.

Screening Process

The alternatives assessment process employed a multiple-step screening process as outlined below:

- Assess each segment of a candidate route relative to the modified evaluation criteria, quantify the "deficiencies" identified, and identify any near or longer-term future improvements to the alternate route corridors that are included in the current statewide transportation improvement program (STIP).

- Calculate a mitigation cost for addressing the deficiencies that remain following implementation of STIP projects.
- For each candidate alternate route that would require implementation of a mitigation measure, review the potential secondary alternate routes that would bypass the identified "deficiency".
- Present the results to the districts for comment and additional input and using the input select the preferred alternate route. The preferred alternate would take into account the significance of the deficiency (e.g. using a 24 foot wide roadway with a gravel/grass shoulder would be marginally acceptable while continuing to recommend a route with a height restricted bridge would not).

The initial screening incorporated the following criteria:

- Structures along the route exceed the following measures of effectiveness:
  - Minimum clearance of more than 16 feet.
- The route does include mainline (BNSF and/or UPRR) at-grade railroad crossings.
- The alternate route has a reasonable level of reserve capacity.
- Minimum roadway width of 28 feet (inclusive of the travel lanes and paved shoulder).
- Pavement condition on the alternate route. Minimum threshold of an NSI rating of 60 and a maximum rutting of 13 mm.

As was documented in the Alternate Route Evaluation Criteria Selection section, one of the key determinants of including a specific criterion was whether the NDOR presently maintained a database of information on the descriptor. Whether a database was available or not was critical because assessment of the route characteristics was scoped to be completed using GIS, not a field survey. The GIS method of assessment was selected due to the magnitude of the mileage to be covered, the time frame in which the initial screening was to be accomplished and the presence of an extensive, up to date data library encompassing applicable roadway characteristics.

GIS datasets georeferenced by mile post for the following characteristics were provided:

- Structures:
  - Width.
  - Length.
  - Overhead clearance.
  - Underclearance.
  - Weight restrictions.
  - Bridge type (truss/not truss).
  - Functionally obsolete (yes/no).
  - Structurally deficient (yes/no).
- Roadway:
  - Travelway width.
  - Shoulder width.
  - Surface type.
  - Nebraska Serviceability Index (NSI).
  - Level of rutting.
  - Average daily traffic (2005).
- Traffic signal locations.
- At-grade crossings (BNSF and UPRR Mainline Only).
- 2006 to 2011 transportation improvement program projects:
  - Project number as a unique identifier
  - Beginning mile post
  - Ending mile post
  - Project description

The databases obtained from the GIS Section of the NDOR were the most current datasets available when the analysis was completed in the summer of 2005. As maintenance, rehabilitation and new construction, which are a continual process that impacts the information in the databases, and updated input information must flow from a number of sources, there is a time lag between project completion and getting the information into the databases. Thus, if recent projects resulted in eliminating a "deficiency" relative to the assessment criteria, it may not be reflected in the datasets used. As the preliminary recommendations were reviewed by the districts, any discrepancies due to recent project completion was likely noted prior to establishing the recommended alternate route path.

Using the NDOR-provided georeferenced databases and a GIS application, queries to display and quantify the following screening results were completed:

- Segments on candidate alternate routes that were presently constructed to less than 28 feet of hard surface (travelway plus shoulders).
- Bridge locations on candidate alternate routes where:
  - The structure is less than 24 feet wide.
  - The overhead clearance was less than 16 feet.
  - The current sufficiency rating results in a structurally deficient or functionally obsolete rating.
  - The present design is a truss bridge.
- The junction of the candidate alternate route and a cross route is signalized.
- The candidate alternate route crosses the UPRR or the BNSF mainline at grade.

The results of the GIS-based assessment of the current facilities relative to the above referenced queries for District 1 through District 6 are displayed in Figures 2 through 7, respectively. Displayed in the figures are the Expressway and Interstate routes that would be the "closed" segments, candidate alternate routes, locations of various deficient segments and bridges based on the range of criteria, traffic signal locations (including overhead flashers and school crossings), at-grade UPRR and BNSF mainline crossings, and programmed improvements projects included in the 2006 to 2011 TIP.

Table 2 documents the results of the initial round of the screening assessment. Observed in the assessment are the following:

- Approximately 300 miles of almost 2,400 miles of candidate alternate route mileage does not meet the threshold for roadway/pavement width following completion of the programmed 2006 through 2011 Transportation Improvement Program (TIP) projects (which was the current period when the analysis was completed). The TIP includes approximately 500 route miles of expansion of roadways that are less that 24 feet wide to the current 28 foot pavement standard. The total candidate miles that currently did not meet the 28 foot width threshold (800 miles) was reduced by the number of miles anticipated to be improved to at least 28 feet wide within the TIP period.
- There are a total of 84 bridges out of the total of 1,016 located on candidate alternate routes that did not meet the alternate route criterion for width. Five bridges on the candidate routes were observed to not meet the minimum vertical clearance criterion.
- There are three weight restricted bridges on identified alternate routes.
- Using the minimum bridge width of 24 feet, results in seven candidate alternate route bridges falling below the minimum width threshold. A range of bridge minimum width thresholds were reviewed through the screening process. Reflected in the range is what was considered a minimum for reasonable operations (24 feet) to a width that would be the currently recommended replacement width based on the design standards for a two-lane route.
- A total of 37 structurally deficient bridges exist along candidate alternate routes and 43 functionally obsolete bridges presently exist.
- The cumulative total number of bridges not meeting the alternate route selection criteria (122) exceeds the number of unique bridges that would fall below a threshold (84), because many of the bridges fall below the threshold in multiple categories.
- There are a total of just under 210 miles of candidate alternate routes that exceed the maximum rutting threshold and just under 600 miles that fall below the minimum NSI threshold.
- There are a total of 72 mainline at-grade railroad crossings along the initial candidate alternate routes.

TABLE 2: STATEWIDE SUMMARY – CANDIDATE ALTERNATE ROUTES RELATIVE TO SELECTION CRITERIA

Criteria Category	Units	Totals	Units Below Established Threshold
Bridges			
Alternate Route Total Bridges[1]		1,016	84
Overhead Clearance <16'	Bridges		5
Width:			
<24'	Bridges		7
<28'	Bridges		33
<32'	Bridges		138
<36'	Bridges		179
Structurally Deficient	Bridges		37
Functionally Obsolete	Bridges		43
Weight Restricted	Bridges		3
Truss Bridge	Bridges		1
Roadway Conditions			
Alternate Route Total Miles		2,381.39	
NSI<60	Miles		593.31
Rutting >/=13mm	Miles		208.94
Both NSI and Rutting Def.	Miles		140.37
Total Top Width <28'	Miles		301.60
Traffic Operations			
2-lane >5,000 VPD	Miles	2,381.39	505.35
Mainline RR At-Grade Crossings	Crossing	72	
Signalized Intersections	Signals	178	

Notes: 1 - Subtotal structures by category does not sum to total deficient bridges.

Selected structures contain multiple deficiencies.

Costs assume replacement of only unique structures, not replacement for each deficiency.

Addressing Identified Segments not Meeting Candidate Thresholds

For the candidate routes that did not meet one or multiple criteria thresholds there are three general courses of action:

- Improve the route to a point where it meets the criteria.
- Identify a secondary alternate route that avoids the segments of the initial candidate that do not meet the selected criteria.
- Use the candidate route even though it does not meet all of the criteria, but does meet the most critical criteria of:
  - Minimum bridge height of 16 feet.
  - Minimum bridge width of 24 feet.
  - Does not include a truss bridge.

Reasonable assessment of the three options requires that the following second iteration of analyses be completed to:

- Develop planning level cost estimates for the improvements needed to meet the identified facility thresholds.
- Identify secondary alternates to the candidate routes and compare the initial candidate to the secondary to determine the travel time differences between them. If the mileage of the secondary candidate is not substantially greater than initial candidate route, and the secondary route meets the thresholds, it would be identified as the recommended route.

Mitigation Cost Estimates

Very generalized mitigation cost estimates were prepared for the road segments and structures along the initiate candidate route that did not meet each of the criteria. It should be noted that the mileage/structure needs were not screened through every potential combination of "deficiencies" to remove the potential for some double counting of improvements to address multiple deficiencies. As excessive rutting and lower NSI rating have a tendency to occur together, a separate multiple criteria screening was completed. In developing an overall estimate for improvements, the totals for the cumulative NSI≤60 and rutting≥13 mm would need to be reduced by the costs associated with addressing the combination of the two criteria.

Listed below are the general methods for estimating the costs of the various elements associated with the mitigation cost estimates:

- Develop Unit Costs: Staff from the NDOR provided typical unit cost estimates for the primary types of improvements that would be needed to address a specific deficiency, including:
  - Bridge replacement: Replacement of a bridge that did not meet the minimum height threshold, the width threshold, is presently a truss bridge, or is presently weight restricted, functionally obsolete or structurally deficient was the mitigation recommendation. A new bridge/structure width of 44 feet and a length consistent with the current bridge length were assumed. The current length was obtained from the NDOR bridge database.
  - Top Width Less Than 28 Feet: For much of the identified mileage that was below the 28 foot width criteria the current pavement width was 24 feet. Mitigation for the segments was to provide a 4 foot asphalt shoulder on either side and add a two inch asphalt overlay to the existing paved roadway. The result is a roadway with a total top width of 28 feet.
  - NSI Less Than 60: Mitigation measures recommended by the Department included a three inch asphalt overlay on top of a stabilizing lime slurry.
  - Rutting Greater Than 13 mm: Mitigation was assumed to include a combination of a full depth fly ash treatment and a three inch asphalt overlay.
  - Mainline Railroad Crossing: The mitigation action would be to replace the at-grade crossing with a grade separated crossing. While there were 72 at-grade crossings identified and included in the mitigation cost estimates, only those that were included in the Statewide Rail Crossing Plan would likely be provided. A

uniform crossing cost of $5,000,000 was assumed for each viaduct/underpass.

Table 3 documents the unit cost assumptions used in the mitigation assessment.

- Develop Unit Estimates of Deficiencies: For each of the assessment criteria, the number of bridges, roadway mileage, number of at-grade railroad crossings along identified alternate route candidates was quantified through the information included in the various GIS databases provided by the NDOR.

TABLE 3: UNIT COSTS OF ALTERNATE ROUTE MITIGATION ACTIONS (2005 DOLLARS)

Criteria Addressed/Element Description	Unit of Measure	Estimated Cost Per Unit
Bridge Deficiency Mitigation:	Square Foot	$80.00
- Bridge Replacement - Width	44	Feet
At-Grade Mainline Railroad Crossing Mitigation:	Each	$5,000,000.00
- Viaduct		
Rutting Mitigation	Linear Mile	$220,000.00
- Full Depth Fly Ash Reclamation Treatment		
- 3 Inches of Hot Mix Asphalt		
NSI </= 60 Mitigation:	Linear Mile	$165,000.00
- Partial Depth Lime Slurry Stabilization		
- 3 Inch Asphalt Top		
Shoulder Mitigation:		
- 4 Foot Asphalt (Both Sides)	Linear Mile	$100,000.00
- 4 Foot Concrete (Both Sides)	Linear Mile	$240,000.00
Roadway Width Mitigation:	Linear Mile	$304,800.00
- 4 Foot Pavement (Asphalt)		
- 2 Inch Asphalt Overlay of Existing		

Source: NDOR, 2005

As many state highway segments were assigned to multiple possible alternate routes, the original databases used for each of the criteria assessments needed to be reviewed to ensure that a link would be counted in only one of the deficiency categories. Thus, was counted only once as a segment in need of improvement. A conservative approach was taken in that the higher unit cost category was applied if there were multiple deficiencies along a segment.

- Apply the Unit Costs to the Deficiency Increment: For each identified segment, structure or at-grade crossing deficiency, the unit cost estimate associated with the preferred mitigation action was applied to the number of units. The sum of each of the individual improvements by criteria category resulted in an overall estimate, in 2005 dollars, of the improvements needed to meet the identified thresholds for width, height, and condition.

The estimated costs, in 2005 dollars, associated with improving the identified alternate route segments to a point where each of the evaluation criteria would be satisfied are documented in Table 4. As the purpose of the alternate route study is to identify diversion routes as part of an operations plan for deployment in the event of a closure on an identified Interstate or

Expressway segment, the cost estimates for mitigation are provided for information only and should not be perceived as a commitment to fund the improvements.

Secondary Alternate Routes to Avoid "Deficient" Segments

For each of the initial candidate alternate routes containing roadway segments and bridges that fall below the criteria thresholds and those initial candidates that include at-grade crossings of a UPRR or BNSF mainline, secondary alternate route options using state highways were identified and presented to the NDOR for comment. The presence of signalized intersections along the initial candidate route was not thought to be as critical to the route assessment as the roadway and structure characteristics.

In most cases the secondary alternatives were longer and less direct than the initial routes, but they did not contain segments of specific points that were below the criteria thresholds. In cases where the secondary route was confirmed by the NDOR, the initial candidate was replaced with the secondary alternate. The secondary route candidates were not supported in all cases by either the Alternate Route Working Group or by the district staff, who also reviewed the initial and secondary candidates. In most cases where the secondary route was not supported for use it was because the "deficiency" identified on the initial candidate was not considered a fatal flaw in use of the route and/or the secondary candidate resulted in unacceptable levels of circuitous travel. In a few cases, the identified secondary alternate route contained segments with non-fatal flaw deficiencies and use of the route was supported by the district.

TABLE 4: ALTERNATE ROUTE MITIGATION COST ESTIMATES (2005 DOLLARS)

Criteria Category	Units	Totals	Units Below Established Threshold	Mitigation Cost Estimate by Closed Route Classification		
				Interstate Routes	Expressway Routes	Total
Bridges						
Alternate Route Total Bridges[1]		1,016	84	$391,813,000	$89,812,000	$481,625,000
Overhead Clearance <16'	Bridges		5	$8,501,000	$676,000	$9,177,000
Width:						
<24'	Bridges		7	$22,264,000	$676,000	$22,940,000
<28'	Bridges		33	$33,197,000	$7,836,000	$41,033,000
<32'	Bridges		138	$106,864,000	$32,268,000	$139,132,000
<36'	Bridges		179	$153,352,000	$35,791,000	$189,143,000
Structurally Deficient	Bridges		37	$14,048,000	$8,084,000	$22,132,000
Functionally Obsolete	Bridges		43	$53,327,000	$3,805,000	$57,132,000
Weight Restricted	Bridges		3	$260,000	$0	$260,000
Truss Bridge	Bridges		1	$0	$676,000	$676,000
Roadway Conditions						
Alternate Route Total Miles		2,381.39				
NSI<60	Miles		593.31	$48,179,000	$49,717,000	$97,896,000
Rutting >/=13mm	Miles		208.94	$23,947,000	$22,021,000	$45,968,000
Both NSI and Rutting Def.	Miles		140.37	$17,458,000	$13,424,000	$30,882,000
Total Top Width <28'	Miles		301.60	$57,272,000	$34,656,000	$91,928,000
Traffic Operations						
2-lane >5,000 VPD	Miles	2,381.39	505.35	NA	NA	NA
Mainline RR At-Grade Crossings	Crossing	72		$235,000,000	$125,000,000	$360,000,000
Signalized Intersections	Signals	178		NA	NA	NA

Notes: 1 - Subtotal structures by category does not sum to total deficient bridges.
Selected structures contain multiple deficiencies.
Costs assume replacement of only unique structures, not replacement for each deficiency.

Recommended Interstate and Expressway System

Alternate Routes

Appendices A through F contain the recommended alternate routes for the Interstate and Expressways routes in Districts 1 through 6 (District 7 and District 8 do not contain any Interstate or Expressway routes). Provided for each District are the following:

- A district-wide summary map displaying the results of the initial candidate route screening relative to the range of alternate route evaluation criteria.
- An index containing a description of each of the Interstate and Expressway segments in the district for which an alternate route has been developed.
- Color-coded maps displaying the designated state route alternate for each segment of the Interstate and Expressway system closed as the result of incident along the segment. On each map the primary segment to be designated as "closed" is displayed in red and the alternate to the primary segment is displayed in blue. A segment on a primary route (Interstate or Expressway) is defined as the length between two state highway routes that would be used as an alternate route. Thus, an I-80 segment may encompass several county or local access interchanges between two state highway routes.

The alternate routes displayed in the figures have been reviewed by the Alternate Route Working Group and the District Engineer staff and the maps. Through the review process selected initial candidate alternate routes were modified based on input from the Committee and/or the District.

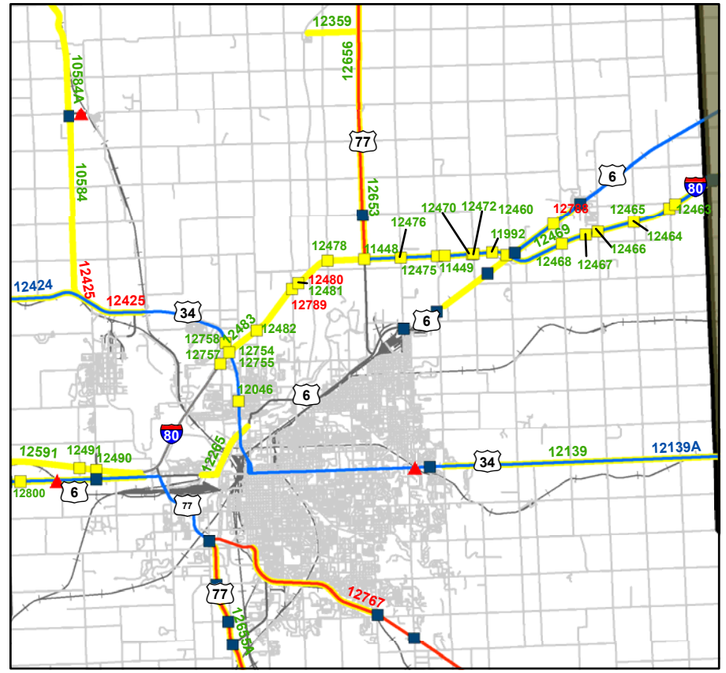
The alternate route maps are maintained in a GIS database that will periodically be updated to reflect continued implementation of improvements to the state system. As pertinent improvements are made and the applicable state databases are updated, revised maps will be issued to the districts for replacement and distribution to emergency responders as appropriate. A key is going to be minimizing the potential lag time between completion of a project that directly impacts a critical piece of an alternate route and updating the databases in the central office.

Appendix A – District 1 Alternate Route Index and Maps

Alternate Route Assessment Summary
District 1

0 5 10 20 Miles

Inset



Legend

- Primary / Closed Route
- Alternate Routes
- Deficient Segment, Not in 5-Year STIP
- Deficient Structures
- Mainline UP or BNSF Railroad Crossing
- Traffic Signals
- County Line
- District Boundary
- Rail Lines
- State Roads
- Water Bodies
- County Name (Buffalo)
- Program Segments
- Program Points

Control Number

- FY 2006
- FY 2007-2011
- FY 2012 and Beyond

PRIMARY ROUTE (CLOSED ROUTE) SEGMENT INDEX – BY DISTRICT (DISTRICT1)

District	Primary Route - Segment	Milepost Reference		Primary Route Description
		Begin	End	
District 1	**East-West Expressway Segments**			
	Nebraska Highway 2-1	456.70	475.68	Nebraska Highway 2 from US Highway 77 to Nebraska Highway 43
	Nebraska Highway 2-2	476.70	488.72	Nebraska Highway 2 from Nebraska Highway S66A to Nebraska Highway 50
	Nebraska Highway 2-3	488.72	504.15	Nebraska Highway 2 from Nebraska Highway 50 to US Highway 75
	Interstate 80-32	353.13	379.11	Interstate 80 from US Highway 81 to Nebraska Highway 15
	Interstate 80-33	379.11	382.11	Interstate 80 from Nebraska Highway 15 to Nebraska Highway L80H
	Interstate 80-34	382.11	397.29	Interstate 80 from Nebraska Highway L80H to US Highway 77
	Interstate 80-35	397.29	401.04	Interstate 80 from US Highway 77 to Interstate 180
	Interstate 80-36	401.04	405.76	Interstate 80 from Interstate 180 to L55X
	Interstate 80-37	405.76	409.76	Interstate 80 from L55X to US Highway 6
	Interstate 80-38	409.76	420.94	Interstate 80 from US Highway 6 to Nebraska Highway 63
	North-South Expressway Segments			
	US Highway 75-1	48.54	59.10	US Highway 75 from Nebraska Highway 2 to US Highway 34
	US Highway 77-1	22.27	36.10	US Highway 77 from US Highway 136 to Nebraska Highway 41
	US Highway 77-2	37.71	50.94	US Highway 77 from Nebraska Highway 41 to Nebraska Highway 33
	US Highway 77-3	50.94	60.36	US Highway 77 from Nebraska Highway 33 to Nebraska Highway 2
	US Highway 77-4	70.80	88.24	US Highway 77 from Interstate 80 to Nebraska Highway 109/77
	US Highway 77-5	95.05	100.13	US Highway 77 from Nebraska Highway 109 to Nebraska Highway 77/92

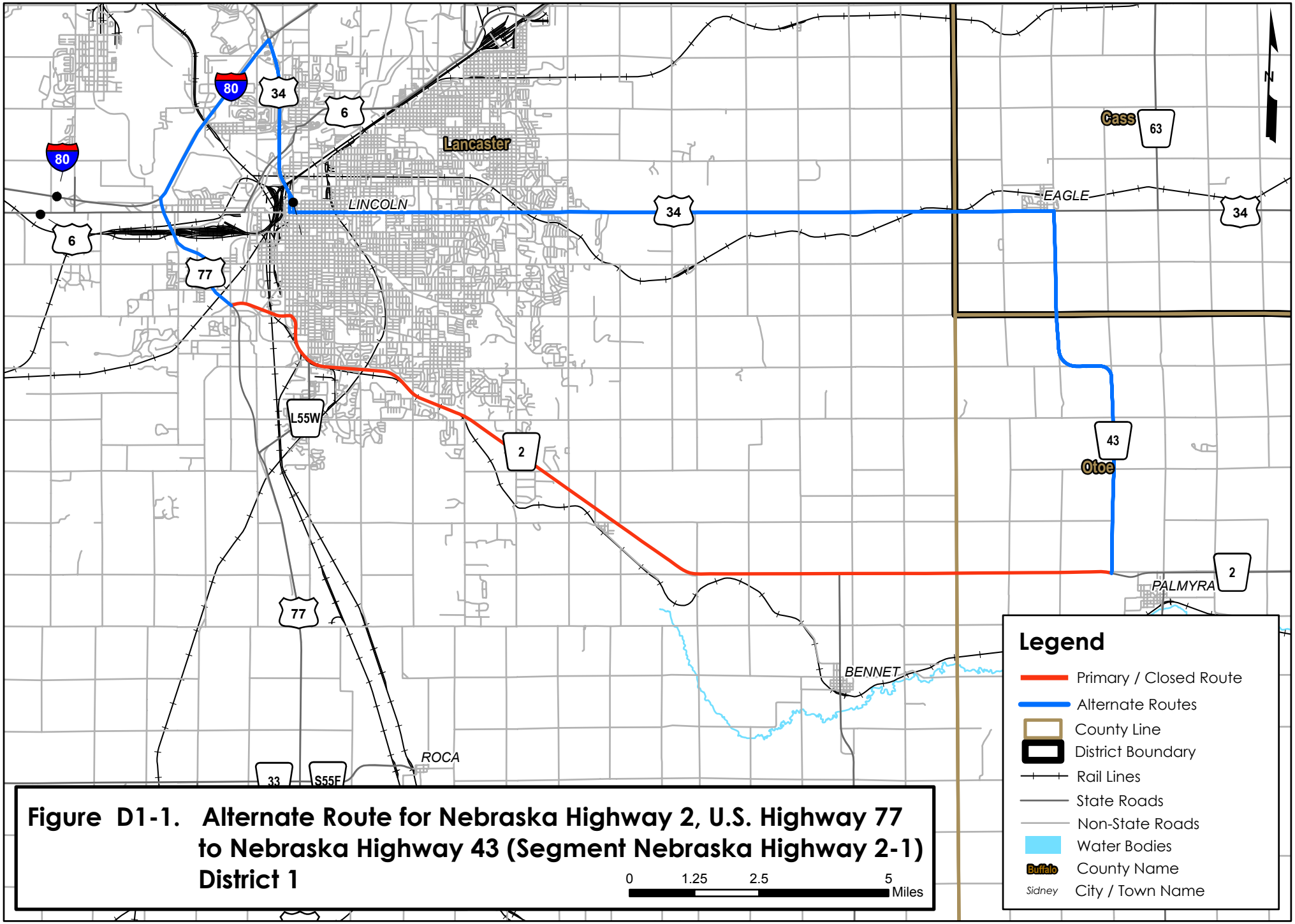


Figure D1-1. Alternate Route for Nebraska Highway 2, U.S. Highway 77 to Nebraska Highway 43 (Segment Nebraska Highway 2-1) District 1

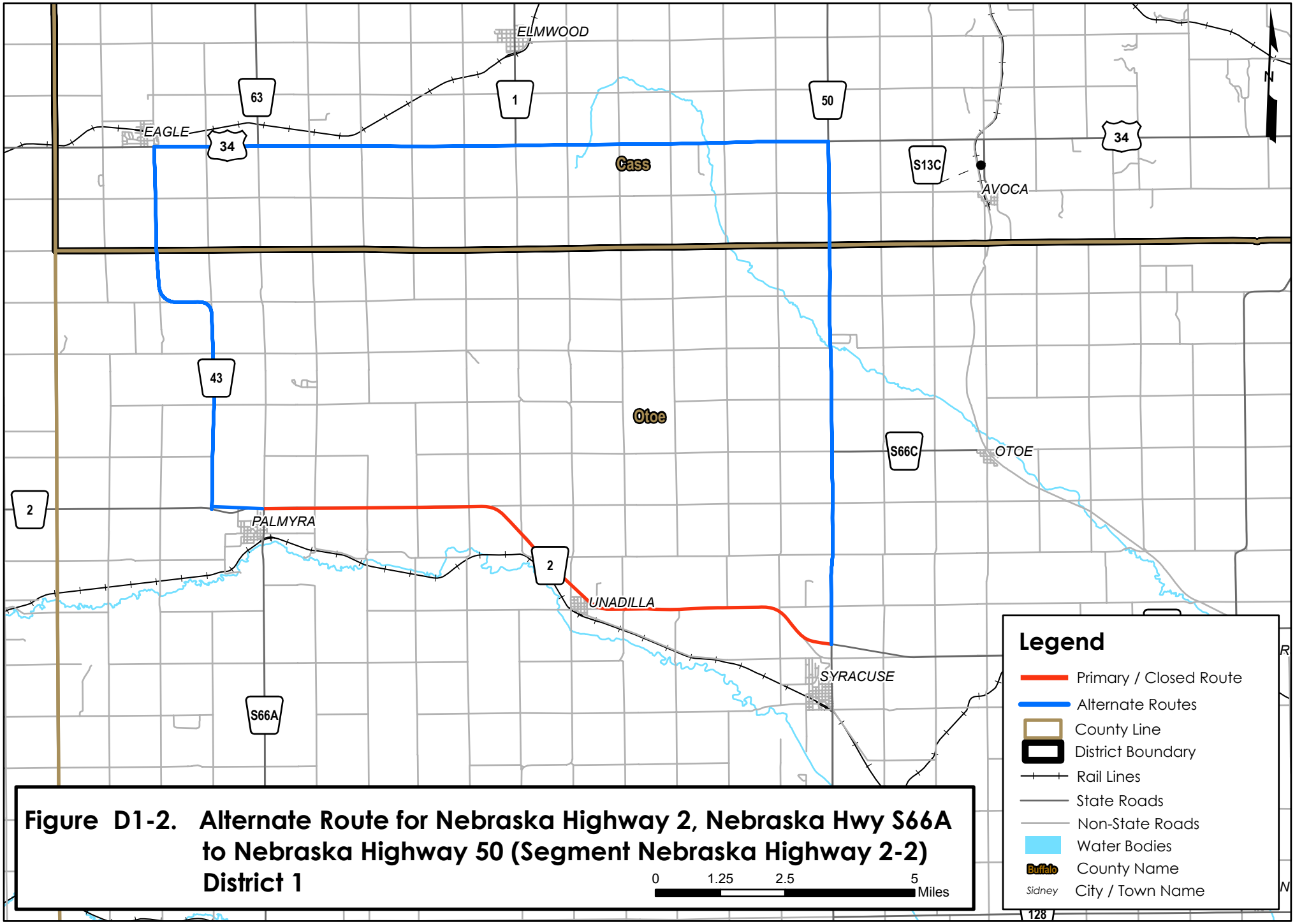


Figure D1-2. Alternate Route for Nebraska Highway 2, Nebraska Hwy S66A to Nebraska Highway 50 (Segment Nebraska Highway 2-2) District 1

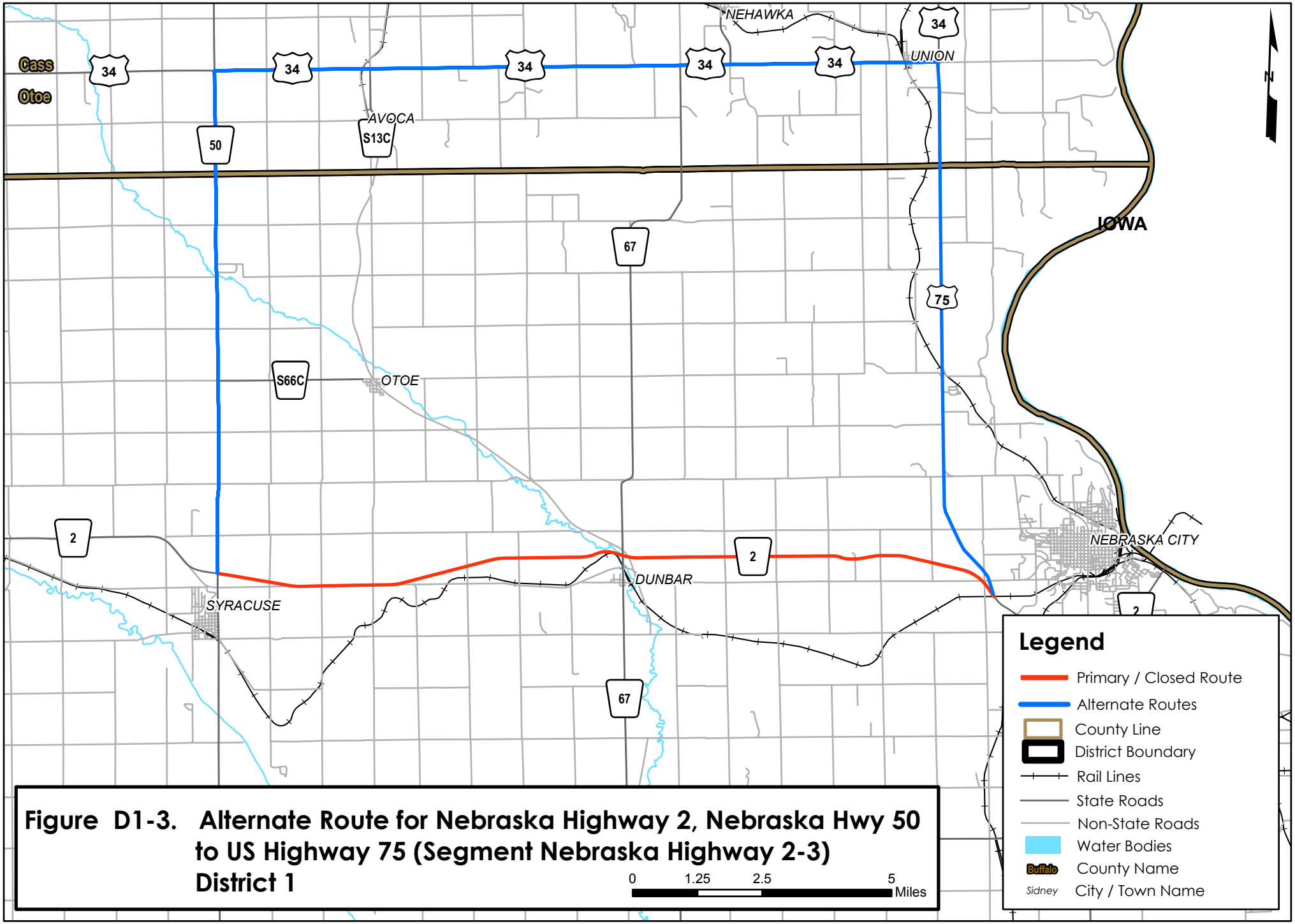


Figure D1-3. Alternate Route for Nebraska Highway 2, Nebraska Hwy 50 to US Highway 75 (Segment Nebraska Highway 2-3) District 1

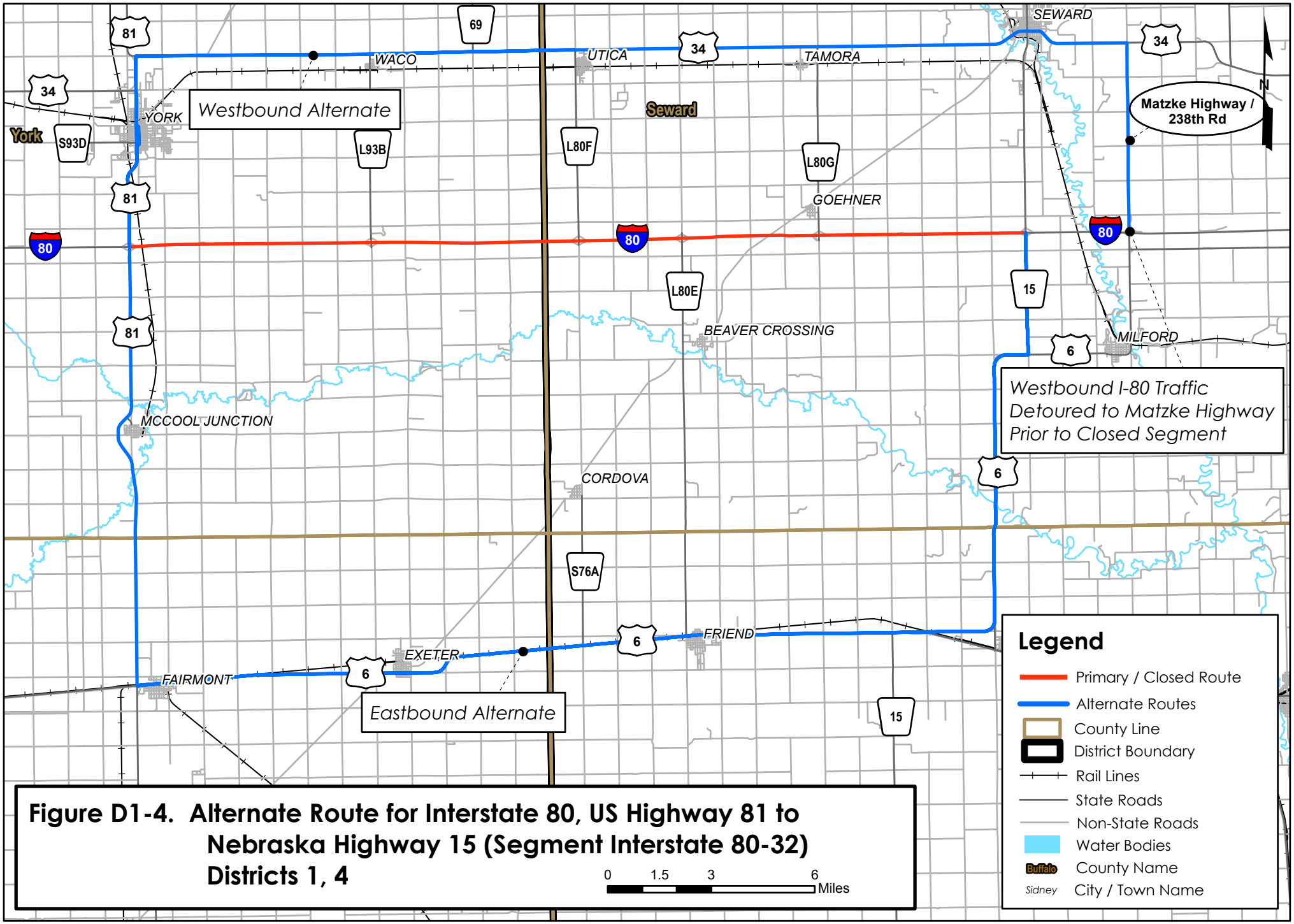


Figure D1-4. Alternate Route for Interstate 80, US Highway 81 to Nebraska Highway 15 (Segment Interstate 80-32) Districts 1, 4

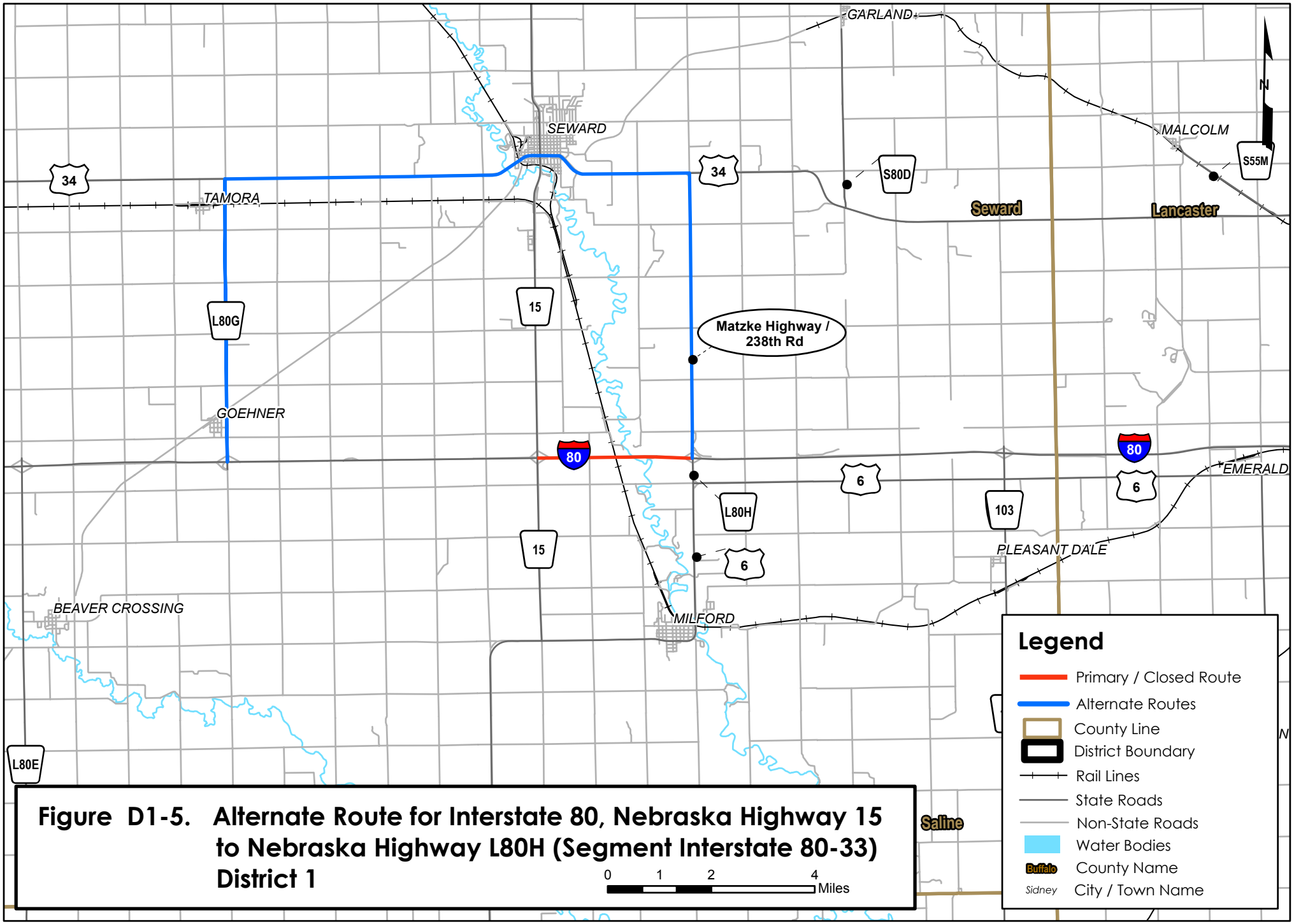


Figure D1-5. Alternate Route for Interstate 80, Nebraska Highway 15 to Nebraska Highway L80H (Segment Interstate 80-33) District 1

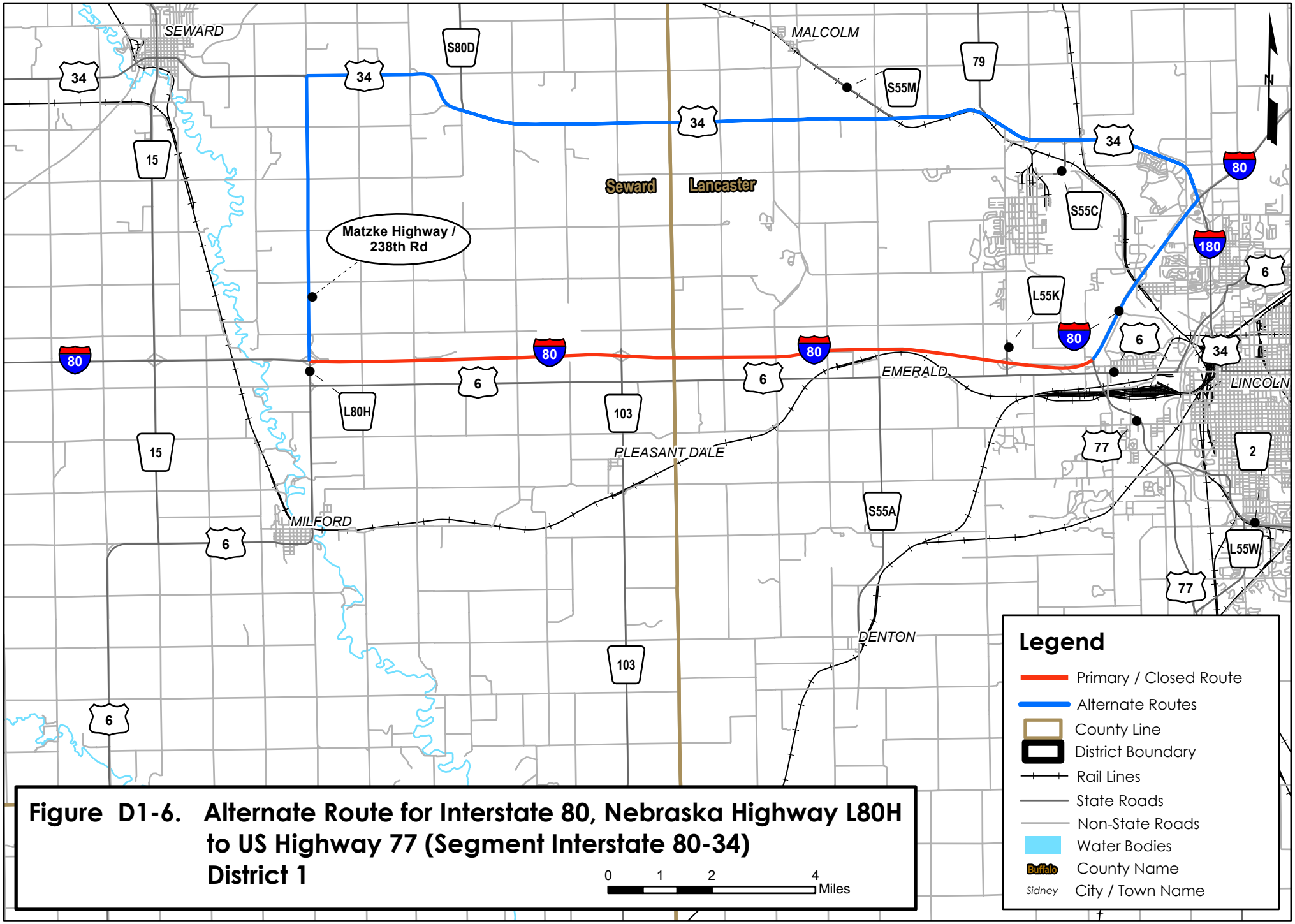


Figure D1-6. Alternate Route for Interstate 80, Nebraska Highway L80H to US Highway 77 (Segment Interstate 80-34)
District 1

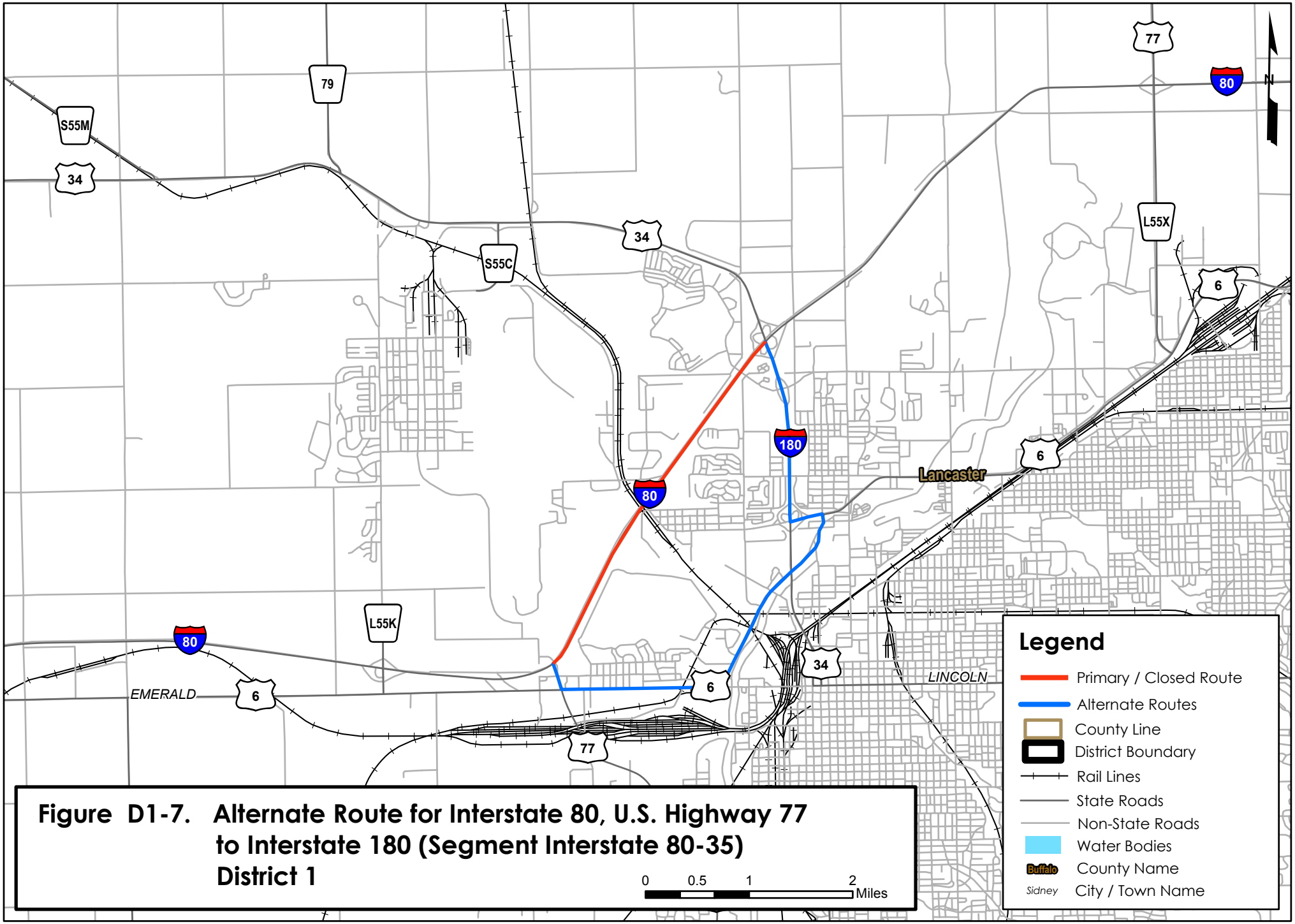


Figure D1-7. Alternate Route for Interstate 80, U.S. Highway 77 to Interstate 180 (Segment Interstate 80-35) District 1

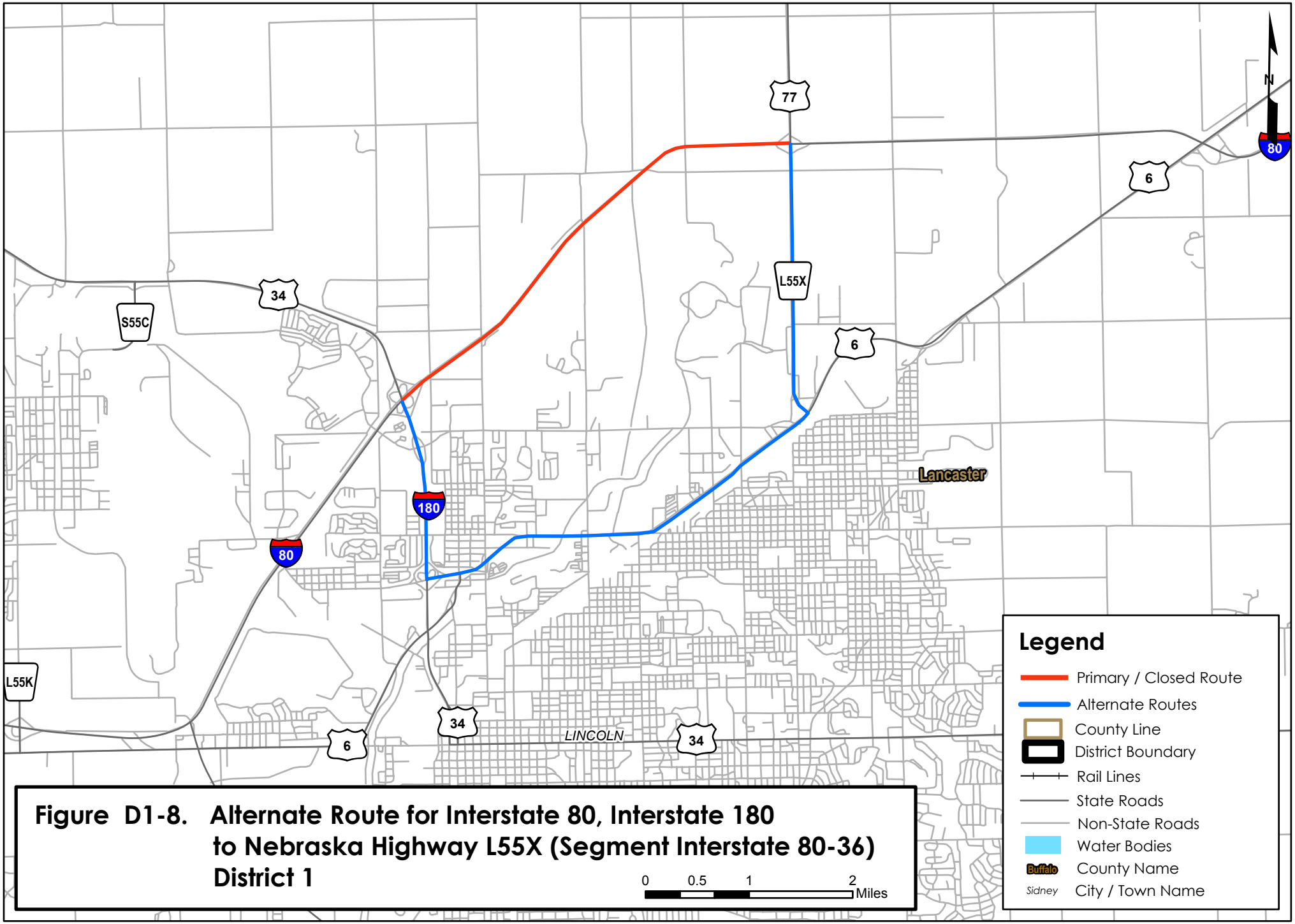


Figure D1-8. Alternate Route for Interstate 80, Interstate 180 to Nebraska Highway L55X (Segment Interstate 80-36) District 1

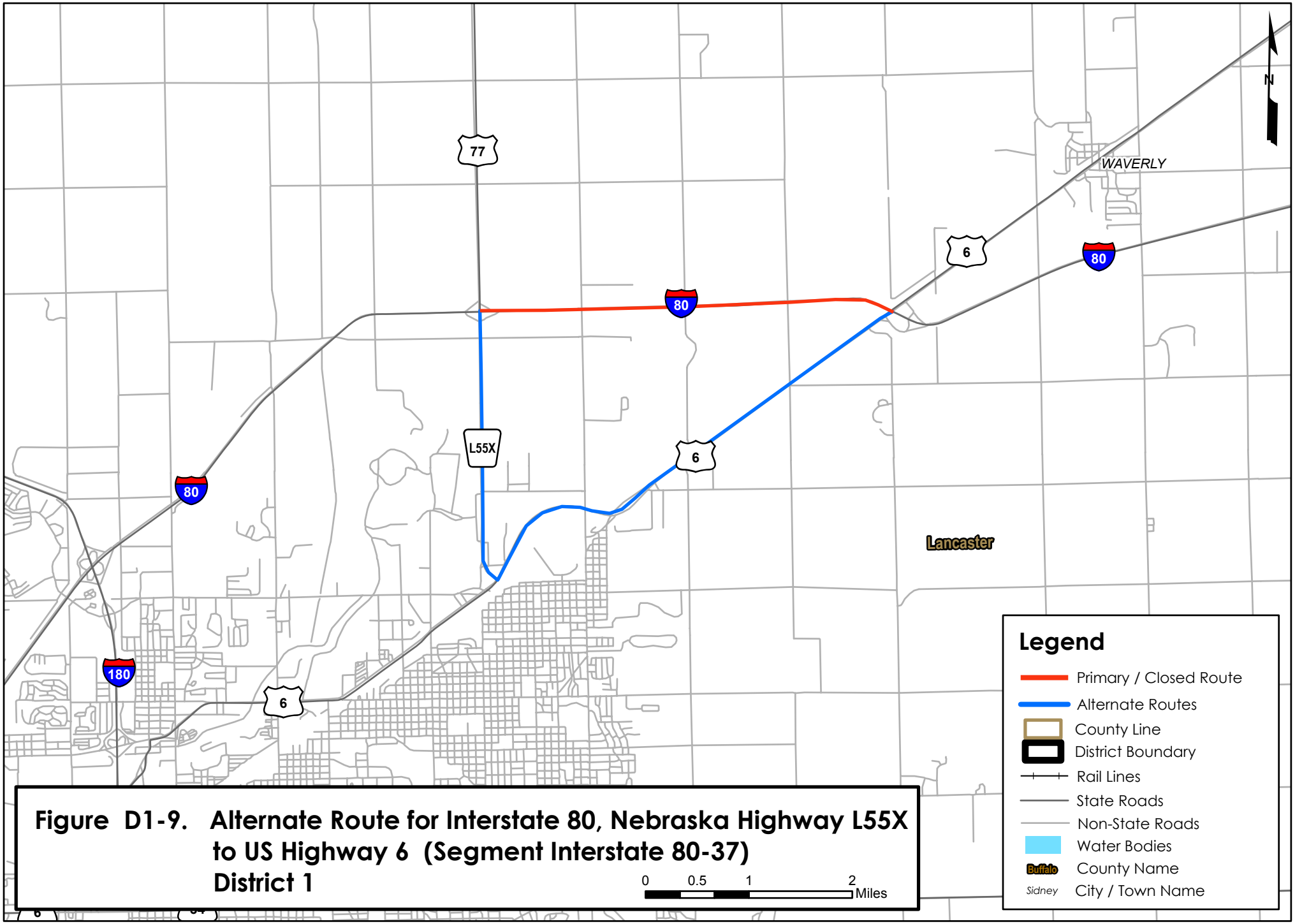


Figure D1-9. Alternate Route for Interstate 80, Nebraska Highway L55X to US Highway 6 (Segment Interstate 80-37) District 1

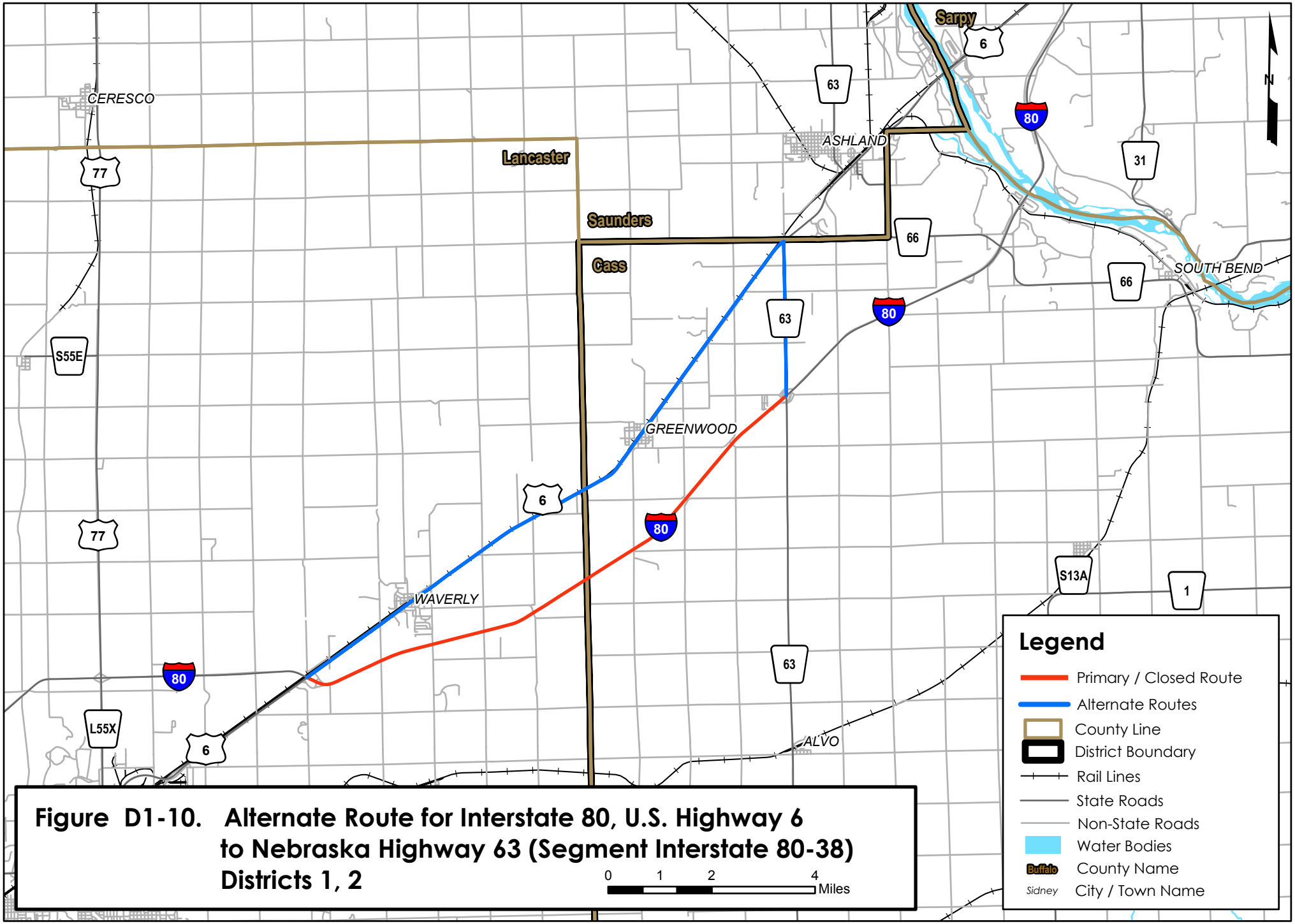


Figure D1-10. Alternate Route for Interstate 80, U.S. Highway 6 to Nebraska Highway 63 (Segment Interstate 80-38) Districts 1, 2

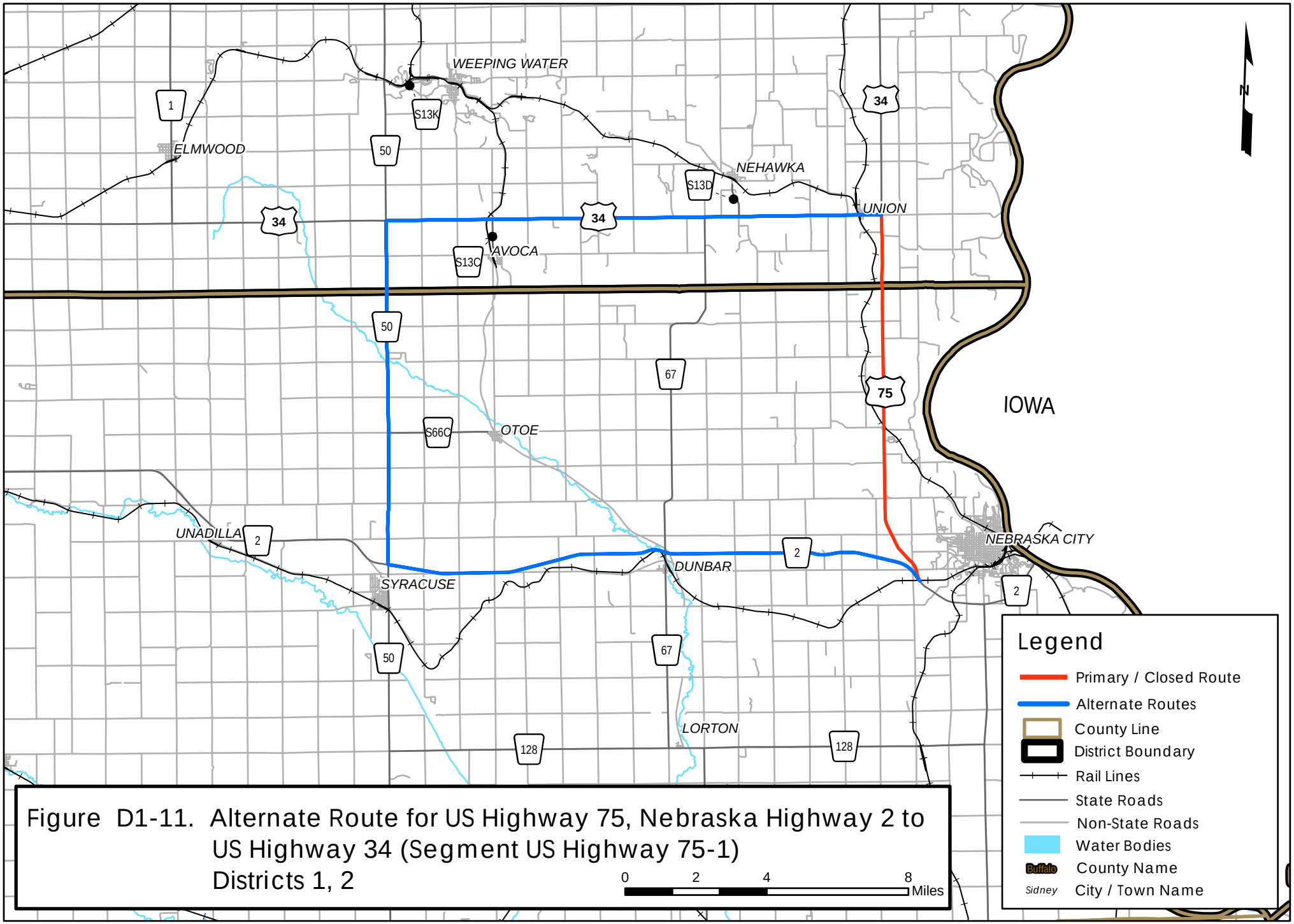


Figure D1-11. Alternate Route for US Highway 75, Nebraska Highway 2 to US Highway 34 (Segment US Highway 75-1)
Districts 1, 2

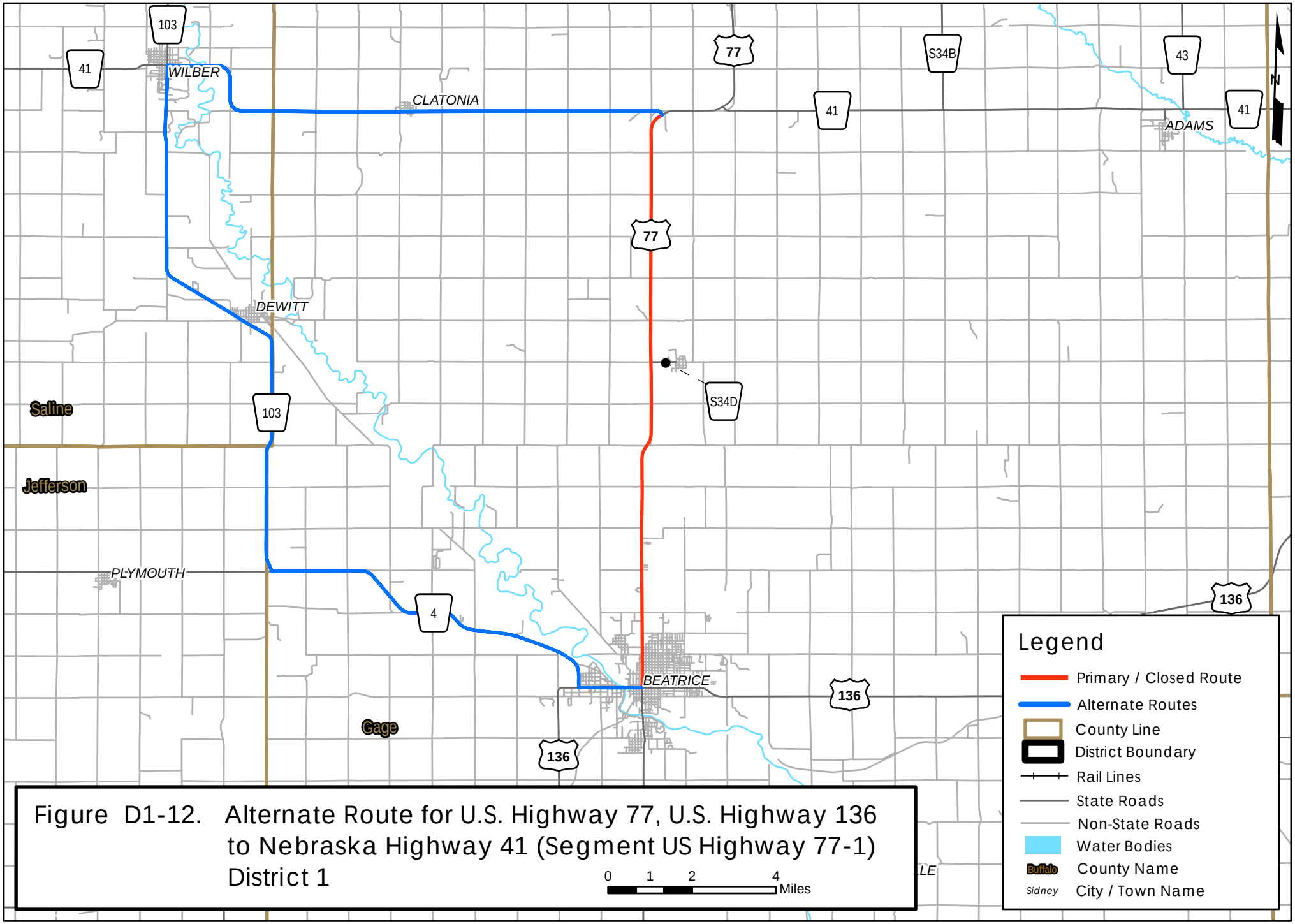


Figure D1-12. Alternate Route for U.S. Highway 77, U.S. Highway 136 to Nebraska Highway 41 (Segment US Highway 77-1) District 1

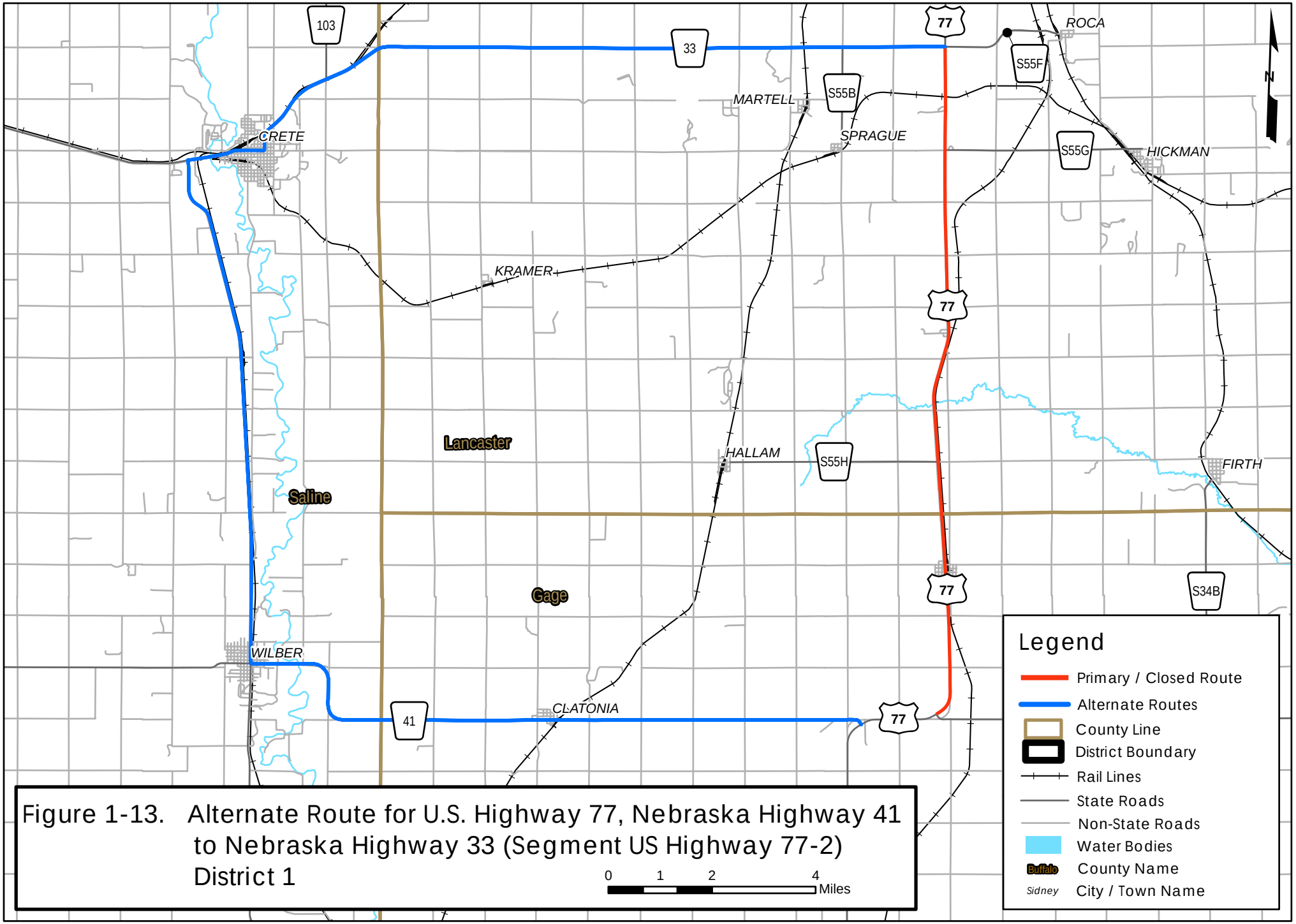


Figure 1-13. Alternate Route for U.S. Highway 77, Nebraska Highway 41 to Nebraska Highway 33 (Segment US Highway 77-2) District 1

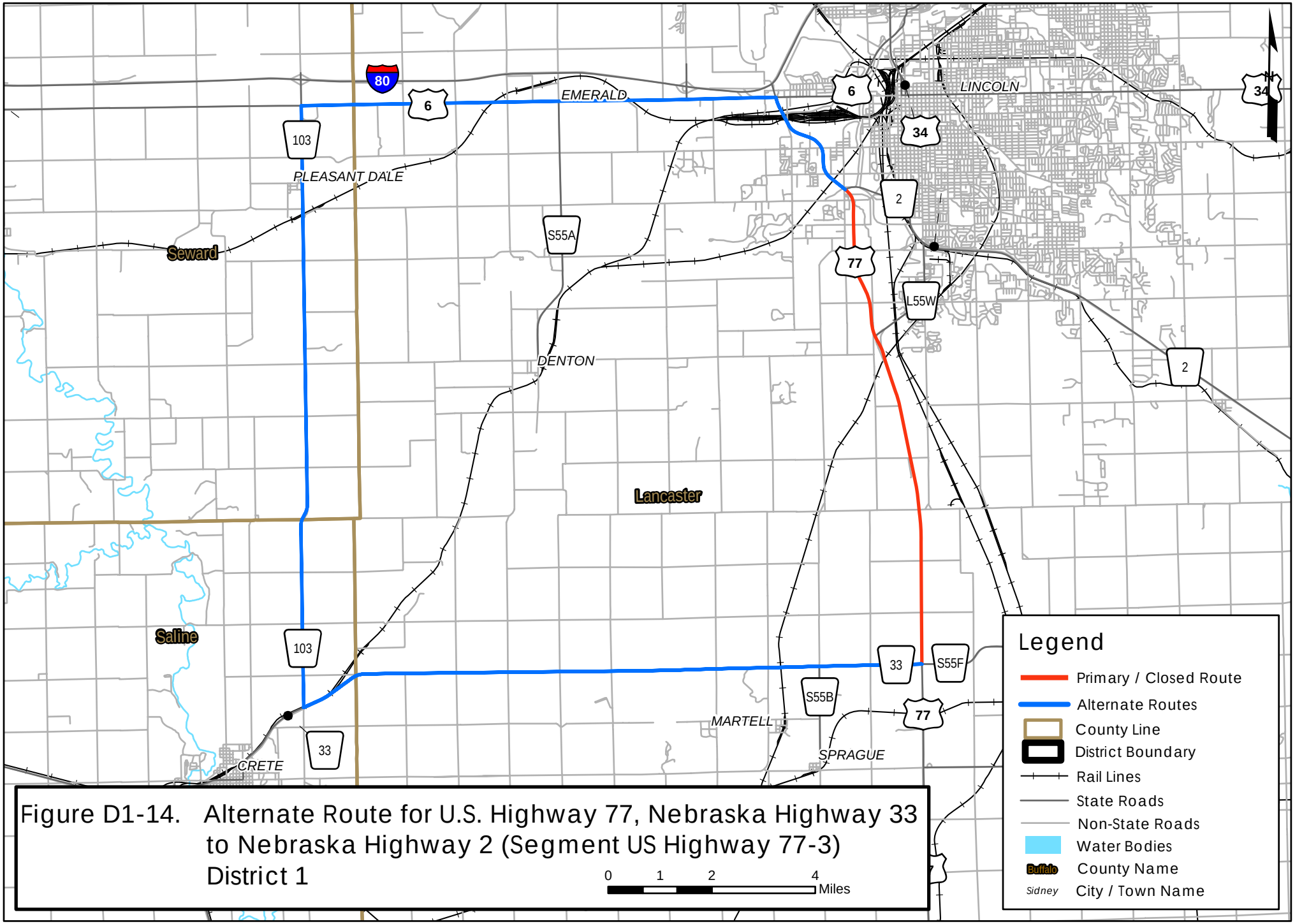


Figure D1-14. Alternate Route for U.S. Highway 77, Nebraska Highway 33 to Nebraska Highway 2 (Segment US Highway 77-3) District 1

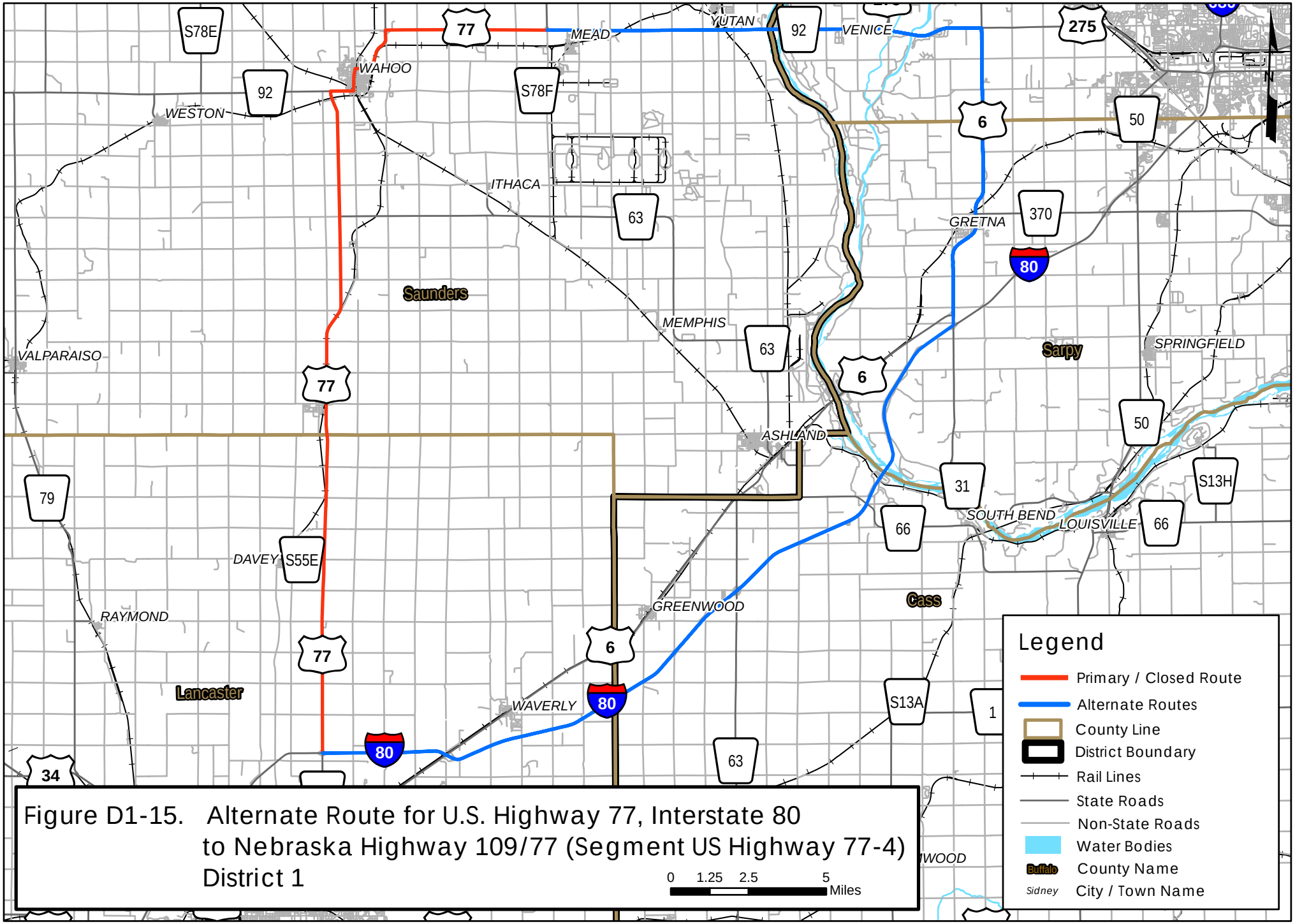


Figure D1-15. Alternate Route for U.S. Highway 77, Interstate 80 to Nebraska Highway 109/77 (Segment US Highway 77-4) District 1

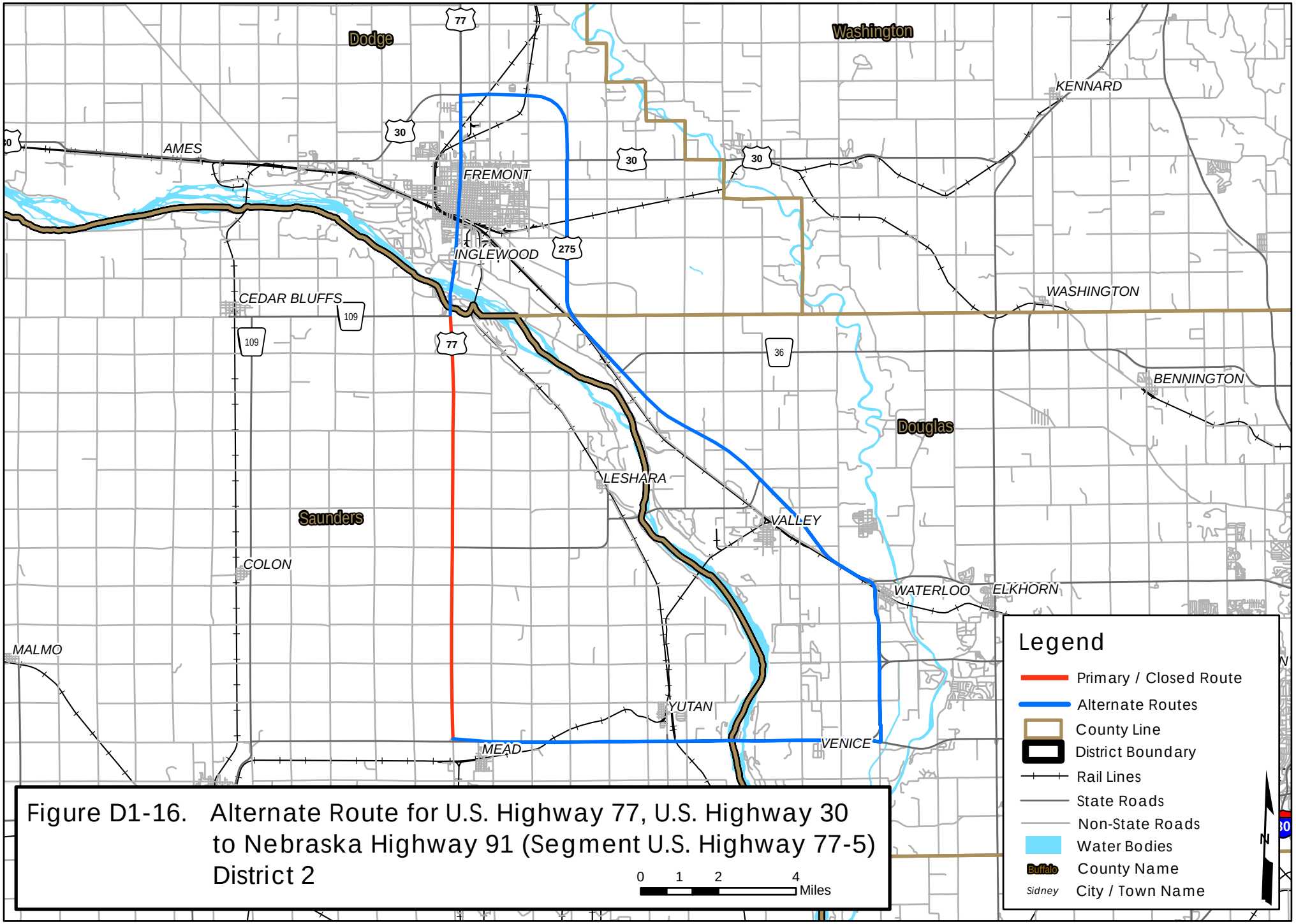


Figure D1-16. Alternate Route for U.S. Highway 77, U.S. Highway 30 to Nebraska Highway 91 (Segment U.S. Highway 77-5) District 2

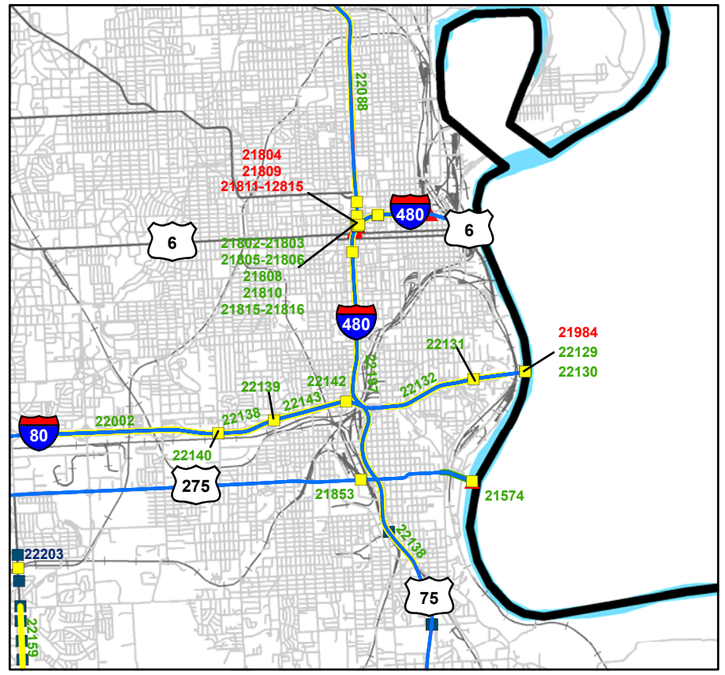
Appendix B – District 2 Alternate Route Index and Maps

Alternate Route Assessment Summary
District 2

0 2.5 5 10 Miles

Colfax
Dodge
Washington
Douglas
Sarpy
Cass
Saunders
Butler
Seward
Lancaster
Otoe

Inset



Legend

- Primary / Closed Route
- Alternate Routes
- Deficient Segment, Not in 5-Year STIP
- Deficient Structures
- Mainline UP or BNSF Railroad Crossing
- Traffic Signals
- County Line
- District Boundary
- Rail Lines
- State Roads
- Water Bodies
- Buffalo County Name
- Program Segments
- Program Points

Control Number

- FY 2006
- FY 2007-2011
- FY 2012 and Beyond

PRIMARY ROUTE (CLOSED ROUTE) SEGMENT INDEX – BY DISTRICT (DISTRICT2)

District	Primary Route - Segment	Milepost Reference		Primary Route Description
		Begin	End	
District 2	**East-West Interstate / Expressway Segments**			
	US Highway 6-1	356.93	365.17	US Highway 6 from Nebraska Highway 31 to Interstate 680
	US Highway 30-1	379.32	411.17	US Highway 30 from US Highway 81 to Nebraska Highway 79
	US Highway 30-2	411.17	425.80	US Highway 30 from Nebraska Highway 79 to US Highway 77
	US Highway 30-3	425.80	428.66	US Highway 30 from US Highway 77 to US Highway 275
	US Highway 30-4	428.66	440.21	US Highway 30 from US Highway 275 to Nebraska Highway 31
	Interstate 80-38	409.77	420.94	Interstate 80 from US Highway 6 to Nebraska Highway 63
	Interstate 80-39	420.94	439.22	Interstate 80 from Nebraska Highway 66 to Nebraska Highway 370
	Interstate 80-40	432.97	439.22	Interstate 80 from Nebraska Highway 31 to Nebraska Highway 370
	Interstate 80-41	439.22	440.66	Interstate 80 from Nebraska Highway 370 to Nebraska Highway 50
	Interstate 80-42	440.66	446.00	Interstate 80 from Nebraska Highway 50 to US Highway 275
	Interstate 80-43	445.07	453.08	Interstate 80 from US Highway 275 to US Highway 75
	Interstate 80-44	446.00	453.08	Interstate 80 from Interstate 680 to US Highway 75
	Interstate 80-45	453.08	455.31	Interstate 80 from US Highway 75 to Interstate 29
	Nebraska Highway L28B-1	0.42	3.17	Nebraska Highway L28B from US Highway 275 to Nebraska Highway 31
	North-South Expressway Segments			
	US Highway 75-1	48.54	59.10	US Highway 75 from Nebraska Highway 2 to US Highway 34
	US Highway 34/75-2	72.14	379.49	US Highway 34/75 from US Highway 75 to Nebraska Highway 370
	US Highway 77-6	116.84	120.66	US Highway 77 from Highway 30 to Highway 91
	US Highway 77-7	120.66	125.25	US Highway 77 from Nebraska Highway 91 to Highway 275
	US Highway 77-8	125.41	141.31	US Highway 77 from US Highway 275 to Highway 32
	US Highway 275-1	75.15	117.46	US Highway 275 from Nebraska Highway 91 to US Highway 81
	US Highway 275-2	118.14	126.82	US Highway 275 from Nebraska Highway 32 to Nebraska Highway 91
	US Highway 275-3	126.82	140.13	US Highway 275 from Nebraska Highway 91 to US Highway 77
	US Highway 275-4	152.69	158.48	US Highway 275 from Nebraska Highway 36 to US Highway 30
	US Highway 275-5	158.48	166.02	US Highway 275 from Nebraska Highway 64 to Nebraska Highway 36
	US Highway 275-6	166.02	168.60	US Highway 275 from Nebraska Highway L28B to Nebraska Highway 64
	US Highway 275-7	168.60	170.70	US Highway 275 from Nebraska Highway 92 to Nebraska Highway L28B
	US Highway 275-8	170.70	173.74	US Highway 275 from Nebraska Highway 92 to US Highway 6
	US Highway 275-9	173.74	180.26	US Highway 275 from US Highway 6 to Nebraska Highway 50

PRIMARY ROUTE (CLOSED ROUTE) SEGMENT INDEX – BY DISTRICT (DISTRICT2)

District	Primary Route - Segment	Milepost Reference		Primary Route Description
		Begin	End	
District 2	North-South Interstate Segments			
	Interstate 480-1	0.00	4.13	Interstate 480 from Interstate 29 to Interstate 80
	Interstate 680-1	0.11	13.43	Interstate 680 from Interstate 29 to Interstate 80
	Interstate 680-2	3.02	7.13	Interstate 680 from Nebraska Highway 133 to US Highway 6
	Interstate 680-3	7.13	11.50	Interstate 680 from Nebraska Highway 133 to Nebraska Highway 36
	Interstate 680-4	13.05	13.43	Interstate 680 from Nebraska Highway L28H to Interstate 29

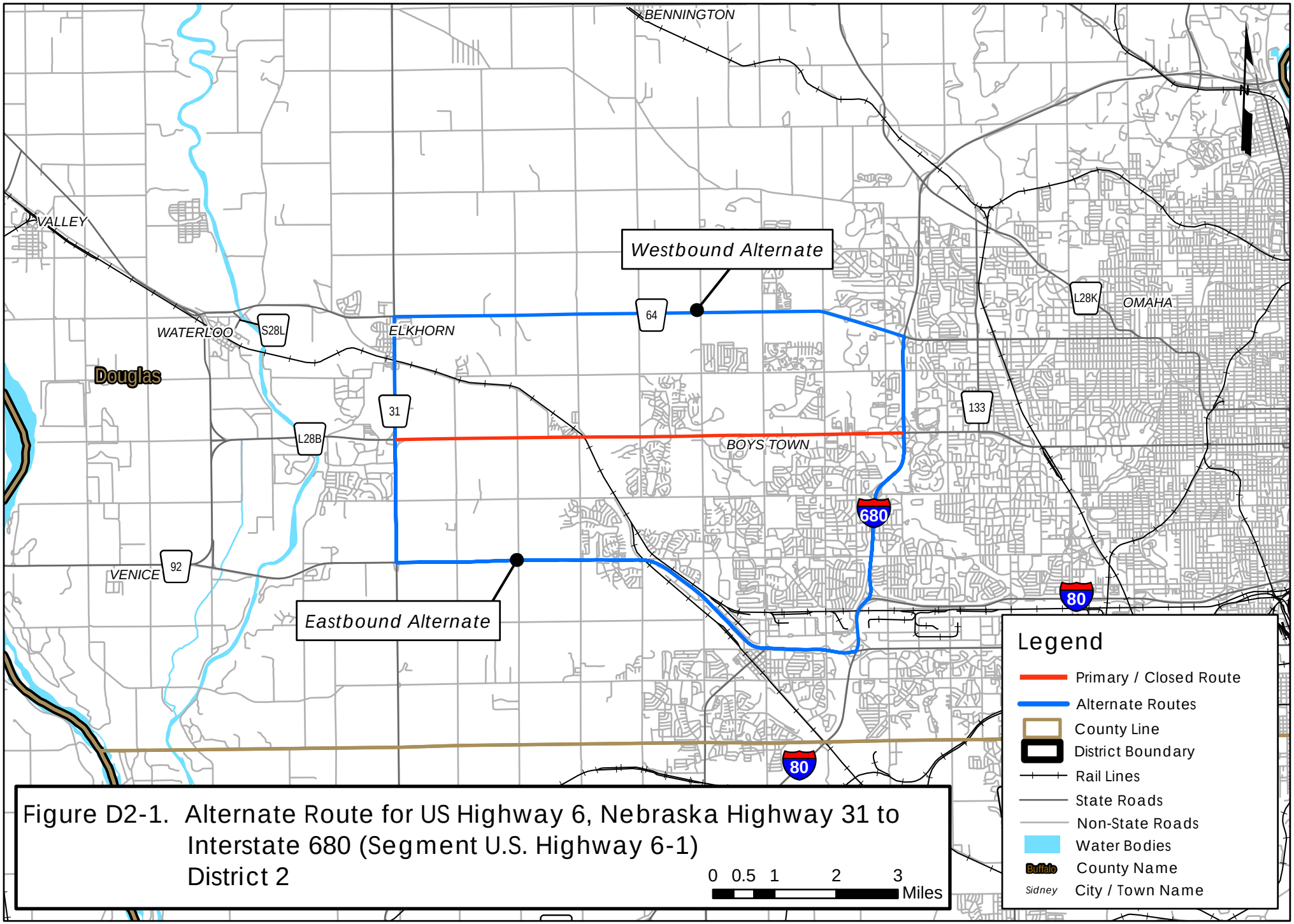


Figure D2-1. Alternate Route for US Highway 6, Nebraska Highway 31 to Interstate 680 (Segment U.S. Highway 6-1)
District 2

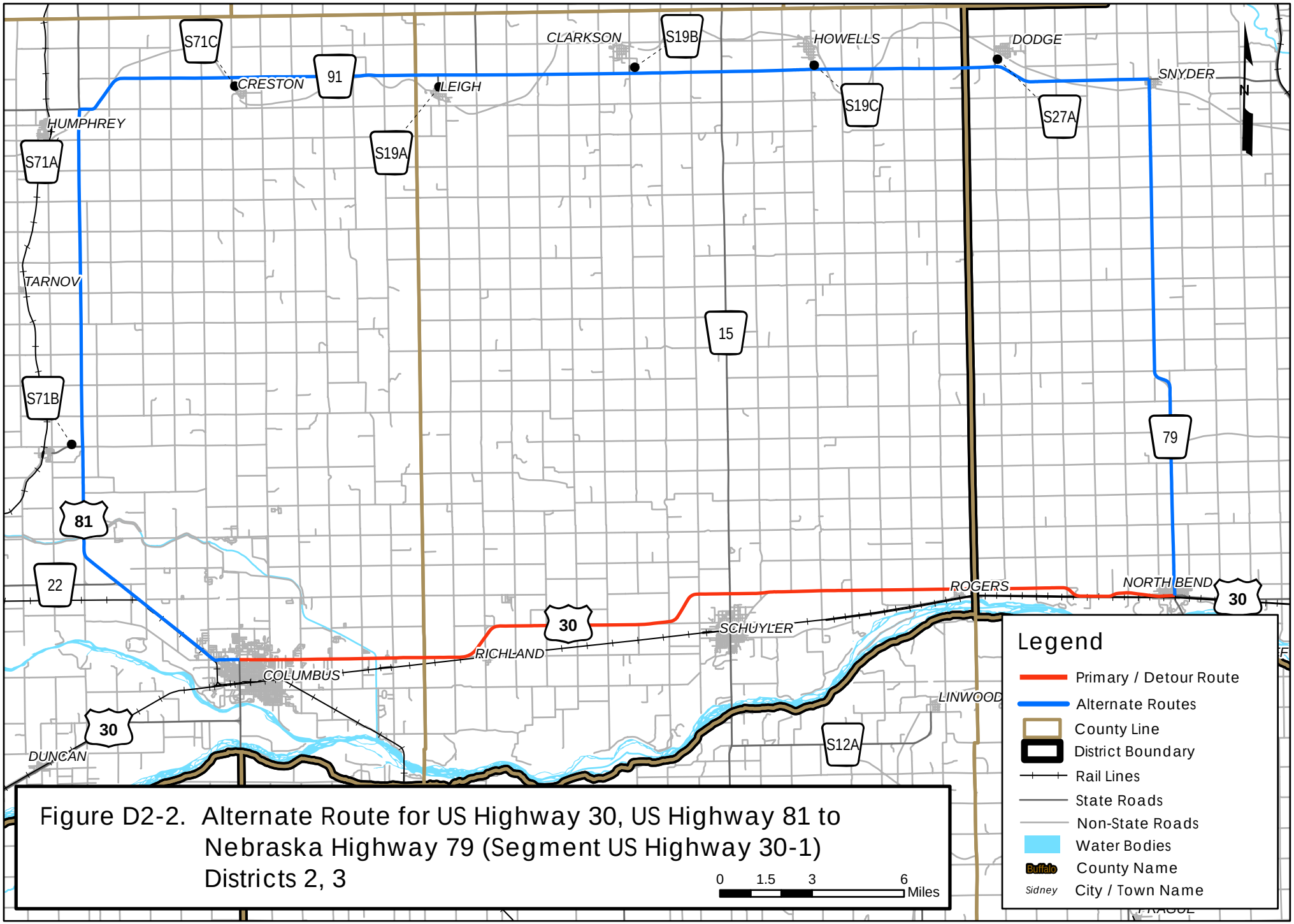


Figure D2-2. Alternate Route for US Highway 30, US Highway 81 to Nebraska Highway 79 (Segment US Highway 30-1)
Districts 2, 3

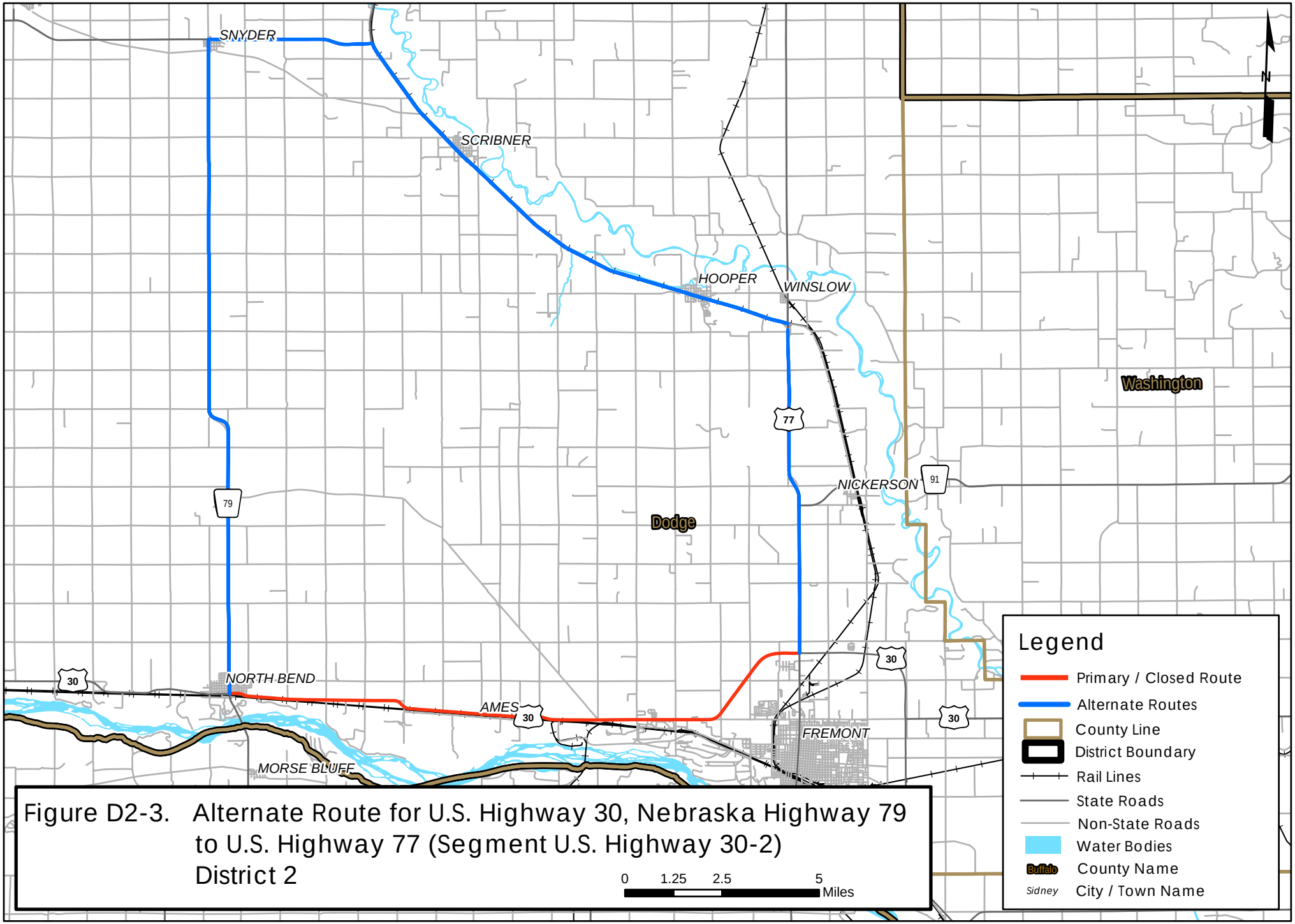


Figure D2-3. Alternate Route for U.S. Highway 30, Nebraska Highway 79 to U.S. Highway 77 (Segment U.S. Highway 30-2) District 2

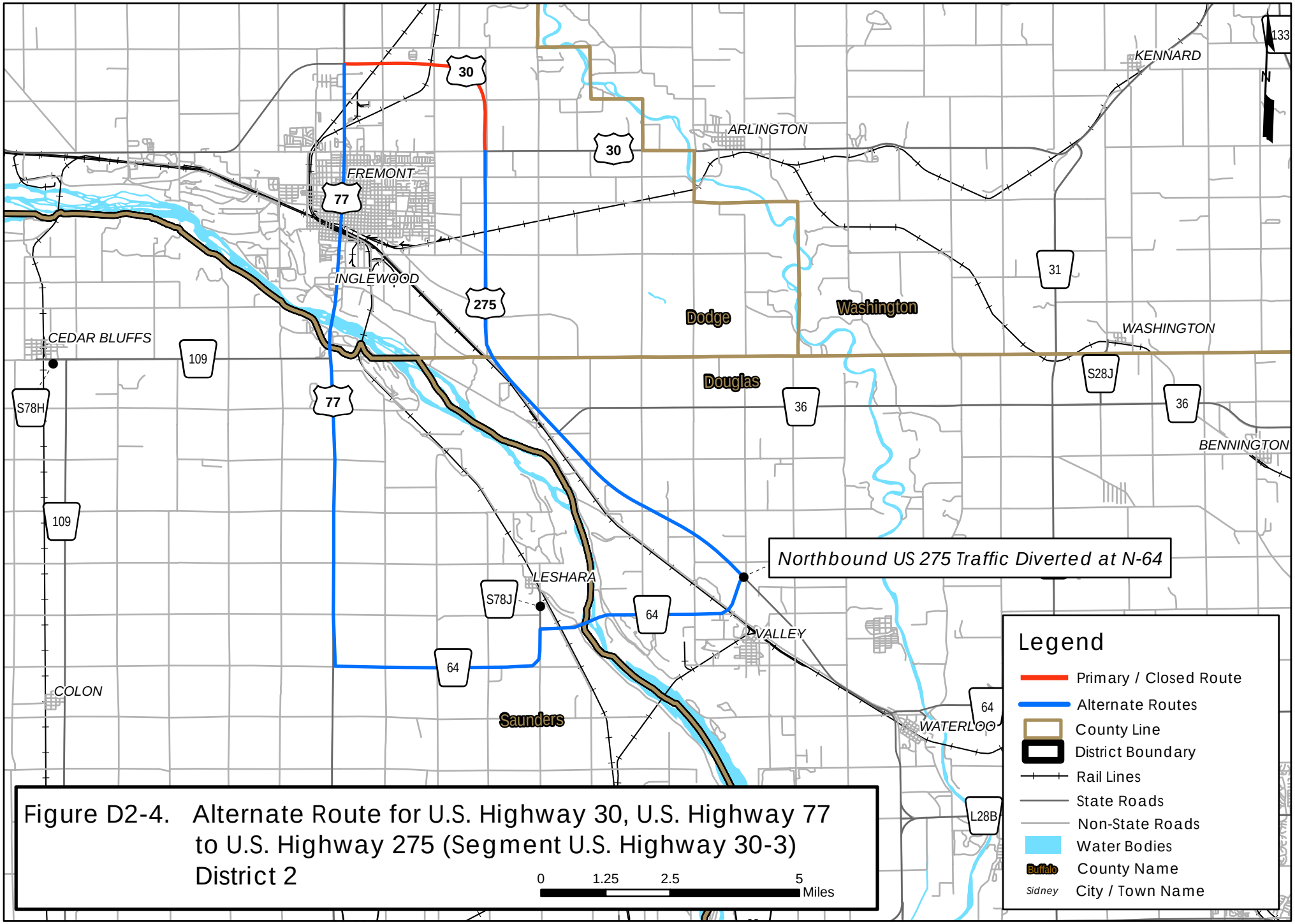


Figure D2-4. Alternate Route for U.S. Highway 30, U.S. Highway 77 to U.S. Highway 275 (Segment U.S. Highway 30-3) District 2

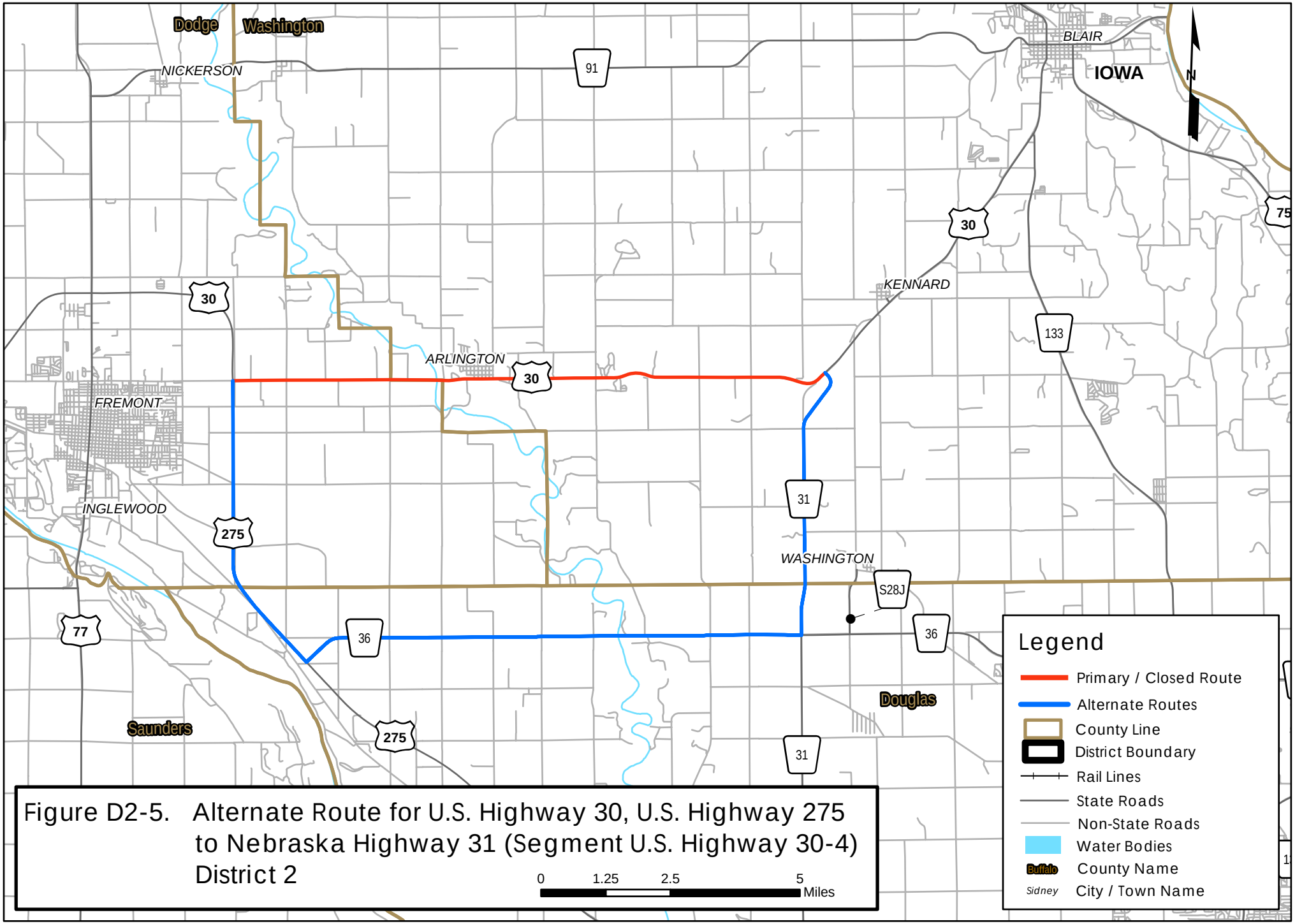


Figure D2-5. Alternate Route for U.S. Highway 30, U.S. Highway 275 to Nebraska Highway 31 (Segment U.S. Highway 30-4) District 2

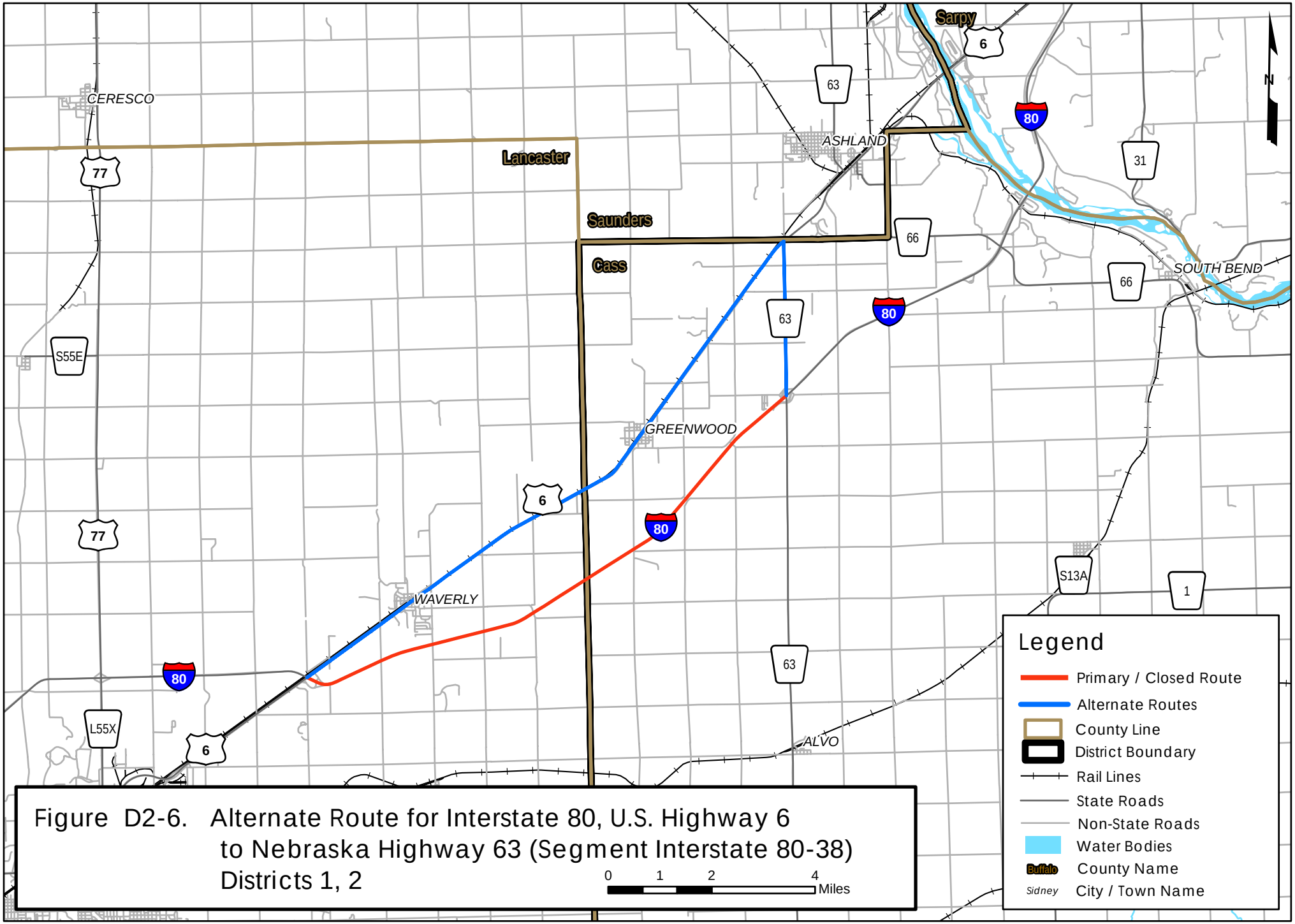


Figure D2-6. Alternate Route for Interstate 80, U.S. Highway 6 to Nebraska Highway 63 (Segment Interstate 80-38) Districts 1, 2

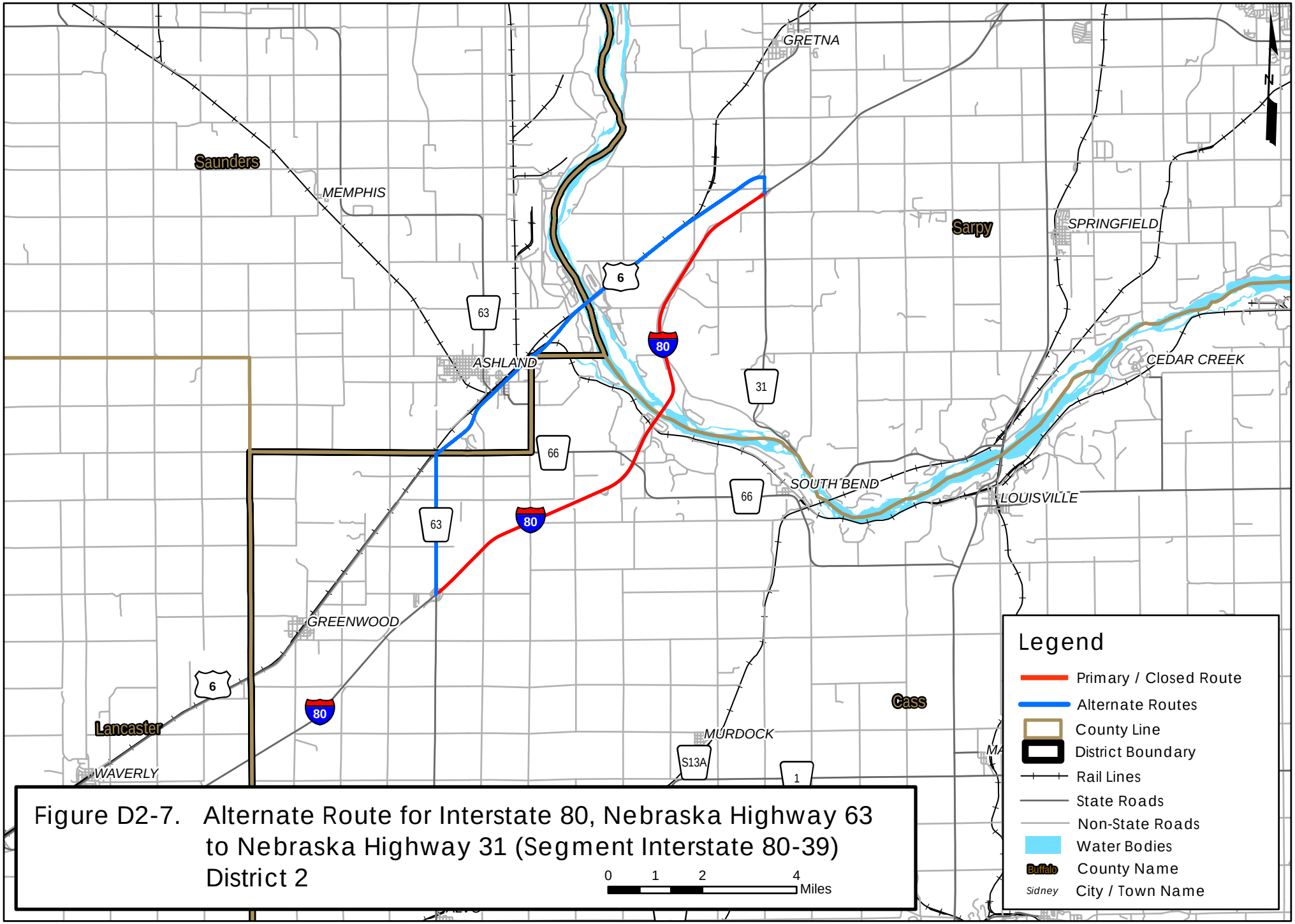


Figure D2-7. Alternate Route for Interstate 80, Nebraska Highway 63 to Nebraska Highway 31 (Segment Interstate 80-39) District 2

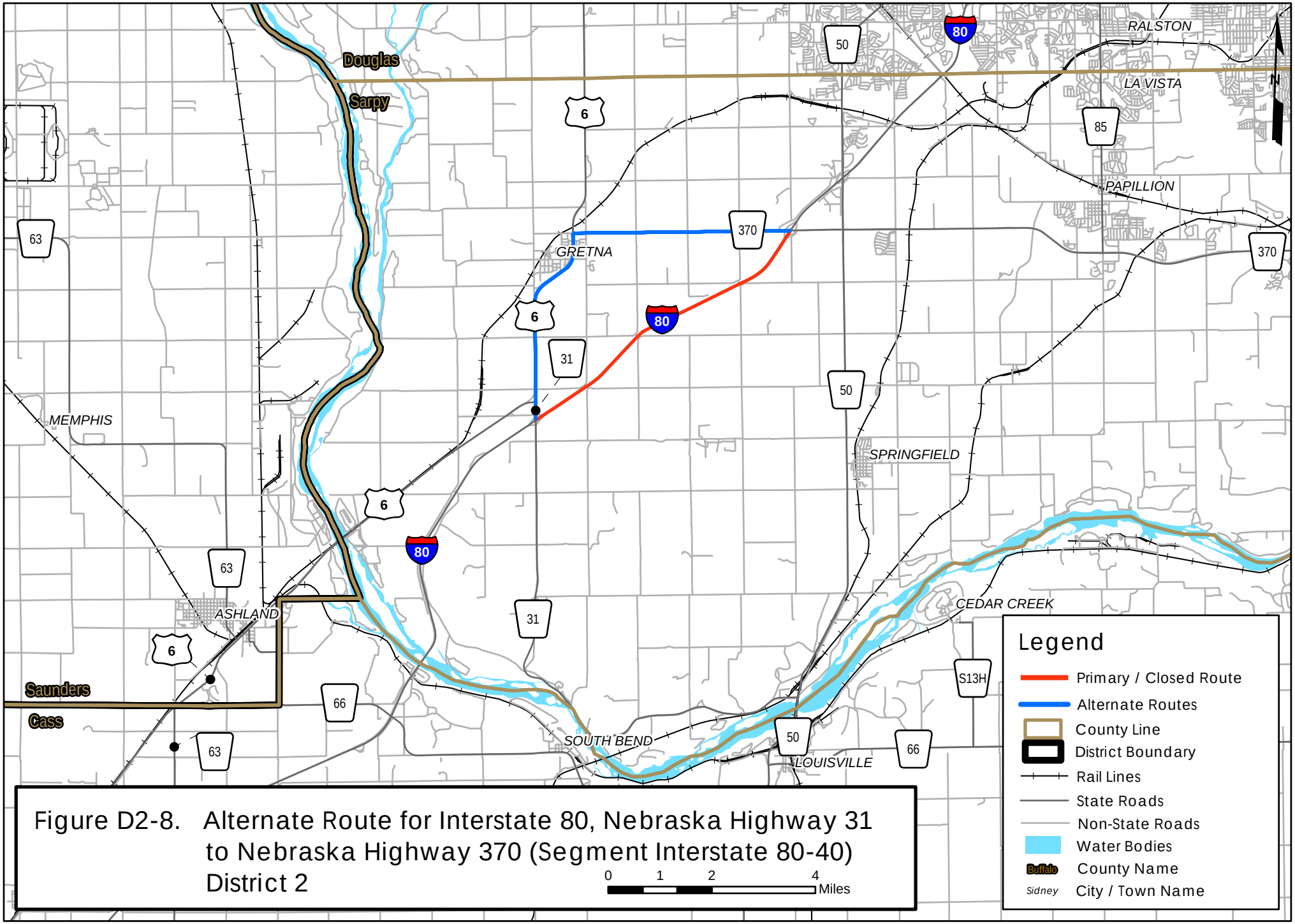


Figure D2-8. Alternate Route for Interstate 80, Nebraska Highway 31 to Nebraska Highway 370 (Segment Interstate 80-40) District 2

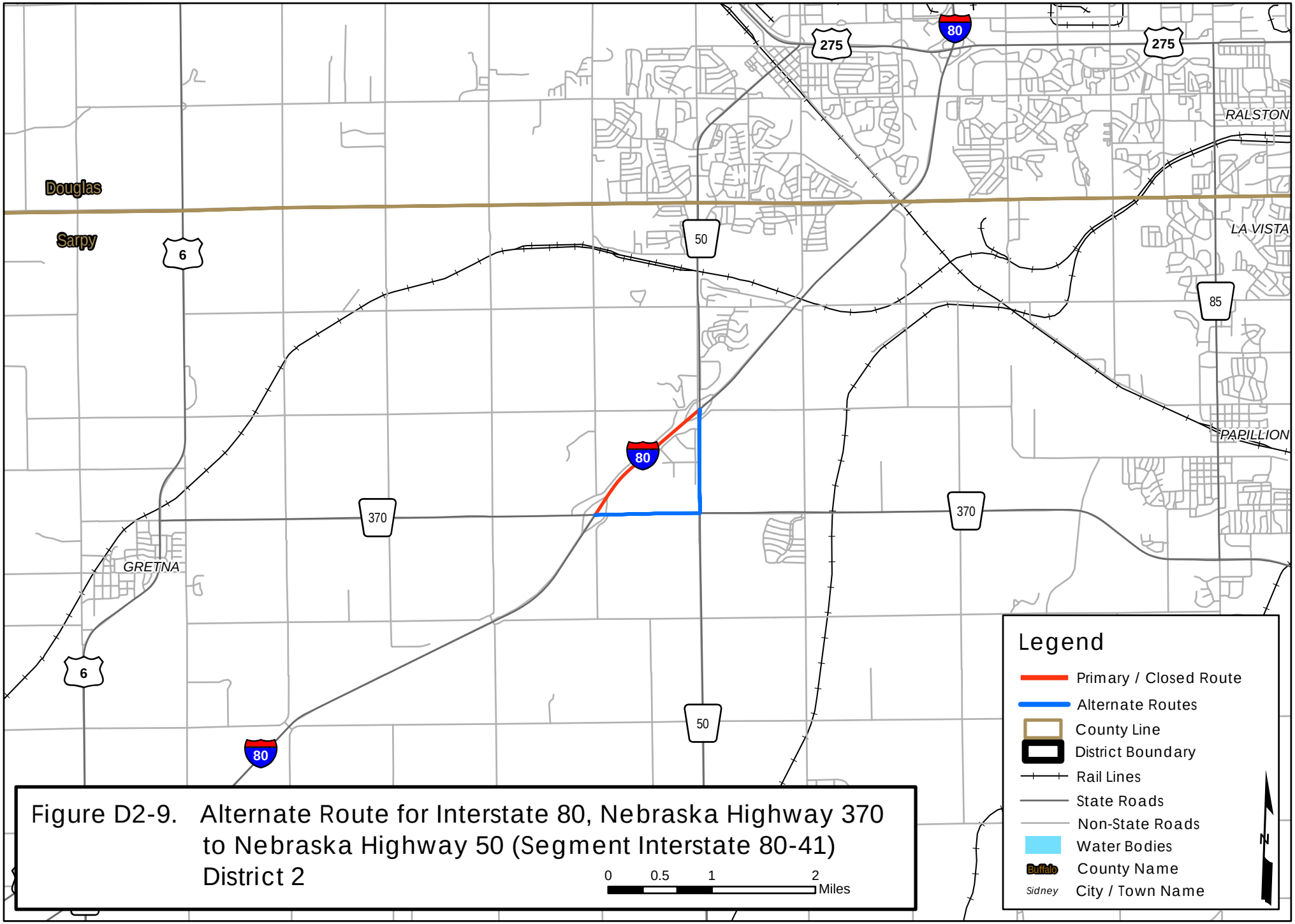


Figure D2-9. Alternate Route for Interstate 80, Nebraska Highway 370 to Nebraska Highway 50 (Segment Interstate 80-41) District 2

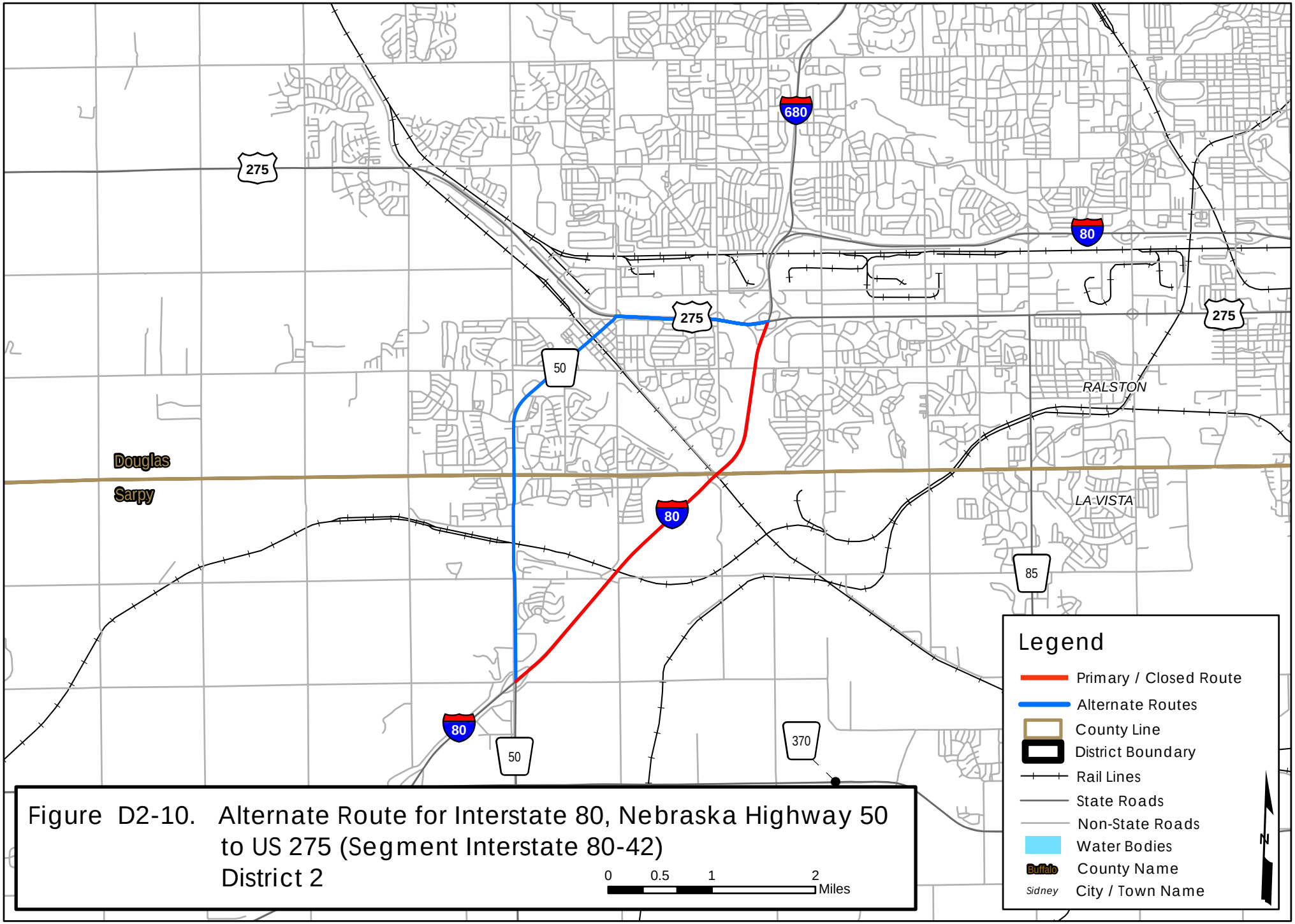


Figure D2-10. Alternate Route for Interstate 80, Nebraska Highway 50 to US 275 (Segment Interstate 80-42)
District 2

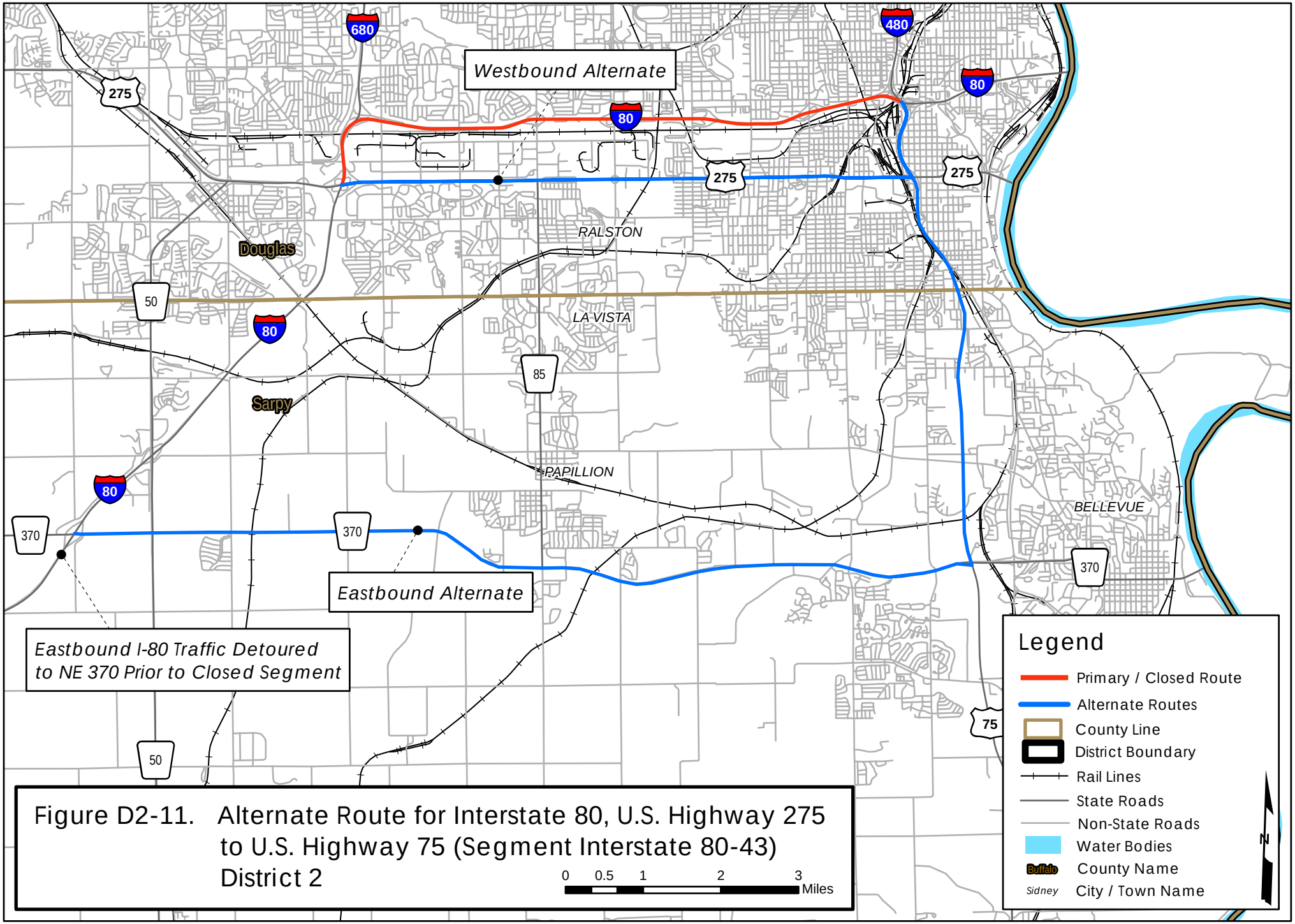


Figure D2-11. Alternate Route for Interstate 80, U.S. Highway 275 to U.S. Highway 75 (Segment Interstate 80-43) District 2

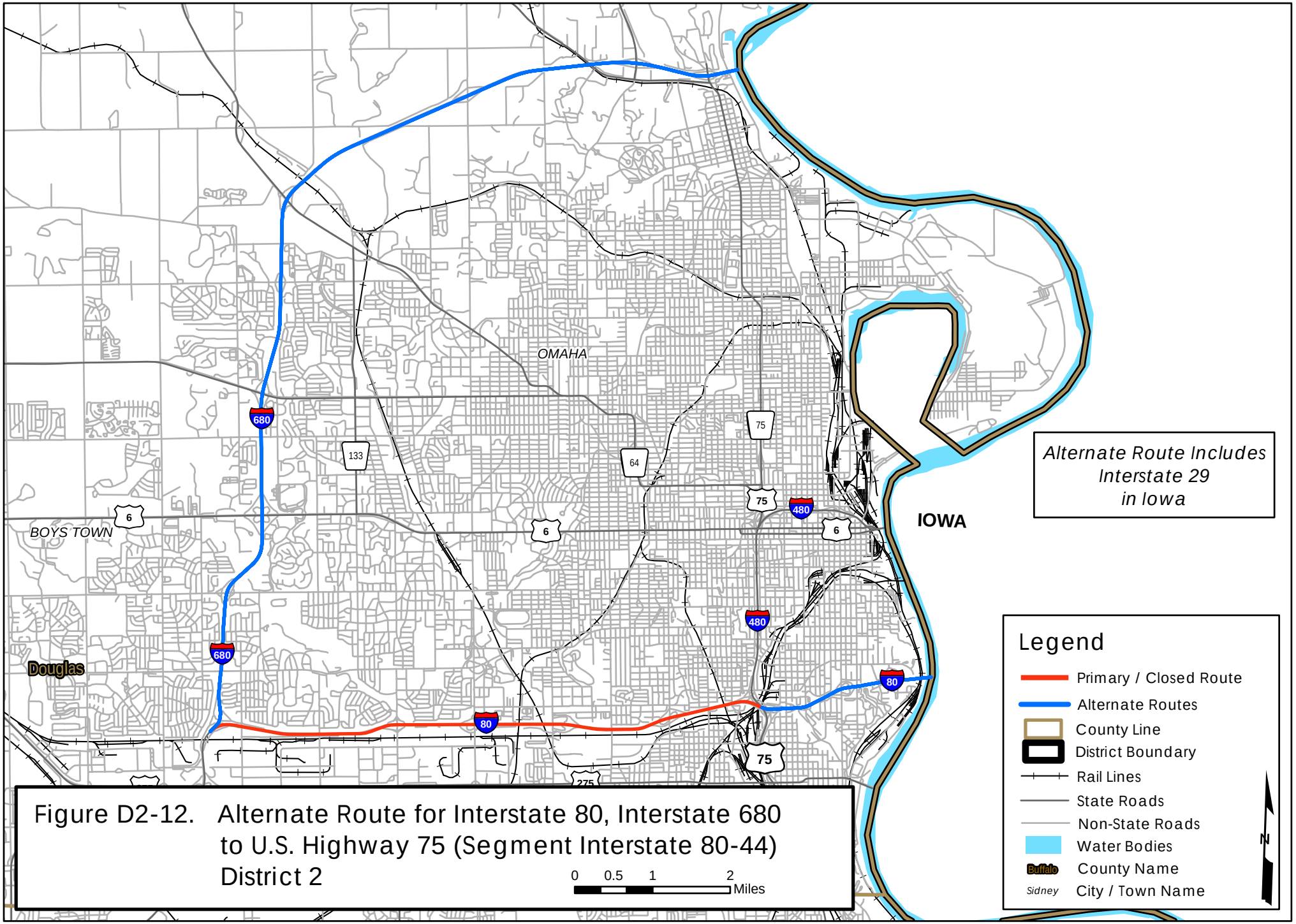


Figure D2-12. Alternate Route for Interstate 80, Interstate 680 to U.S. Highway 75 (Segment Interstate 80-44) District 2

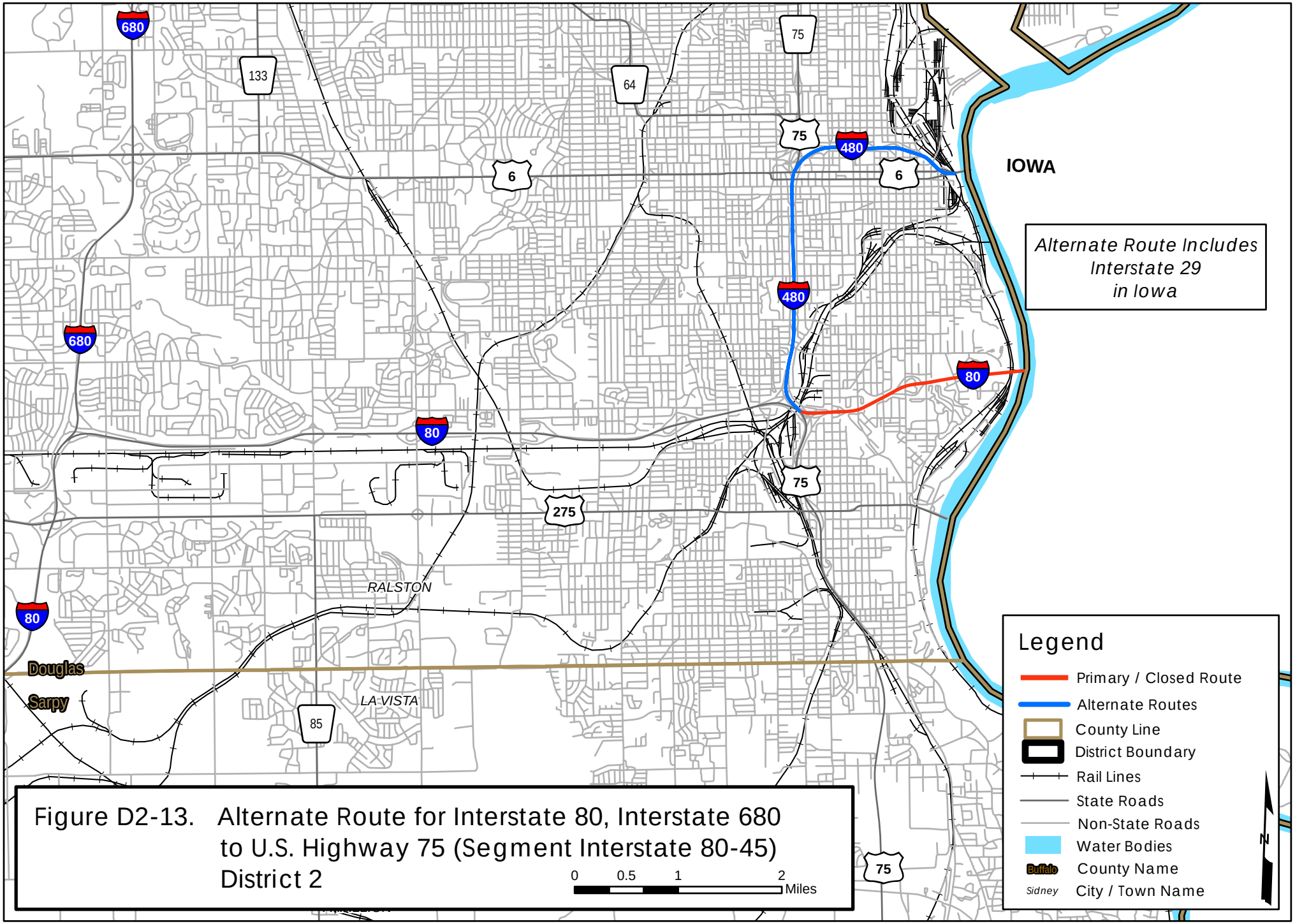


Figure D2-13. Alternate Route for Interstate 80, Interstate 680 to U.S. Highway 75 (Segment Interstate 80-45) District 2

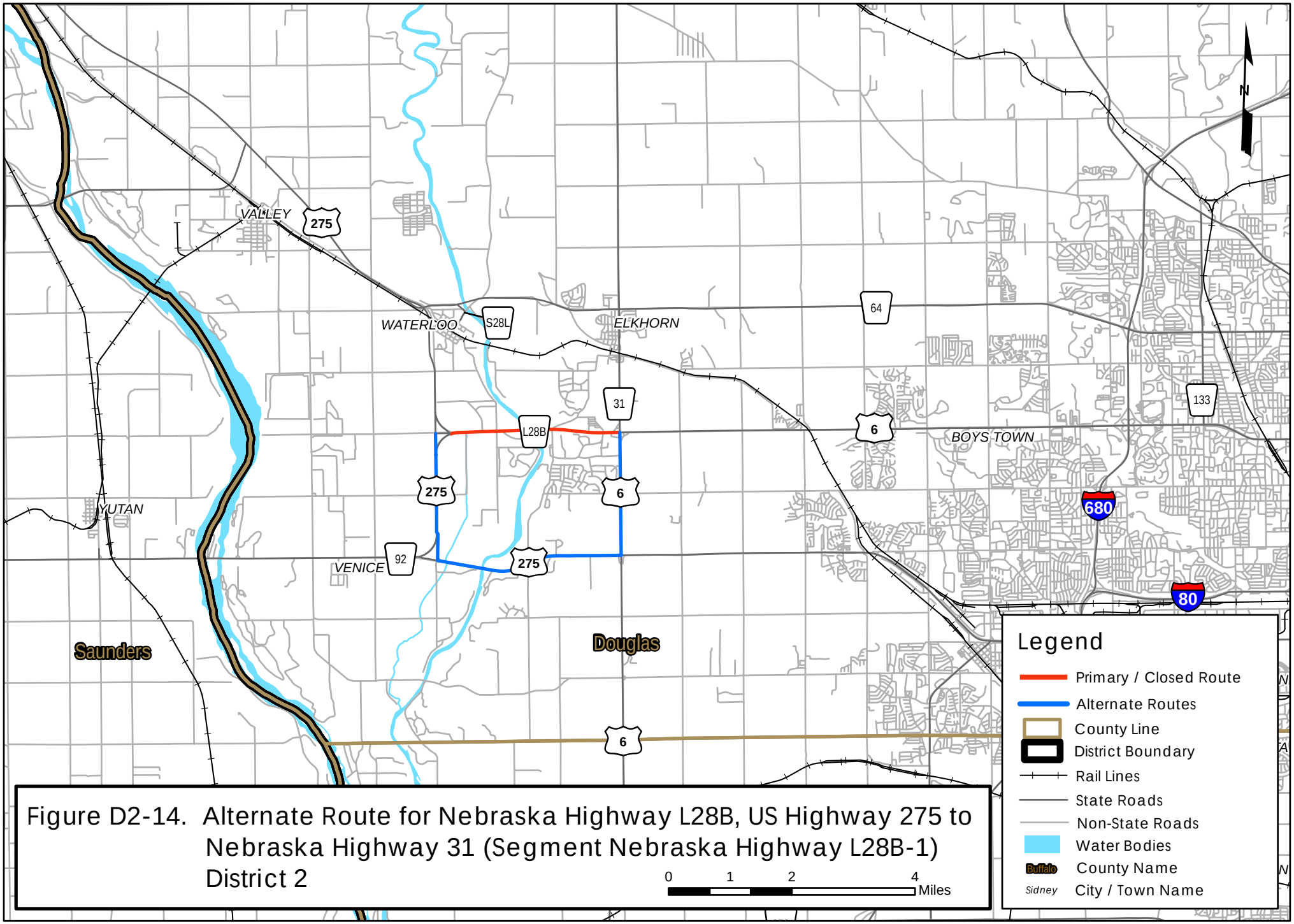


Figure D2-14. Alternate Route for Nebraska Highway L28B, US Highway 275 to Nebraska Highway 31 (Segment Nebraska Highway L28B-1) District 2

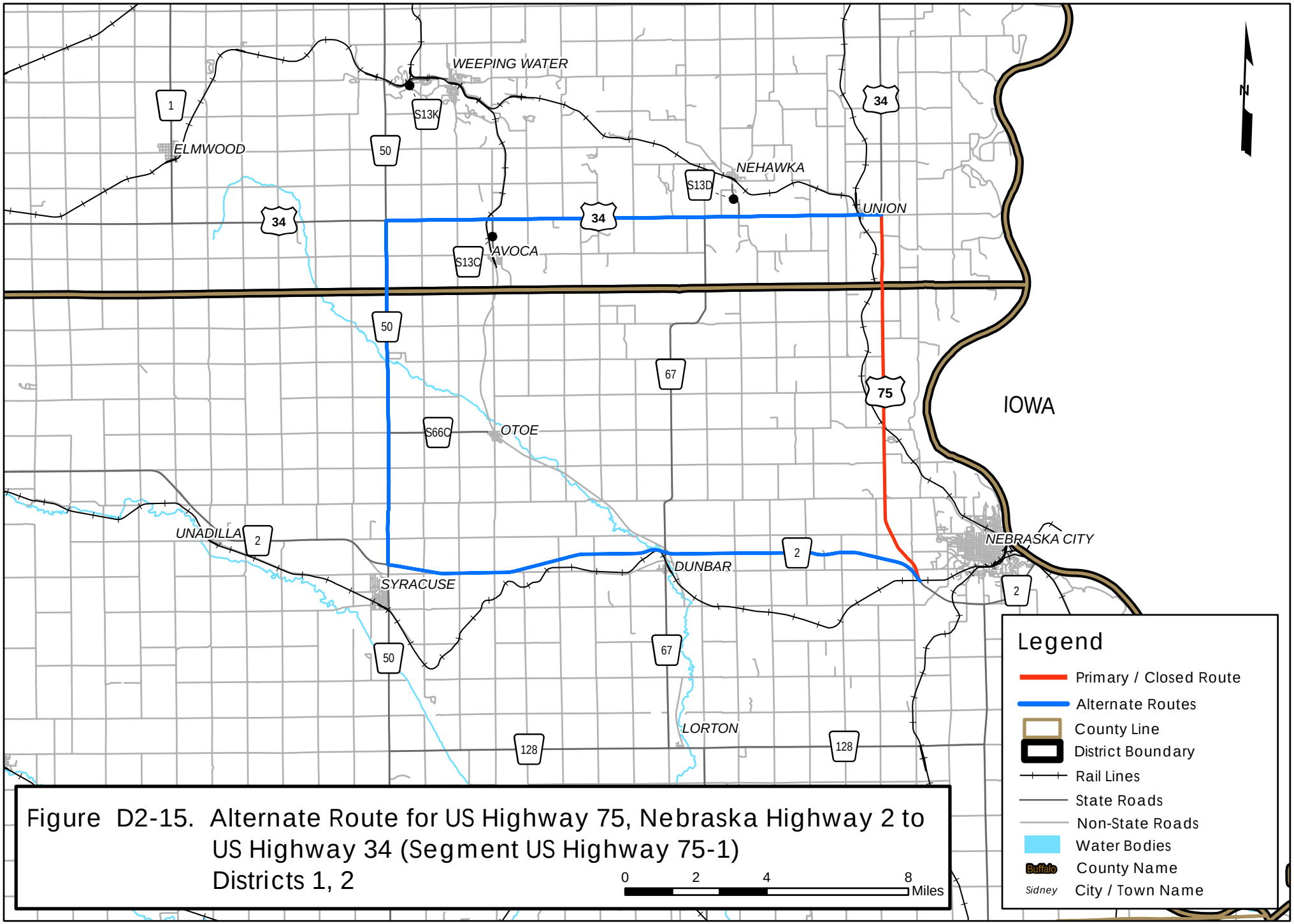


Figure D2-15. Alternate Route for US Highway 75, Nebraska Highway 2 to US Highway 34 (Segment US Highway 75-1)
Districts 1, 2

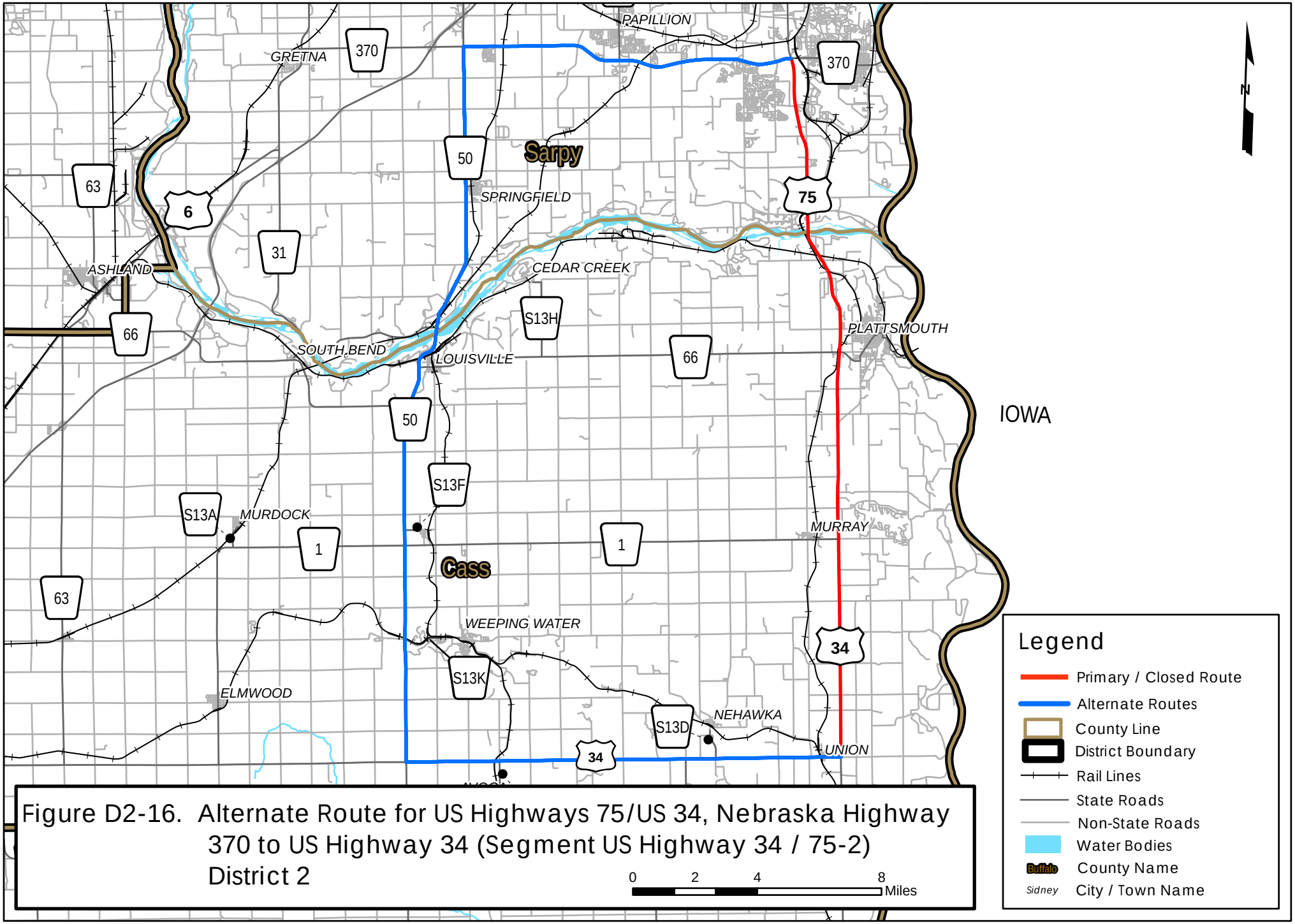


Figure D2-16. Alternate Route for US Highways 75/US 34, Nebraska Highway 370 to US Highway 34 (Segment US Highway 34 / 75-2) District 2

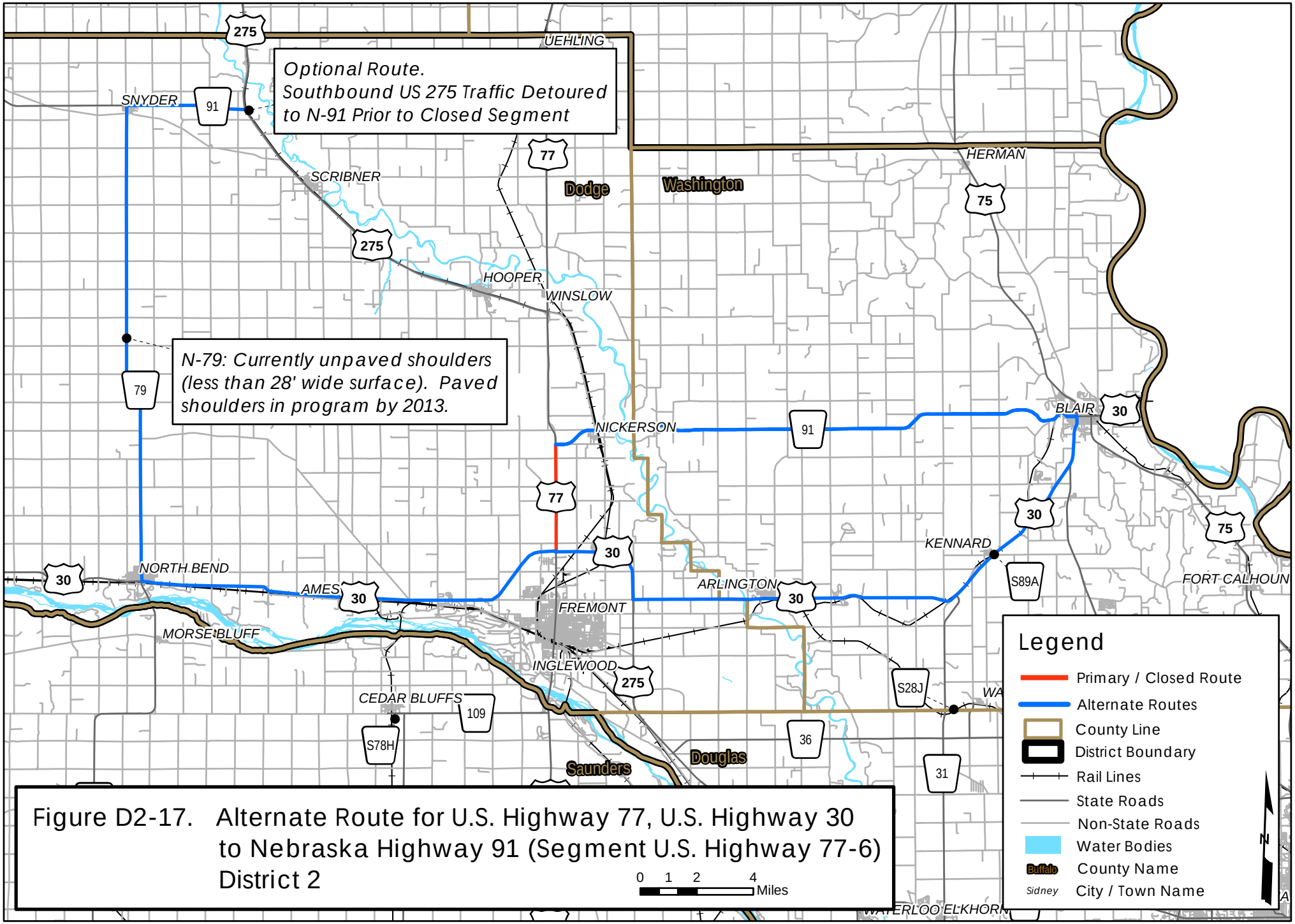


Figure D2-17. Alternate Route for U.S. Highway 77, U.S. Highway 30 to Nebraska Highway 91 (Segment U.S. Highway 77-6) District 2

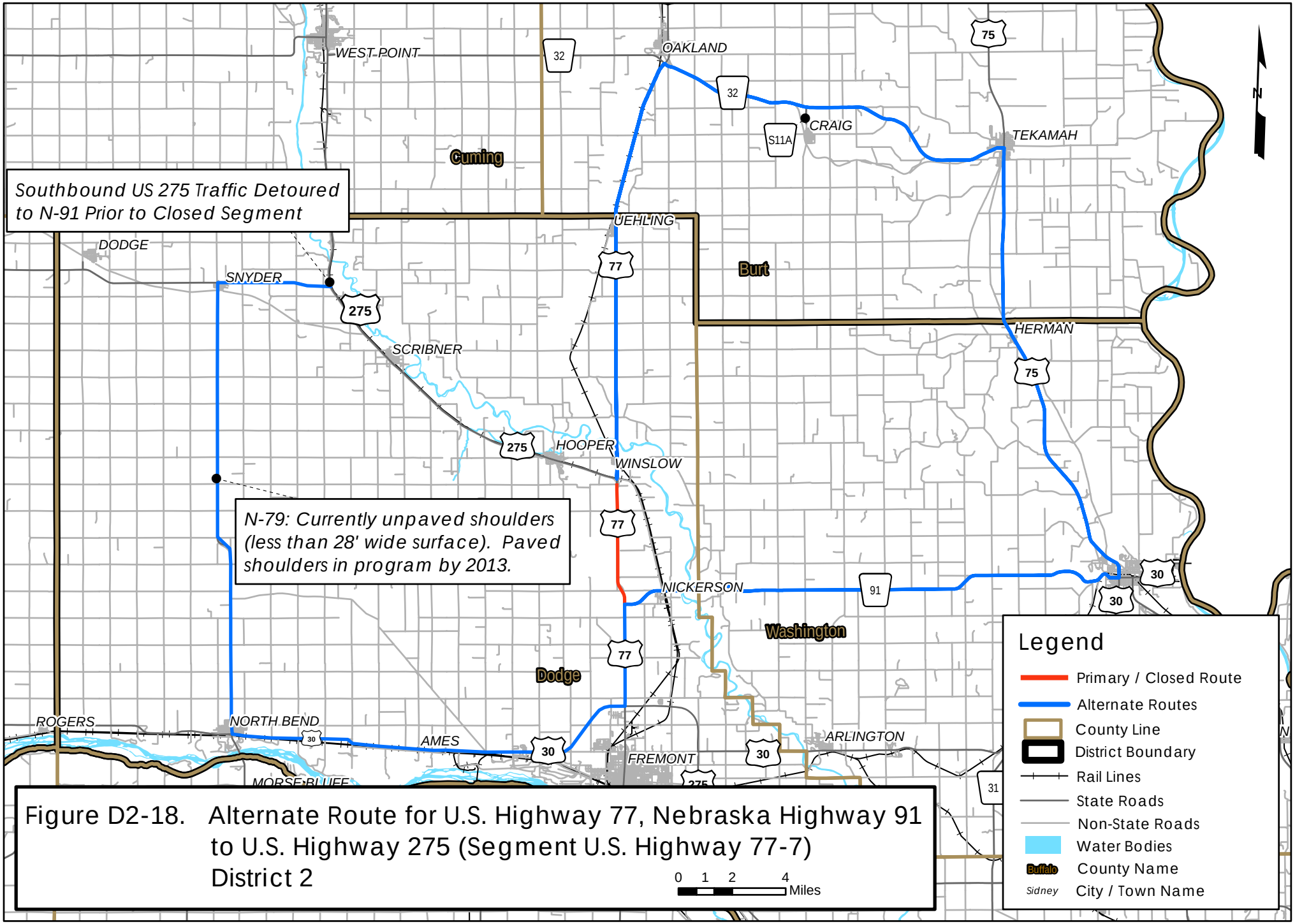


Figure D2-18. Alternate Route for U.S. Highway 77, Nebraska Highway 91 to U.S. Highway 275 (Segment U.S. Highway 77-7) District 2

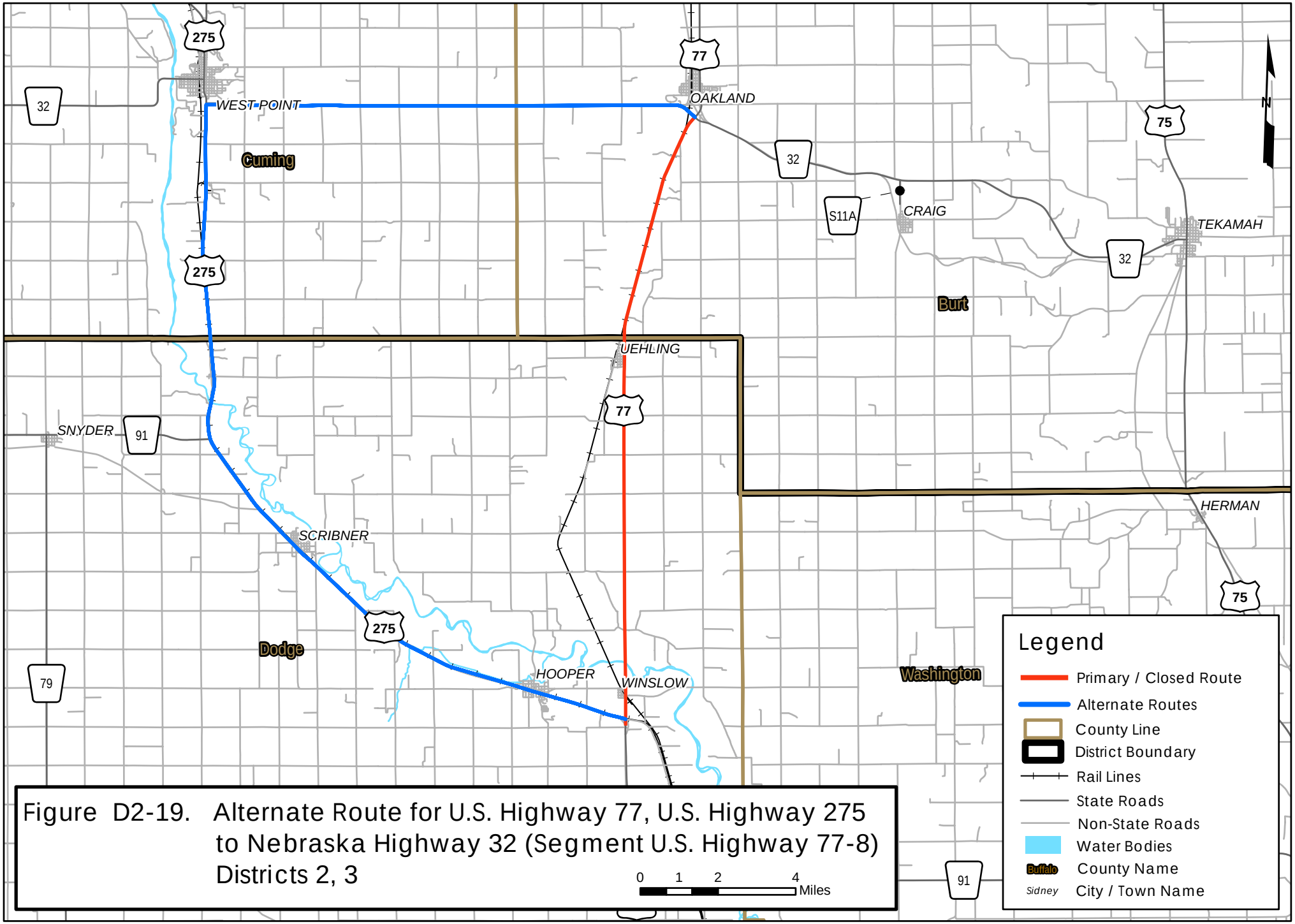


Figure D2-19. Alternate Route for U.S. Highway 77, U.S. Highway 275 to Nebraska Highway 32 (Segment U.S. Highway 77-8) Districts 2, 3

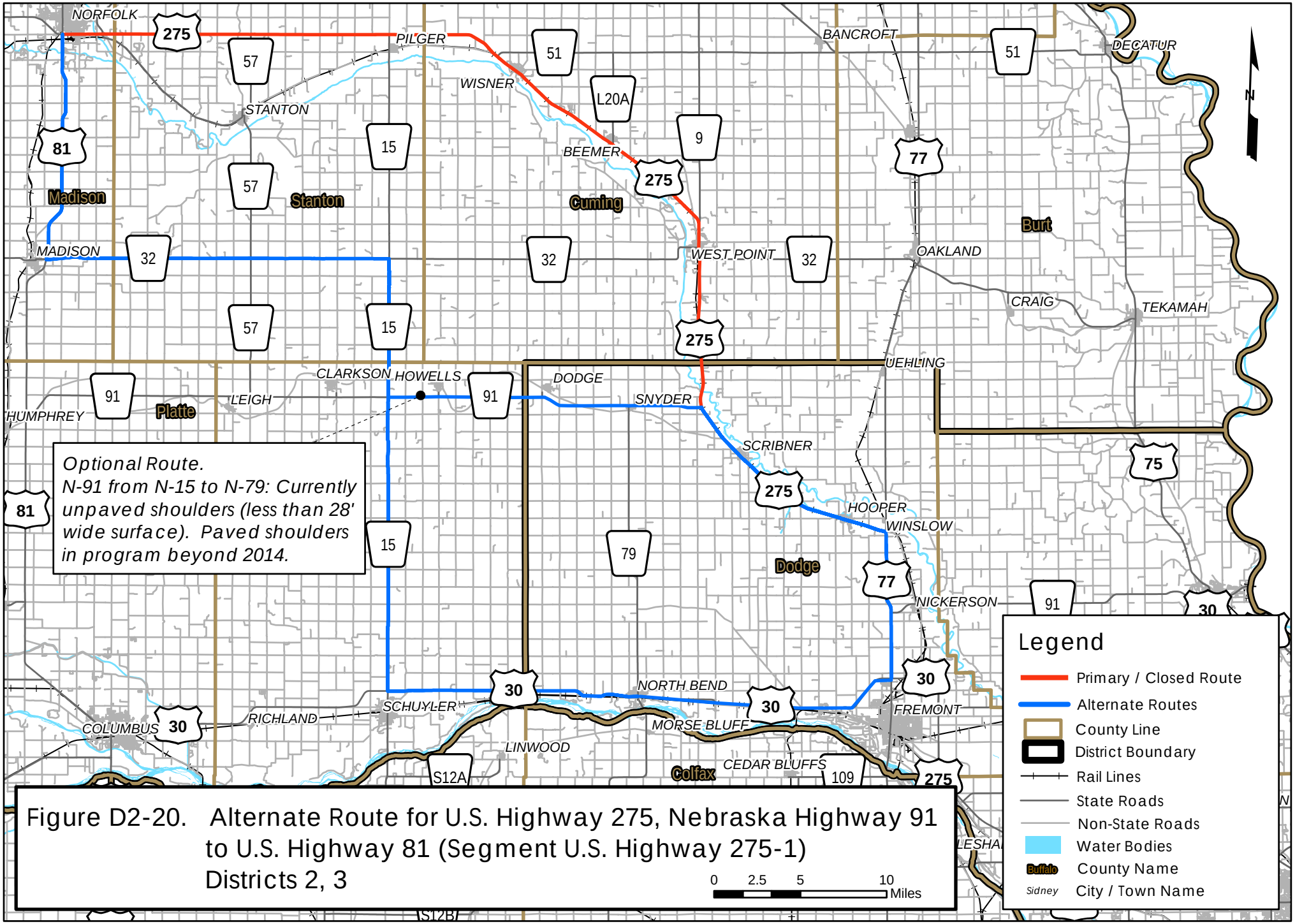


Figure D2-20. Alternate Route for U.S. Highway 275, Nebraska Highway 91 to U.S. Highway 81 (Segment U.S. Highway 275-1)
Districts 2, 3

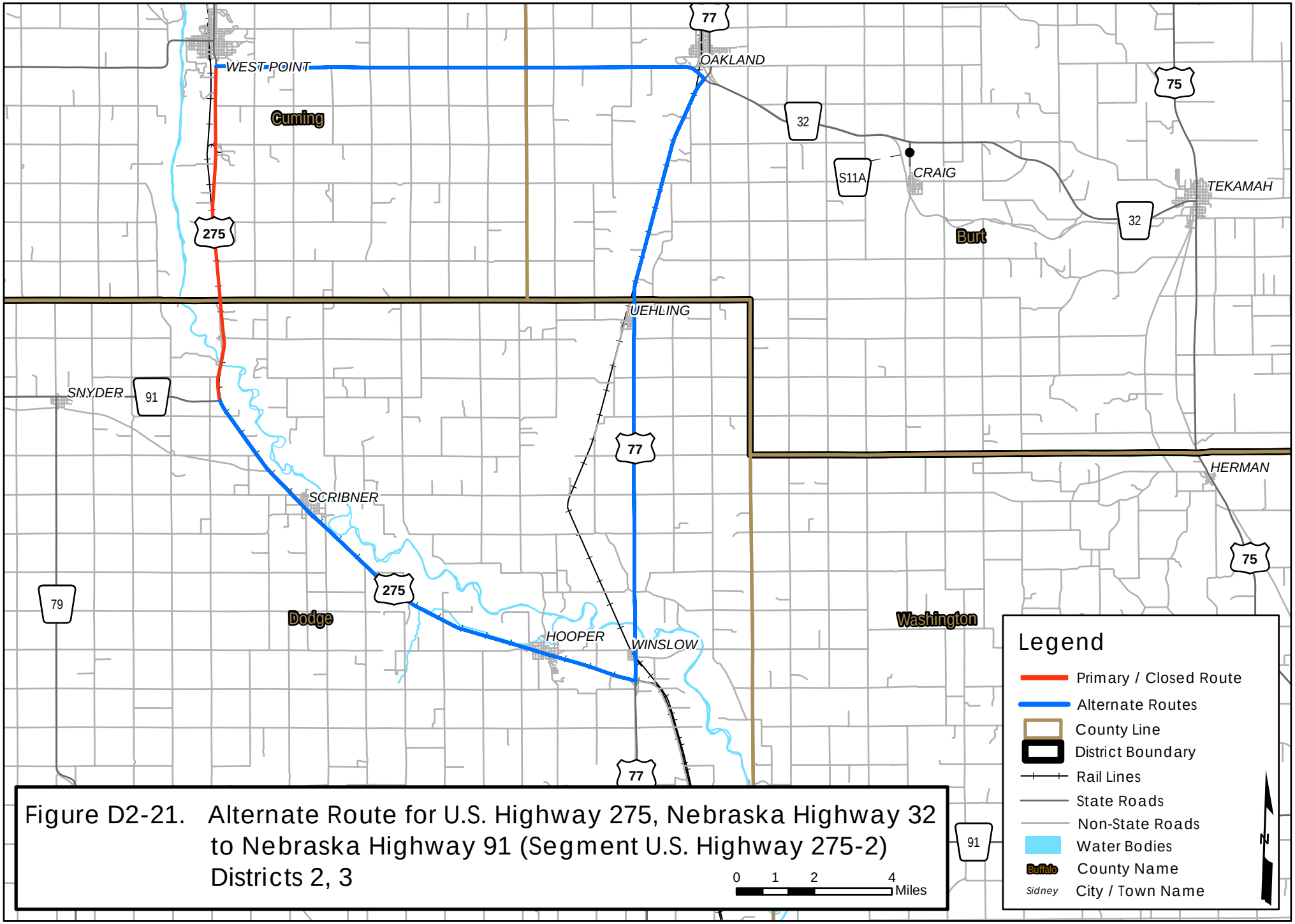


Figure D2-21. Alternate Route for U.S. Highway 275, Nebraska Highway 32 to Nebraska Highway 91 (Segment U.S. Highway 275-2) Districts 2, 3

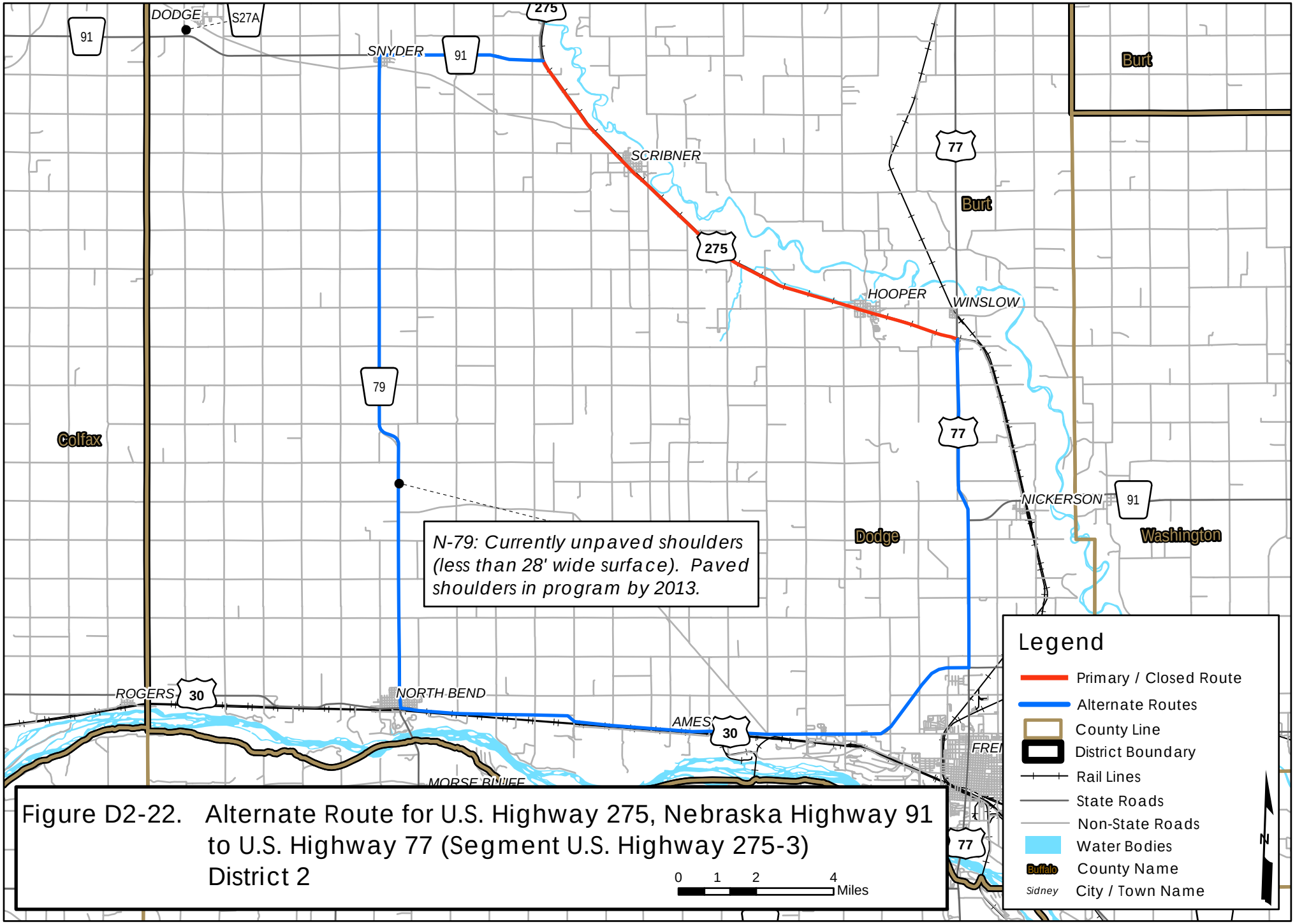


Figure D2-22. Alternate Route for U.S. Highway 275, Nebraska Highway 91 to U.S. Highway 77 (Segment U.S. Highway 275-3) District 2

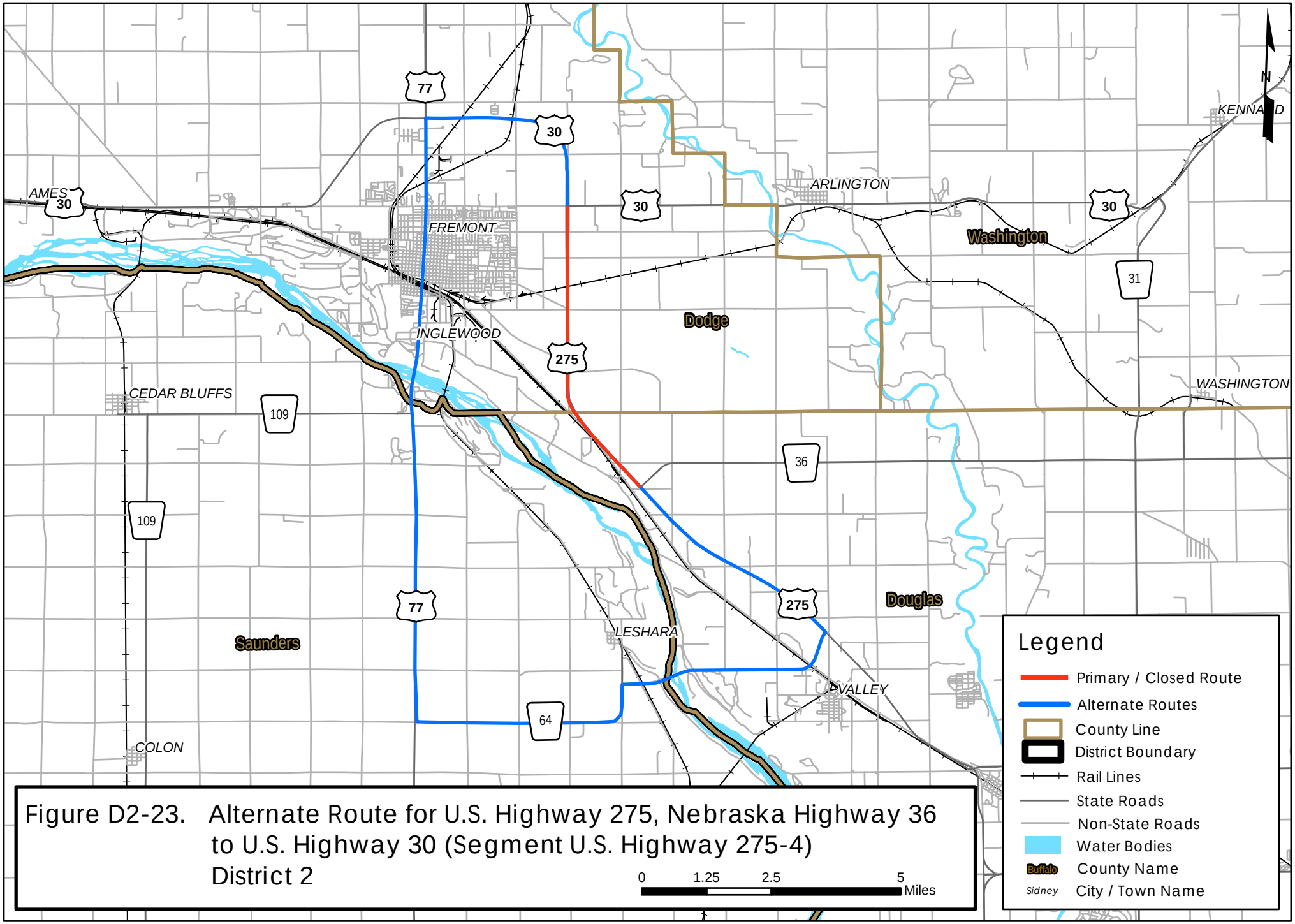


Figure D2-23. Alternate Route for U.S. Highway 275, Nebraska Highway 36 to U.S. Highway 30 (Segment U.S. Highway 275-4) District 2

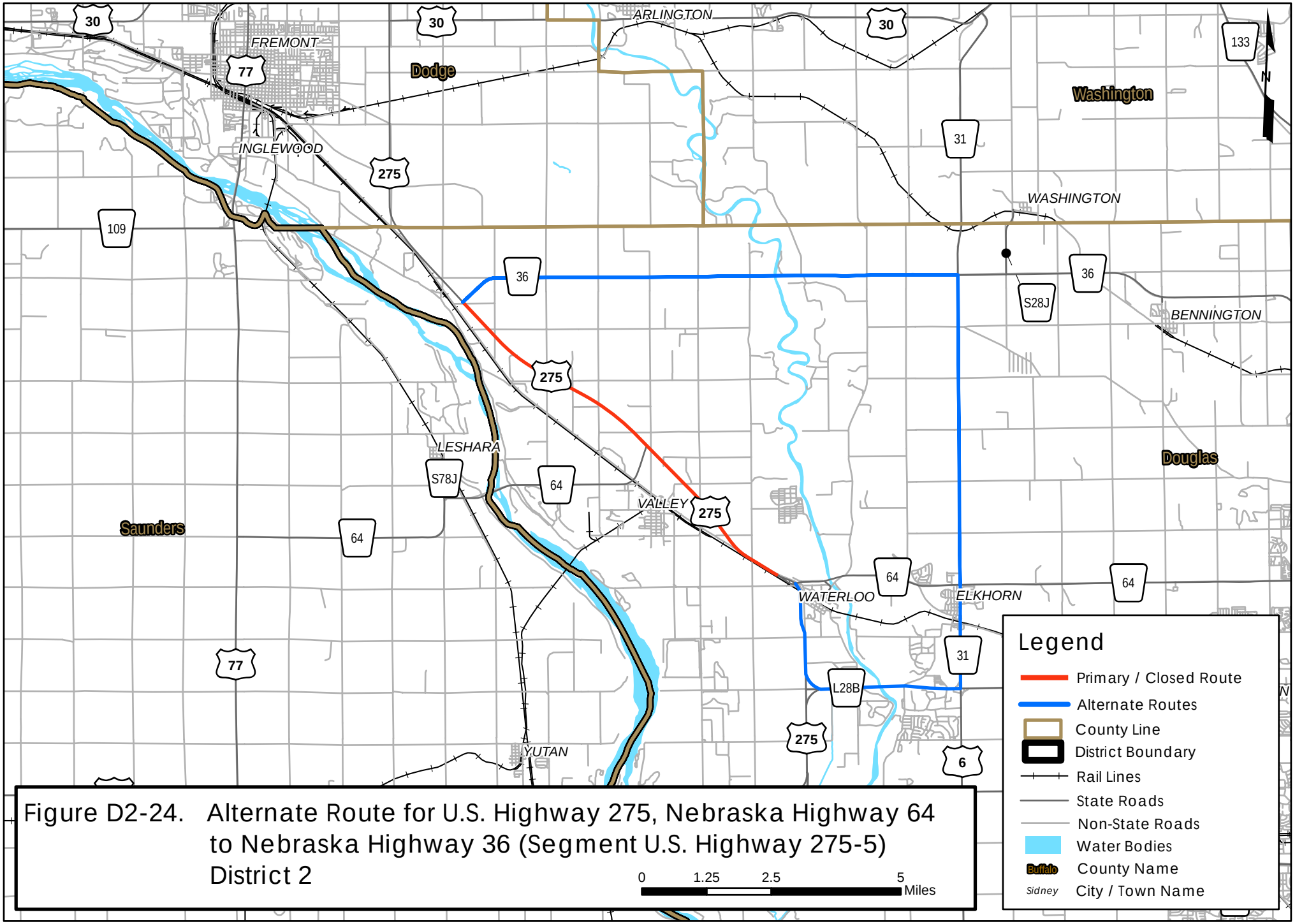


Figure D2-24. Alternate Route for U.S. Highway 275, Nebraska Highway 64 to Nebraska Highway 36 (Segment U.S. Highway 275-5) District 2

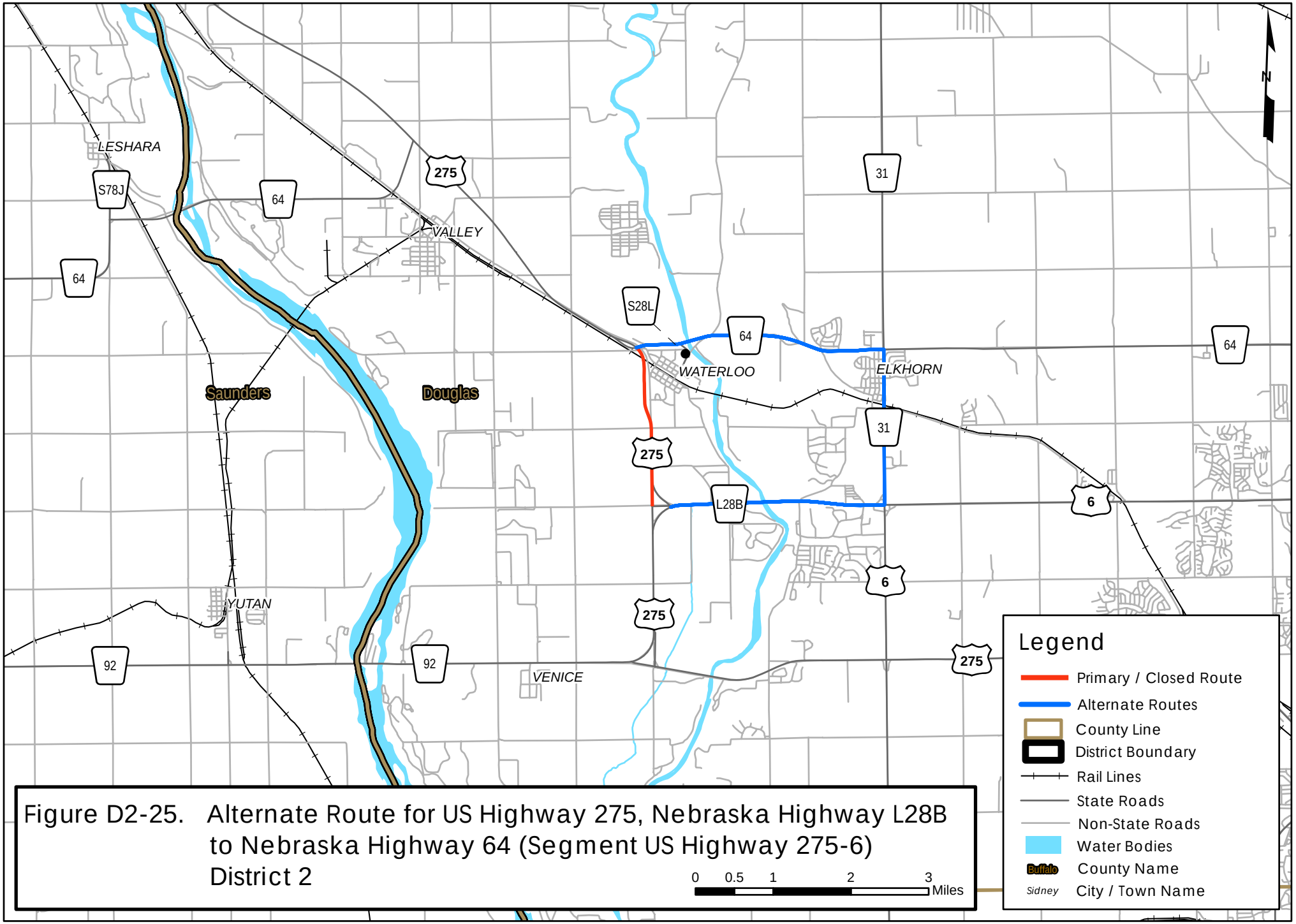


Figure D2-25. Alternate Route for US Highway 275, Nebraska Highway L28B to Nebraska Highway 64 (Segment US Highway 275-6) District 2

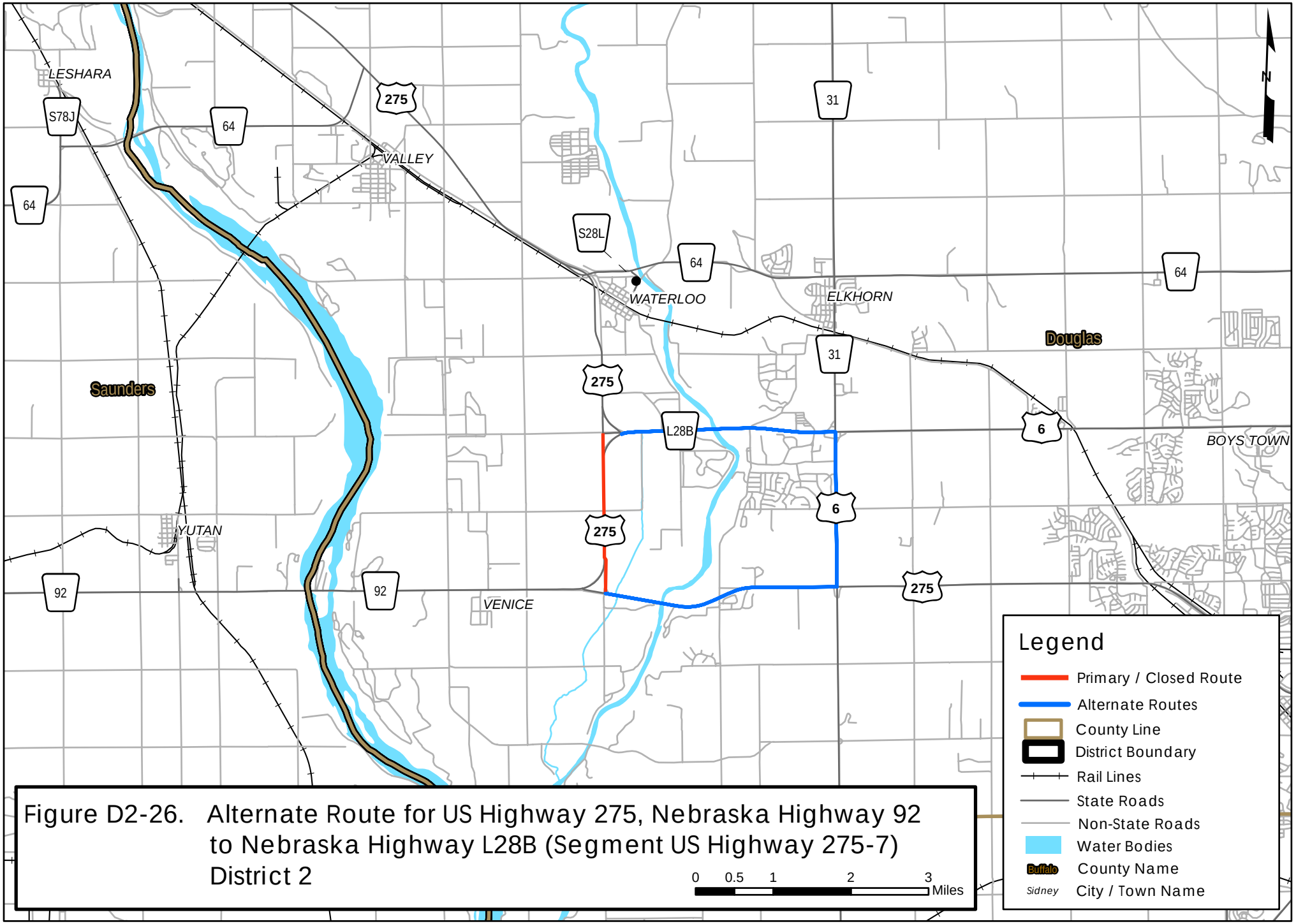


Figure D2-26. Alternate Route for US Highway 275, Nebraska Highway 92 to Nebraska Highway L28B (Segment US Highway 275-7) District 2

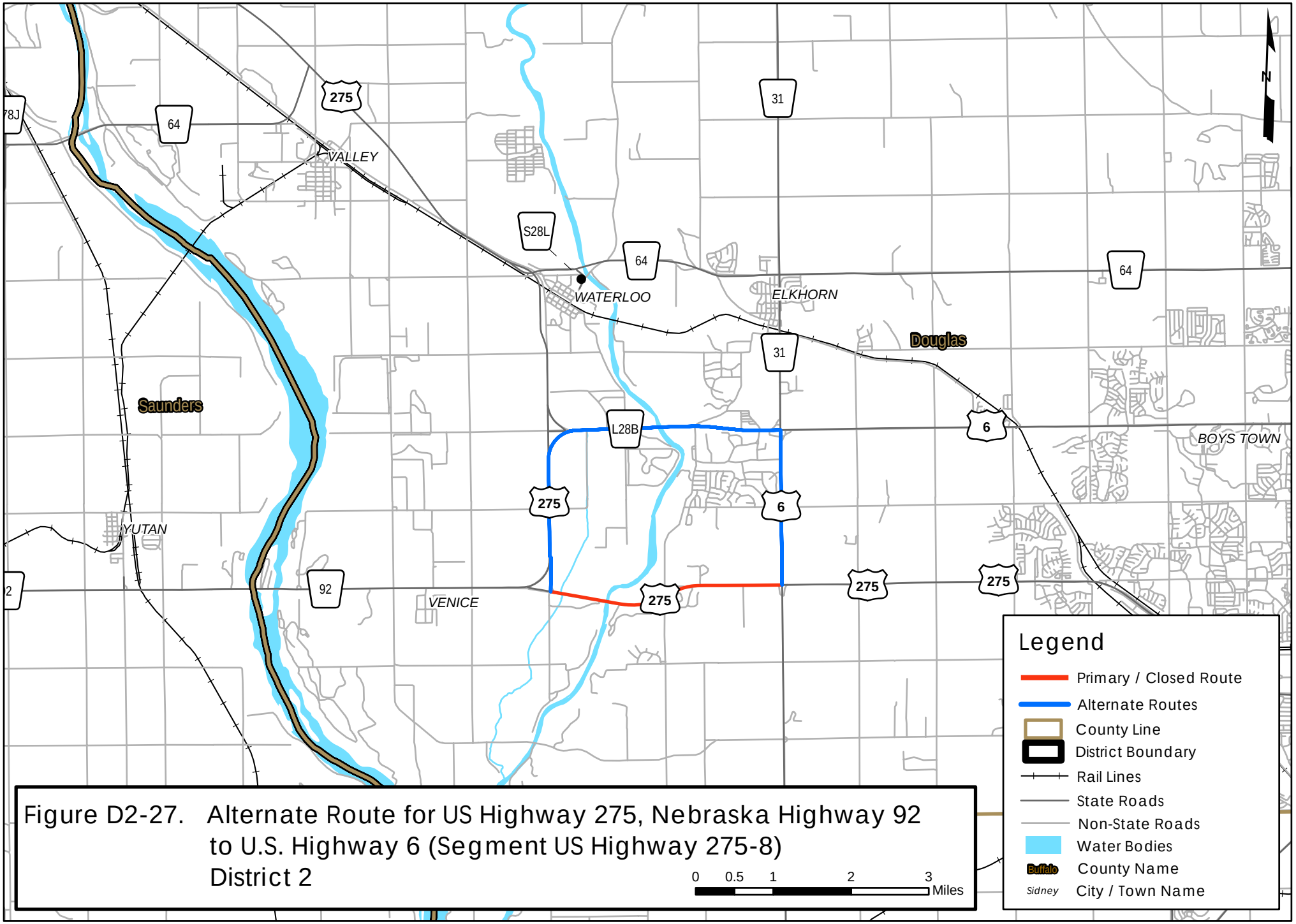


Figure D2-27. Alternate Route for US Highway 275, Nebraska Highway 92 to U.S. Highway 6 (Segment US Highway 275-8)
District 2

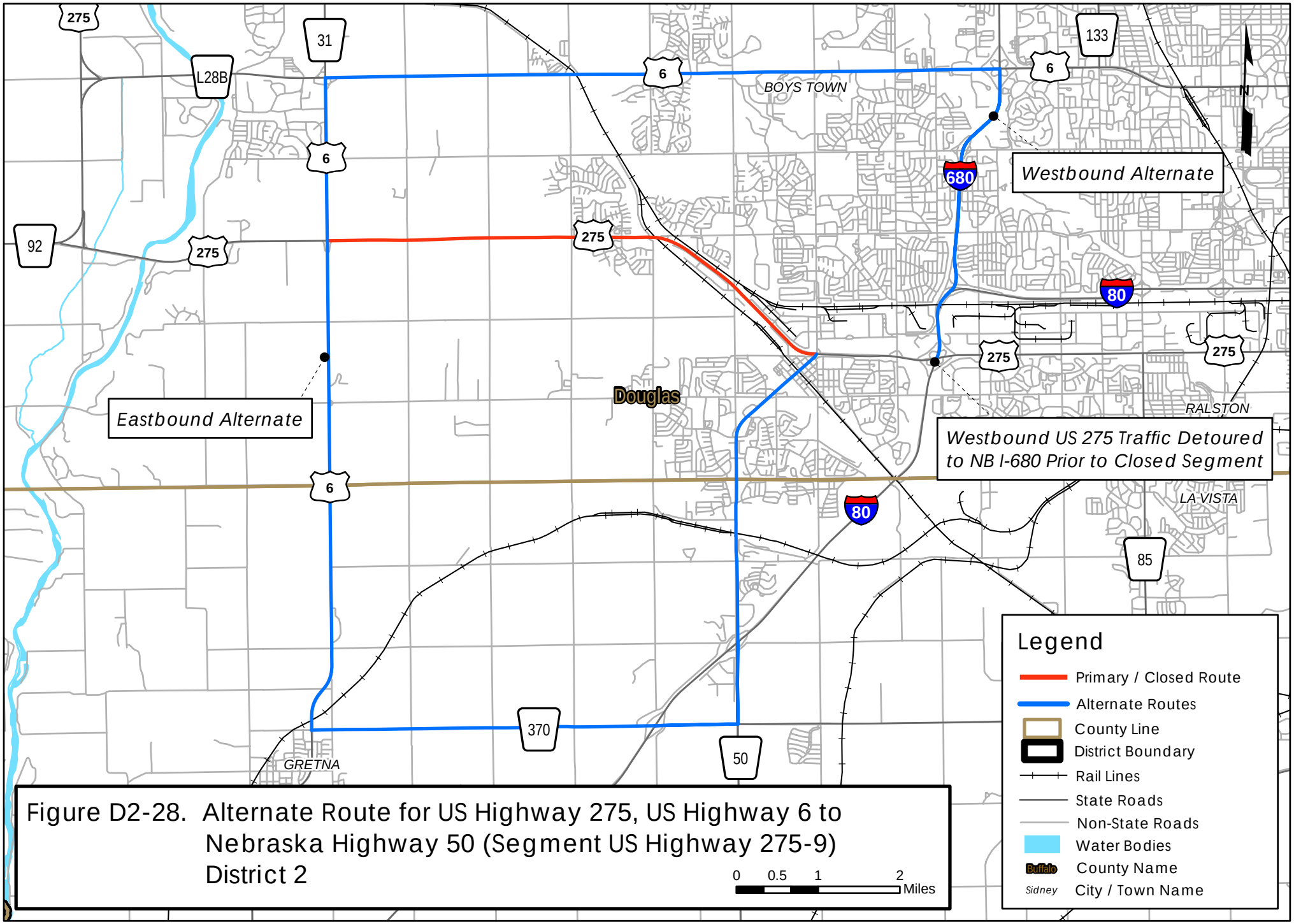


Figure D2-28. Alternate Route for US Highway 275, US Highway 6 to Nebraska Highway 50 (Segment US Highway 275-9) District 2

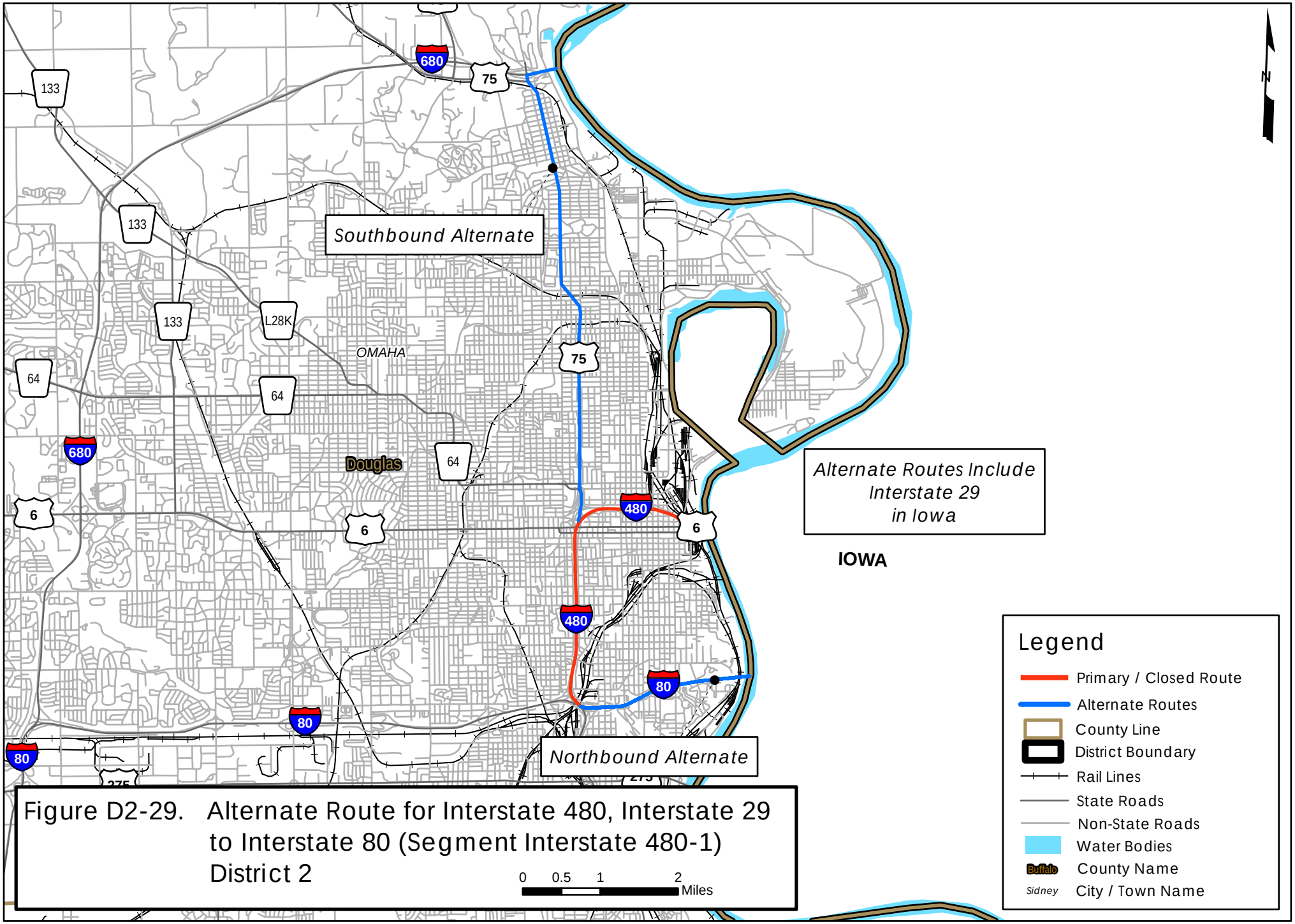


Figure D2-29. Alternate Route for Interstate 480, Interstate 29 to Interstate 80 (Segment Interstate 480-1) District 2

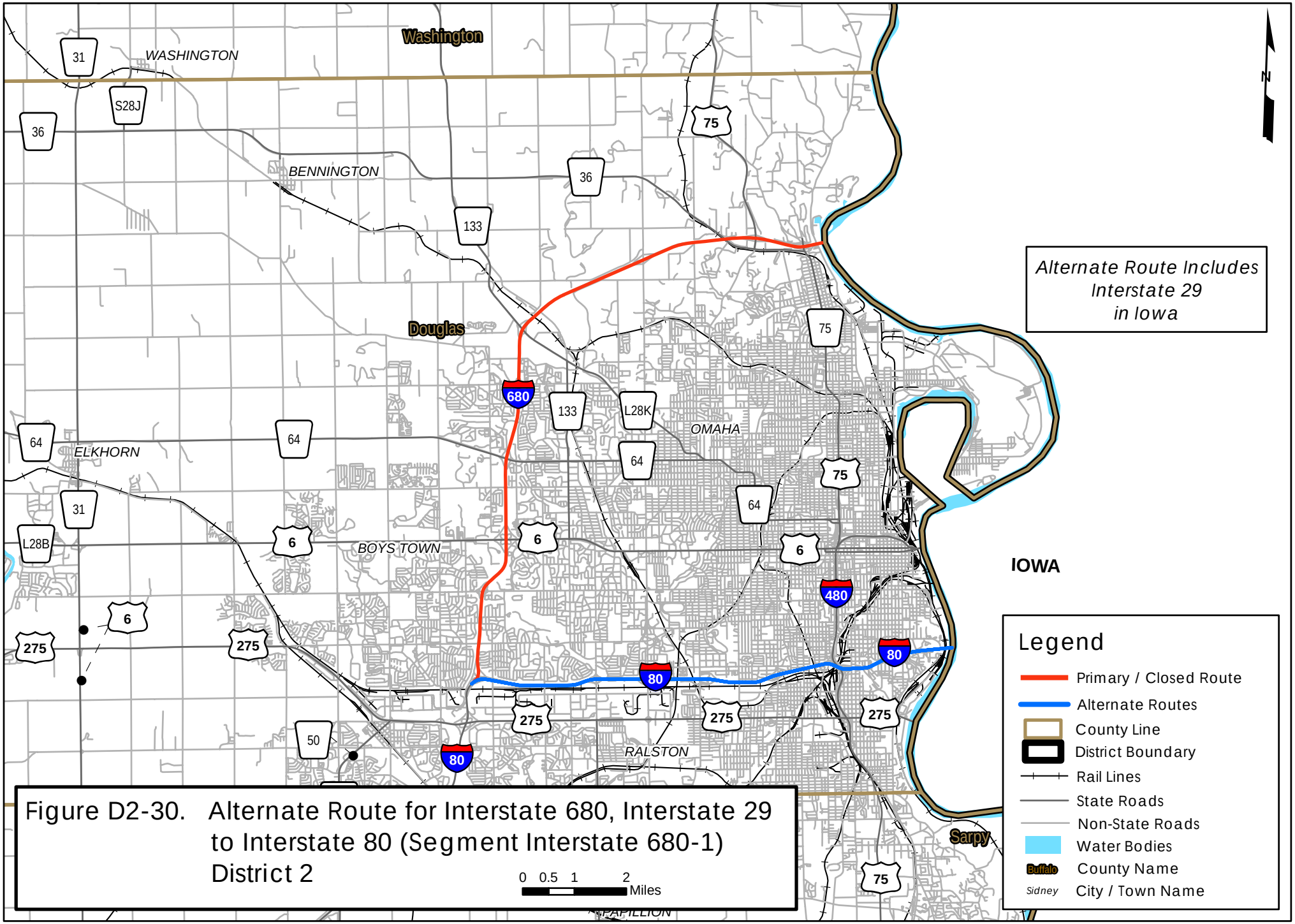


Figure D2-30. Alternate Route for Interstate 680, Interstate 29 to Interstate 80 (Segment Interstate 680-1) District 2

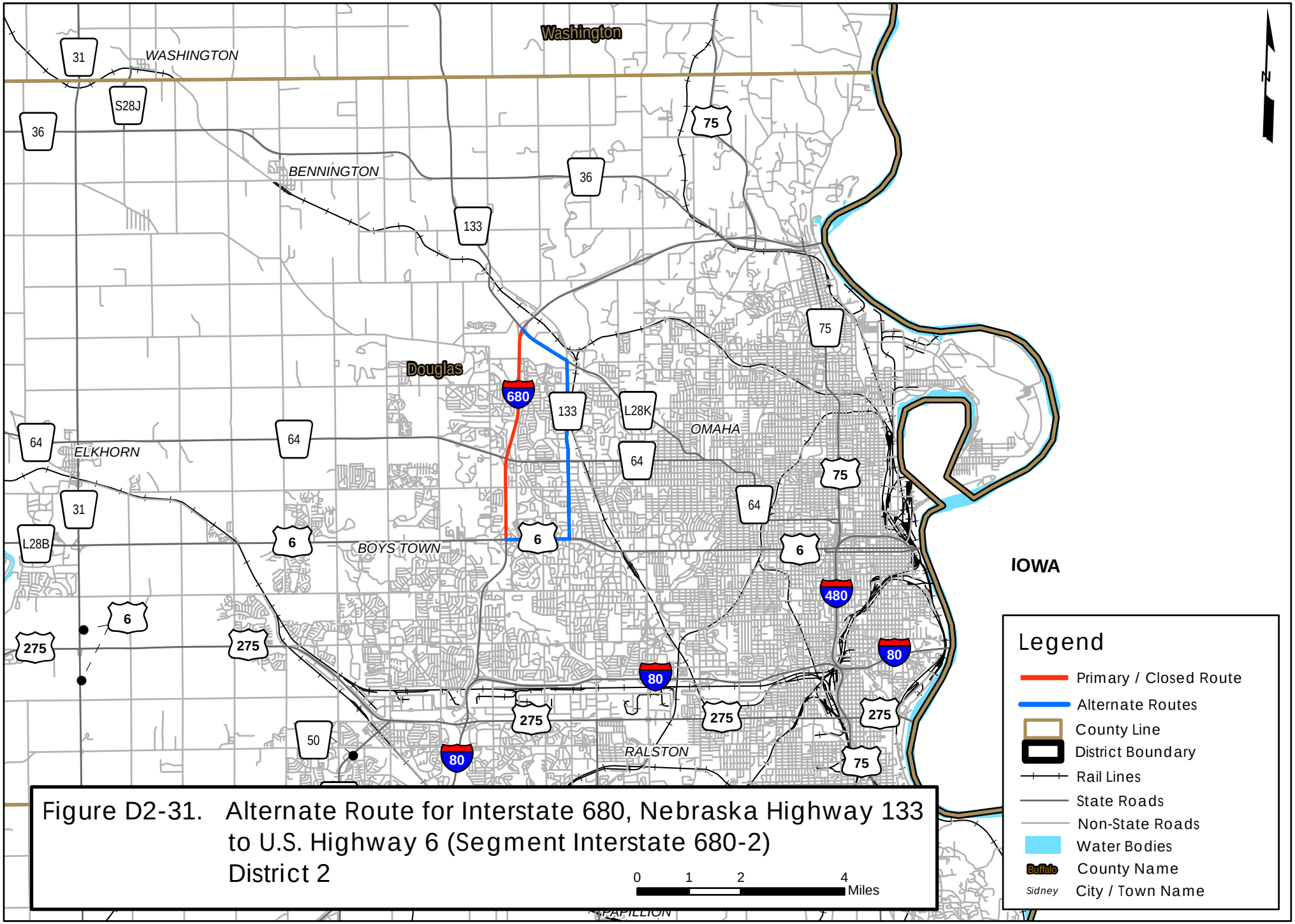


Figure D2-31. Alternate Route for Interstate 680, Nebraska Highway 133 to U.S. Highway 6 (Segment Interstate 680-2)
District 2

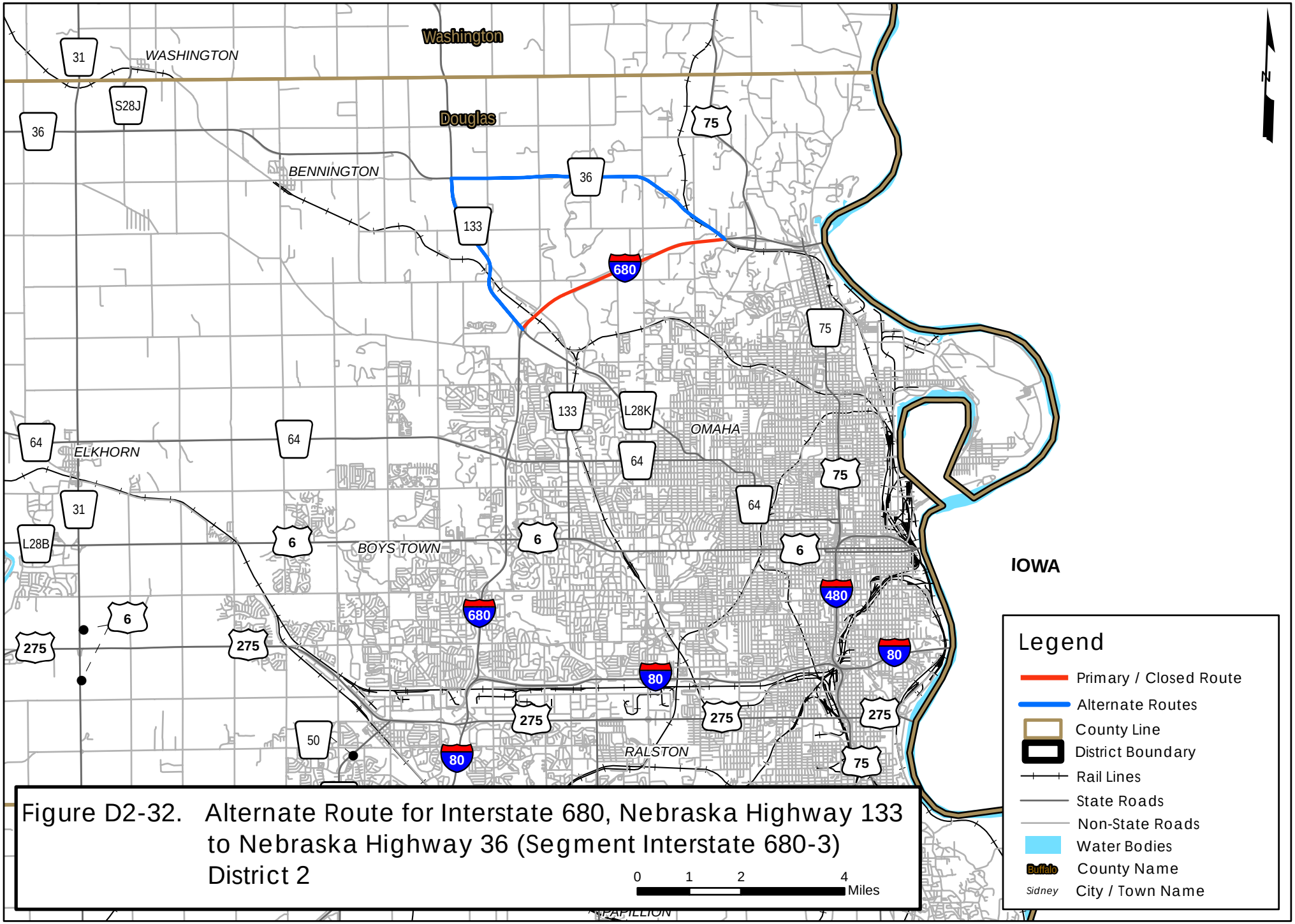


Figure D2-32. Alternate Route for Interstate 680, Nebraska Highway 133 to Nebraska Highway 36 (Segment Interstate 680-3) District 2

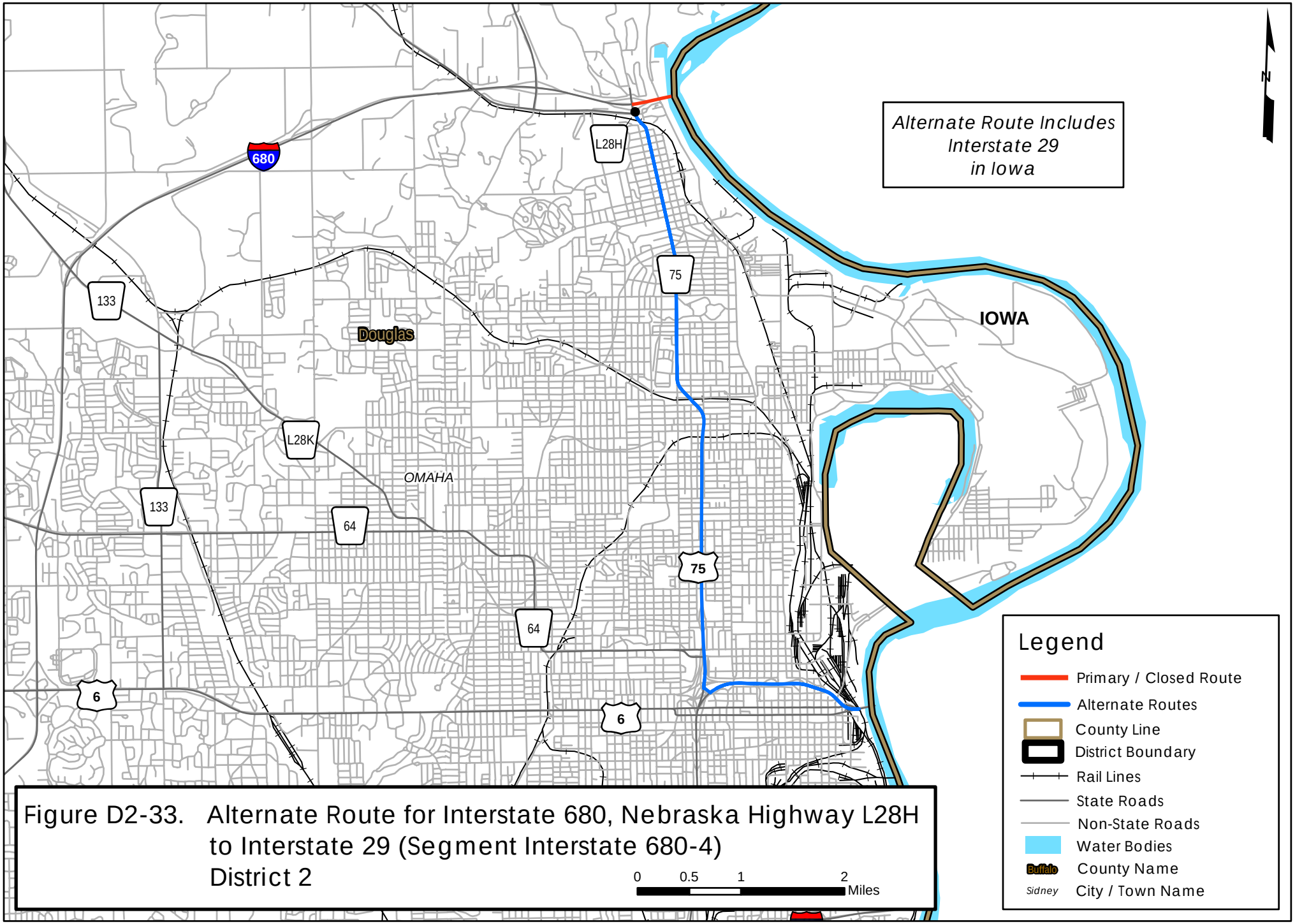


Figure D2-33. Alternate Route for Interstate 680, Nebraska Highway L28H to Interstate 29 (Segment Interstate 680-4)
District 2

Appendix C – District 3 Alternate Route Index and Maps

Alternate Route Assessment Summary
District 3

0 2.5 5 10 Miles

Boyd
Holt
Knox
Cedar
Dixon
Dakota
Pierce
Antelope
Wayne
Thurston
Madison
Stanton
Cuming
Burt
Wheeler
Boone
Platte
Colfax
Dodge
Washington
Greeley
Nance
Polk
Butler
Saunders
Douglas

Legend

- Primary / Closed Route
- Alternate Routes
- Deficient Segment, Not in 5-Year STIP
- Deficient Structures
- Mainline UP or BNSF Railroad Crossing
- Traffic Signals
- County Line
- District Boundary
- Rail Lines
- State Roads
- Water Bodies
- County Name
- Program Segments
- Program Points

Control Number

- FY 2006
- FY 2007-2011
- FY 2012 and Beyond

PRIMARY ROUTE (CLOSED ROUTE) SEGMENT INDEX – BY DISTRICT (DISTRICT3)

District	Primary Route - Segment	Milepost Reference		Primary Route Description
		Begin	End	
District 3	**East-West Expressway Segments**			
	US Highway 30-1	379.32	411.17	US Highway 30 from US Highway 81to Nebraska Highway 79
	North-South Expressway Segments			
	US Highway 77-8	125.41	141.31	US Highway 77 from US Highway 275 to Highway 32
	US Highway 81-8	111.89	155.95	US Highway 81 from US Highway 30 to Highway 275
	US Highway 275-1	75.15	117.46	US Highway 275 from Nebraska Highway 91 to US Highway 81
	US Highway 275-2	118.14	126.82	US Highway 275 from Nebraska Highway 91 to Nebraska Highway 32

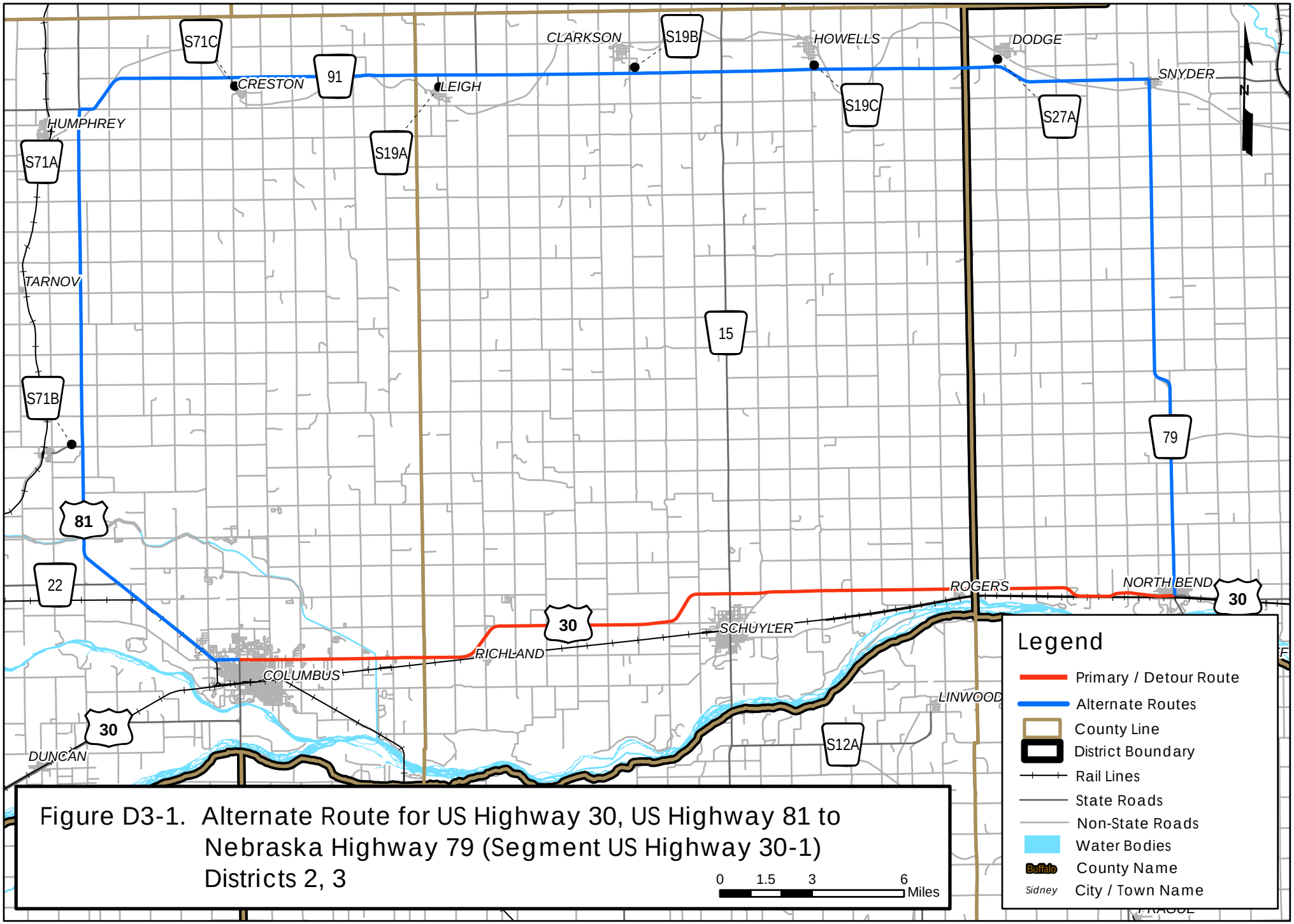


Figure D3-1. Alternate Route for US Highway 30, US Highway 81 to Nebraska Highway 79 (Segment US Highway 30-1)
Districts 2, 3

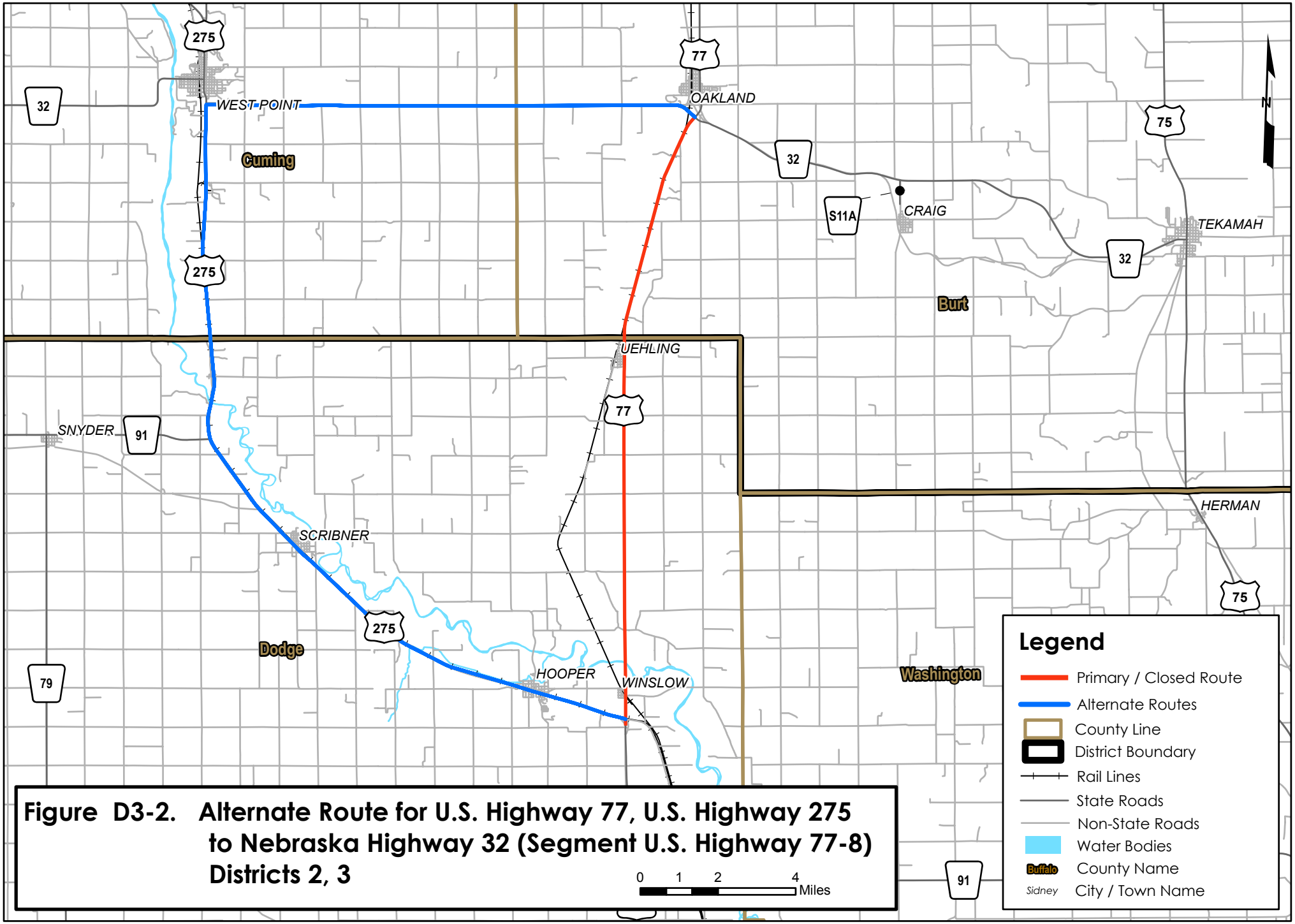


Figure D3-2. Alternate Route for U.S. Highway 77, U.S. Highway 275 to Nebraska Highway 32 (Segment U.S. Highway 77-8) Districts 2, 3

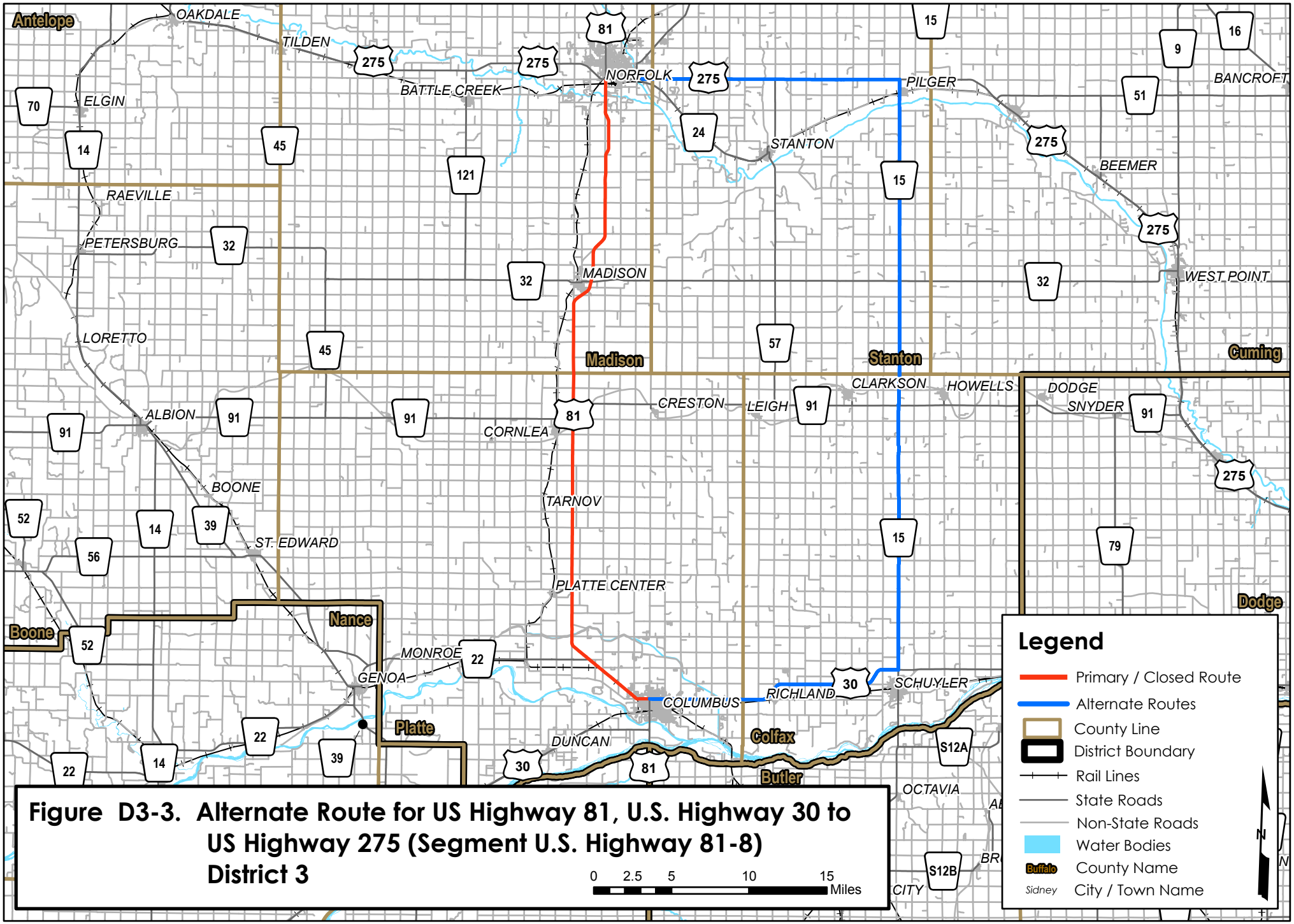


Figure D3-3. Alternate Route for US Highway 81, U.S. Highway 30 to US Highway 275 (Segment U.S. Highway 81-8) District 3

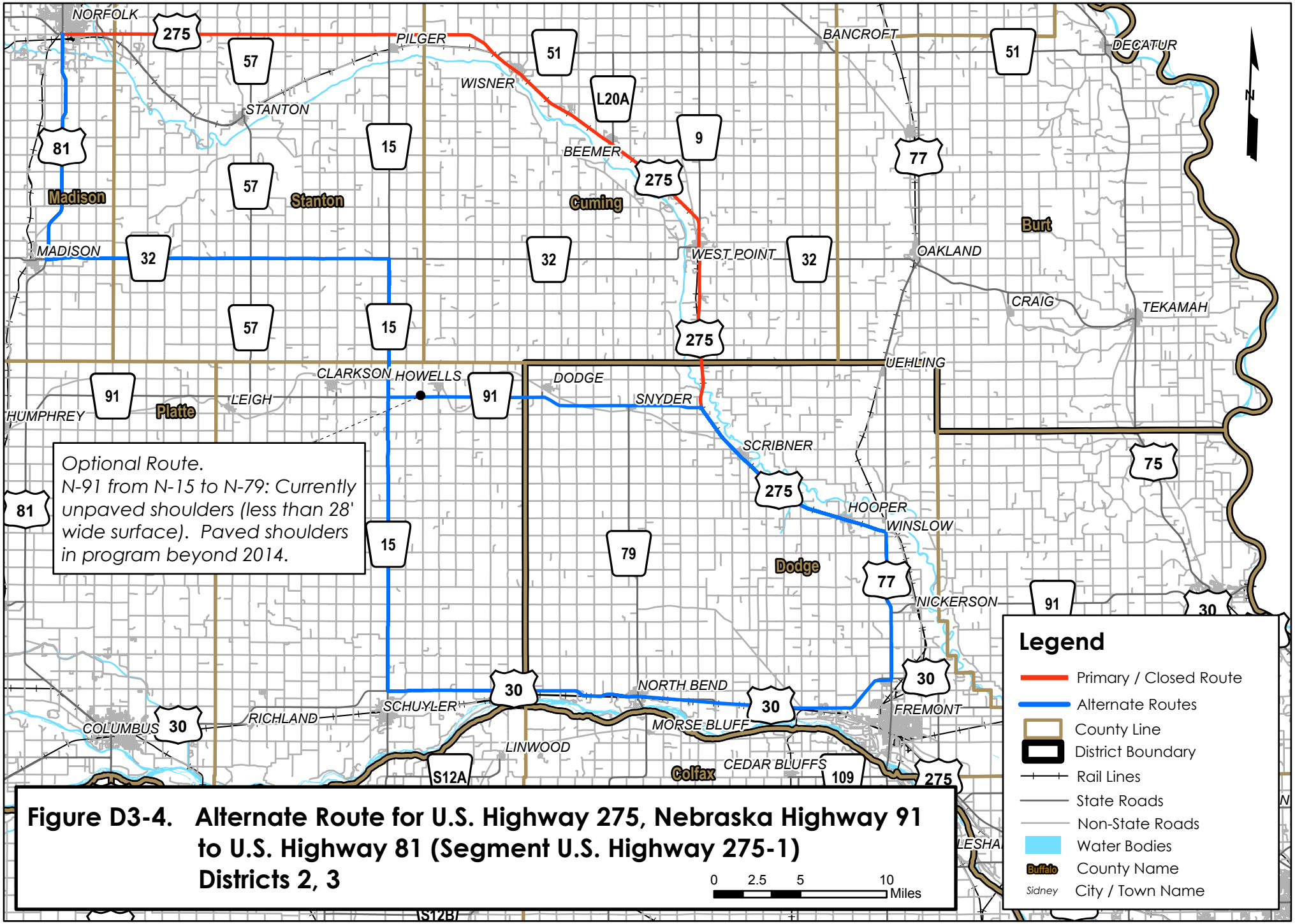


Figure D3-4. Alternate Route for U.S. Highway 275, Nebraska Highway 91 to U.S. Highway 81 (Segment U.S. Highway 275-1) Districts 2, 3

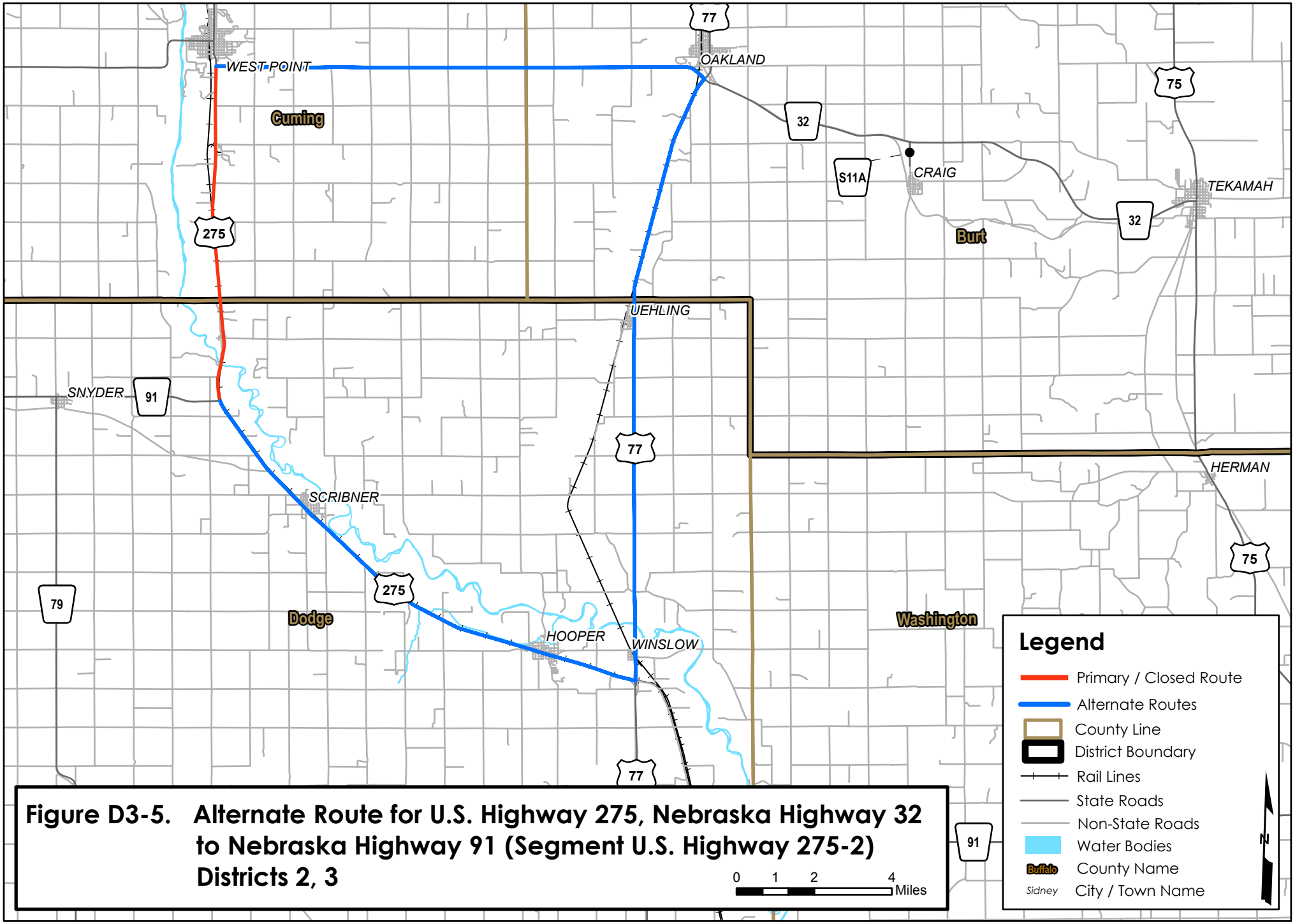


Figure D3-5. Alternate Route for U.S. Highway 275, Nebraska Highway 32 to Nebraska Highway 91 (Segment U.S. Highway 275-2) Districts 2, 3

Appendix D – District 4 Alternate Route Index and Maps

Alternate Route Assessment Summary
District 4

0 5 10 20 Miles

N

Boone
Platte
Colfax
Dodge
Washington
Custer
Nance
Butler
Saunders
Sherman
Howard
Merrick
Polk
York
Seward
Lancaster
Dawson
Buffalo
Hall
Hamilton
Gosper
Phelps
Kearney
Adams
Clay
Fillmore
Saline
Johnson
Furnas
Harlan
Franklin
Webster
Nuckolls
Thayer
Jefferson

Legend

- Primary / Closed Route
- Alternate Routes
- Deficient Segment, Not in 5-Year STIP
- Deficient Structures
- Mainline UP or BNSF Railroad Crossing
- Traffic Signals
- County Line
- District Boundary
- Rail Lines
- State Roads
- Water Bodies
- Buffalo County Name
- Program Segments
- Program Points

Control Number

- FY 2006
- FY 2007-2011
- FY 2012 and Beyond

PRIMARY ROUTE (CLOSED ROUTE) SEGMENT INDEX – BY DISTRICT (DISTRICT4)

District	Primary Route - Segment	Milepost Reference		Primary Route Description
		Begin	End	
District 4	**East-West Interstate Segments**			
	Interstate 80-18	237.22	257.04	Interstate 80 from Highway 283 to Highway 183
	Interstate 80-19	248.56	257.04	Interstate 80 from Nebraska Highway L24B to US Highway 183
	Interstate 80-20	257.04	263.69	Interstate 80 from US Highway 183 to Nebraska Highway L10B
	Interstate 80-21	263.69	272.65	Interstate 80 from Nebraska Highway L10B to Nebraska Highway 44
	Interstate 80-22	272.65	285.66	Interstate 80 from Nebraska Highway 44 to Nebraska Highway 10C
	Interstate 80-23	285.66	291.39	Interstate 80 from Nebraska Highway L10C to Nebraska Highway L10D
	Interstate 80-24	291.39	300.13	Interstate 80 from Nebraska Highway L10D to Nebraska Highway 11
	Interstate 80-25	300.13	305.69	Interstate 80 from Nebraska Highway 11 to Nebraska Highway L40C
	Interstate 80-26	305.69	312.11	Interstate 80 from Nebraska Highway L40C to US Highway 34
	Interstate 80-27	312.11	318.17	Interstate 80 from US Highway 34 to Nebraska Highway 2
	Interstate 80-28	318.17	324.17	Interstate 80 from Nebraska Highway 2 to Nebraska Highway S41B
	Interstate 80-29	324.17	332.18	Interstate 80 from Nebraska Highway S41B to Nebraska Highway 14
	Interstate 80-30	332.18	342.14	Interstate 80 from Nebraska Highway 14 to Nebraska Highway S93A
	Interstate 80-31	342.14	353.13	Interstate 80 from Nebraska Highway S93A to US Highway 81
	Interstate 80-32	353.13	379.11	Interstate 80 from US Highway 81 to Nebraska Highway 15
	North-South Expressway Segments			
	US Highway 34-1	208.57	231.16	US Highway 34 from US Highway 6 to US Highway 34
	US Highway 81-1	1.04	11.38	US Highway 81 from Nebraska Highway 8 to US Highway 136
	US Highway 81-2	11.38	45.46	US Highway 81 from US Highway 136 to US Highway 6
	US Highway 81-3	45.46	58.21	US Highway 81 from US Highway 6 to Interstate 80
	US Highway 81-4	58.21	62.93	US Highway 81 from Interstate 80 to US Highway 34
	US Highway 81-5	63.88	82.92	US Highway 81 from US Highway 34 to Nebraska Highway 92
	US Highway 81-6	82.92	95.26	US Highway 81 from Nebraska Highway 92 (W) to Nebraska Highway 92 (E)
	US Highway 81-7	95.26	110.24	US Highway 81 from Nebraska Highway 92 to US Highway 30

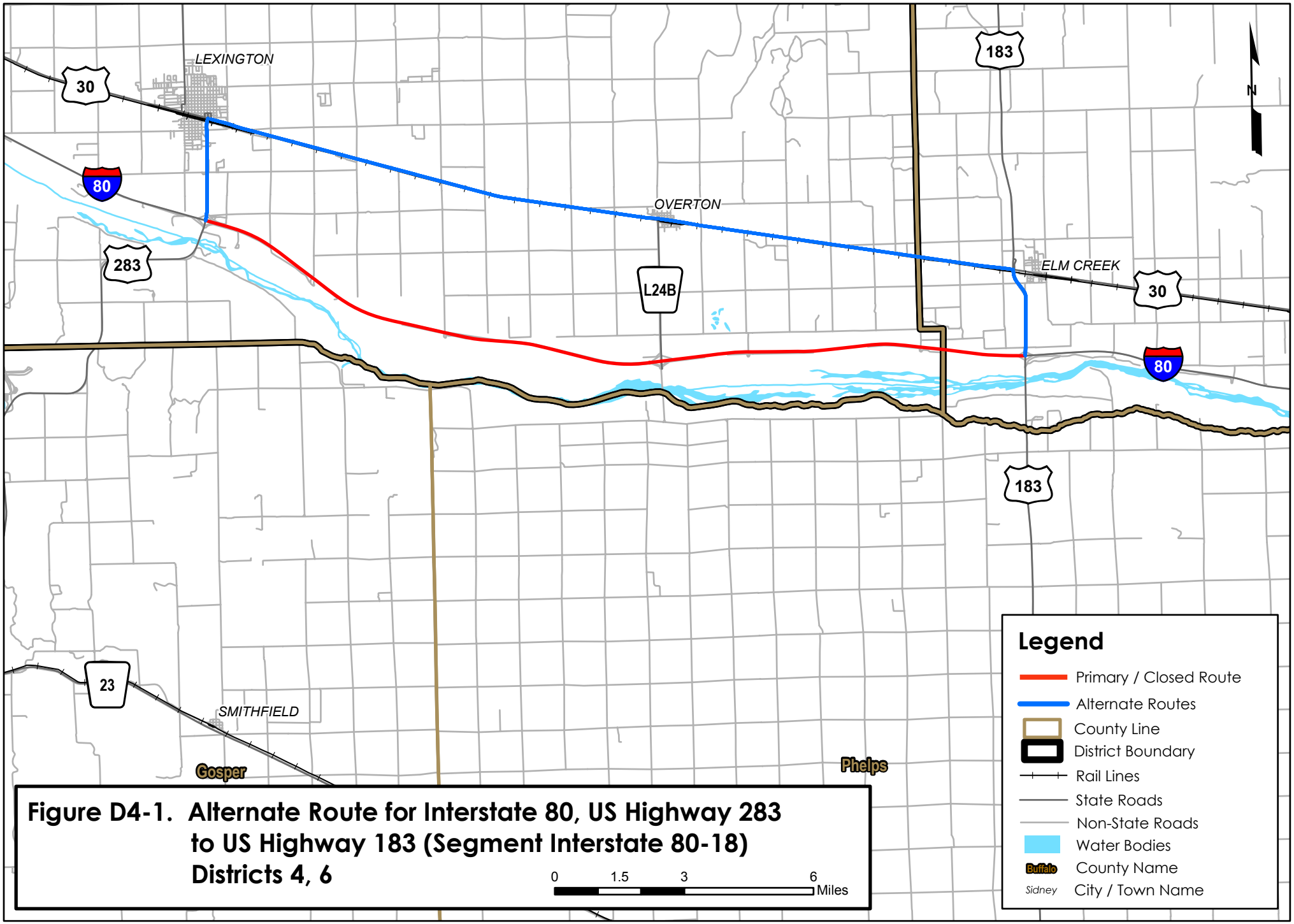


Figure D4-1. Alternate Route for Interstate 80, US Highway 283 to US Highway 183 (Segment Interstate 80-18) Districts 4, 6

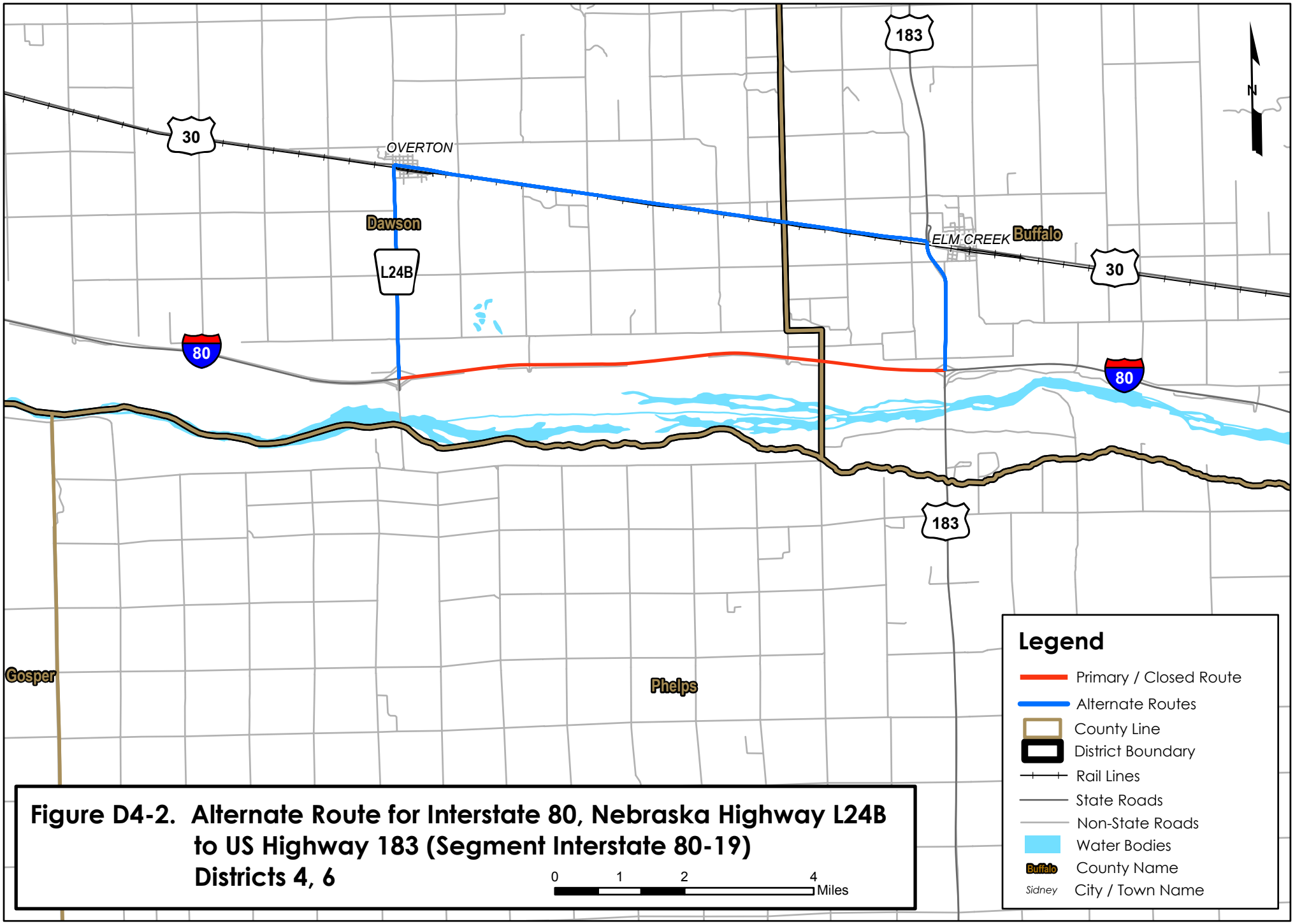


Figure D4-2. Alternate Route for Interstate 80, Nebraska Highway L24B to US Highway 183 (Segment Interstate 80-19) Districts 4, 6

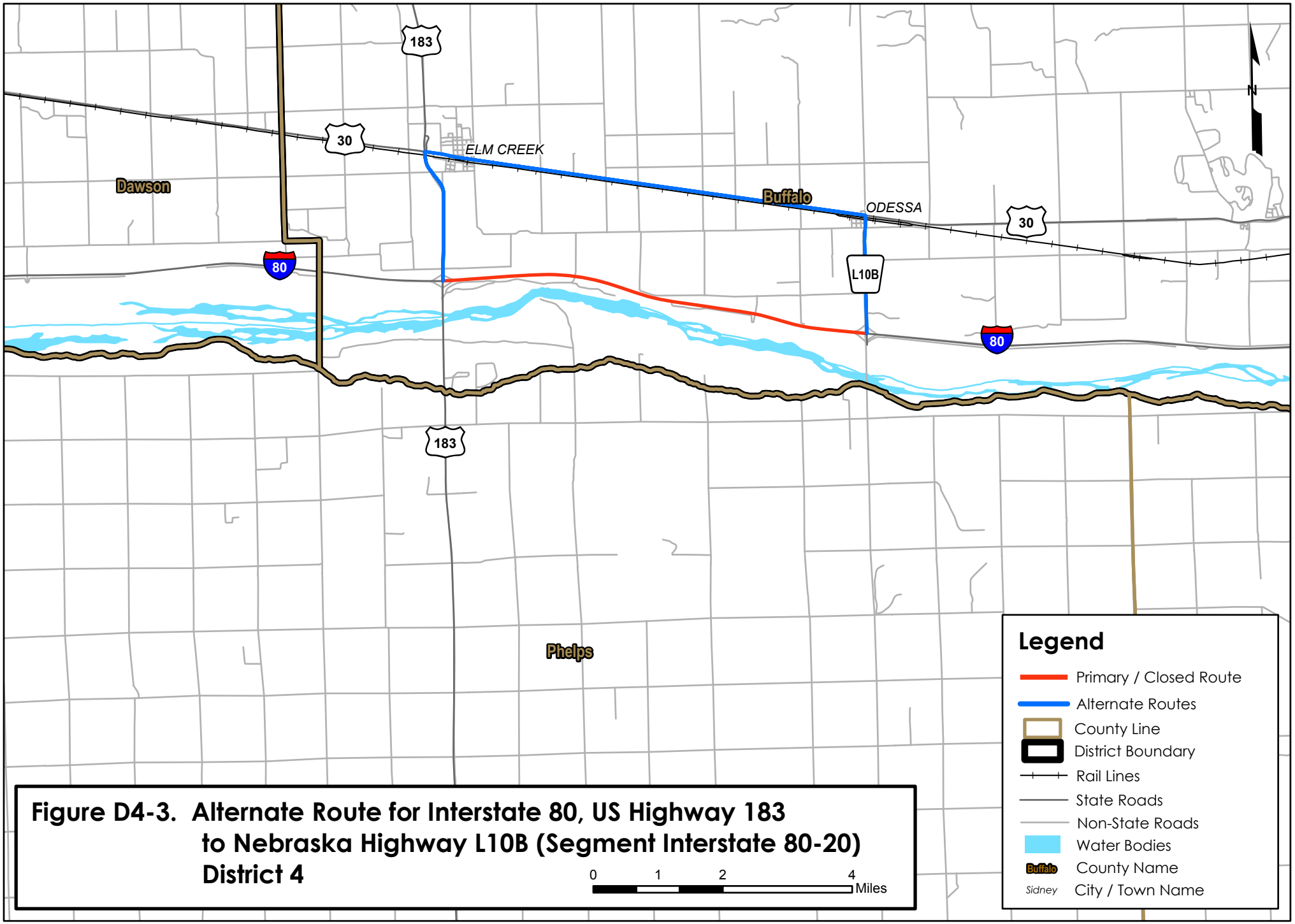


Figure D4-3. Alternate Route for Interstate 80, US Highway 183 to Nebraska Highway L10B (Segment Interstate 80-20) District 4

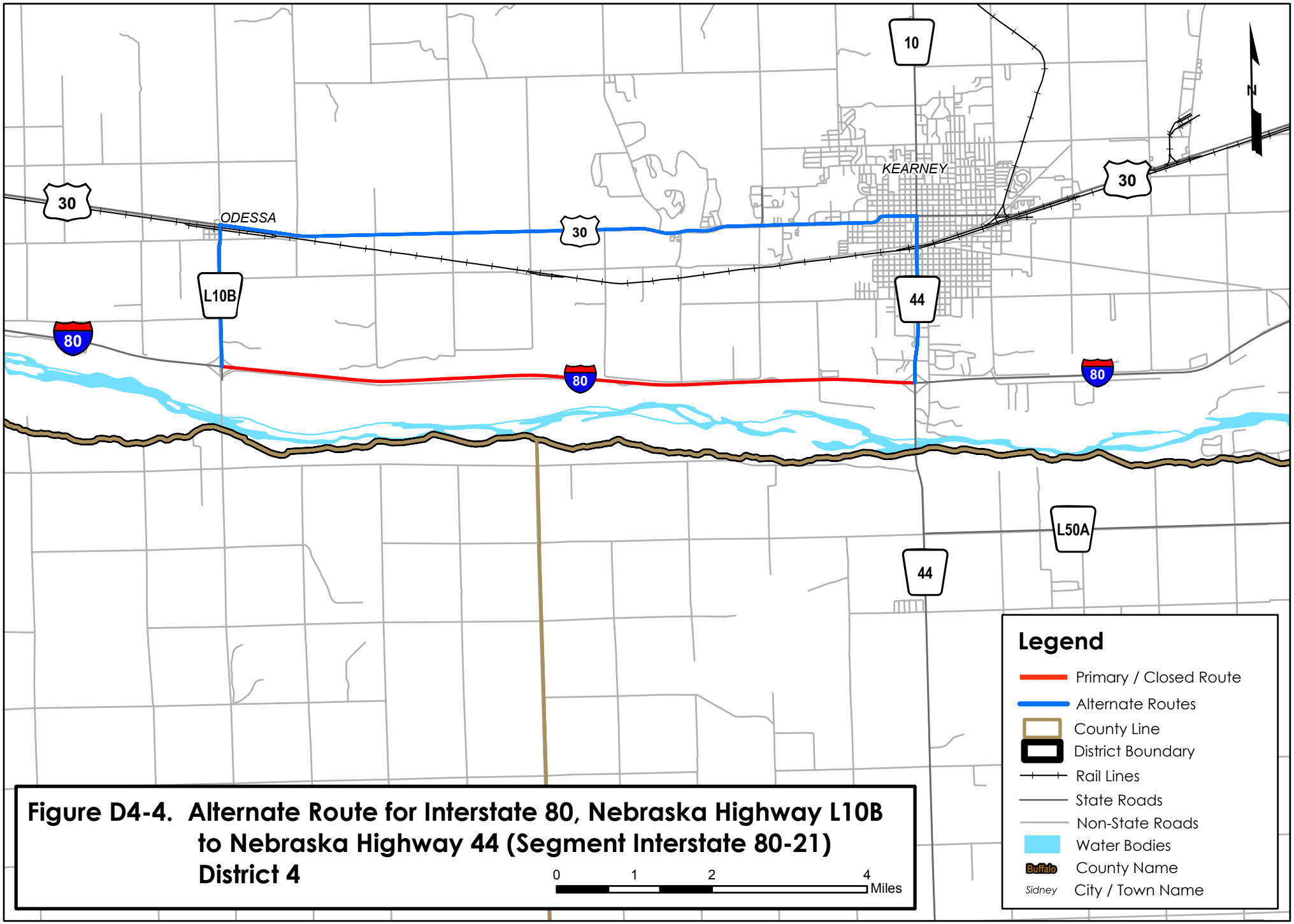


Figure D4-4. Alternate Route for Interstate 80, Nebraska Highway L10B to Nebraska Highway 44 (Segment Interstate 80-21) District 4

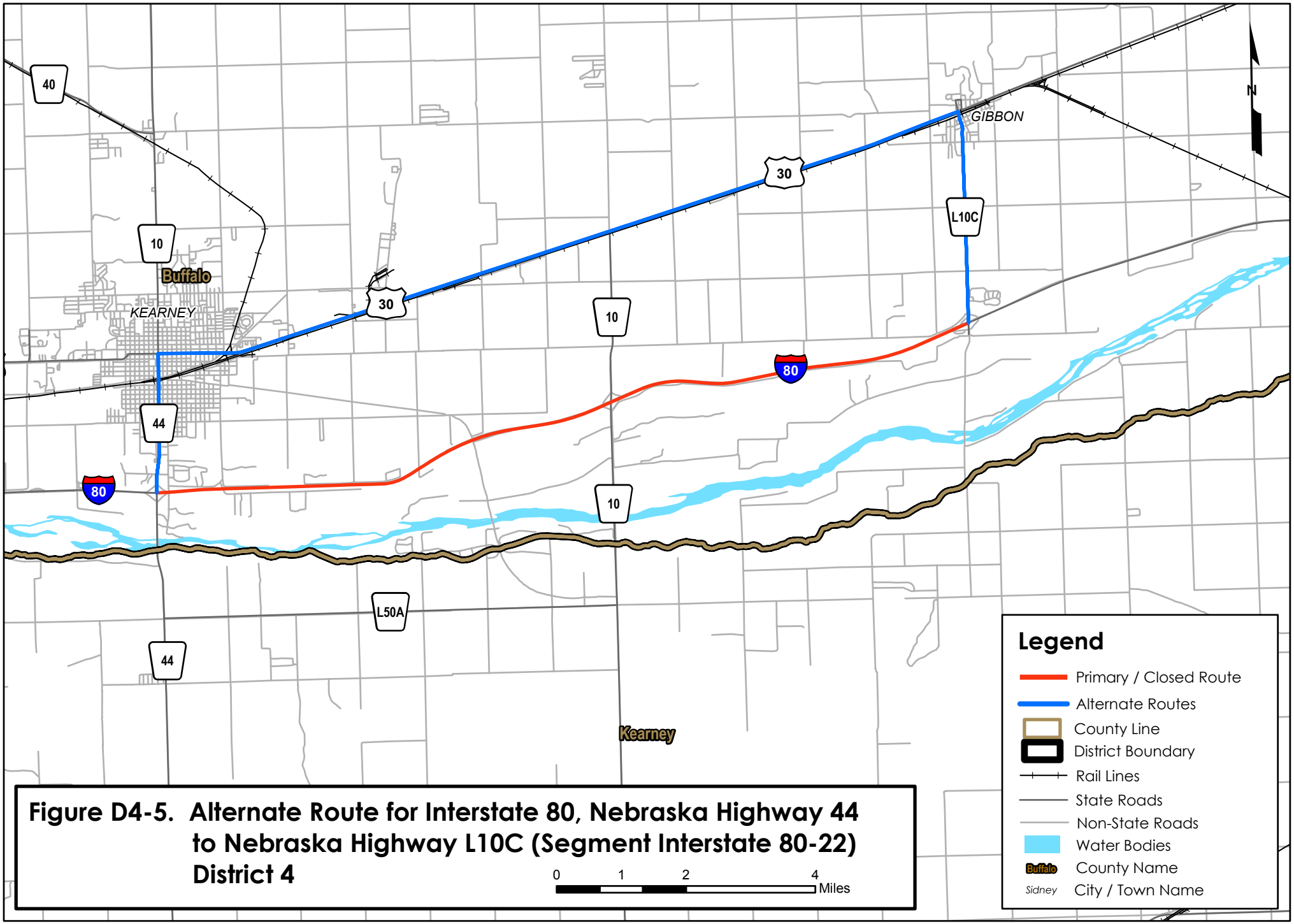


Figure D4-5. Alternate Route for Interstate 80, Nebraska Highway 44 to Nebraska Highway L10C (Segment Interstate 80-22) District 4

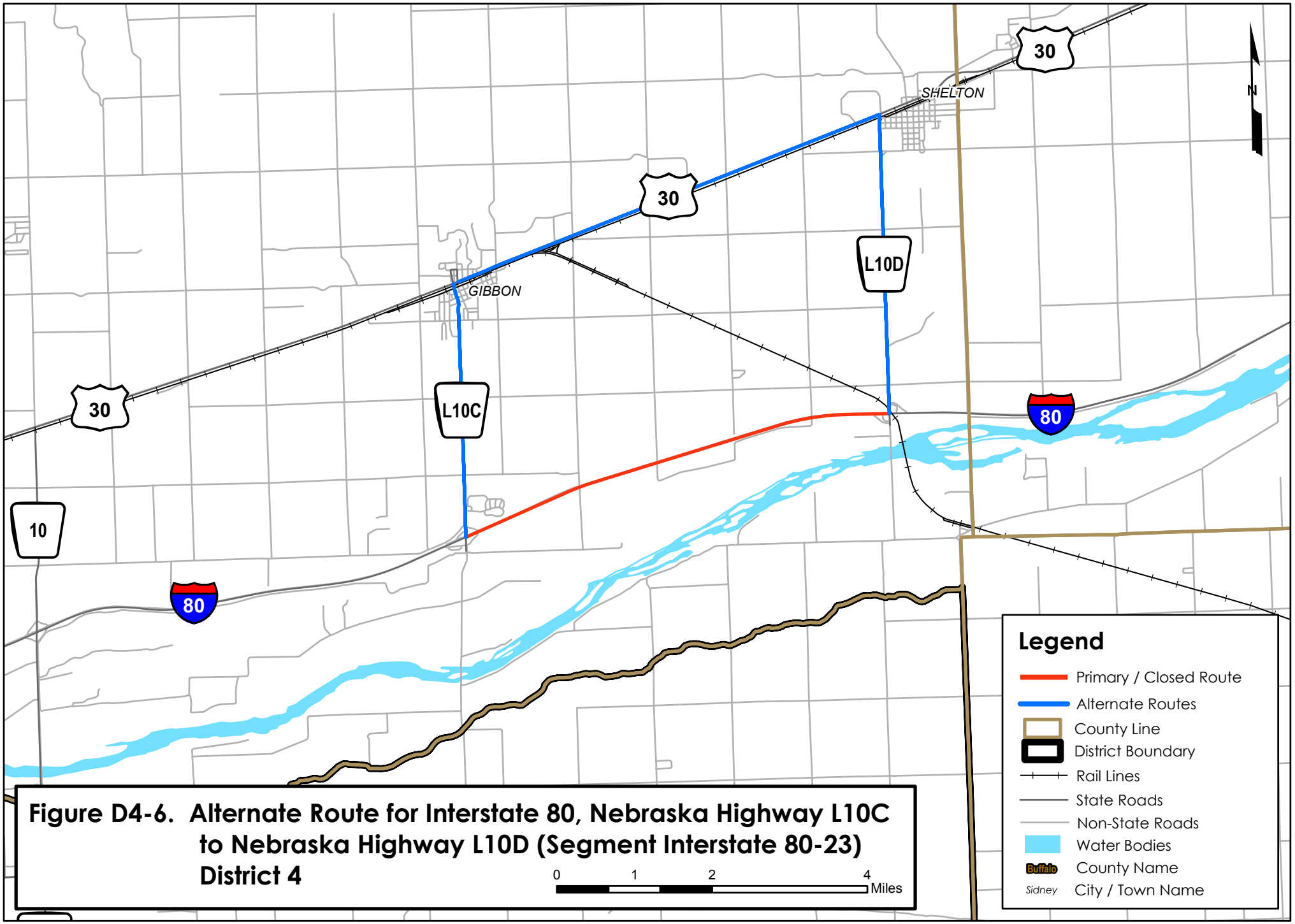


Figure D4-6. Alternate Route for Interstate 80, Nebraska Highway L10C to Nebraska Highway L10D (Segment Interstate 80-23) District 4

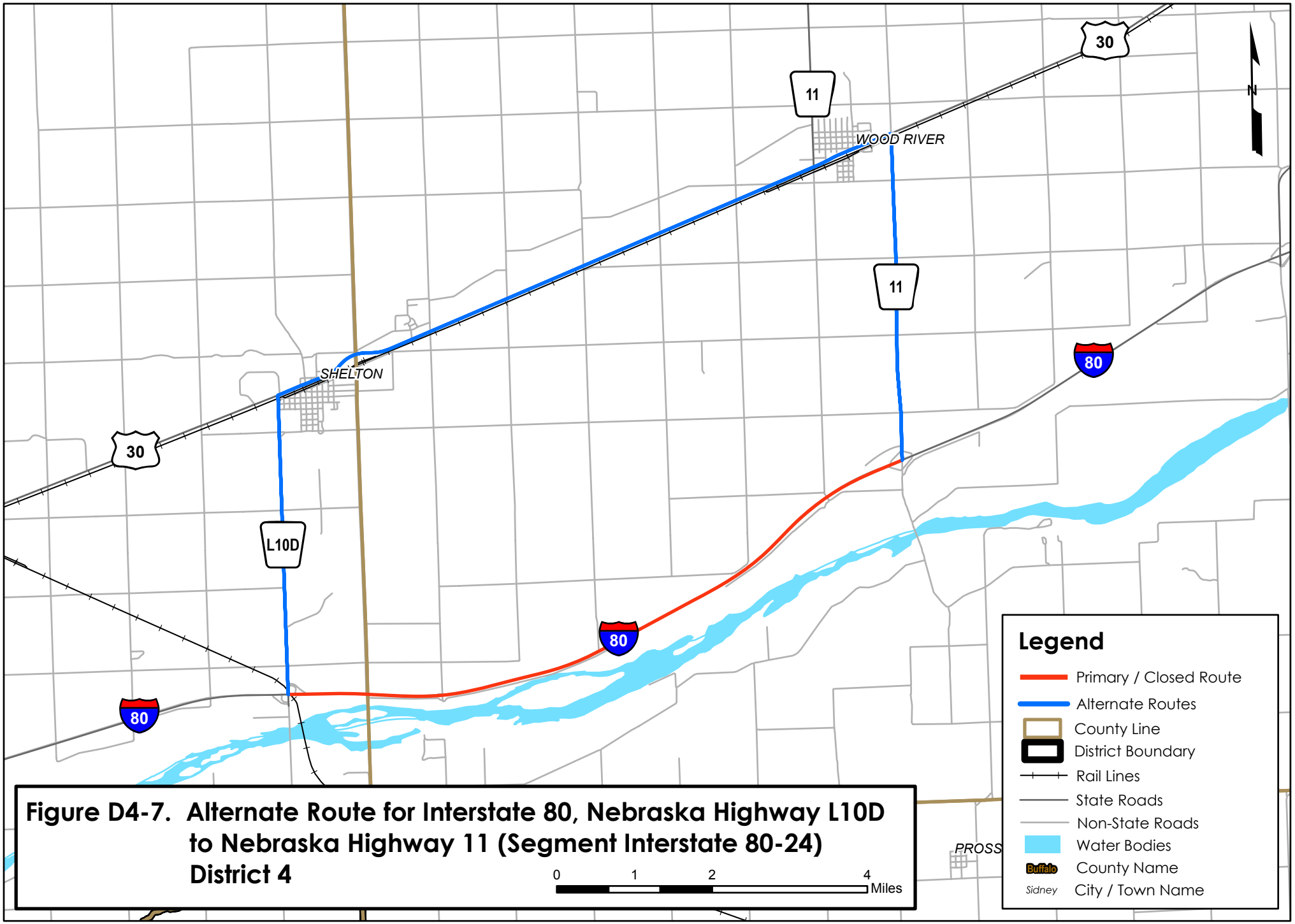


Figure D4-7. Alternate Route for Interstate 80, Nebraska Highway L10D to Nebraska Highway 11 (Segment Interstate 80-24) District 4

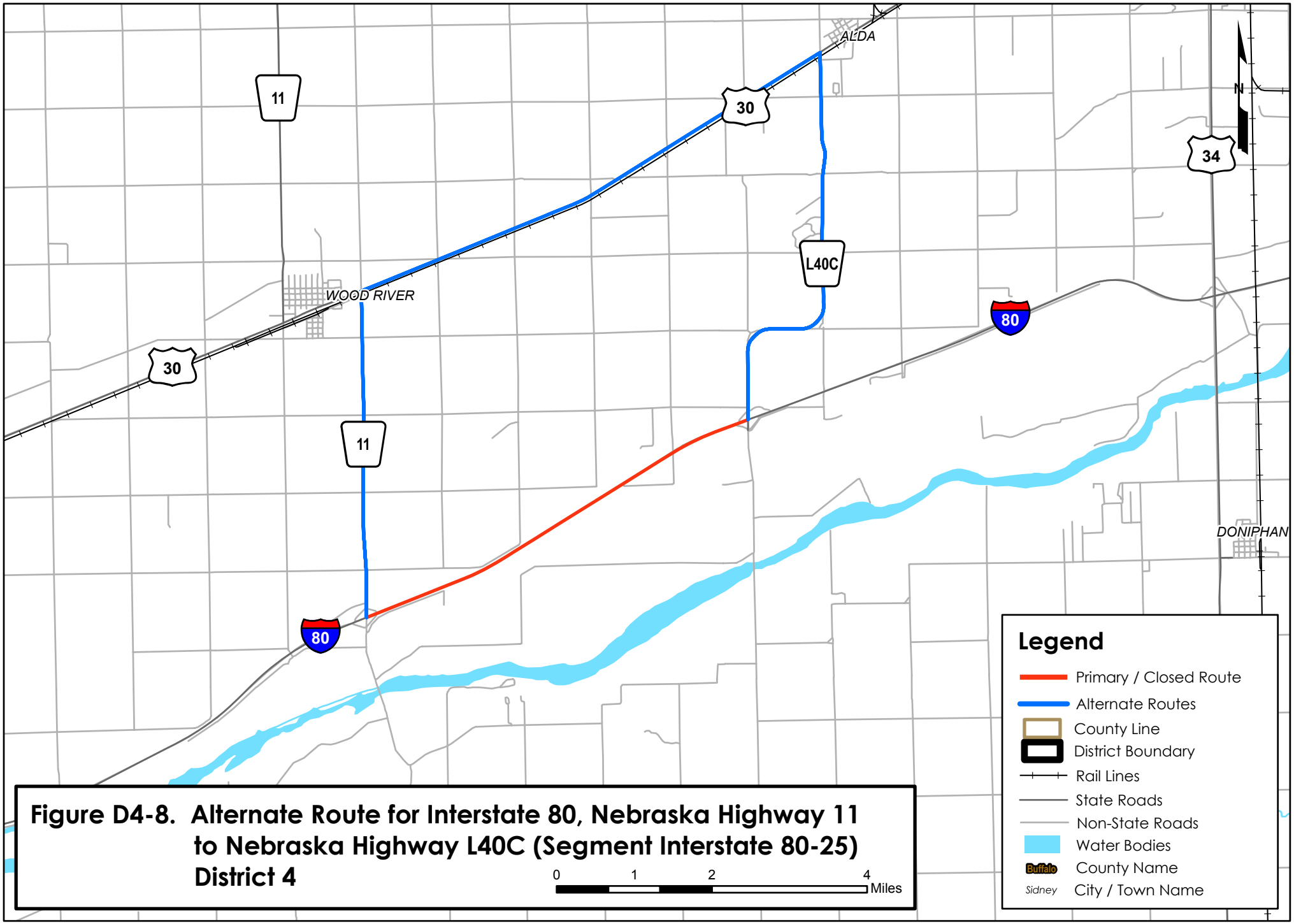


Figure D4-8. Alternate Route for Interstate 80, Nebraska Highway 11 to Nebraska Highway L40C (Segment Interstate 80-25) District 4

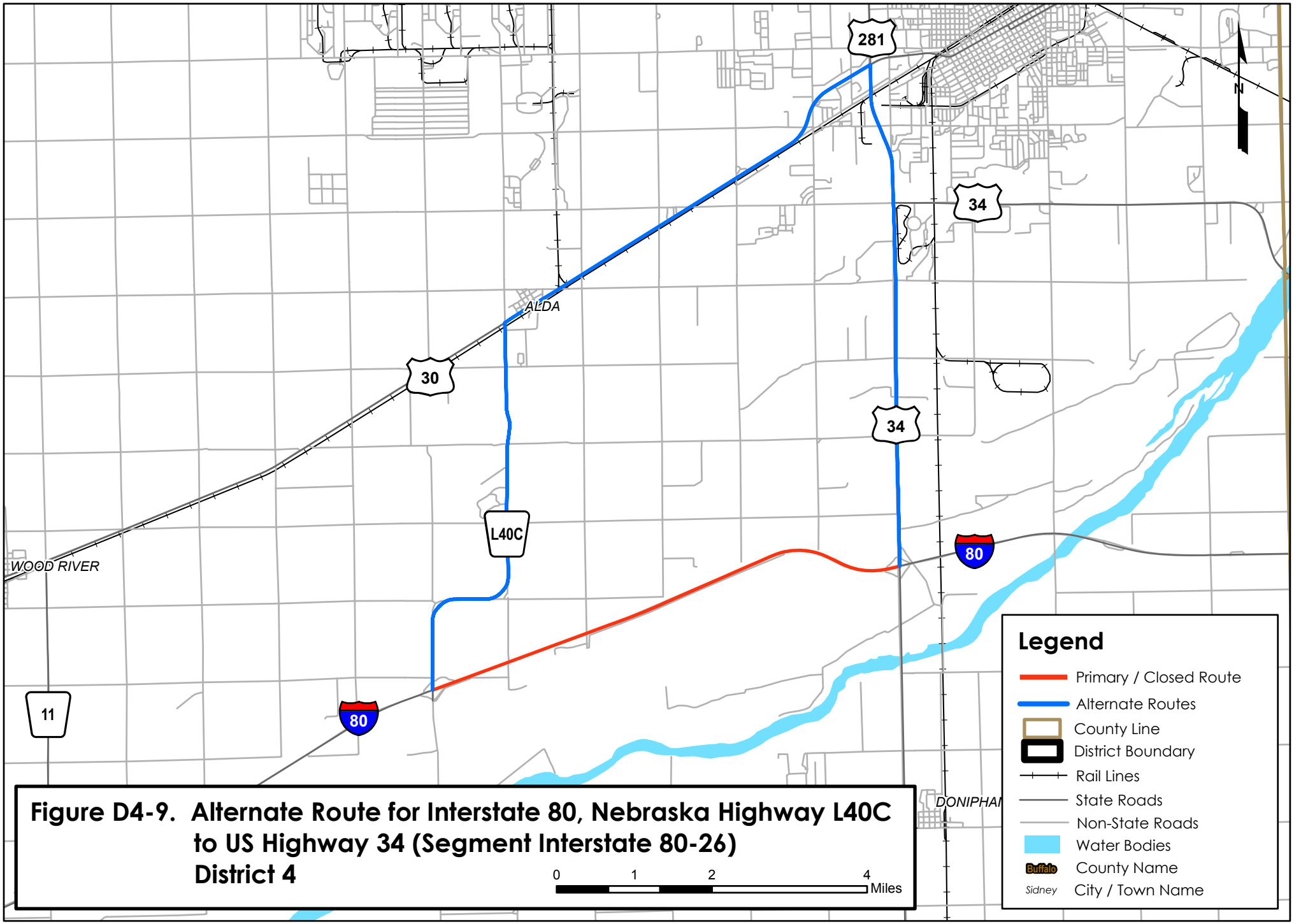


Figure D4-9. Alternate Route for Interstate 80, Nebraska Highway L40C to US Highway 34 (Segment Interstate 80-26) District 4

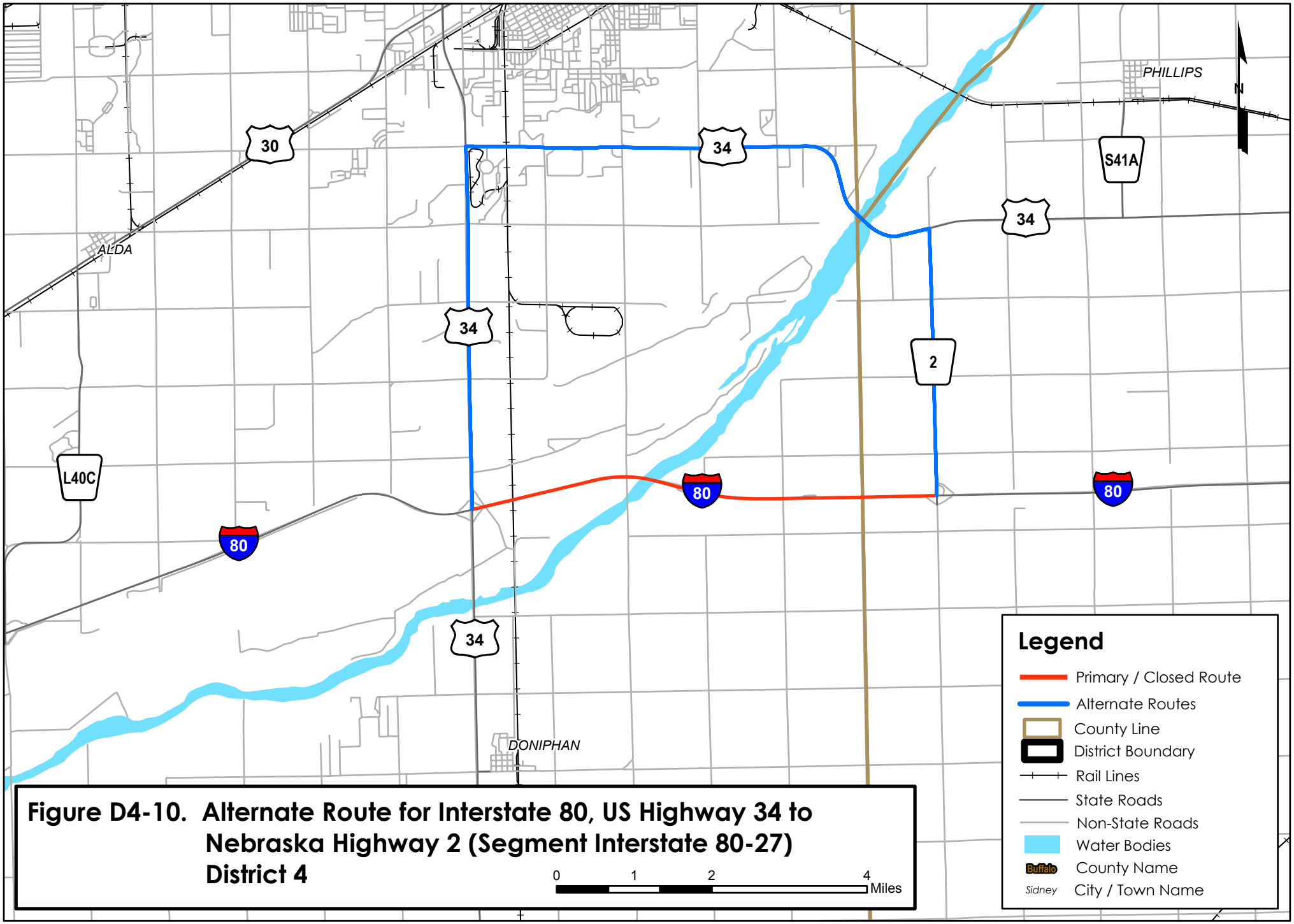


Figure D4-10. Alternate Route for Interstate 80, US Highway 34 to Nebraska Highway 2 (Segment Interstate 80-27) District 4

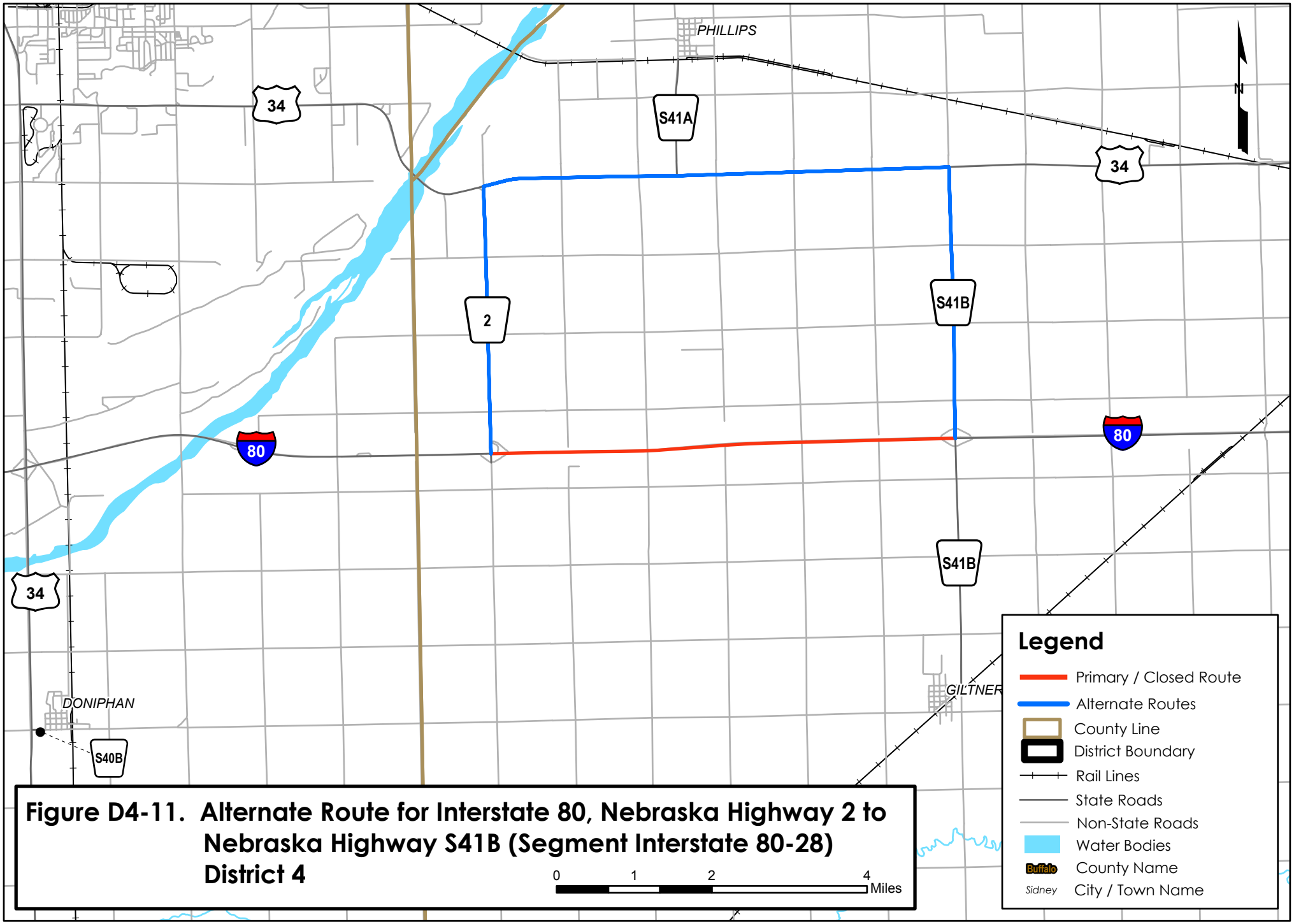


Figure D4-11. Alternate Route for Interstate 80, Nebraska Highway 2 to Nebraska Highway S41B (Segment Interstate 80-28) District 4

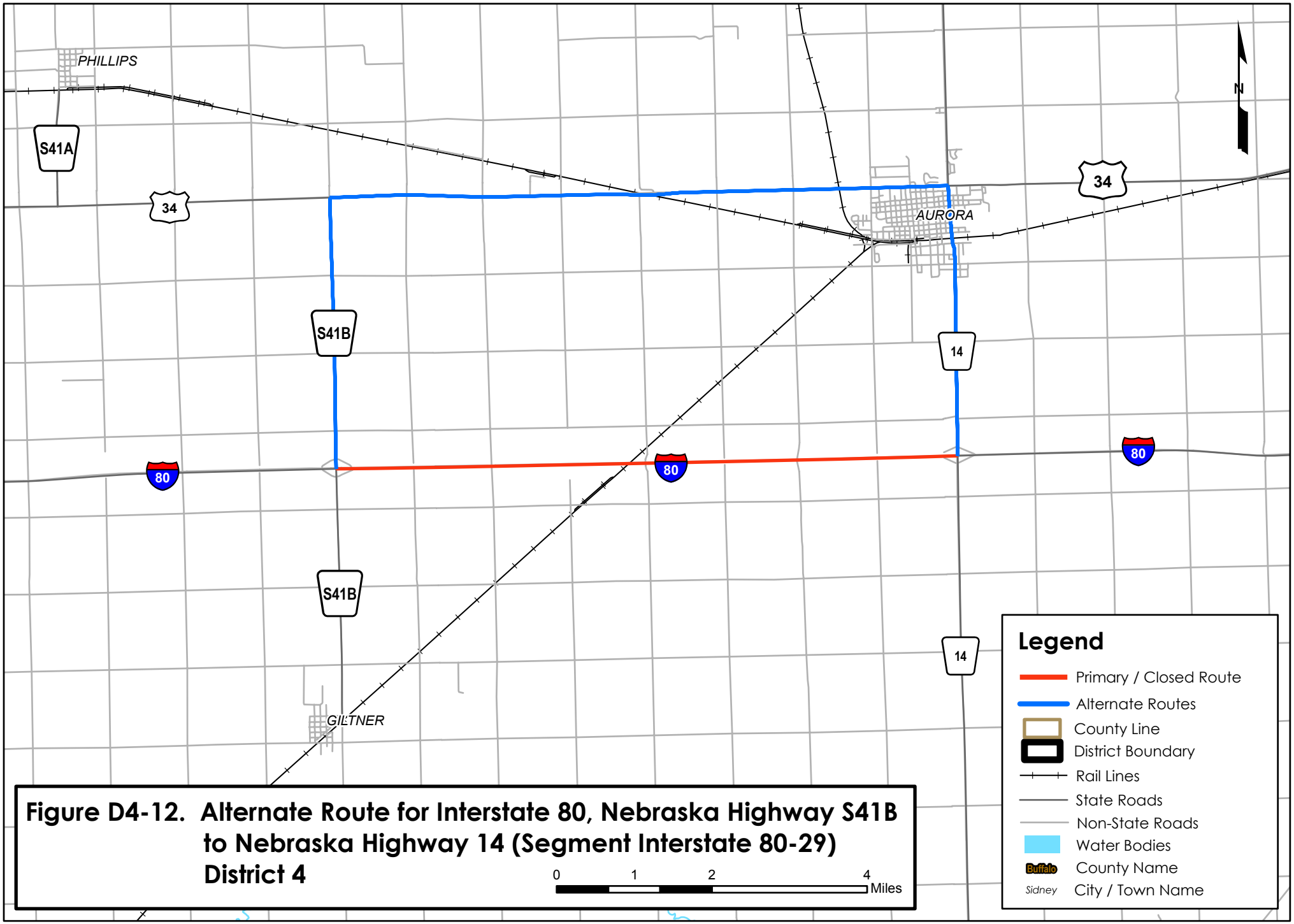


Figure D4-12. Alternate Route for Interstate 80, Nebraska Highway S41B to Nebraska Highway 14 (Segment Interstate 80-29) District 4

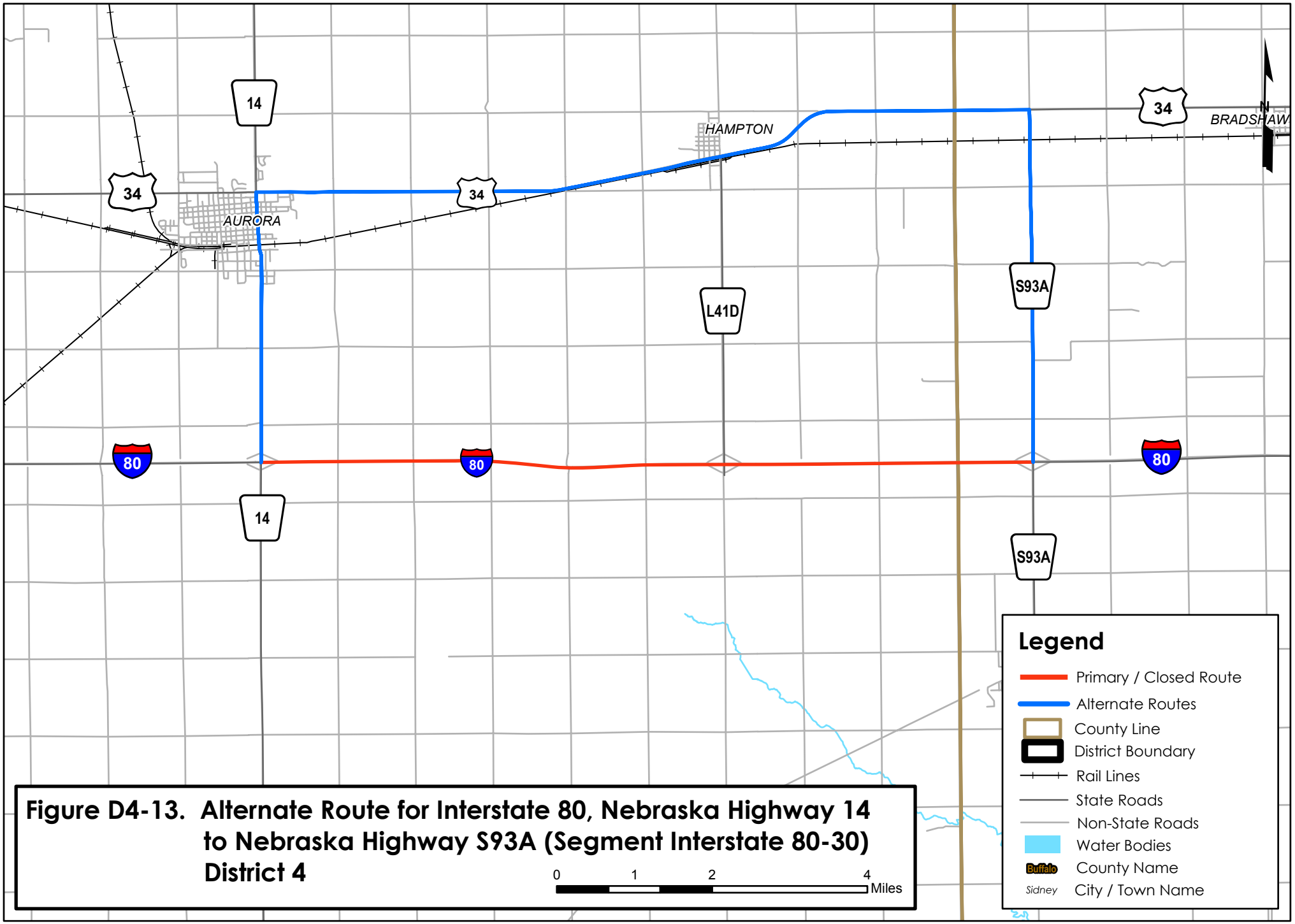


Figure D4-13. Alternate Route for Interstate 80, Nebraska Highway 14 to Nebraska Highway S93A (Segment Interstate 80-30) District 4

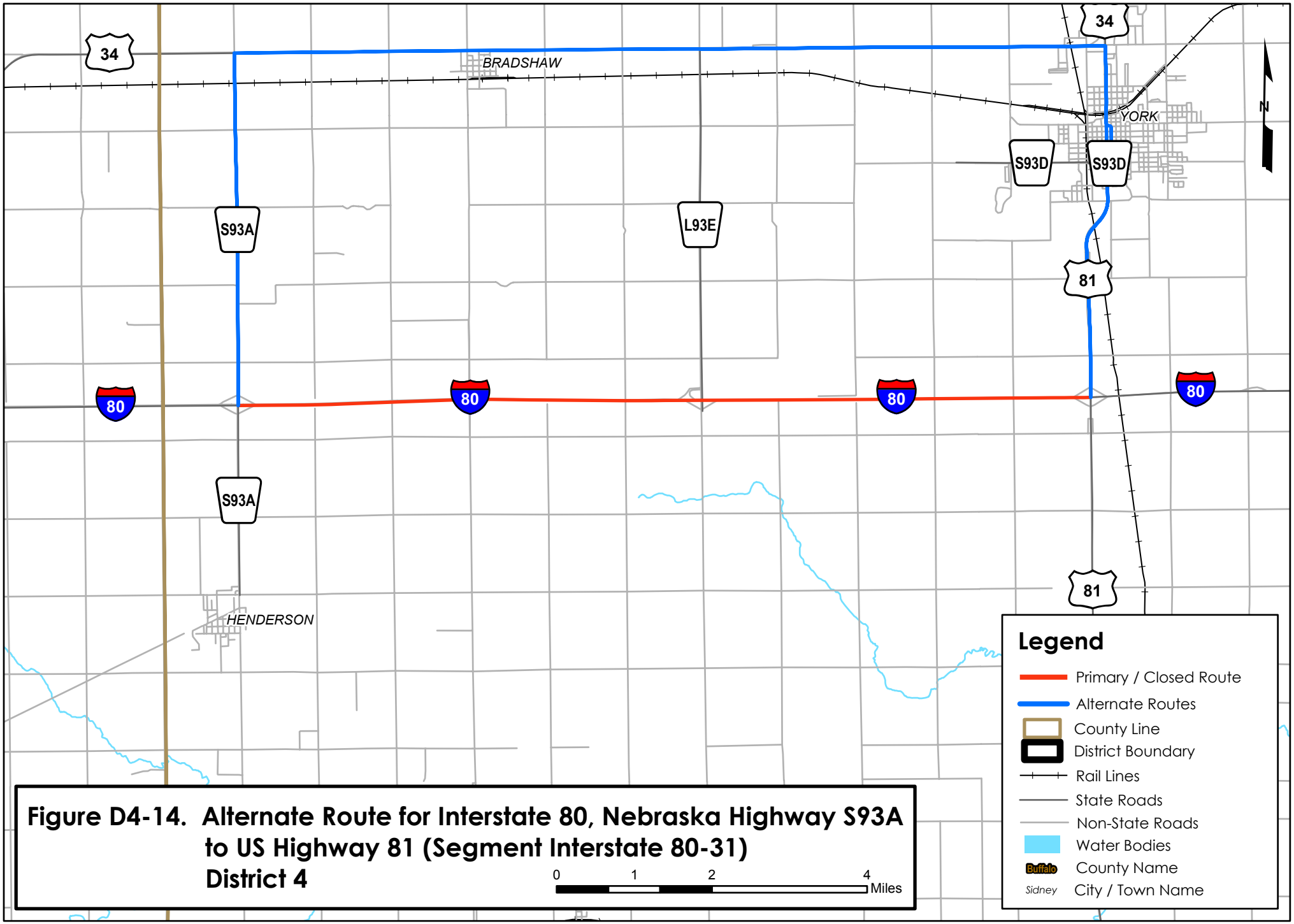


Figure D4-14. Alternate Route for Interstate 80, Nebraska Highway S93A to US Highway 81 (Segment Interstate 80-31) District 4

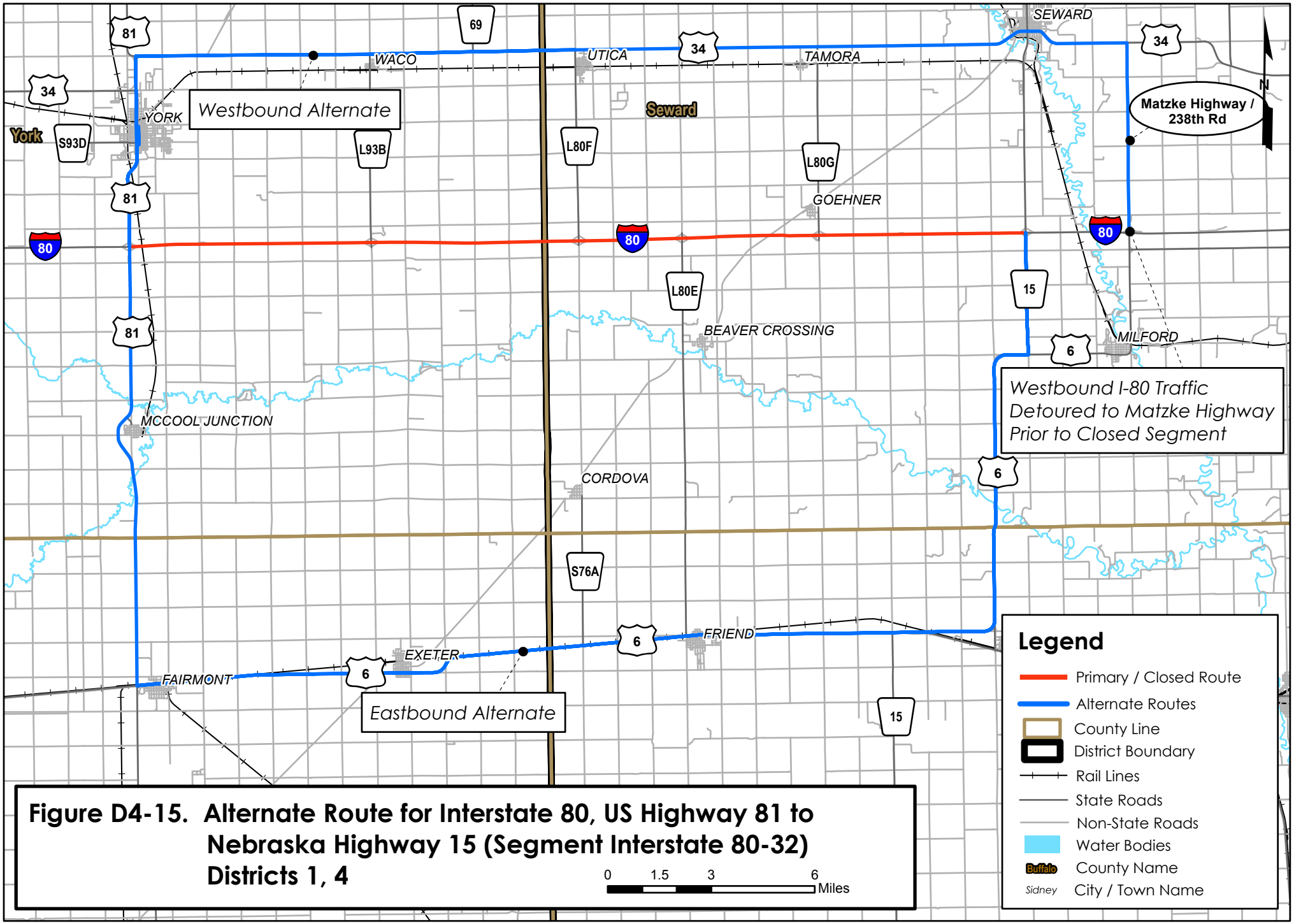


Figure D4-15. Alternate Route for Interstate 80, US Highway 81 to Nebraska Highway 15 (Segment Interstate 80-32) Districts 1, 4

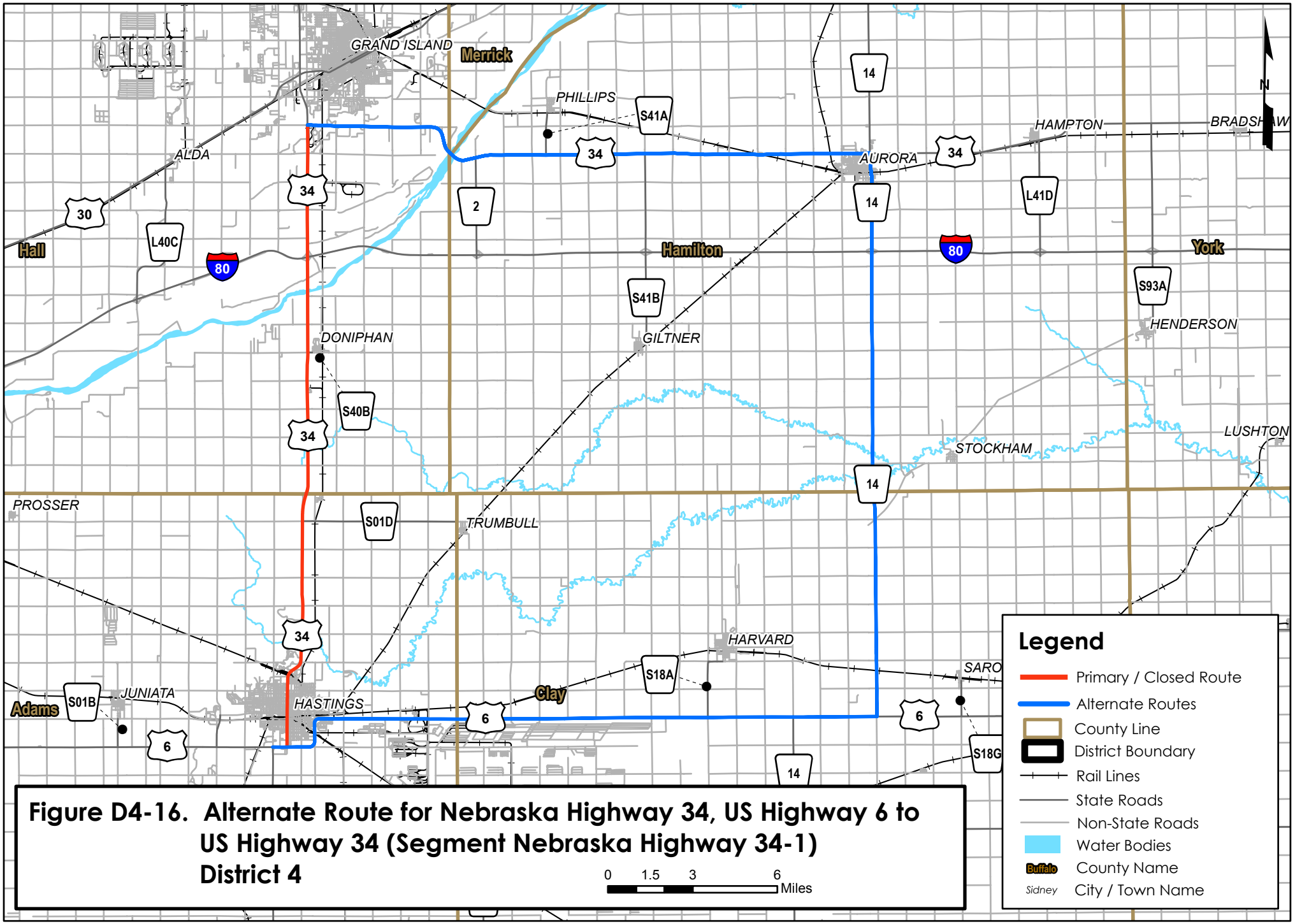


Figure D4-16. Alternate Route for Nebraska Highway 34, US Highway 6 to US Highway 34 (Segment Nebraska Highway 34-1) District 4

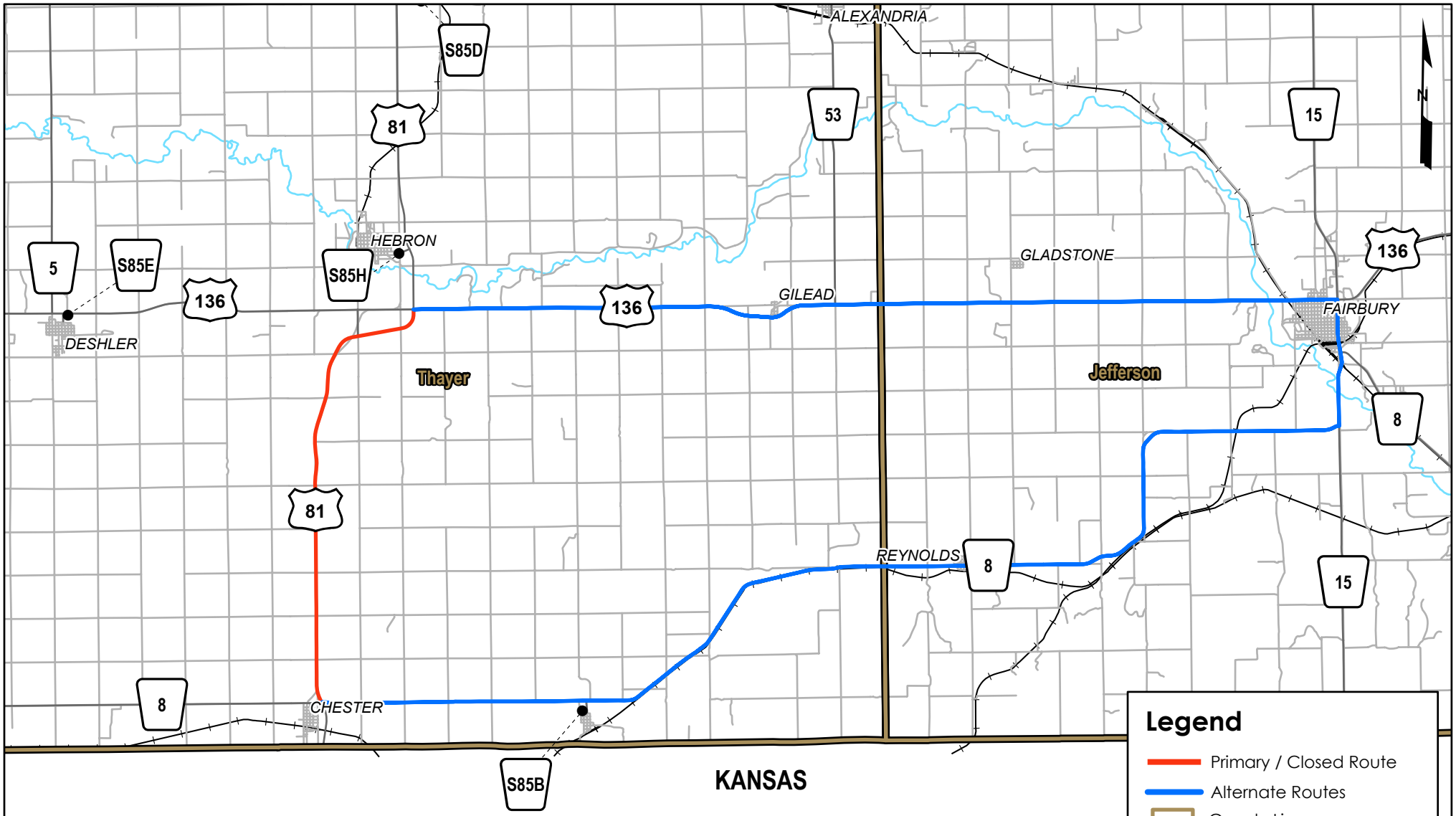


Figure D4-17. Alternate Route for US Highway 81, Nebraska Highway 8 to US Highway 136 (Segment US Highway 81-1)
District 4

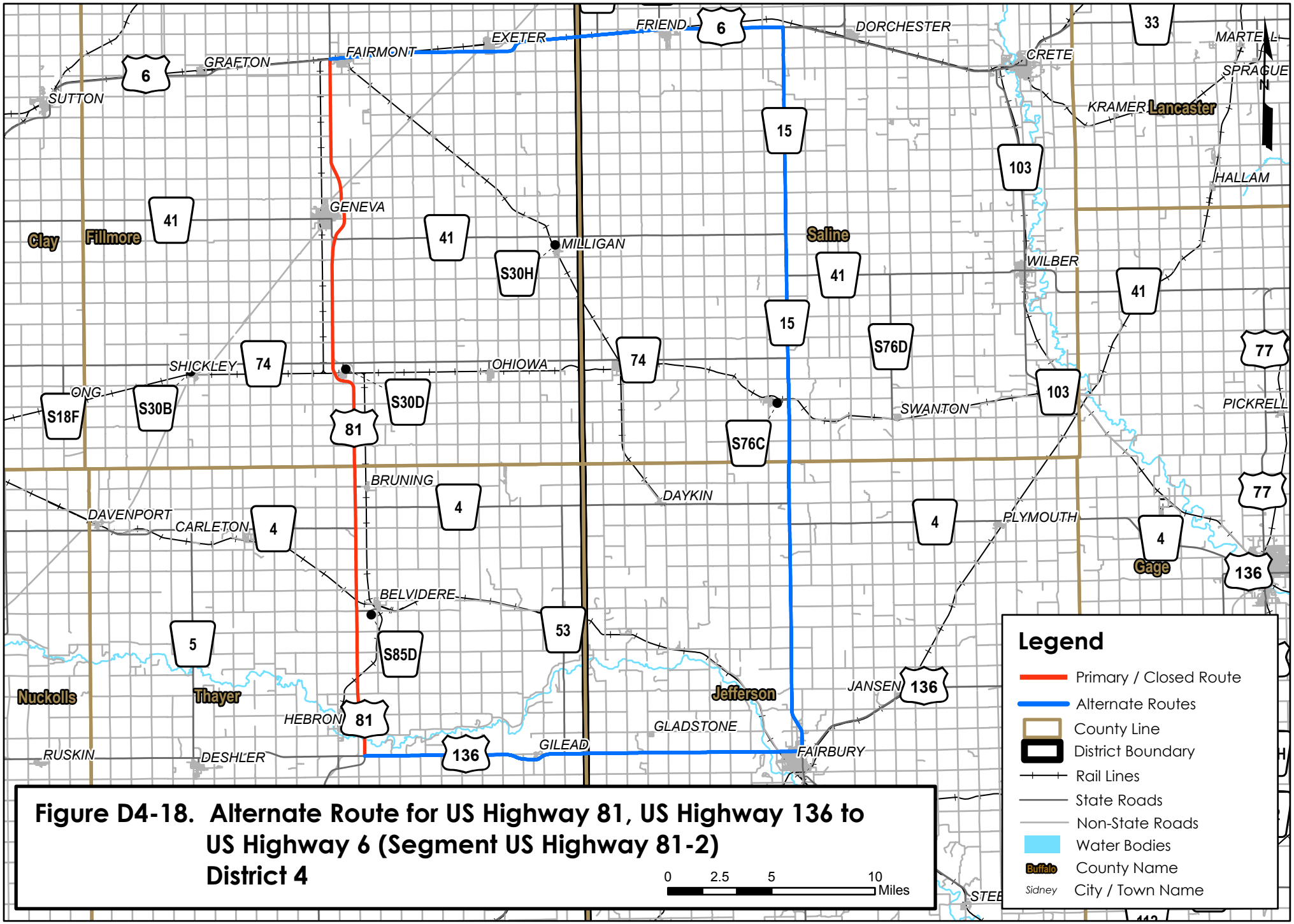


Figure D4-18. Alternate Route for US Highway 81, US Highway 136 to US Highway 6 (Segment US Highway 81-2)
District 4

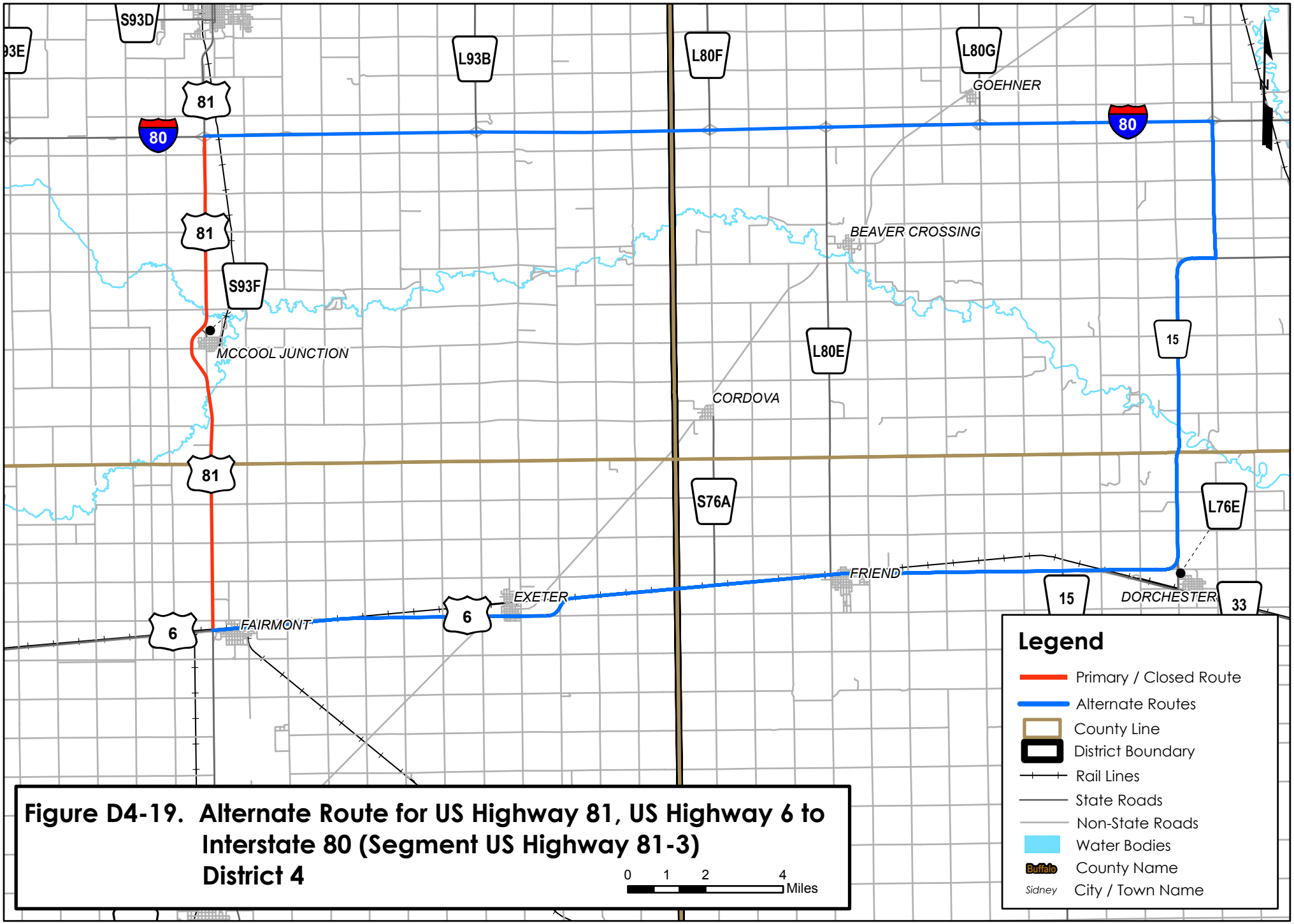


Figure D4-19. Alternate Route for US Highway 81, US Highway 6 to Interstate 80 (Segment US Highway 81-3)
District 4

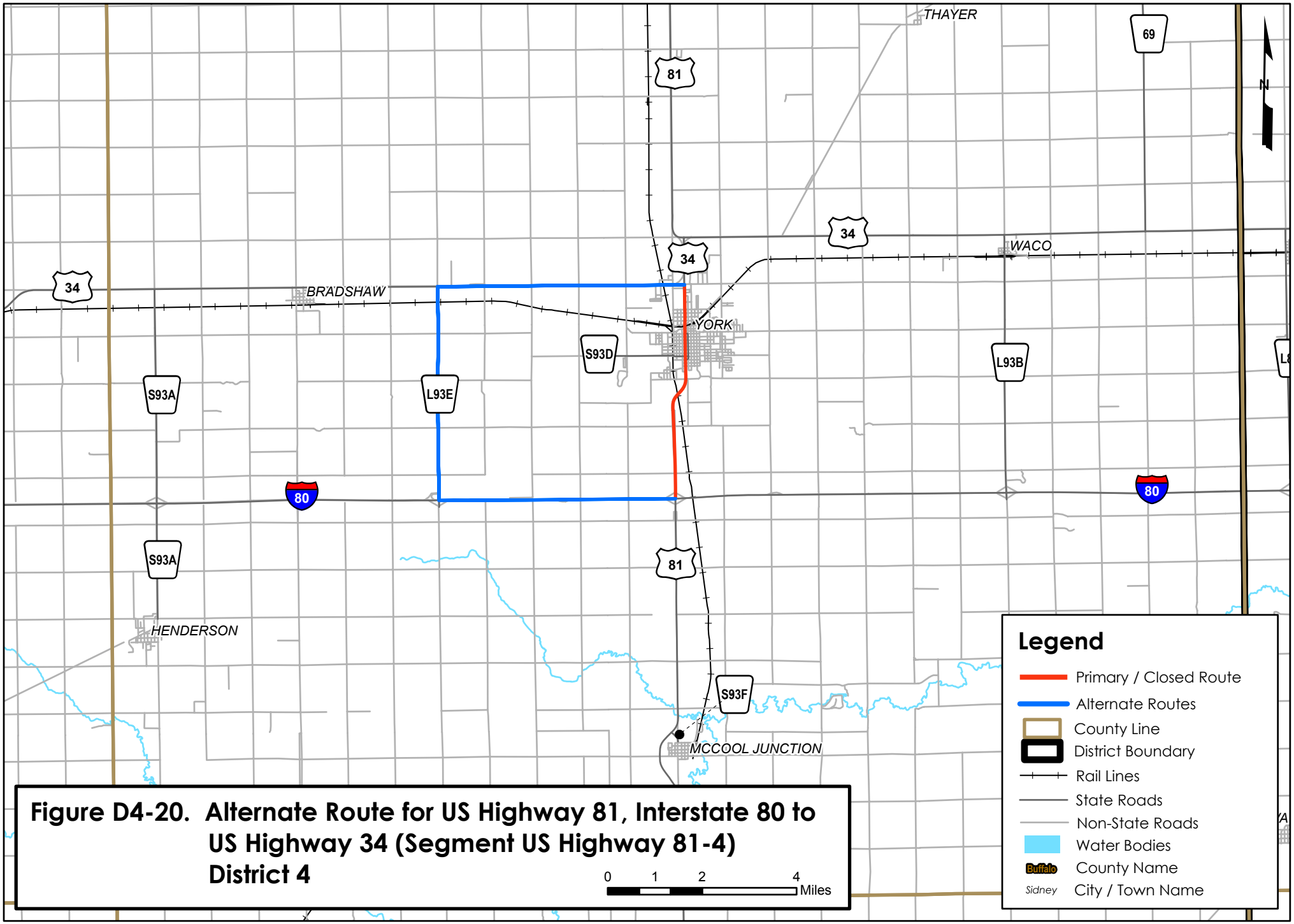


Figure D4-20. Alternate Route for US Highway 81, Interstate 80 to US Highway 34 (Segment US Highway 81-4) District 4

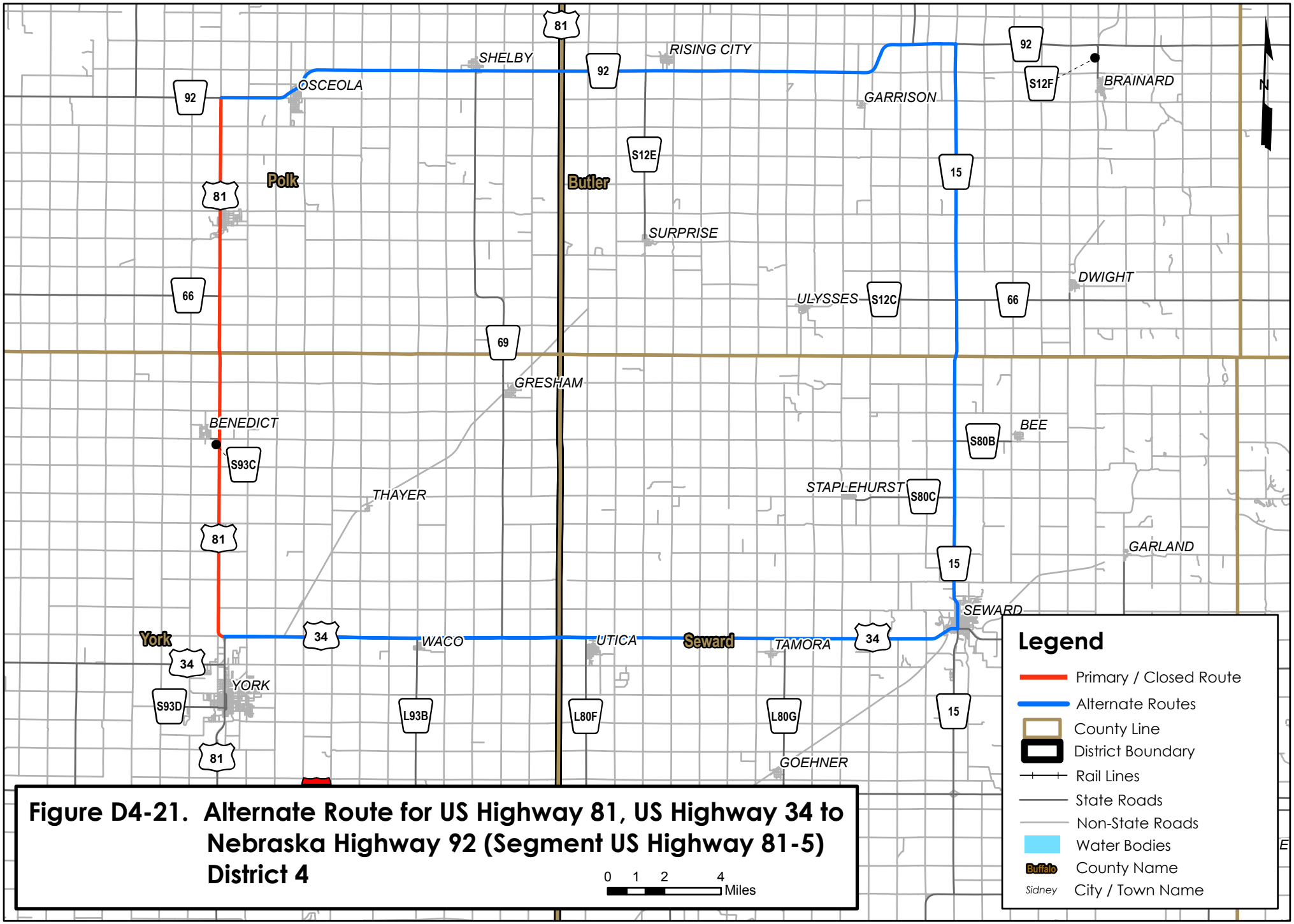


Figure D4-21. Alternate Route for US Highway 81, US Highway 34 to Nebraska Highway 92 (Segment US Highway 81-5) District 4

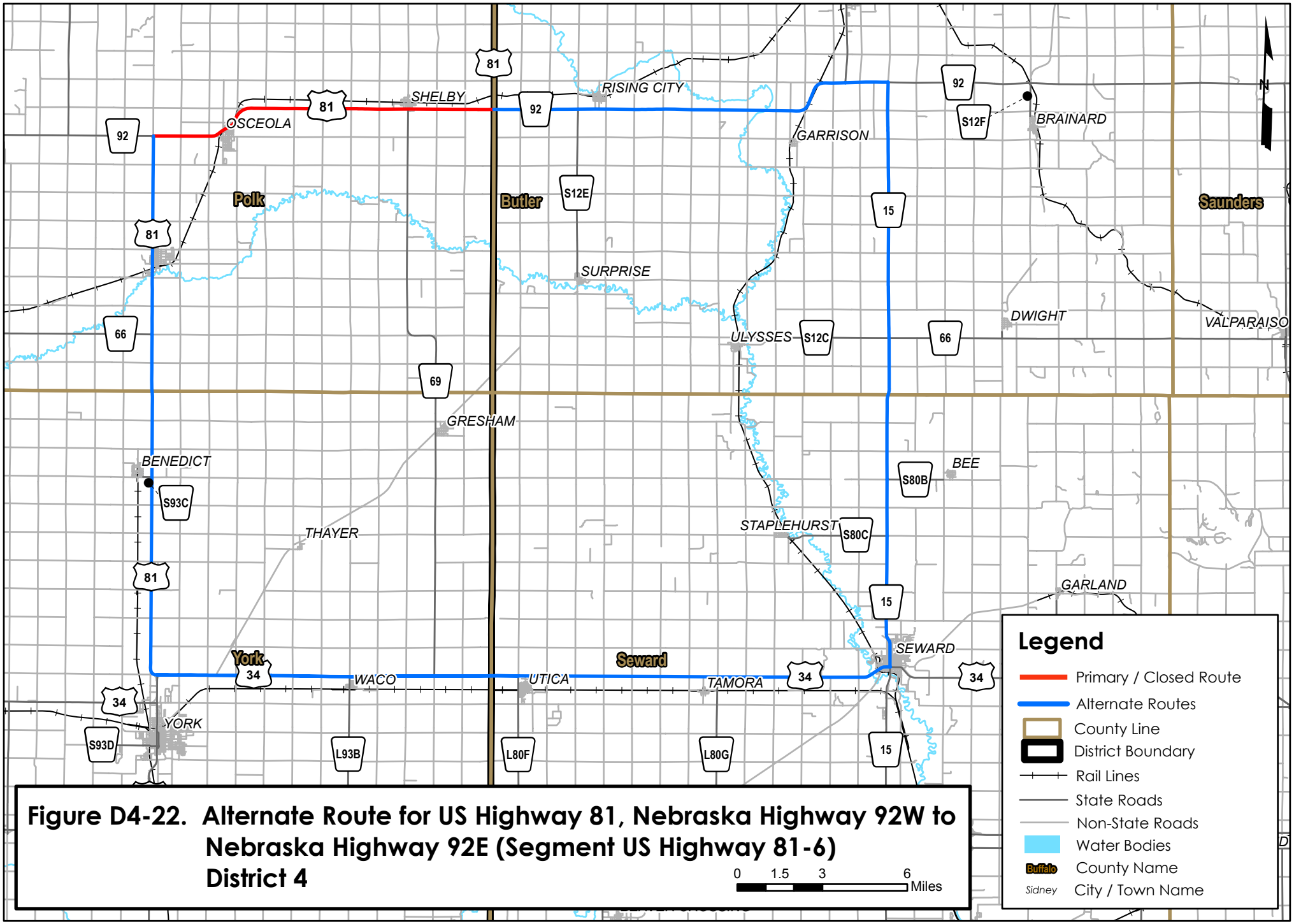


Figure D4-22. Alternate Route for US Highway 81, Nebraska Highway 92W to Nebraska Highway 92E (Segment US Highway 81-6)
District 4

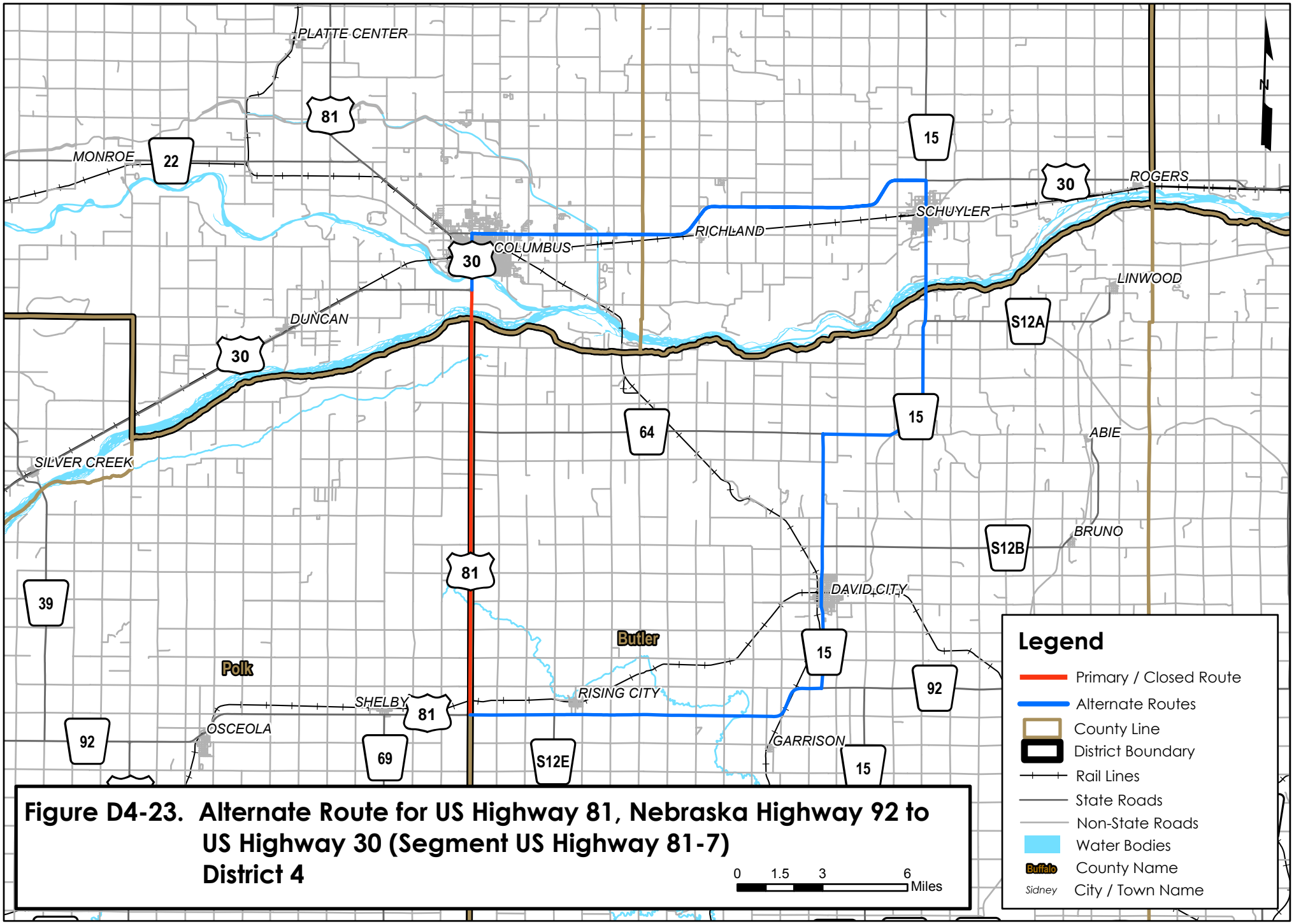
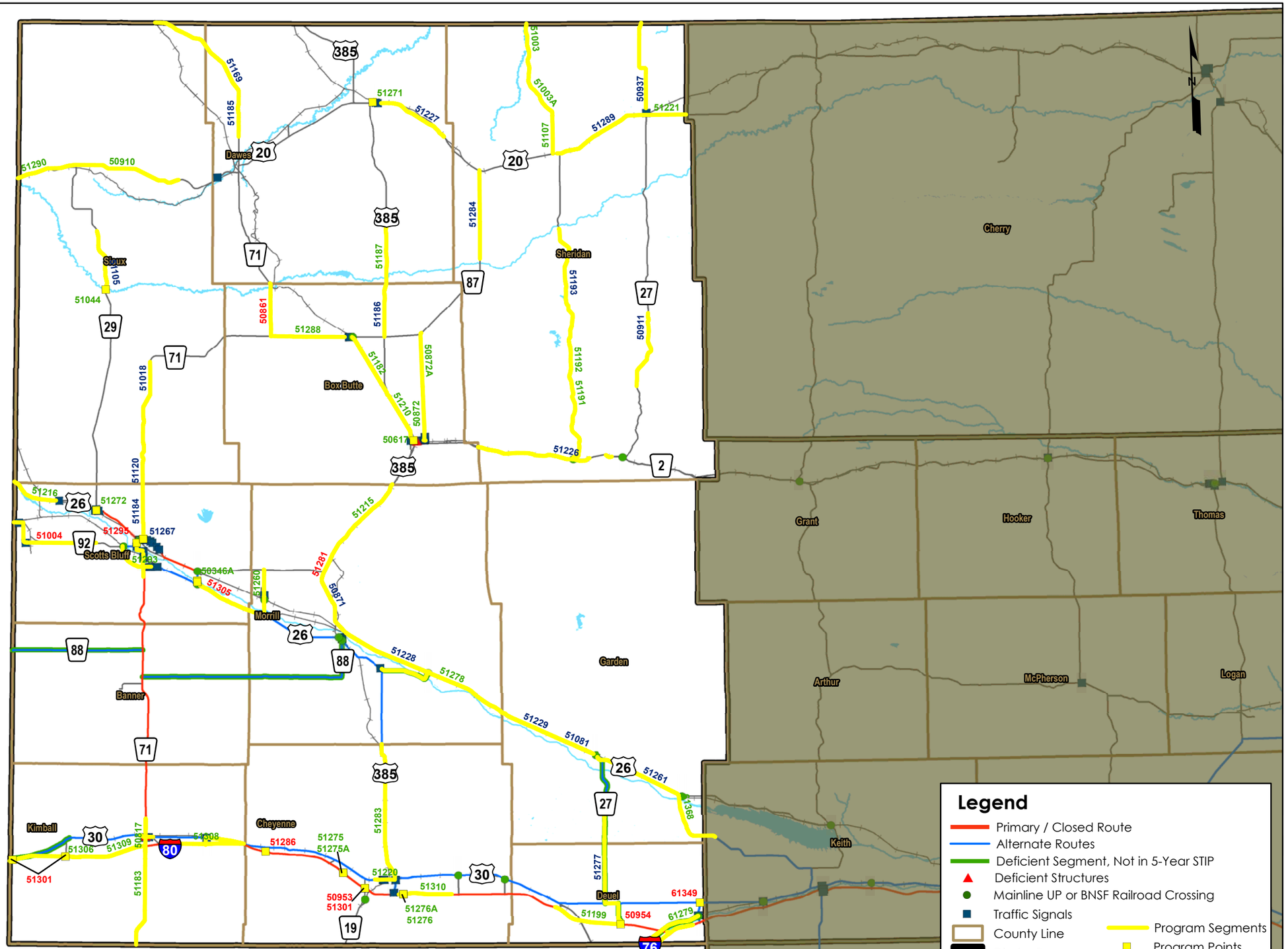


Figure D4-23. Alternate Route for US Highway 81, Nebraska Highway 92 to US Highway 30 (Segment US Highway 81-7)
District 4

Appendix E – District 5 Alternate Route Index and Maps

Alternate Route Assessment Summary
District 5

0 5 10 20 Miles



Legend

- Primary / Closed Route
- Alternate Routes
- Deficient Segment, Not in 5-Year STIP
- Deficient Structures
- Mainline UP or BNSF Railroad Crossing
- Traffic Signals
- County Line
- District Boundary
- Rail Lines
- State Roads
- Water Bodies
- County Name (Buffalo)
- Program Segments
- Program Points

Control Number

- FY 2006
- FY 2007-2011
- FY 2012 and Beyond

PRIMARY ROUTE (CLOSED ROUTE) SEGMENT INDEX – BY DISTRICT (DISTRICT5)

District	Primary Route - Segment	Milepost Reference		Primary Route Description
		Begin	End	
District 5	**East-West Interstate / Expressway Segments**			
	US Highway 26-1	13.67	22.28	US Highway 26 from Nebraska Highway 29 to Nebraska Highway 71
	US Highway 26-2	22.28	31.90	US Highway 26 from Nebraska Highway 71 to Nebraska Highway L79E
	Interstate 80-1	0.48	59.92	Interstate 80 from Nebraska Highway L53B to Nebraska Highway L17J
	Interstate 80-2	59.92	107.36	Interstate 80 from Nebraska Highway L17J to Nebraska Highway L25B
	Interstate 80-3	107.36	117.35	Interstate 80 from Nebraska Highway L25B to Nebraska Highway L51A
	North-South Expressway Segments			
	Nebraska Highway 71-1	16.57	57.87	Nebraska Highway 71 from US Highway 30 to Nebraska Highway 92

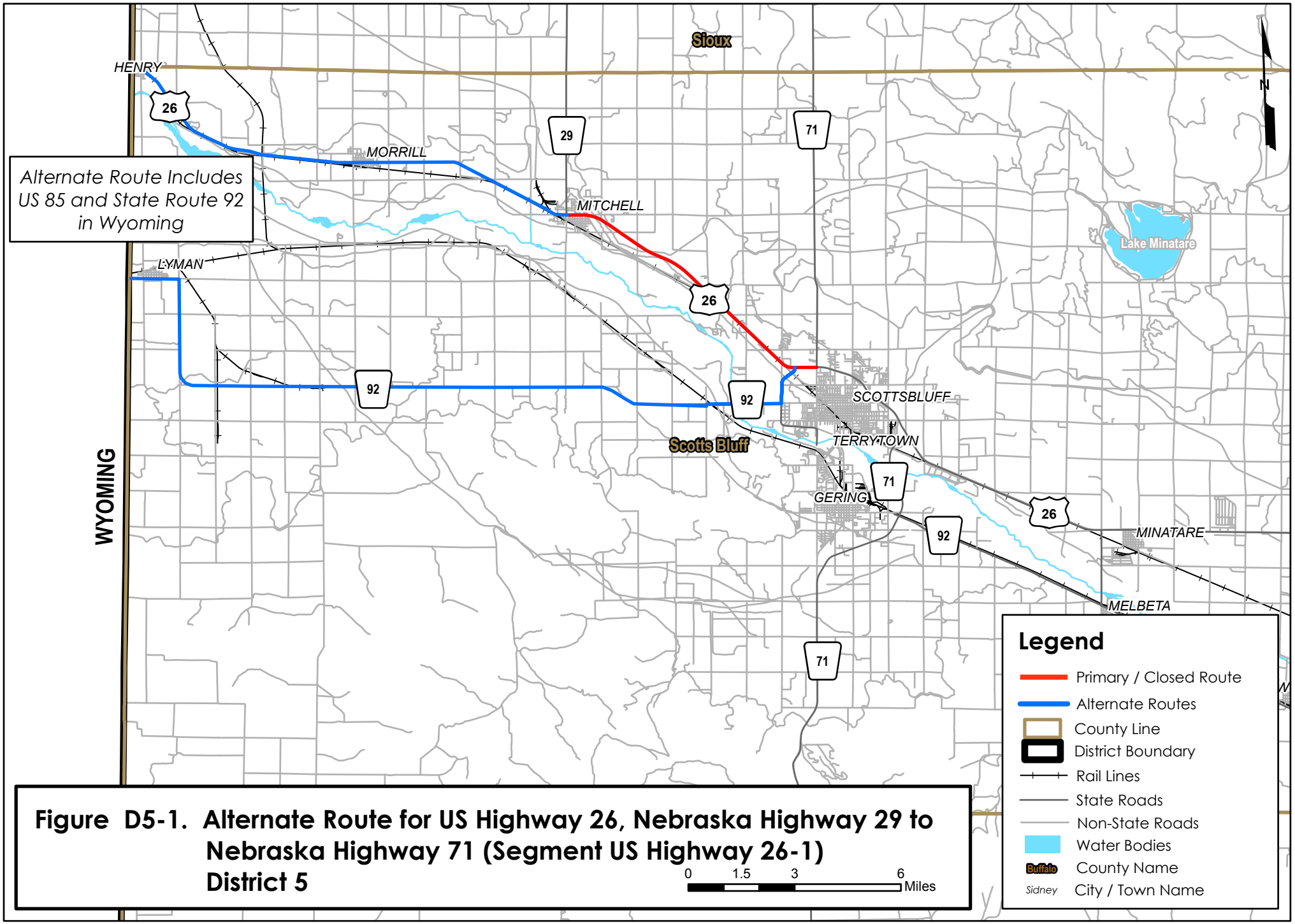


Figure D5-1. Alternate Route for US Highway 26, Nebraska Highway 29 to Nebraska Highway 71 (Segment US Highway 26-1) District 5

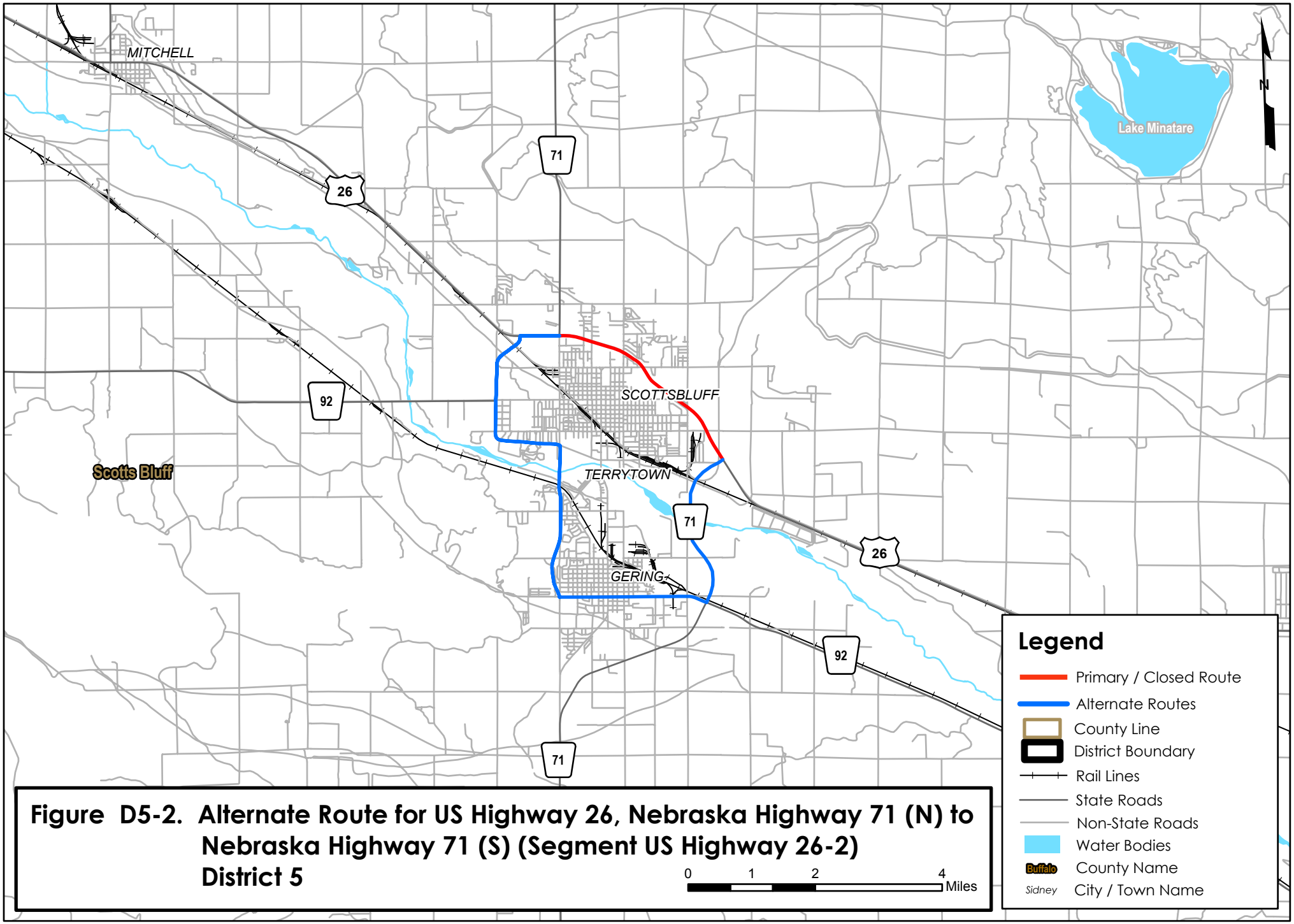


Figure D5-2. Alternate Route for US Highway 26, Nebraska Highway 71 (N) to Nebraska Highway 71 (S) (Segment US Highway 26-2) District 5

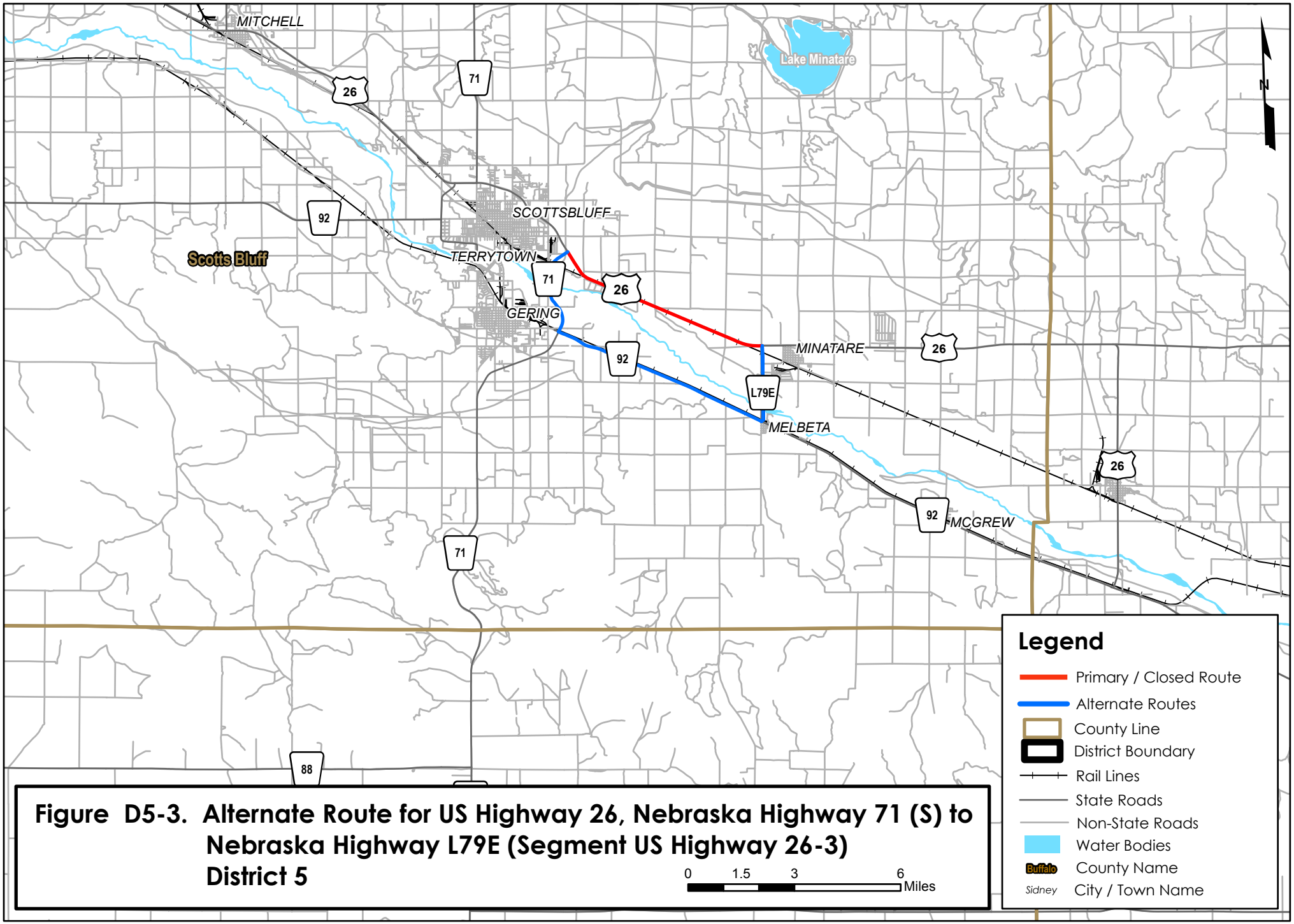


Figure D5-3. Alternate Route for US Highway 26, Nebraska Highway 71 (S) to Nebraska Highway L79E (Segment US Highway 26-3) District 5

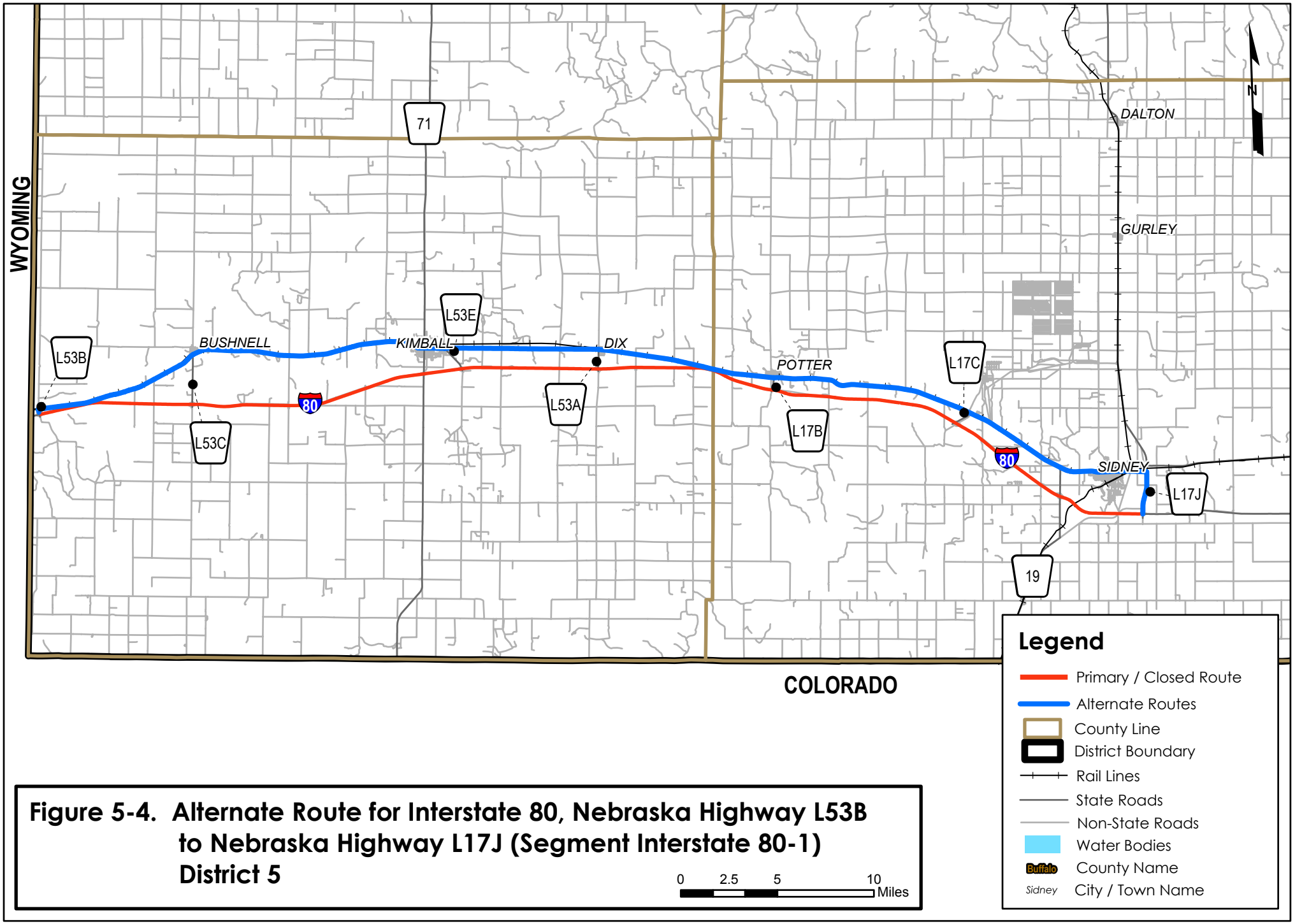


Figure 5-4. Alternate Route for Interstate 80, Nebraska Highway L53B to Nebraska Highway L17J (Segment Interstate 80-1) District 5

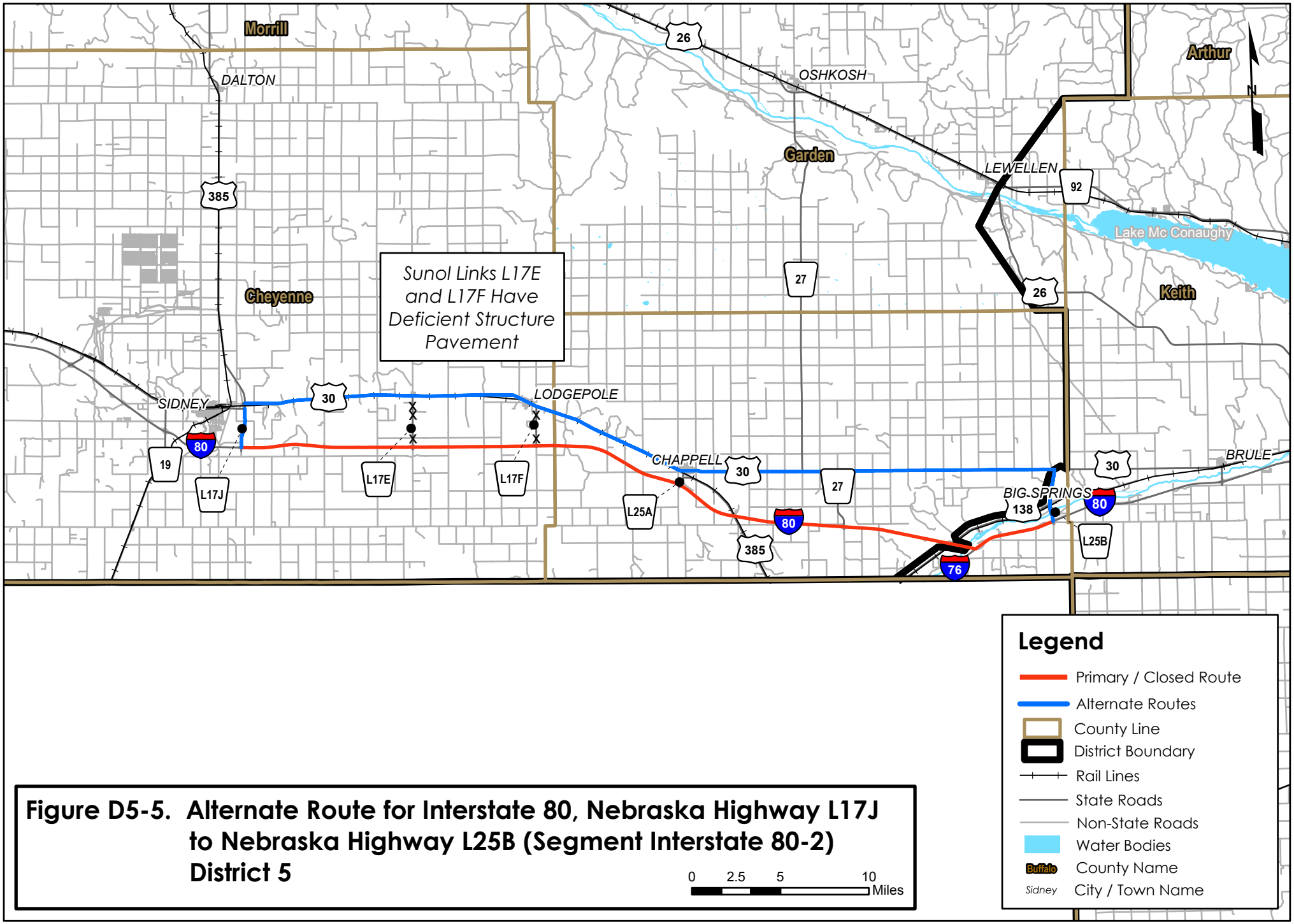


Figure D5-5. Alternate Route for Interstate 80, Nebraska Highway L17J to Nebraska Highway L25B (Segment Interstate 80-2) District 5

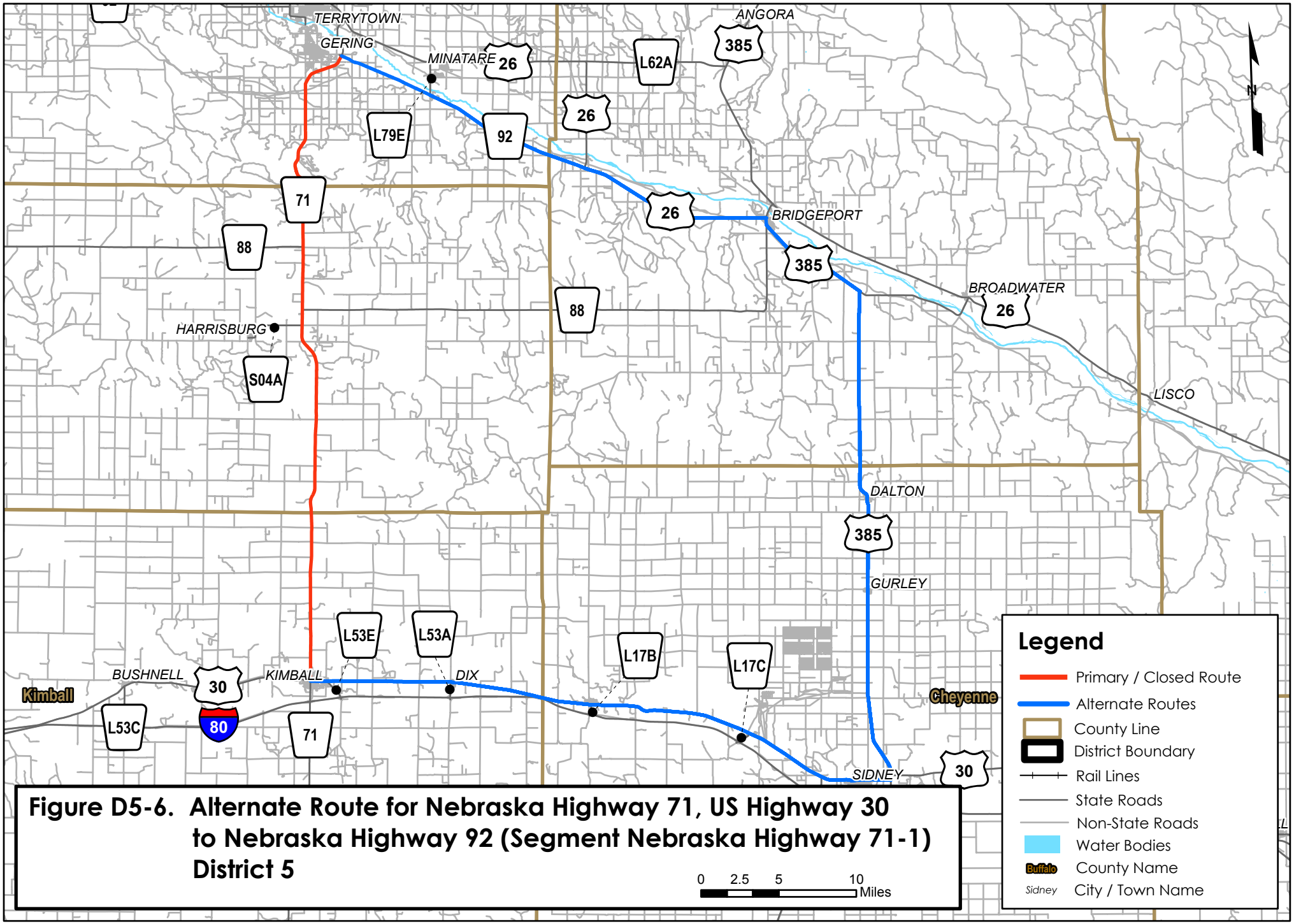


Figure D5-6. Alternate Route for Nebraska Highway 71, US Highway 30 to Nebraska Highway 92 (Segment Nebraska Highway 71-1) District 5

Appendix F – District 6 Alternate Route Index and Maps

Alternate Route Assessment Summary
District 6

0 5 10 20 Miles

N

Grant
Hooker
Thomas
Blaine
Loup
Garfield
Arthur
McPherson
Logan
Valley
Keith
Lincoln
Custer
Sherman
Perkins
Dawson
Buffalo
Chase
Hayes
Frontier
Gosper

61326 61008 61009 61044 60823 60818 61232 60943
61380A 61372 61335 60938 61333 61385 61200 60945
61380 61149 61359 61360 61361 61362 61363 61388
6136461365 61383 61371 60975 60975B 61395 61399 60887 61387
61370 61370A 60856 61336 61355 61367 60985 61196 61269 61382 61327 61397 61332
61386 60891 61180 61384 61434 61366

Legend

- Primary / Closed Route
- Alternate Routes
- Deficient Segment, Not in 5-Year STIP
- Deficient Structures
- Mainline UP or BNSF Railroad Crossing
- Traffic Signals
- County Line
- District Boundary
- Rail Lines
- State Roads
- Water Bodies
- County Name (Buffalo)
- Program Segments
- Program Points

Control Number

- FY 2006
- FY 2007-2011
- FY 2012 and Beyond

PRIMARY ROUTE (CLOSED ROUTE) SEGMENT INDEX – BY DISTRICT (DISTRICT 6)

District	Primary Route - Segment	Milepost Reference		Primary Route Description
		Begin	End	
District 6	**East-West Interstate Segments**			
	Interstate 76-1	0.00	3.15	Interstate 76 from Colorado State Line to Interstate 80
	Interstate 80-3	107.36	117.35	Interstate 80 from Nebraska Highway L25B to Nebraska Highway L51A
	Interstate 80-4	117.35	126.69	Interstate 80 from Nebraska Highway L51A to US Highway 26
	Interstate 80-5	126.69	133.97	Interstate 80 from US Highway 26 to Nebraska Highway L51B
	Interstate 80-6	126.69	158.03	Interstate 80 from US Highway 26 to Nebraska Highway 25
	Interstate 80-7	133.97	145.67	Interstate 80 from Nebraska Highway L51B to Nebraska Highway L51C
	Interstate 80-8	145.67	158.03	Interstate 80 from Nebraska Highway L51C to Highway 25
	Interstate 80-9	158.03	164.53	Interstate 80 from Nebraska Highway 25 to Nebraska Highway L56C
	Interstate 80-10	158.03	177.19	Interstate 80 from Nebraska Highway 25 to Highway 83
	Interstate 80-11	164.53	179.22	Interstate 80 from Nebraska Highway L56C to Nebraska Highway L56G
	Interstate 80-12	177.19	211.80	Interstate 80 from US Highway 83 to Nebraska Highway 47
	Interstate 80-13	179.22	190.45	Interstate 80 from Nebraska Highway L56G to Nebraska Highway S56A
	Interstate 80-14	190.45	211.80	Interstate 80 from Nebraska Highway S56A to Nebraska Highway 47
	Interstate 80-15	211.80	222.49	Interstate 80 from Nebraska Highway 47 to Nebraska Highway 21
	Interstate 80-16	222.49	237.22	Interstate 80 from Nebraska Highway 21 to US Highway 283
	Interstate 80-17	237.22	248.56	Interstate 80 from US Highway 283 to Nebraska Highway L24B
	Interstate 80-18	237.22	257.04	Interstate 80 from US Highway 283 to US Highway 183
	Interstate 80-19	248.56	257.04	Interstate 80 from Nebraska Highway L24B to US Highway 183

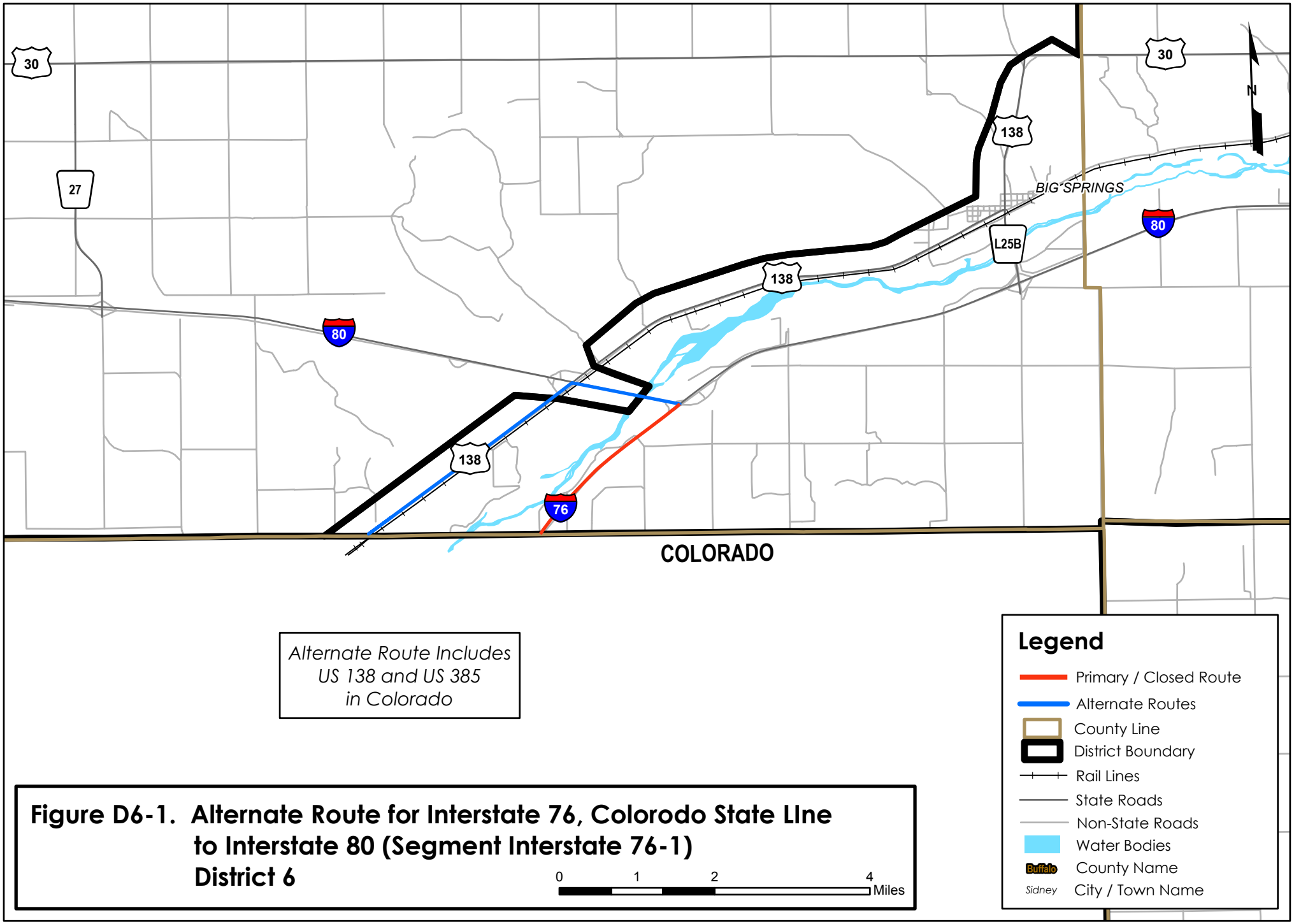


Figure D6-1. Alternate Route for Interstate 76, Colorodo State LIne to Interstate 80 (Segment Interstate 76-1) District 6

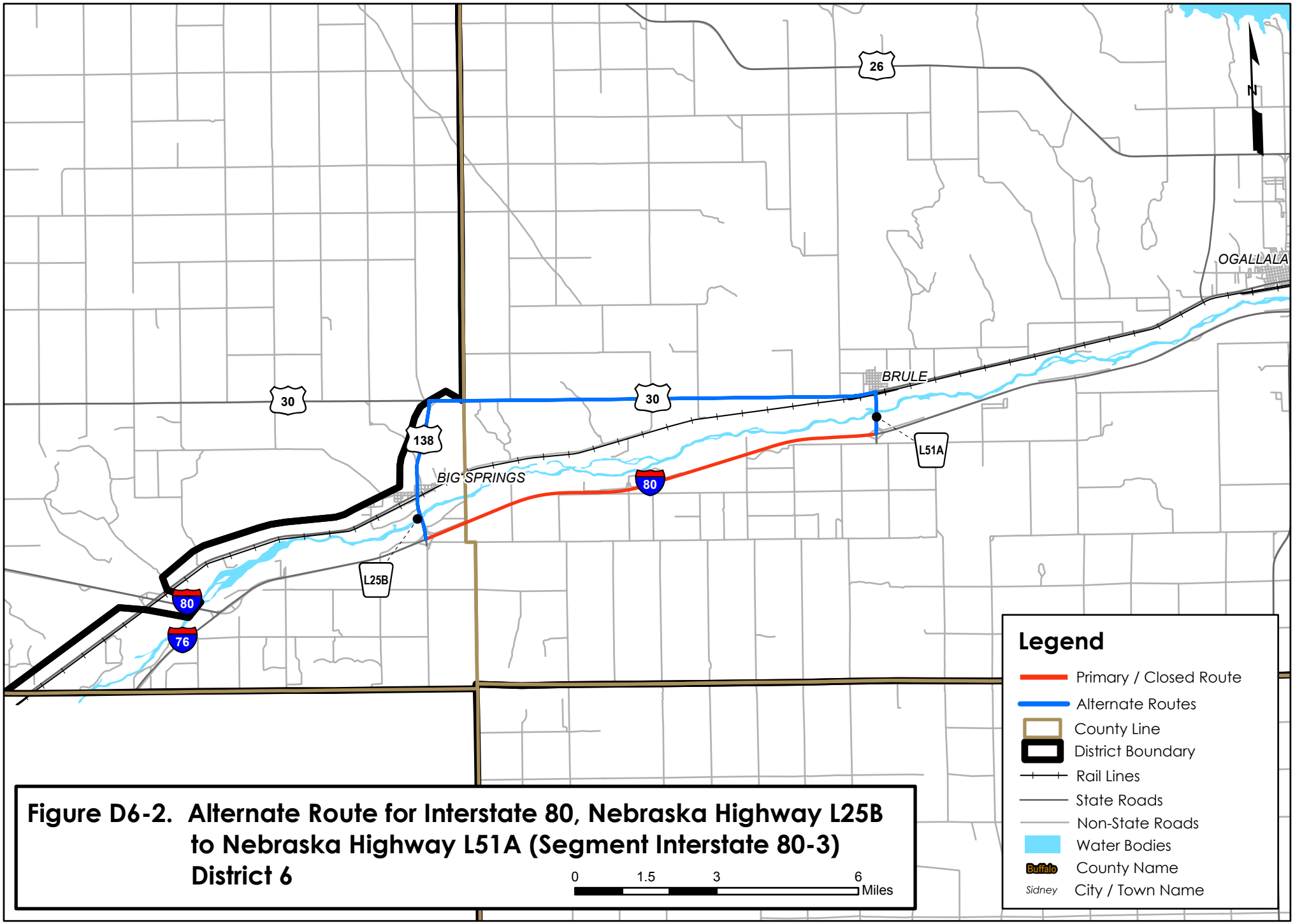


Figure D6-2. Alternate Route for Interstate 80, Nebraska Highway L25B to Nebraska Highway L51A (Segment Interstate 80-3) District 6

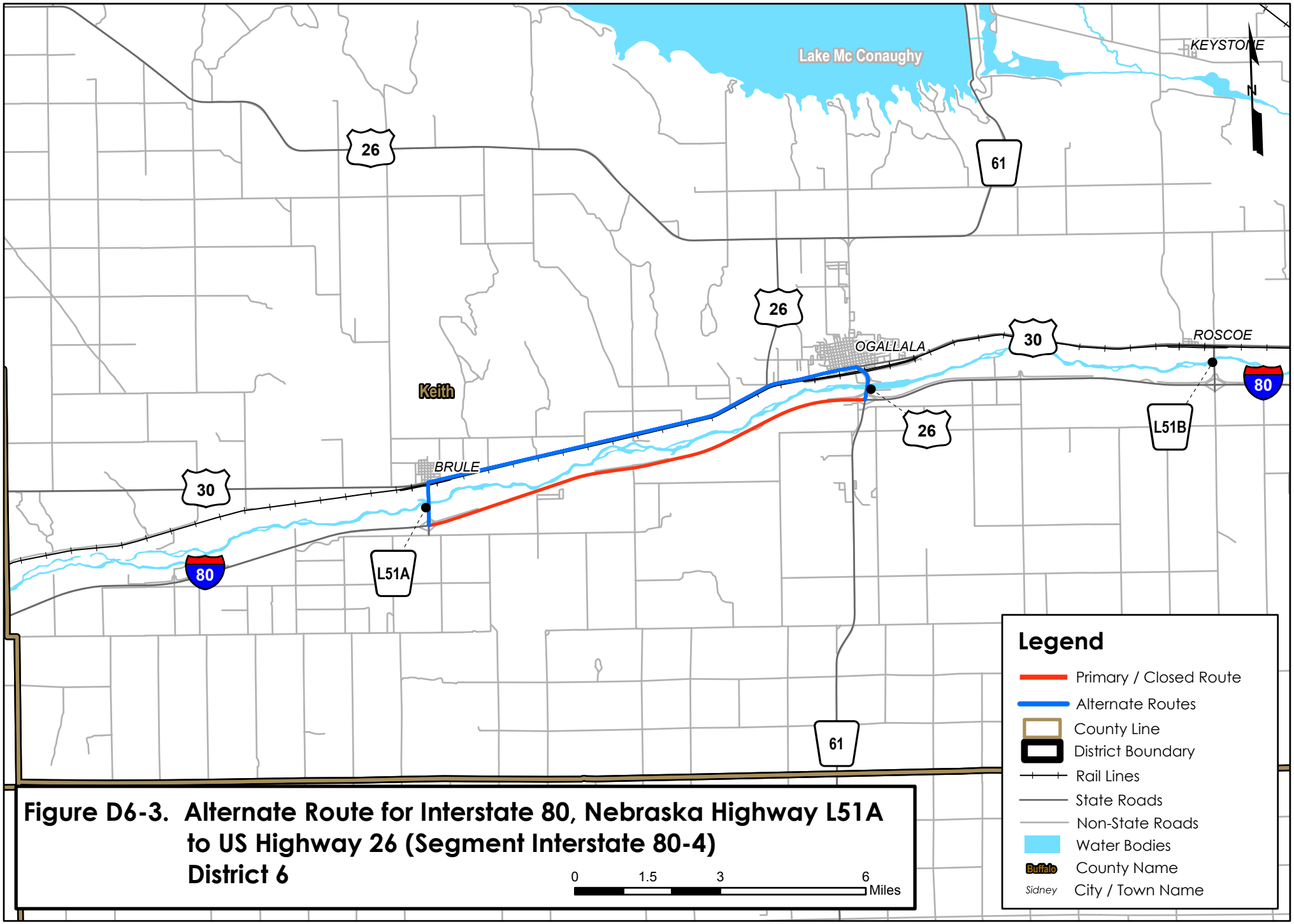


Figure D6-3. Alternate Route for Interstate 80, Nebraska Highway L51A to US Highway 26 (Segment Interstate 80-4) District 6

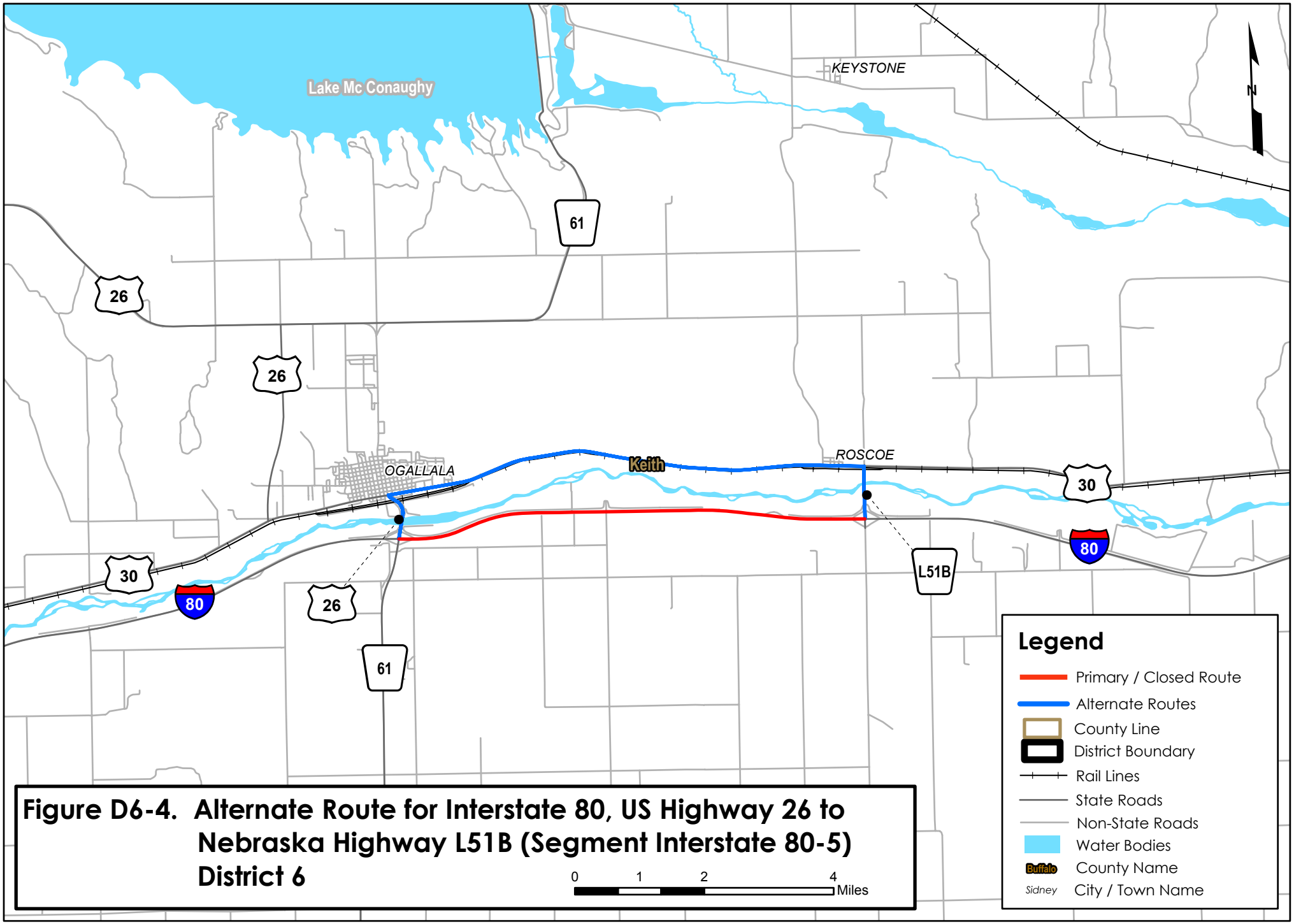


Figure D6-4. Alternate Route for Interstate 80, US Highway 26 to Nebraska Highway L51B (Segment Interstate 80-5) District 6

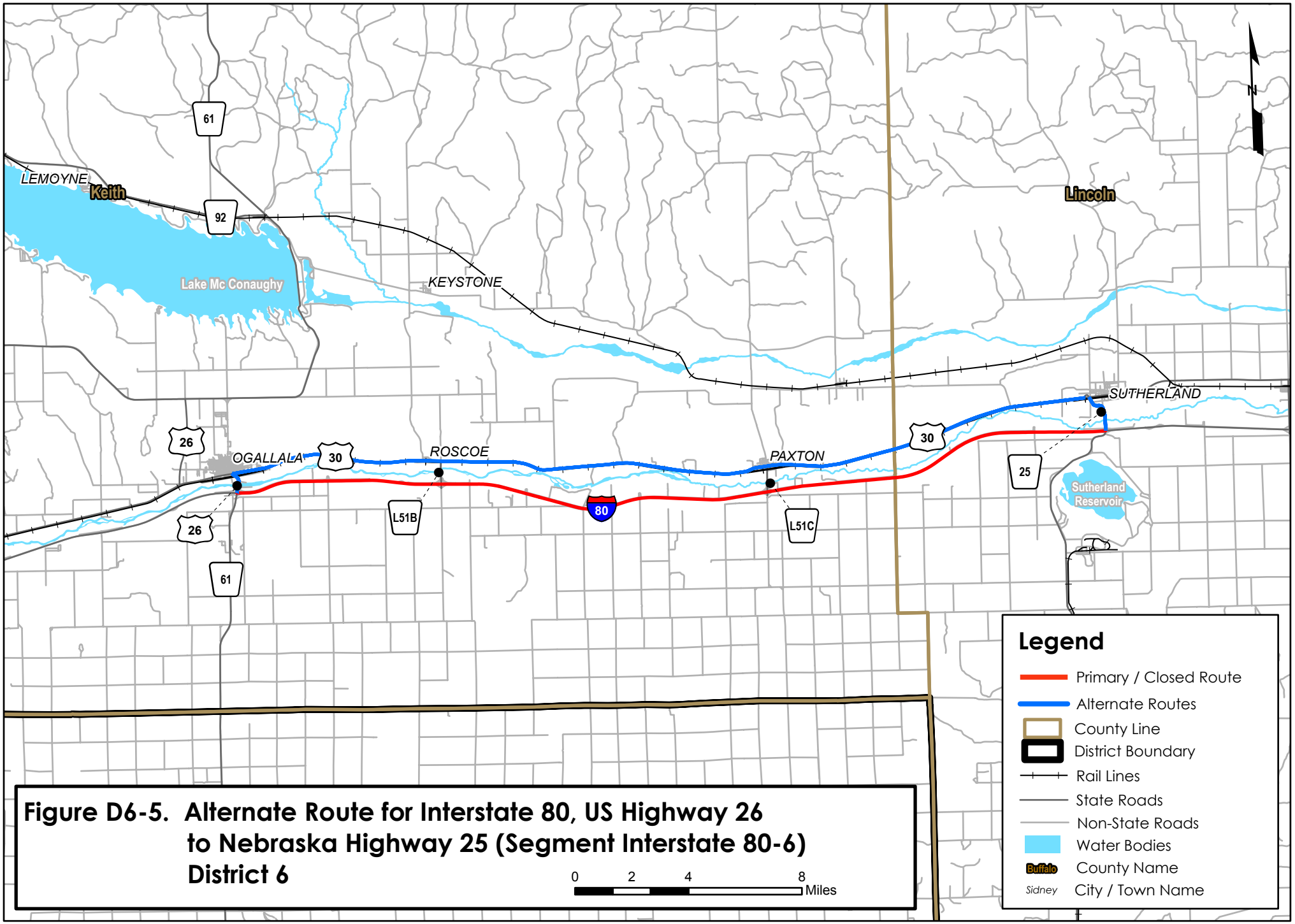


Figure D6-5. Alternate Route for Interstate 80, US Highway 26 to Nebraska Highway 25 (Segment Interstate 80-6) District 6

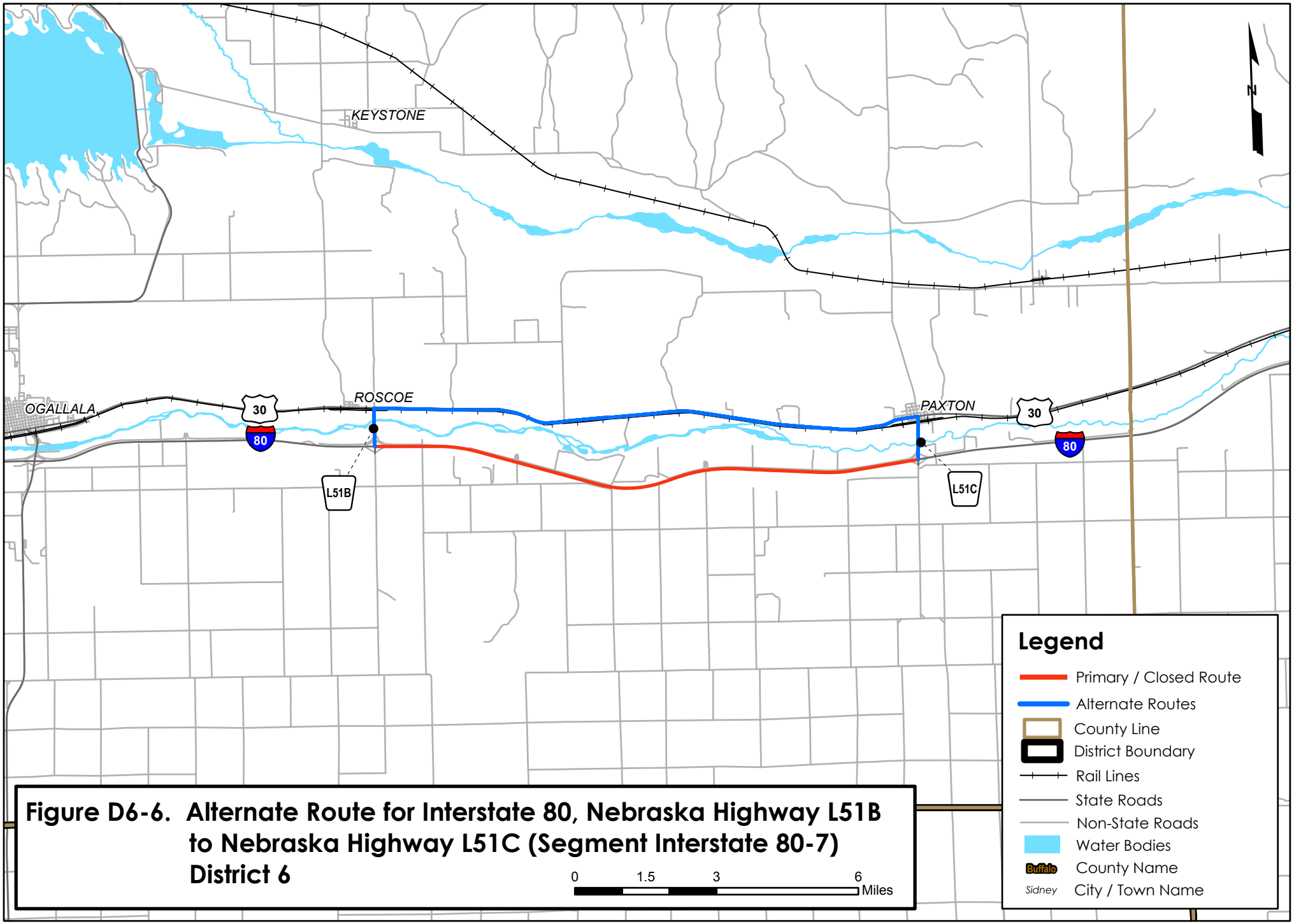


Figure D6-6. Alternate Route for Interstate 80, Nebraska Highway L51B to Nebraska Highway L51C (Segment Interstate 80-7) District 6

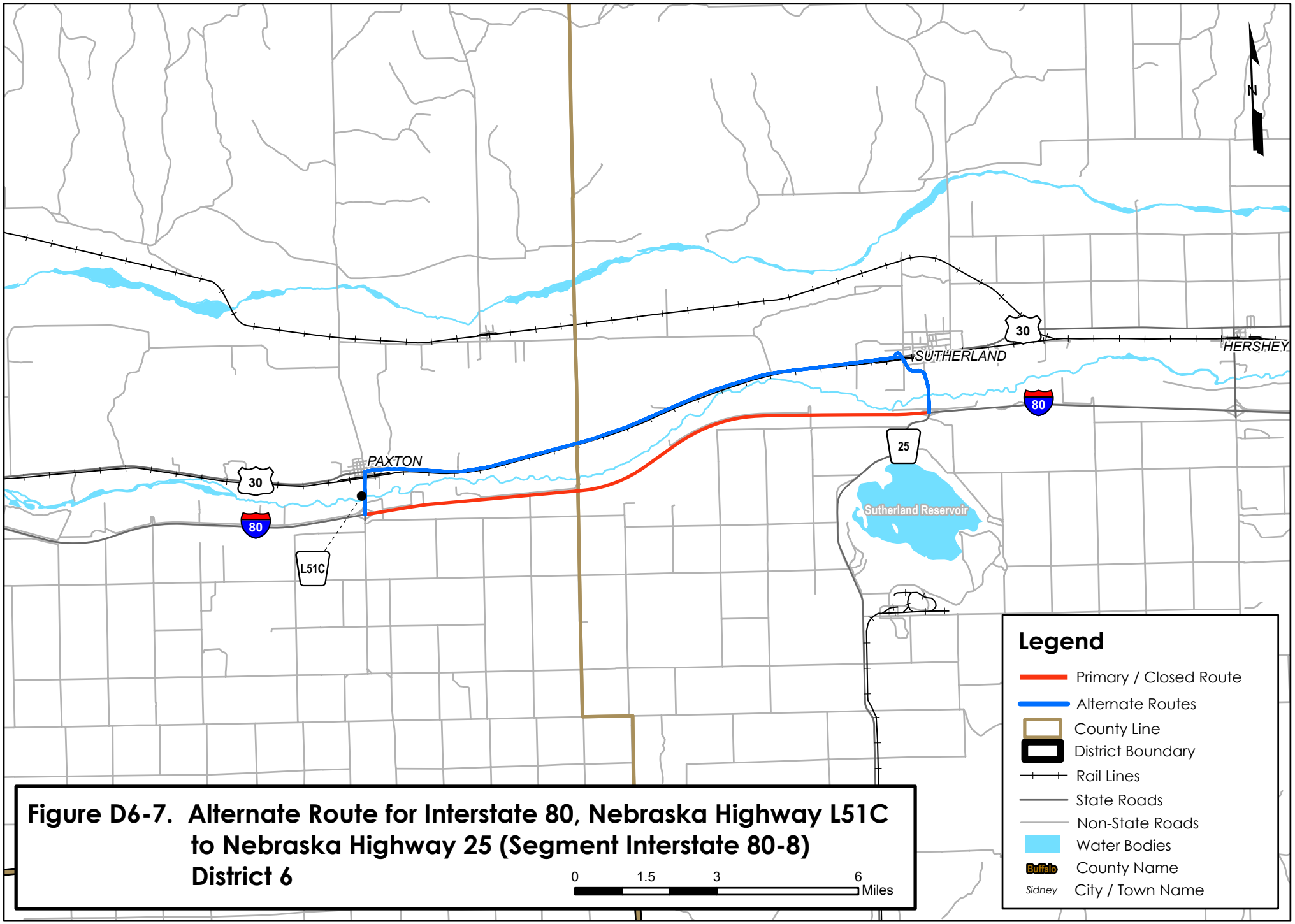


Figure D6-7. Alternate Route for Interstate 80, Nebraska Highway L51C to Nebraska Highway 25 (Segment Interstate 80-8) District 6

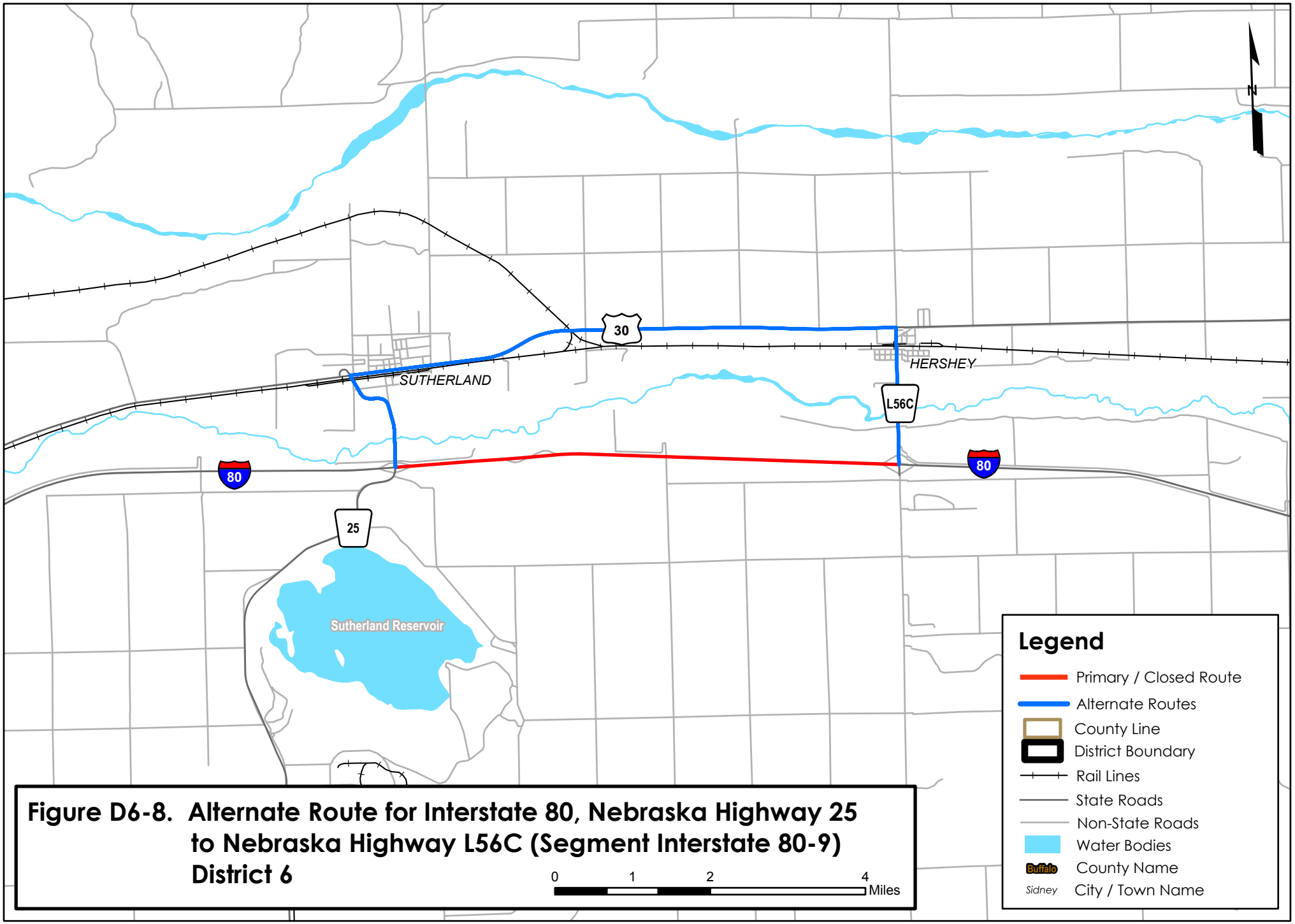


Figure D6-8. Alternate Route for Interstate 80, Nebraska Highway 25 to Nebraska Highway L56C (Segment Interstate 80-9) District 6

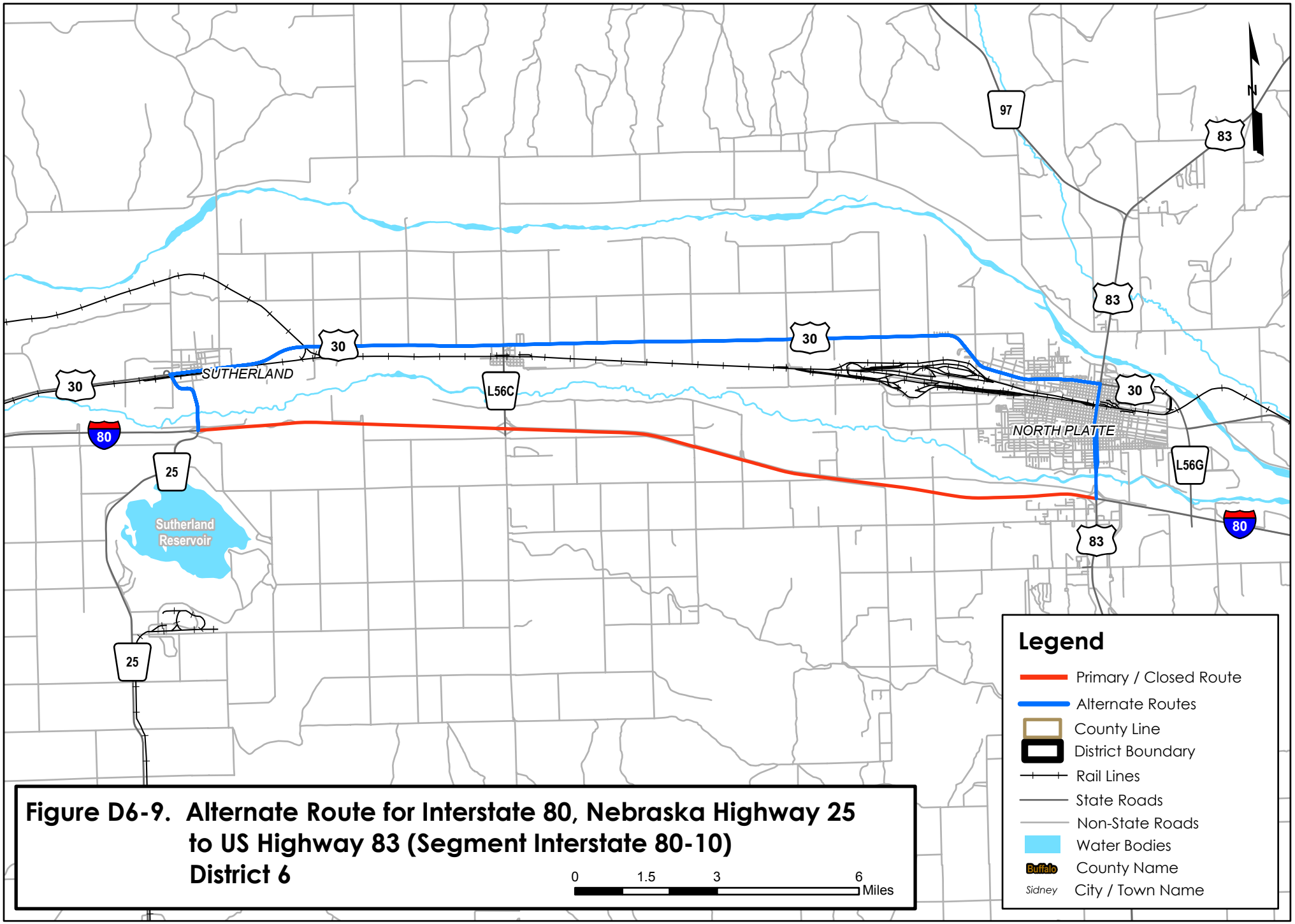


Figure D6-9. Alternate Route for Interstate 80, Nebraska Highway 25 to US Highway 83 (Segment Interstate 80-10) District 6

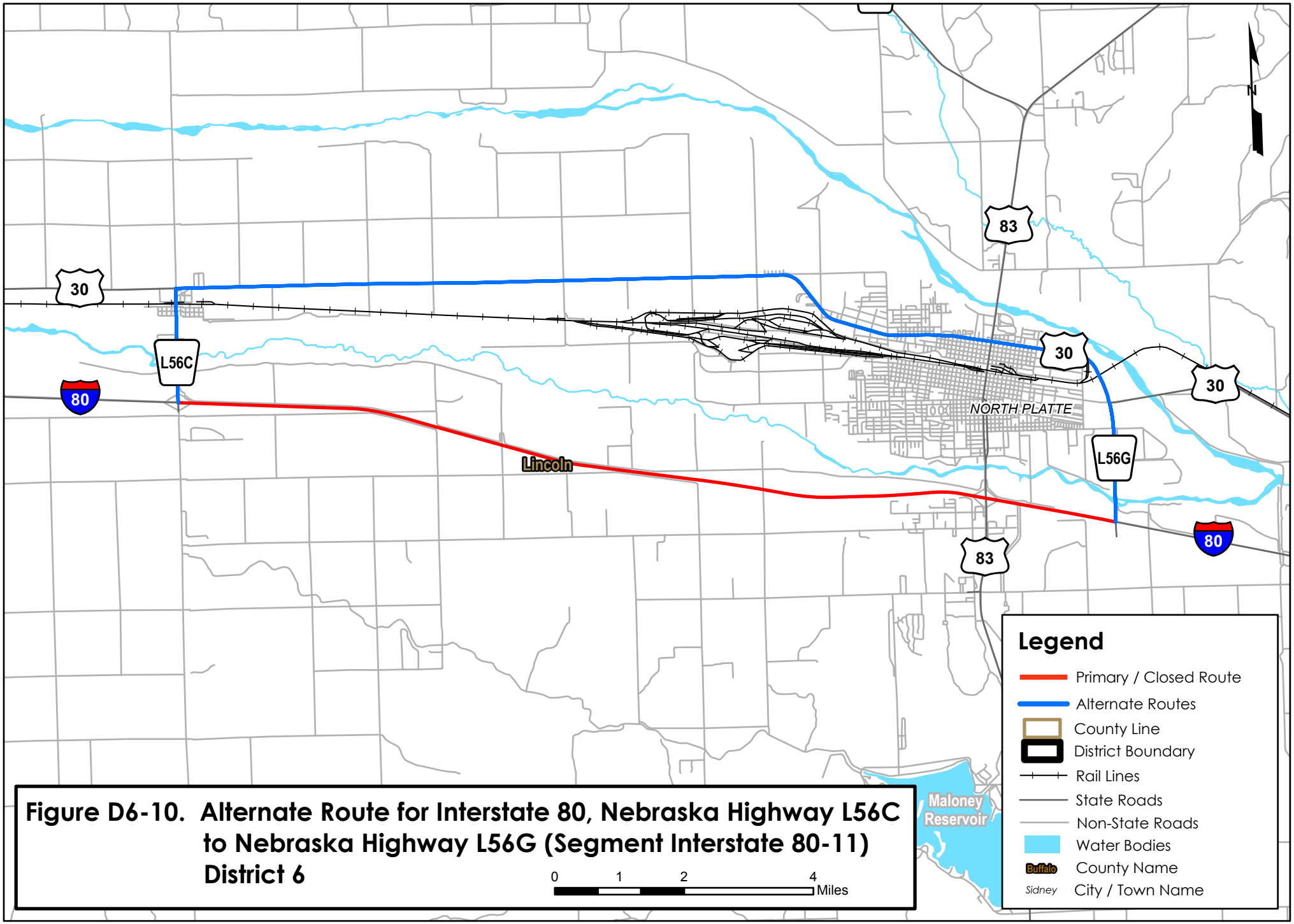


Figure D6-10. Alternate Route for Interstate 80, Nebraska Highway L56C to Nebraska Highway L56G (Segment Interstate 80-11) District 6

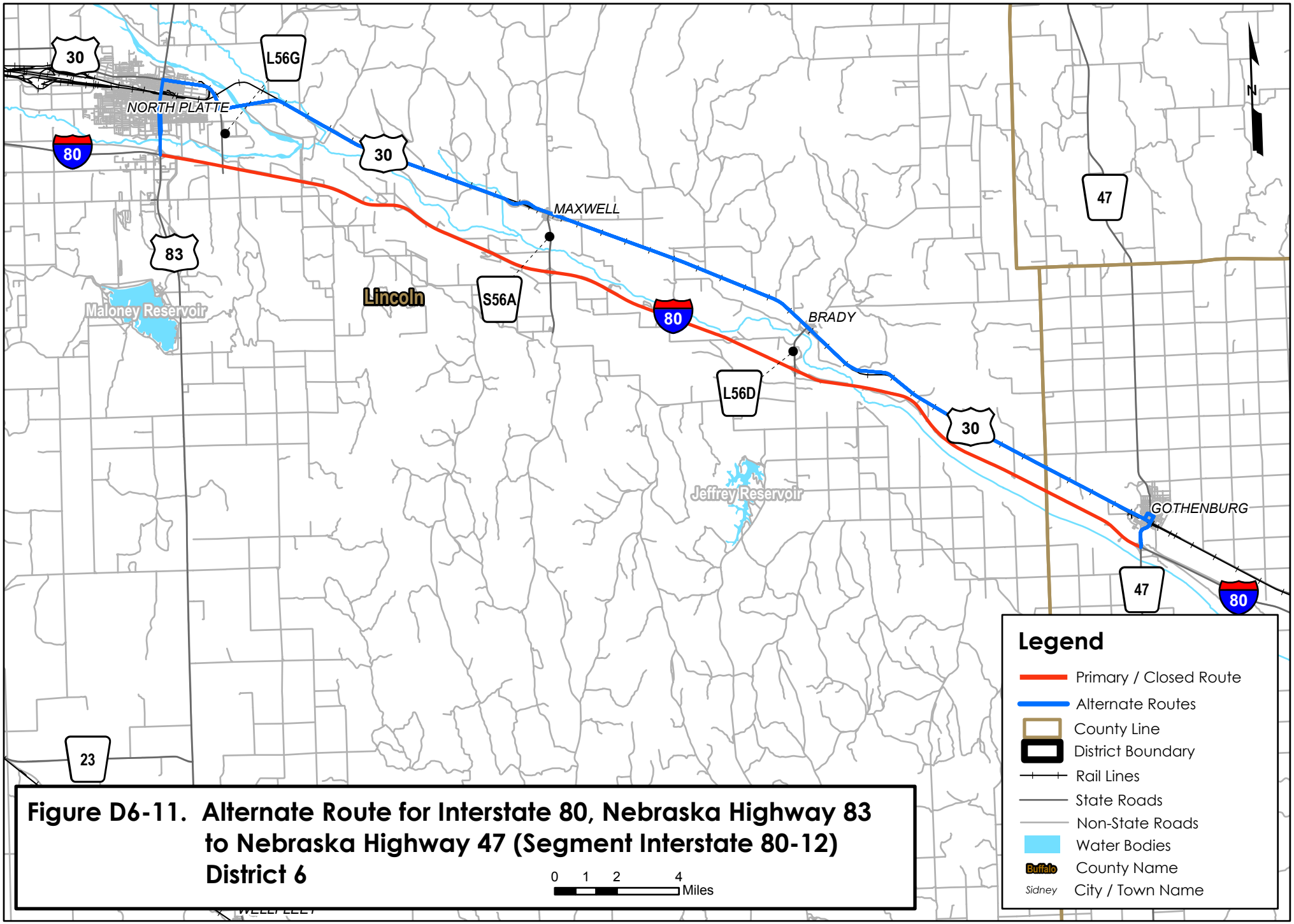


Figure D6-11. Alternate Route for Interstate 80, Nebraska Highway 83 to Nebraska Highway 47 (Segment Interstate 80-12) District 6

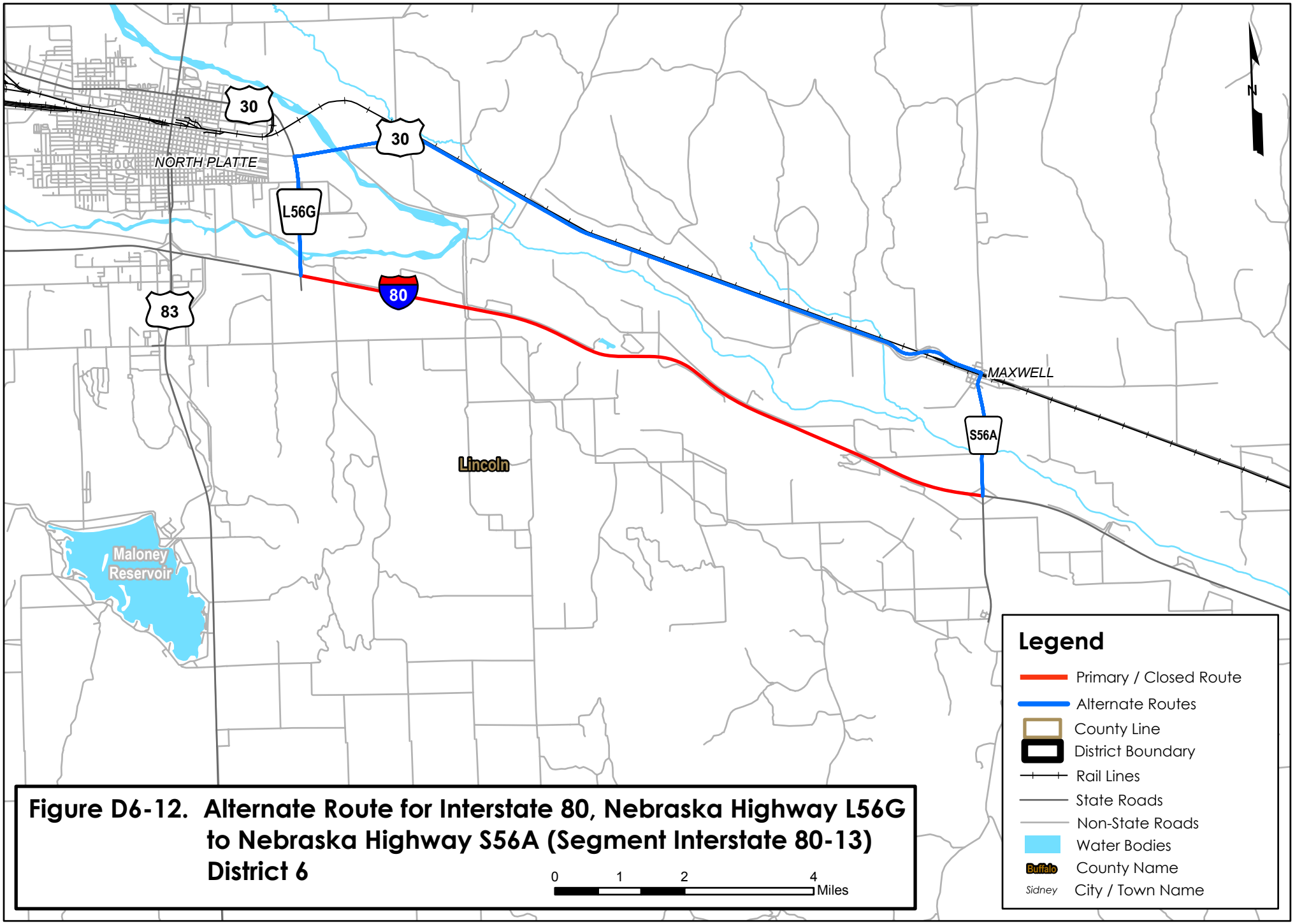


Figure D6-12. Alternate Route for Interstate 80, Nebraska Highway L56G to Nebraska Highway S56A (Segment Interstate 80-13) District 6

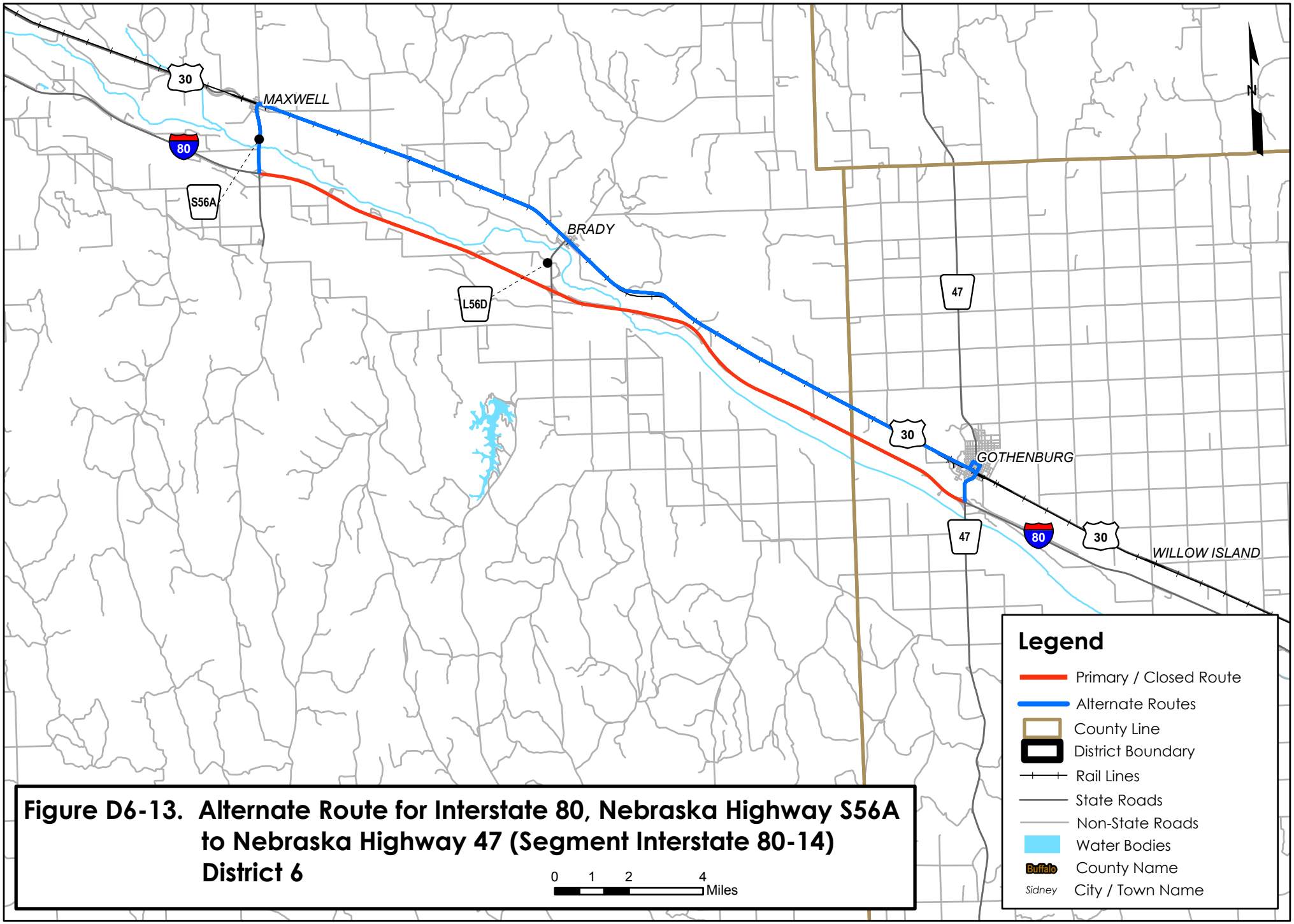


Figure D6-13. Alternate Route for Interstate 80, Nebraska Highway S56A to Nebraska Highway 47 (Segment Interstate 80-14) District 6

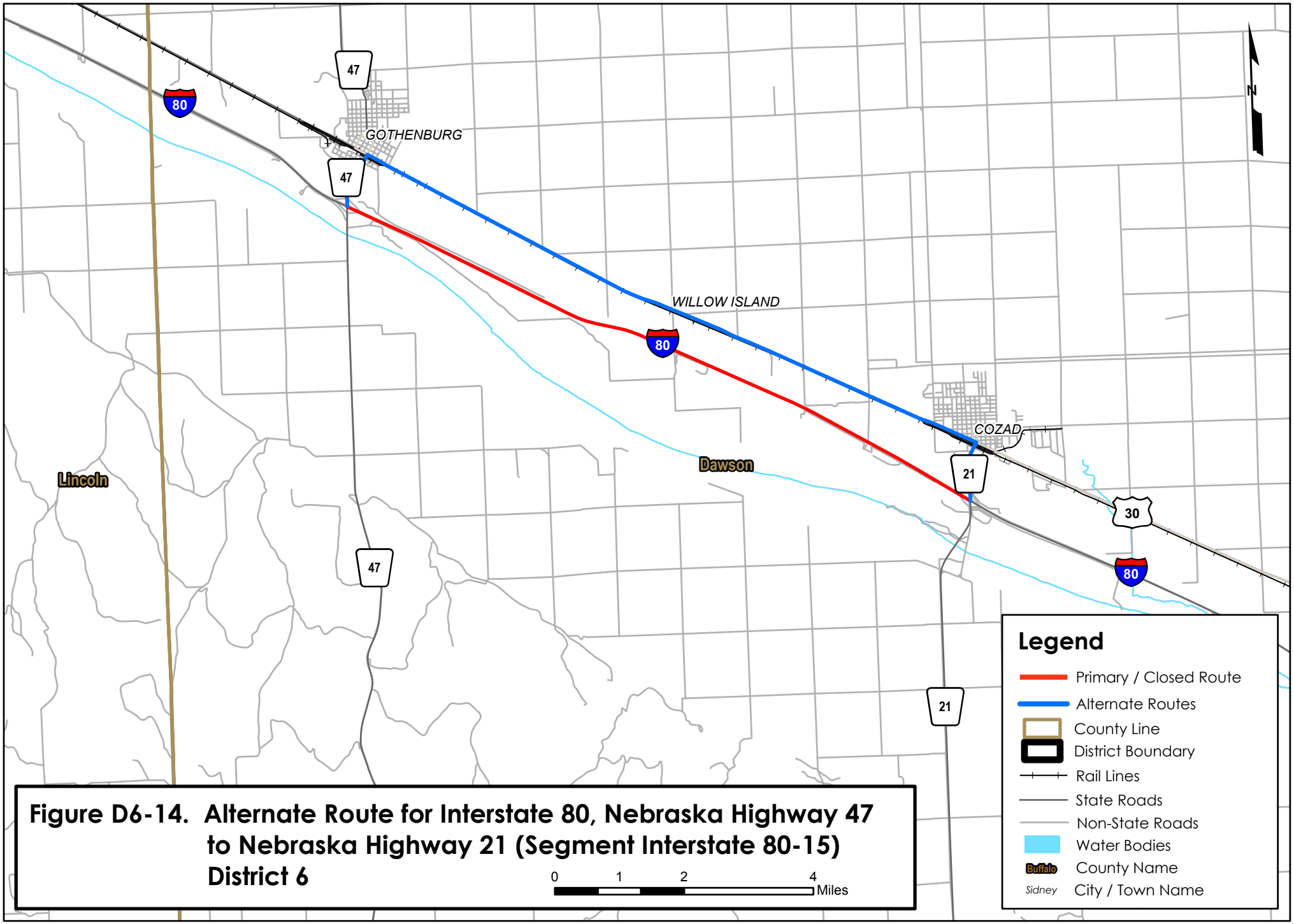


Figure D6-14. Alternate Route for Interstate 80, Nebraska Highway 47 to Nebraska Highway 21 (Segment Interstate 80-15) District 6

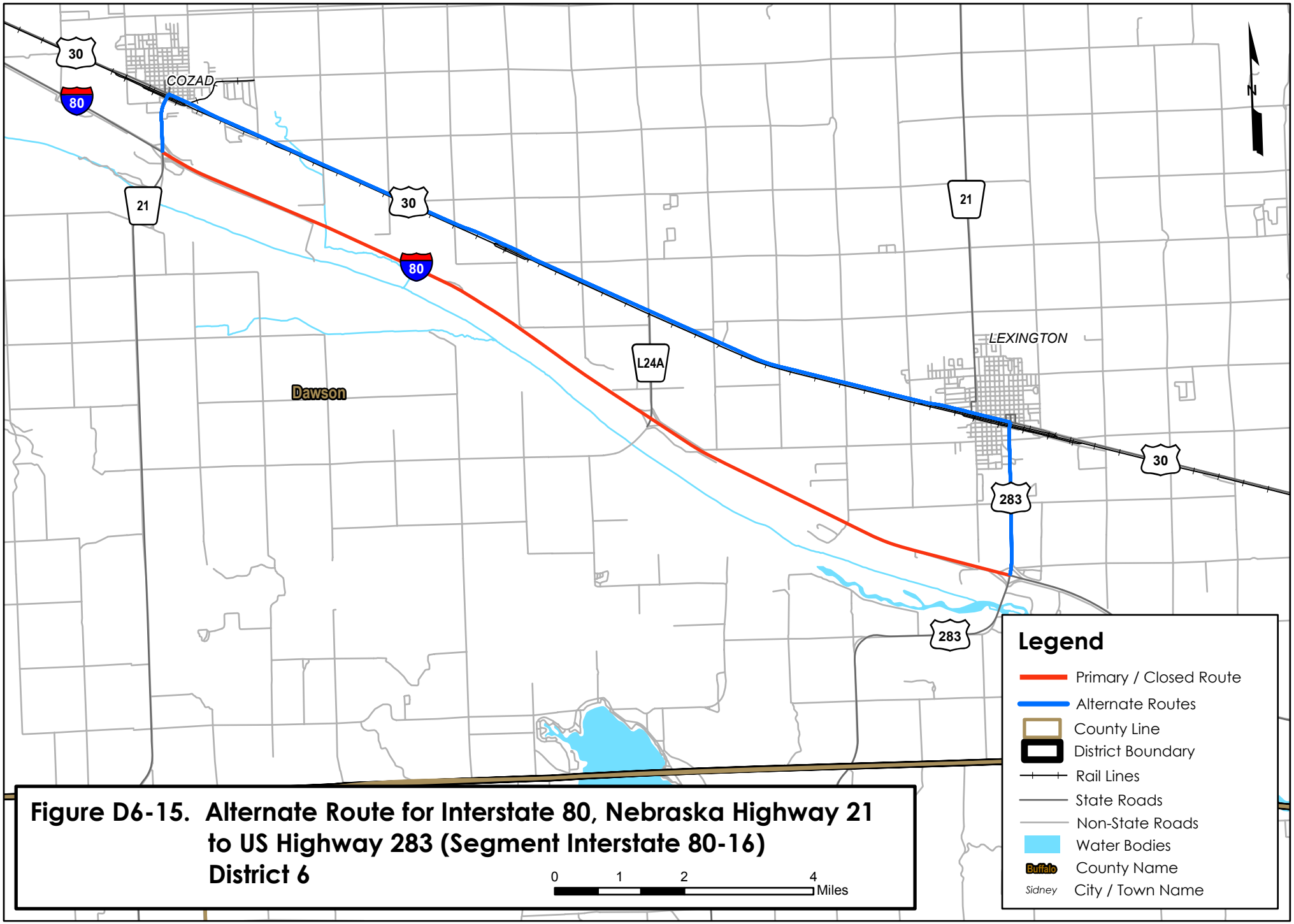


Figure D6-15. Alternate Route for Interstate 80, Nebraska Highway 21 to US Highway 283 (Segment Interstate 80-16) District 6

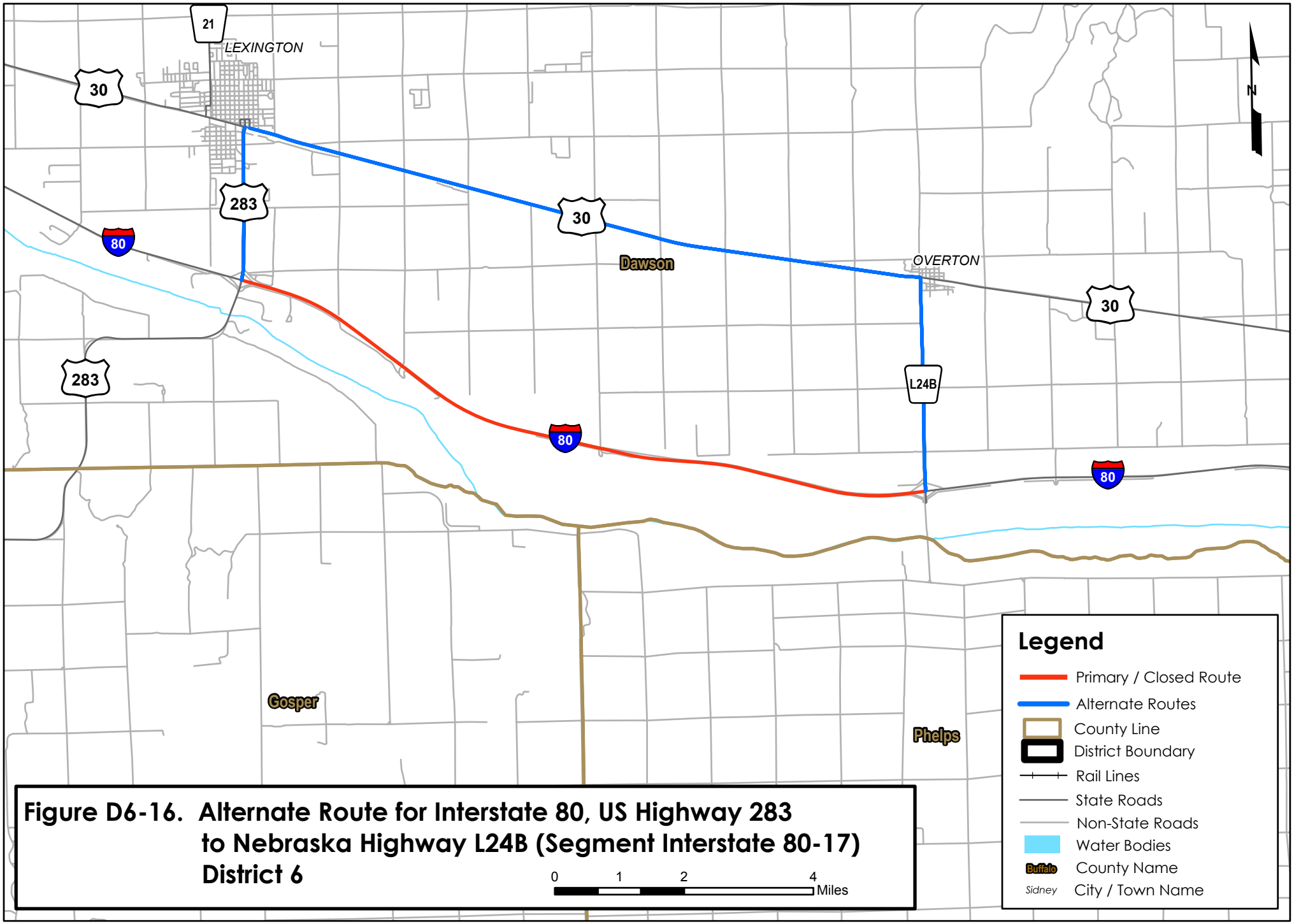


Figure D6-16. Alternate Route for Interstate 80, US Highway 283 to Nebraska Highway L24B (Segment Interstate 80-17) District 6

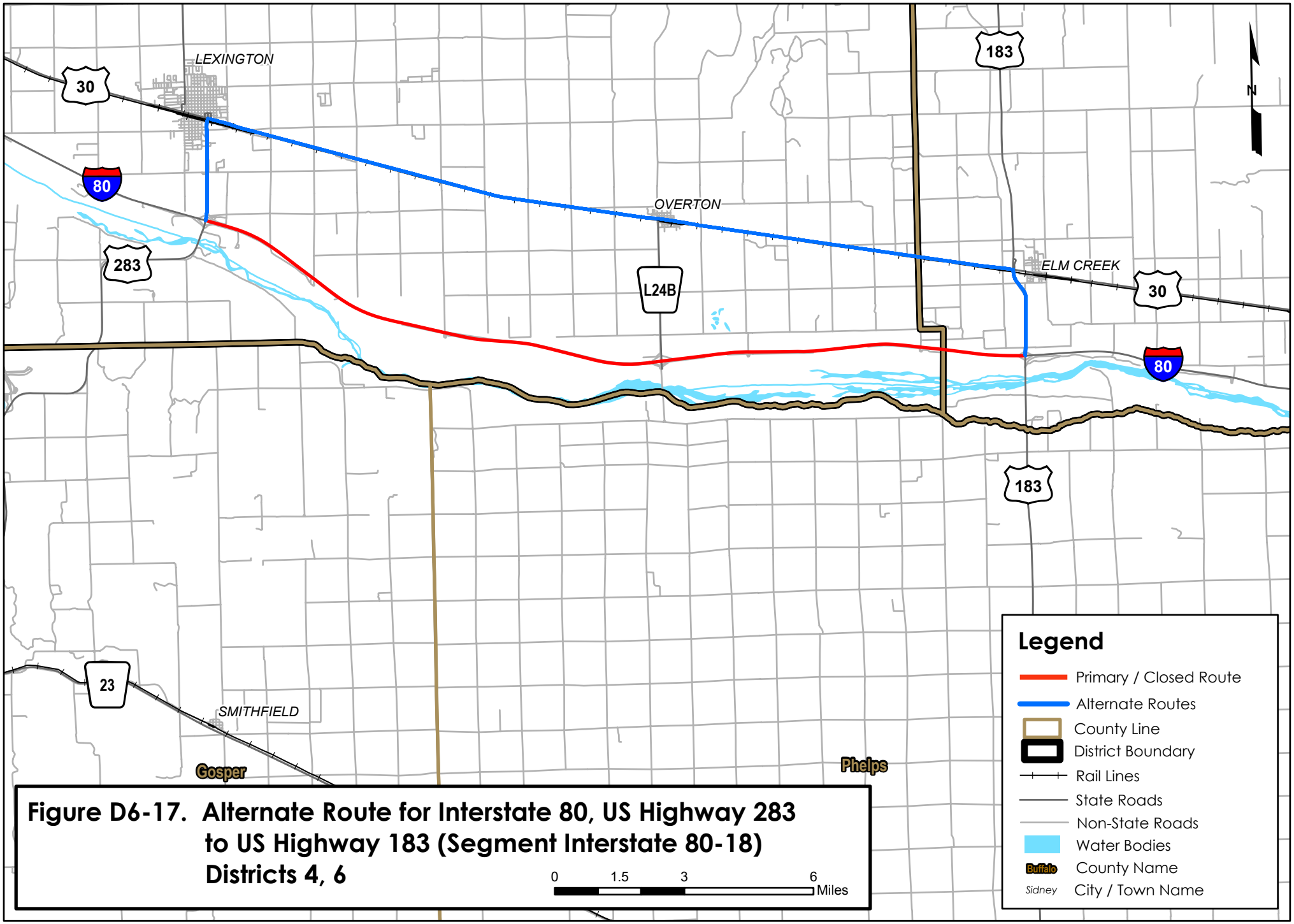


Figure D6-17. Alternate Route for Interstate 80, US Highway 283 to US Highway 183 (Segment Interstate 80-18) Districts 4, 6

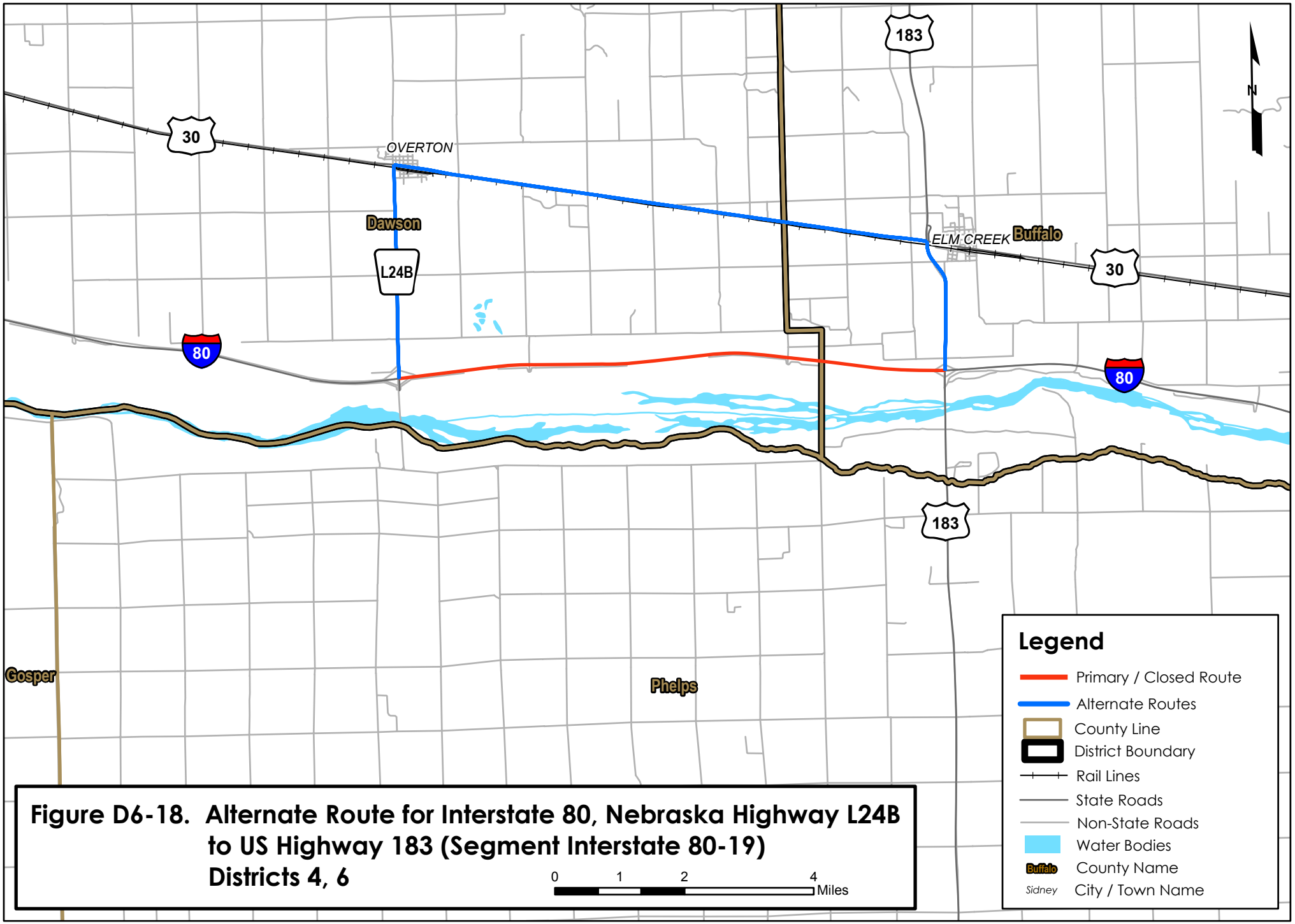


Figure D6-18. Alternate Route for Interstate 80, Nebraska Highway L24B to US Highway 183 (Segment Interstate 80-19) Districts 4, 6