Joint City Council and Planning Commission Discussion

Dayton Arterial Network

May 3, 2022

Agenda

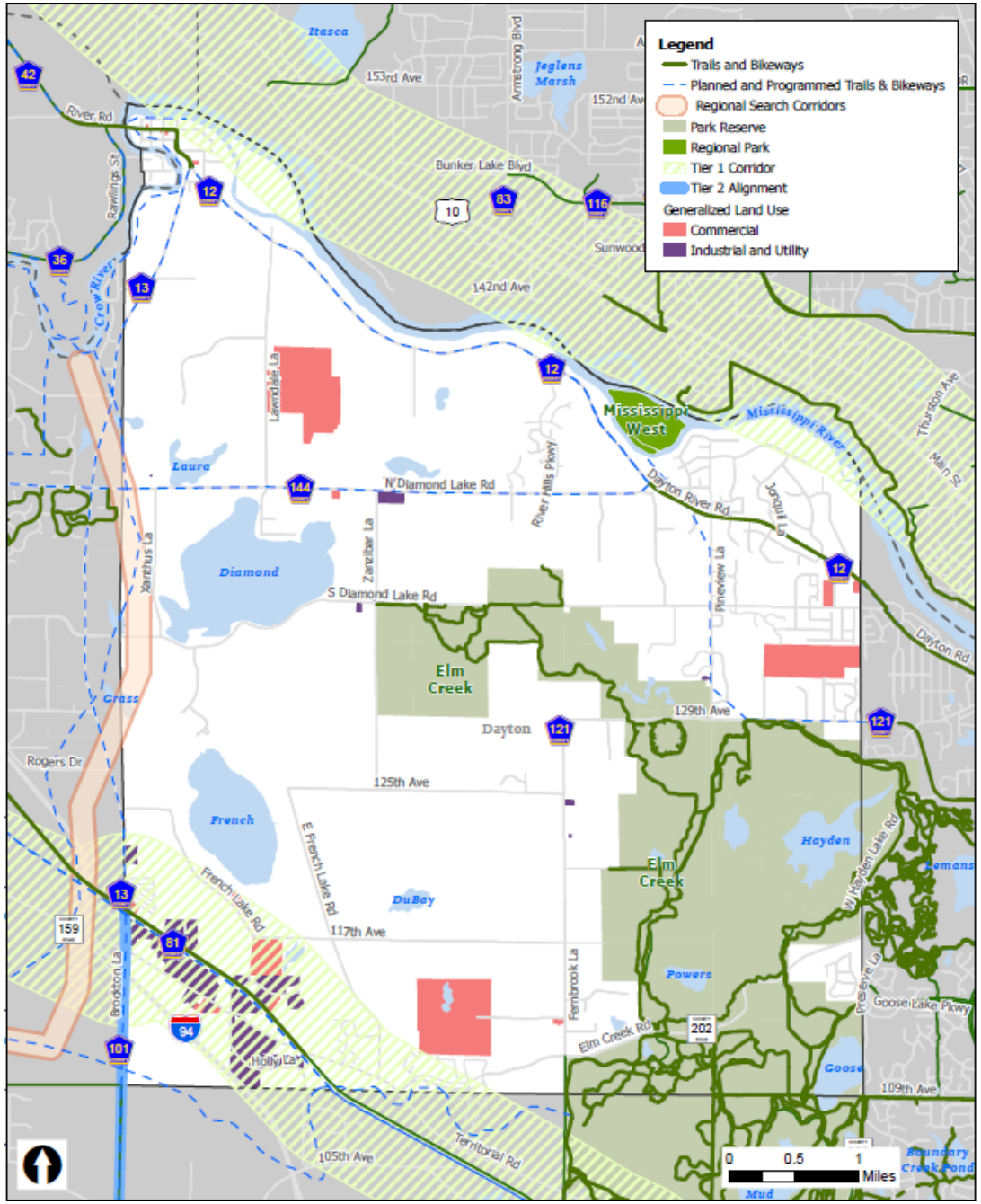
1. Introductions
2. Re-cap Previous Work Session
3. Technical Analysis
   - Development Assumptions
   - Network Assumptions
   - Traffic Flow Patterns
   - Forecast Results
4. Questions/Discussion

Previous Work Session Input

- Questions about traffic patterns/volumes
- Concerns about diagonal routes
- Safety along Fernbrook (CR 121)
- Financial costs to City
- Understand implications of River Xing
- Beyond 2040 – Full Development
- Development considerations

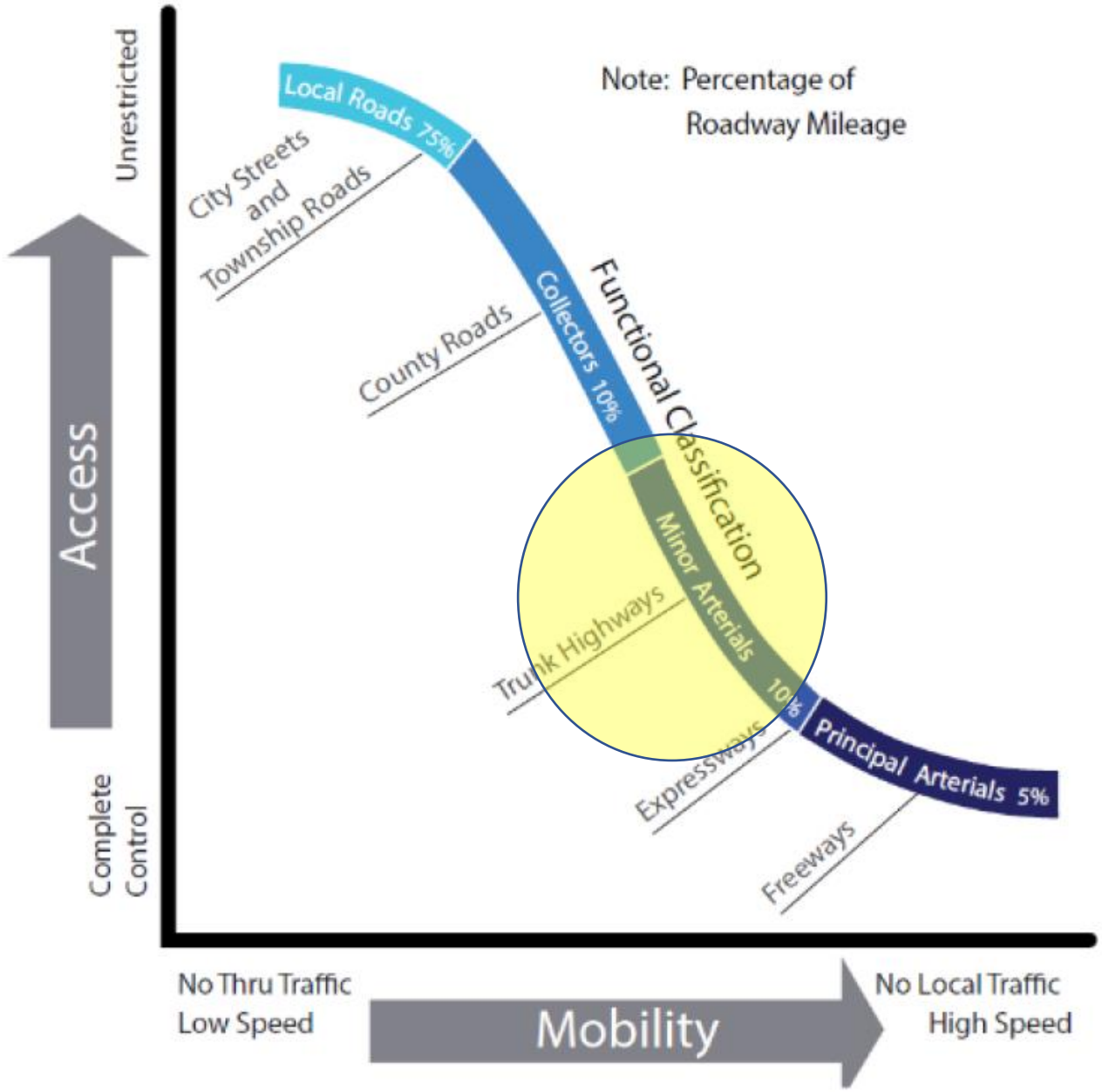
System Context

- Current and future land use (e.g., Elm Creek Park Reserve)
- Environmental and other physical constraints (e.g., Mississippi/Crow River)
- Route spacing, connectivity and continuity (e.g., TH 101, I-94)
- Current network hierarchy and key access points
- Safety, access and modal considerations
- Long-term maintenance and capital costs



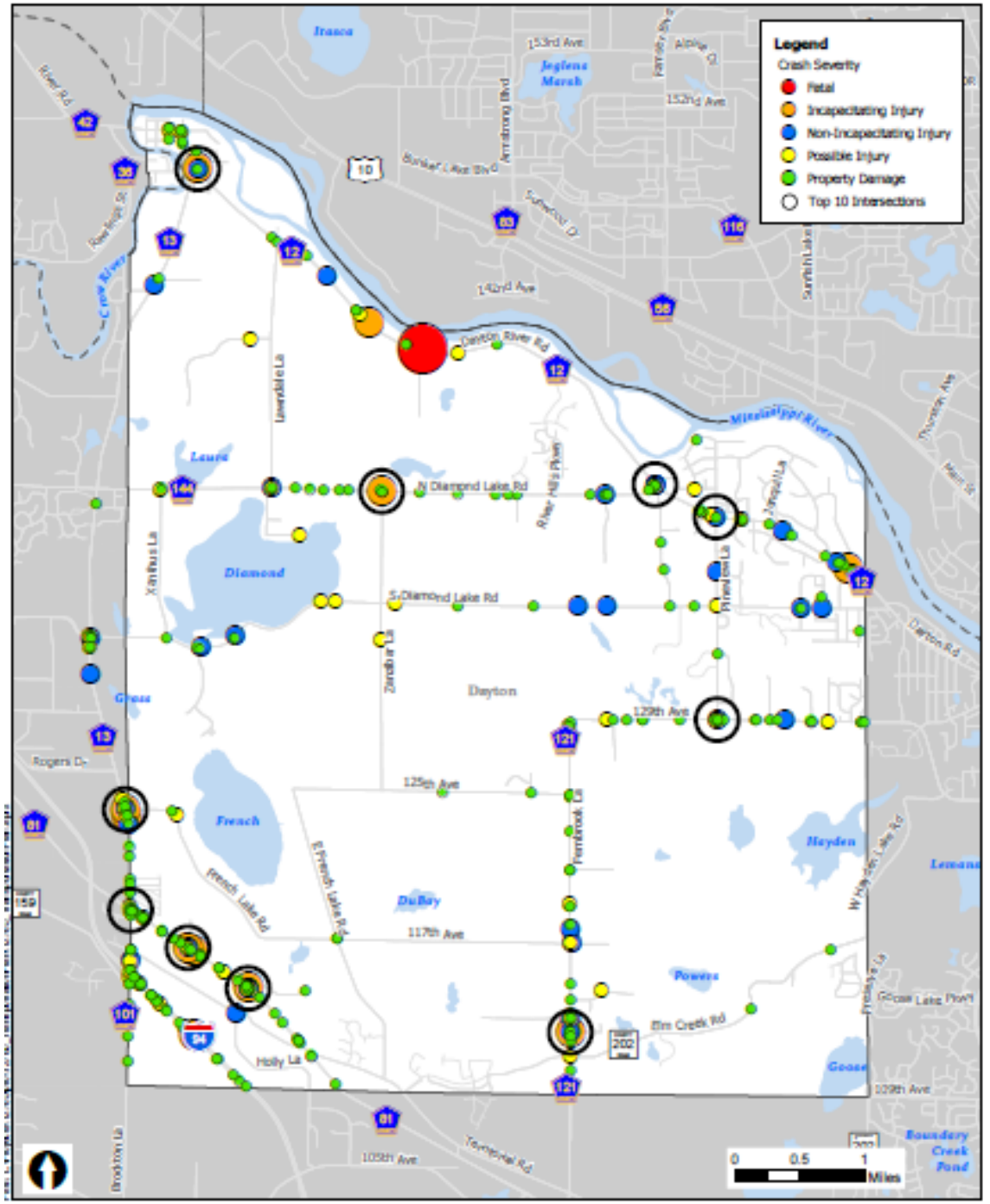
Minor Arterials

- 1-2 mile spacing
- More mobility verses access
- Full Access ¼ to ½ mile
- Continuity of route
- Connectivity of route
- Typically state or county
- Eligibility for federal funding



2011-2015 Crash Information

- Crashes are usually related to volume and level of access as well as type of access
- Crash severity usually goes up with speed as well as severity of conflict (i.e., head-on and right-angle)
- Facility type can help separate conflict areas



Next 20 yrs Regional Growth

- 20% growth in population
- 23 % growth in households
- 17% growth in employment

Regional growth in development, population and employment will reshape communities on both sides of the river. This means increased flow of people and goods across the river in an area where crossings are limited.

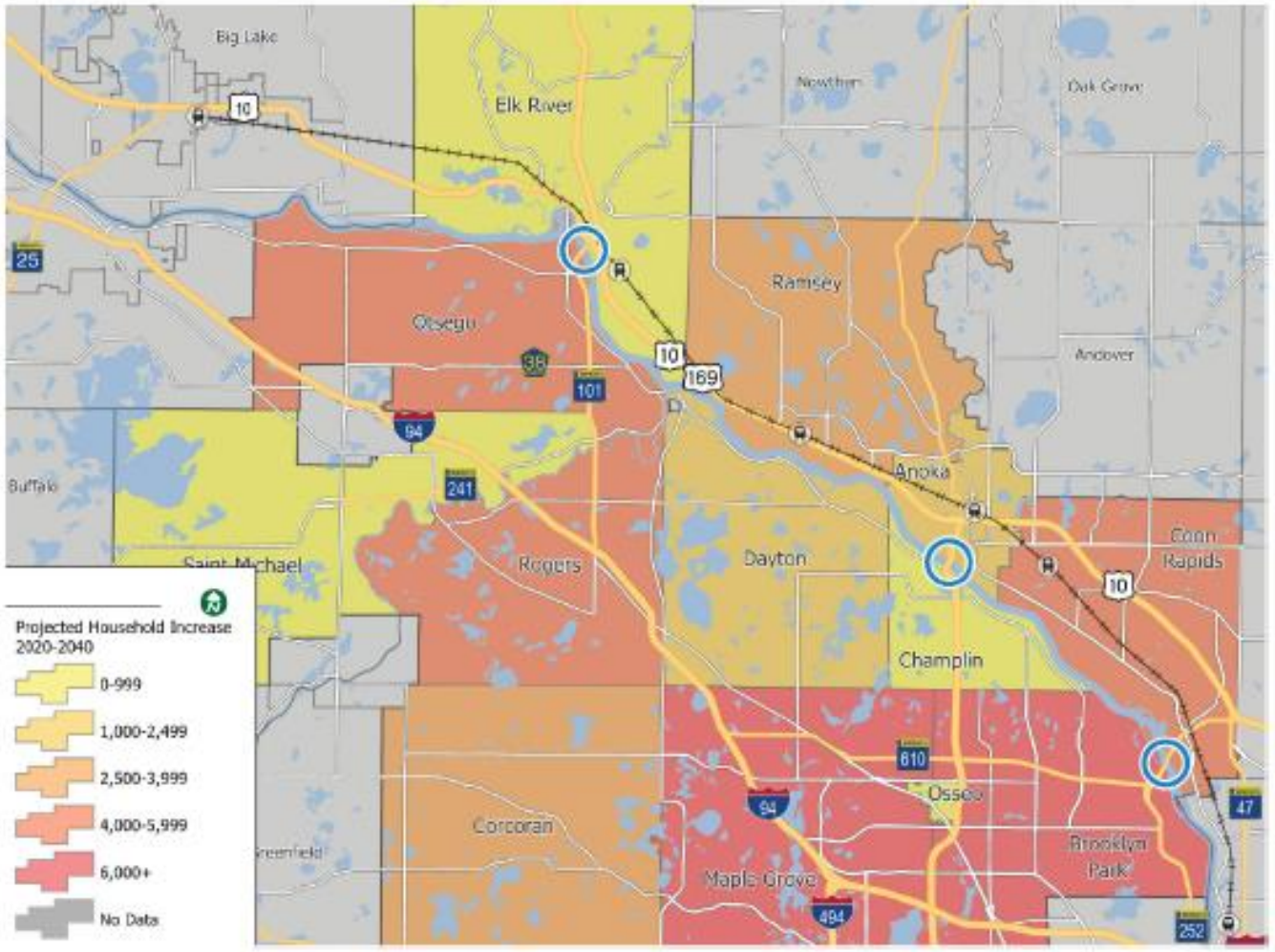
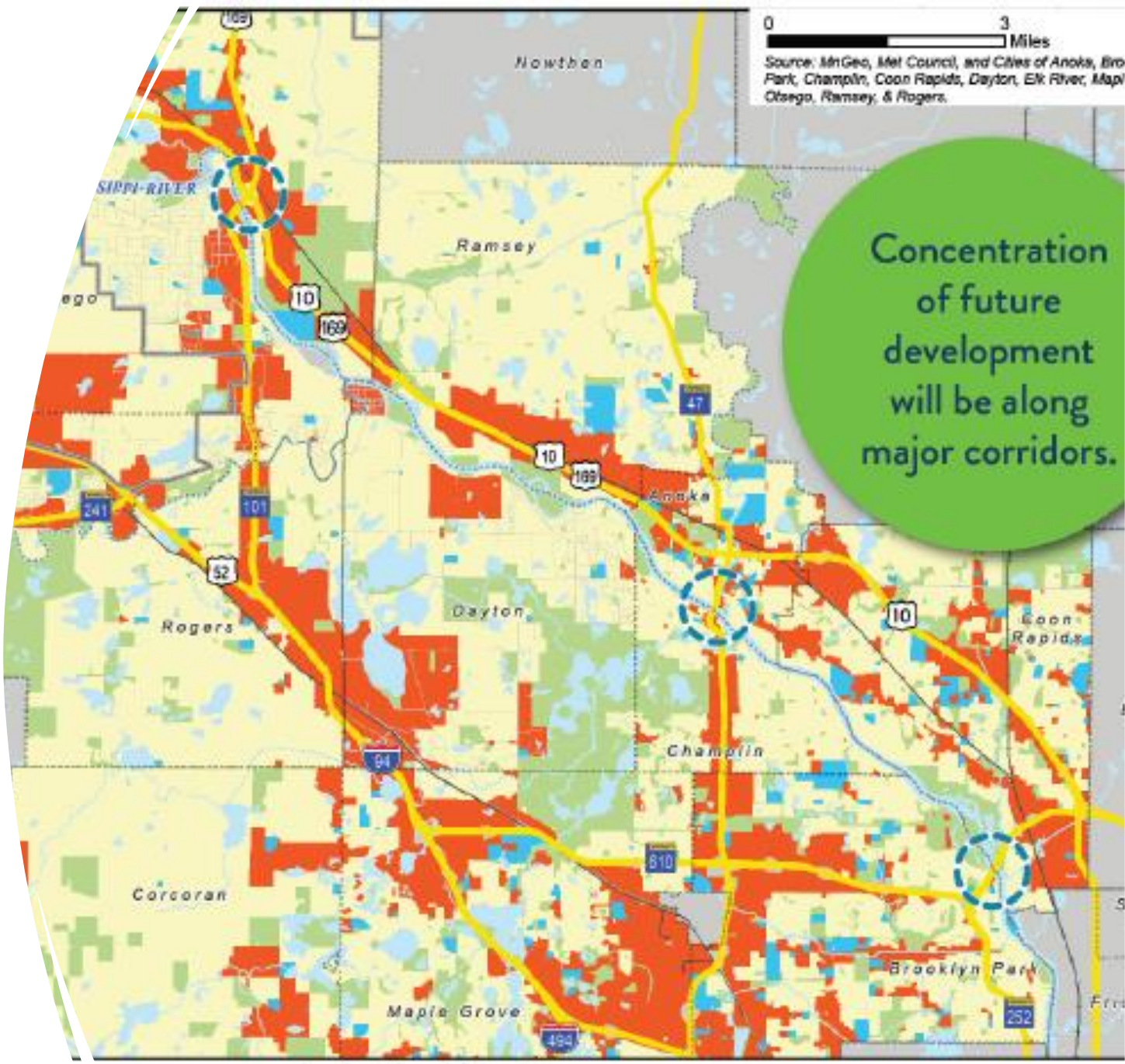


Image shows heat map displaying density of growth in the northwest metro area on both sides of the river.

Growth Concentrations

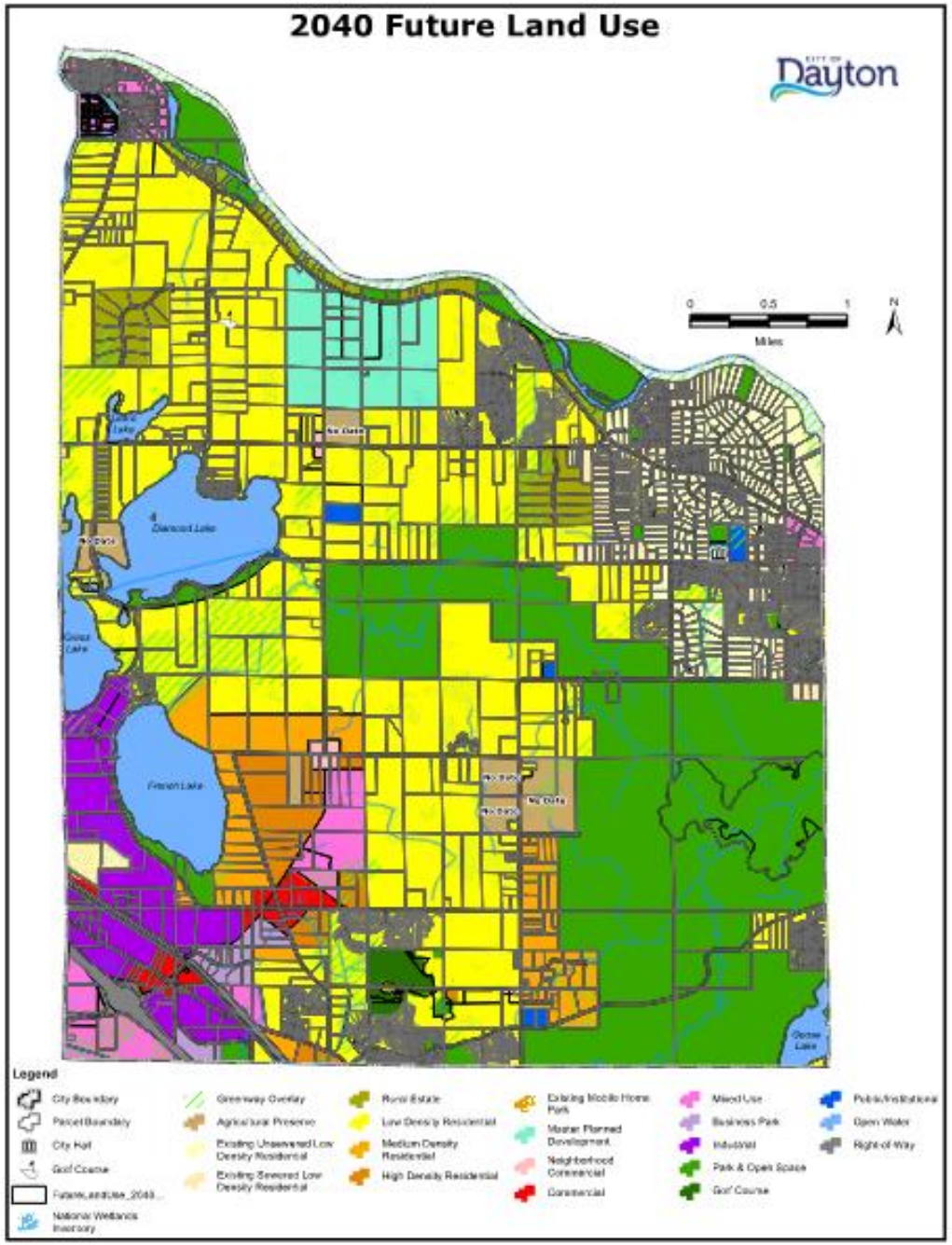
- Along key corridors
- For Dayton…key areas
  - TH 101
  - I-94
  - TH 610



s metro area on both sides of the river.

2040 Dayton Land Use Plan

- Larger concentration of jobs and business in SW portion of City
- Residential through central portion of City
- Elm Creek Park Reserve in SE area

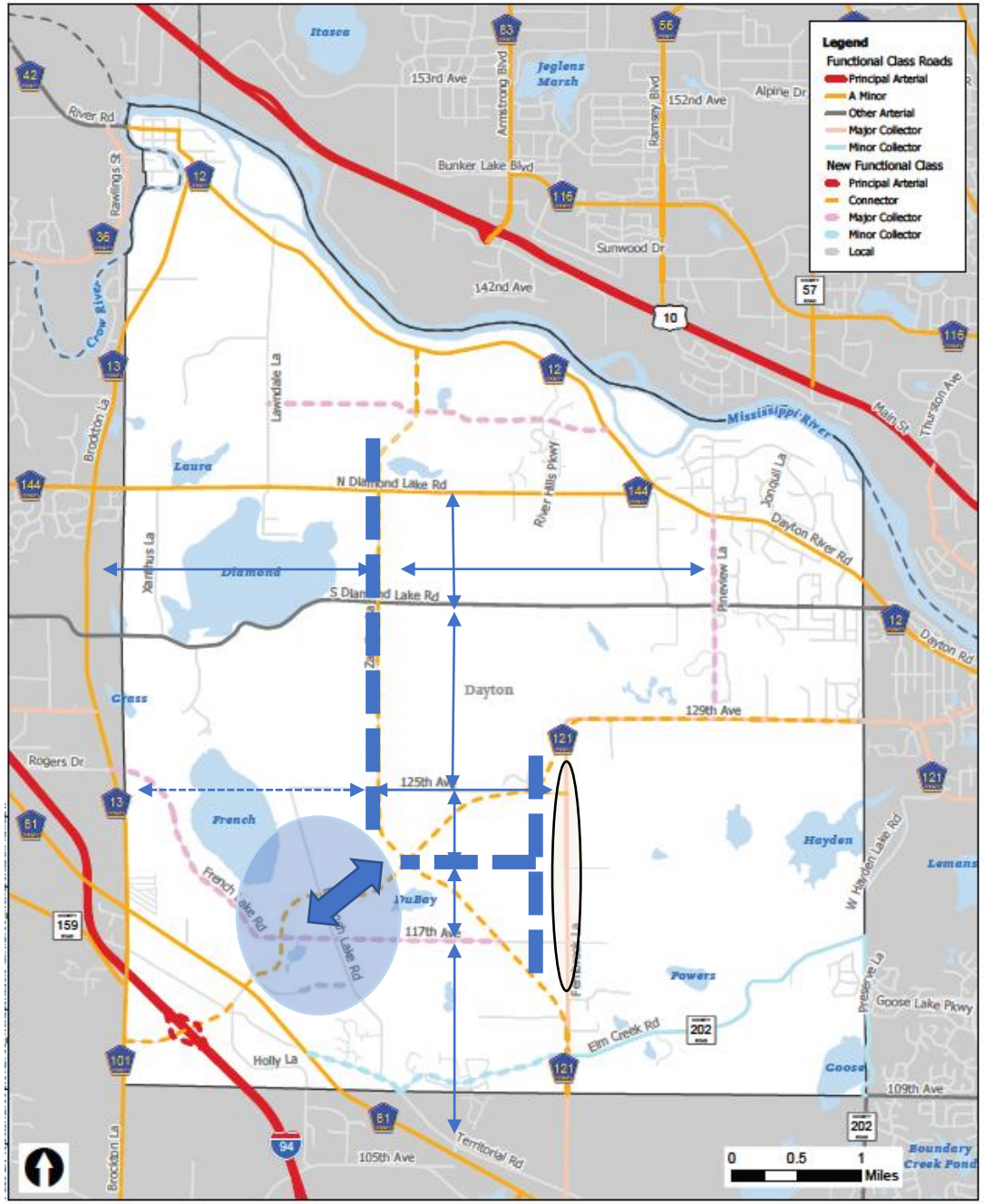


New Look at System Plan

- Limit diagonal orientation
- Promote community connectivity
- Mitigate future safety issues
- Balance traffic flows; spacing of network
- Manage access points
- Limit impacts to natural resources

System Thoughts

- Natural barriers to connectivity
- Limit high-volume, high-speed traffic mixed with access
- Orient more to grid pattern

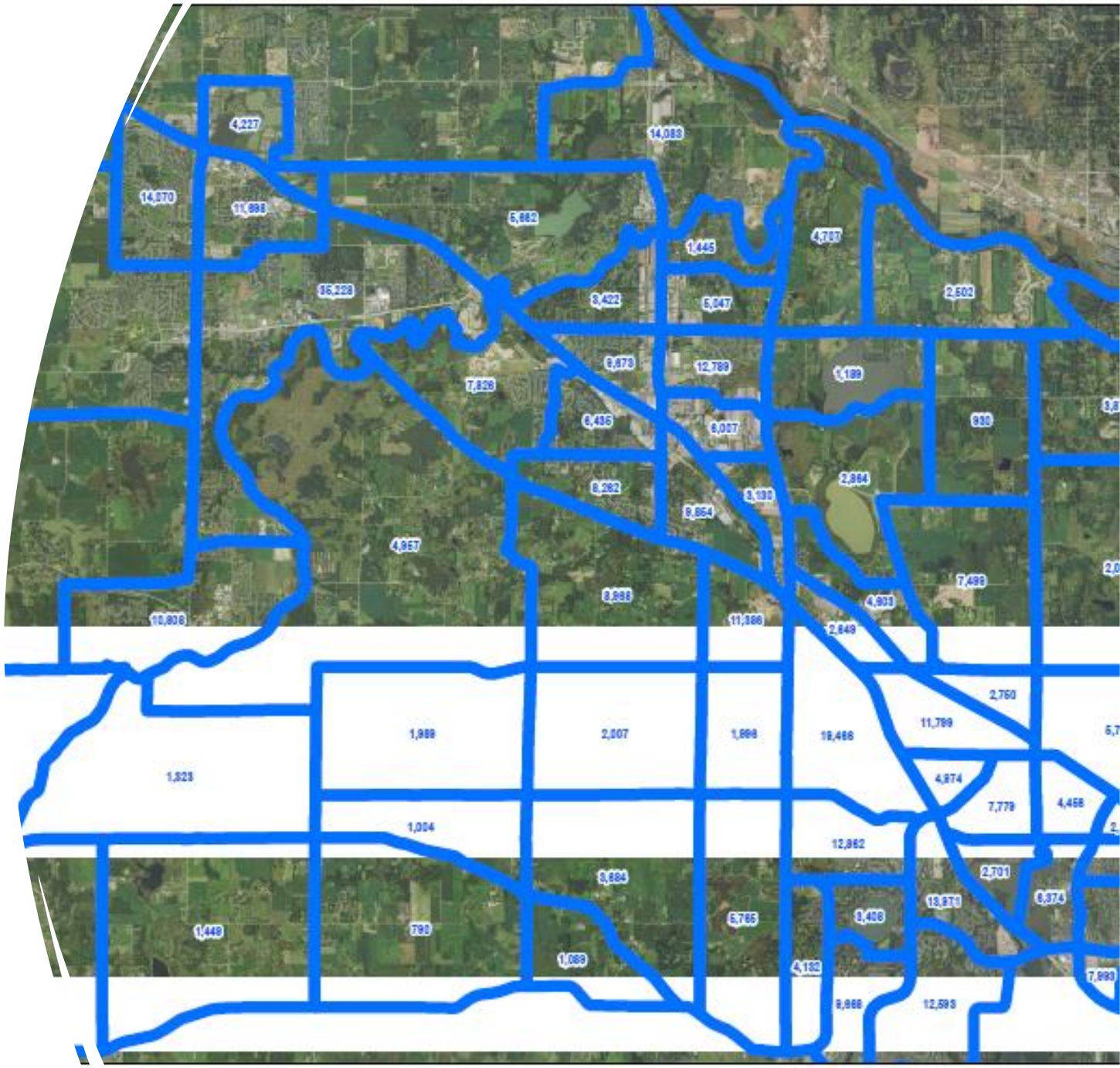


SRF **Future Functional Class**
Dayton Transportation Plan Update
City of Dayton

Figure 2B

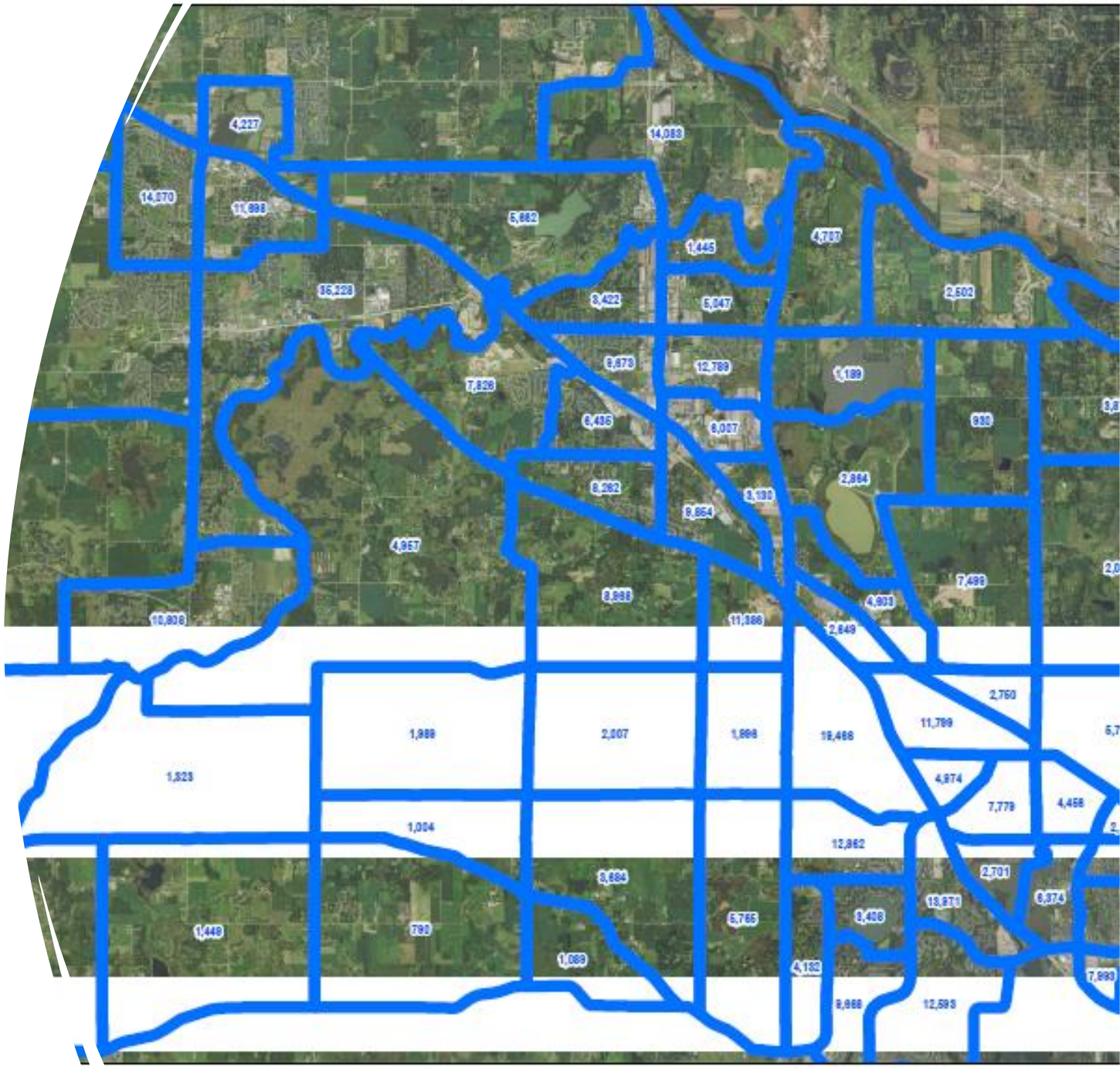
Regional Model

- Best for Arterial System
- Uses demographic info
- Assignment by TAZ
- Travel logs – user behavior
- Demographics and trends
- Runs travel time paths based on Origins and destinations



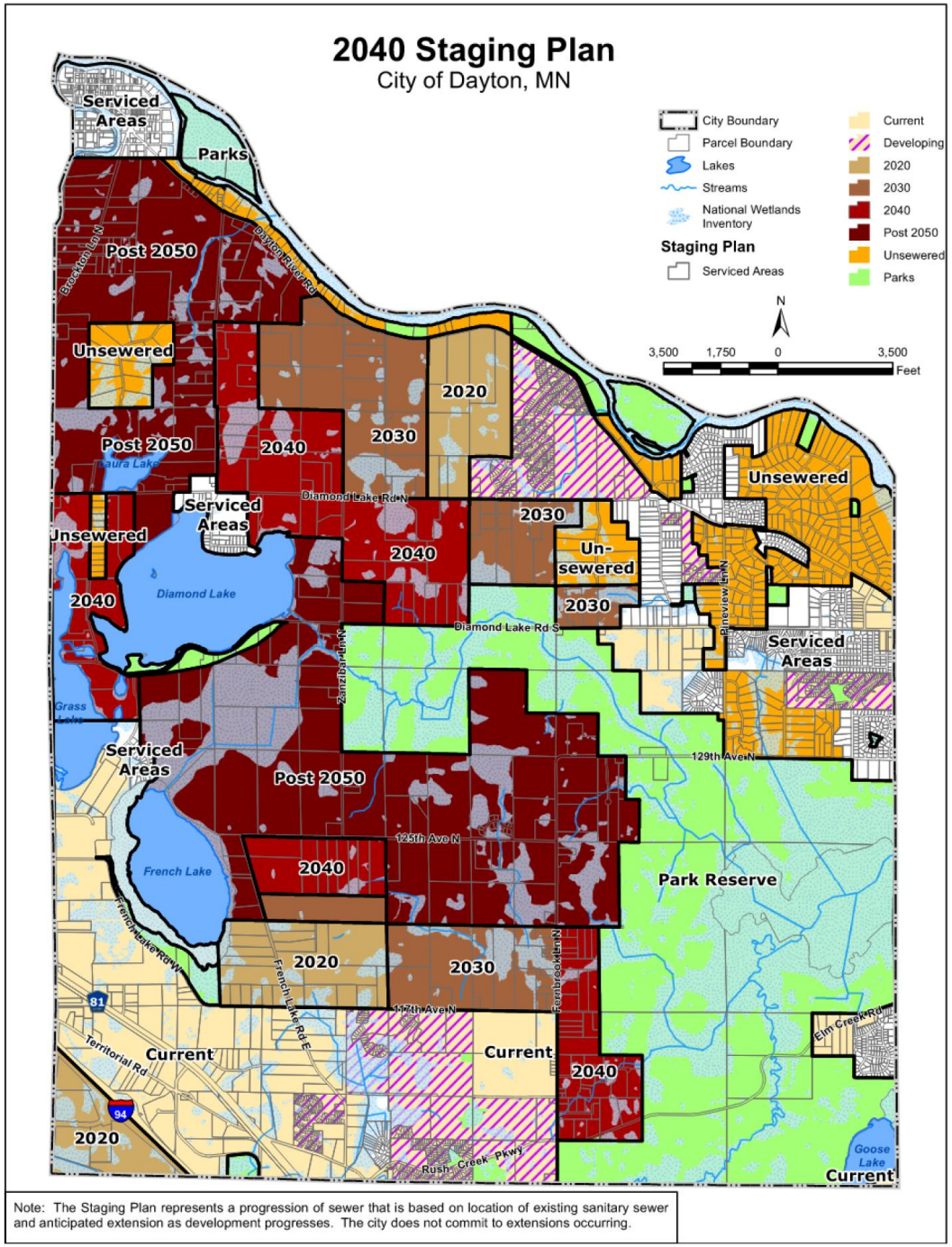
Regional Model Assumptions

- Includes Fletcher Bypass
- Includes CR 117 Extension
- Includes CSAH 30 to TH 610
- Added E-W link between 125th and 117th
- Reduced size of zones in developing area of Dayton



Land Use Assumptions

- 2040 Forecast = 2020, 2030, 2040 development areas
- Full Build = Post 2050 development area



2040 Socioeconomic #s (New vs Old)*

City / Township Name	2040 POPULATION DIFFERENCE	2040 HOUSEHOLDS DIFFERENCE	2040 Non-Retail DIFFERENCE	2040 RETAIL DIFFERENCE
Albertville city	(2,394)	(891)	(959)	(519)
Anoka city	17	18	(464)	421
Champlin city	22	(12)	(308)	328
Corcoran city	(34)	(15)	(12)	21
Elk River city	(7,280)	(2,761)	(4,608)	(592)
Hanover city	(727)	(256)	(295)	(46)
Maple Grove city	4,493	1,484	850	(2,529)
Monticello city	(4,305)	(1,687)	(2,210)	(698)
Monticello township	(1,023)	(386)	(1,016)	(17)
Otsego city	(4,472)	(1,626)	(856)	(304)
Ramsey city	4,417	507	554	249
Rogers city	(302)	(123)	(490)	510
St. Michael city	(4,865)	(1,870)	(1,430)	(832)
TOTAL:	(16,453)	(7,618)	(11,244)	(4,008)

* This modification was made in 2020 after last round of regional planning (Met Council)

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Reduction of 470,000 Trips

* Change since last round of regional planning (Met Council) - beginning 2020

Trip Patterns

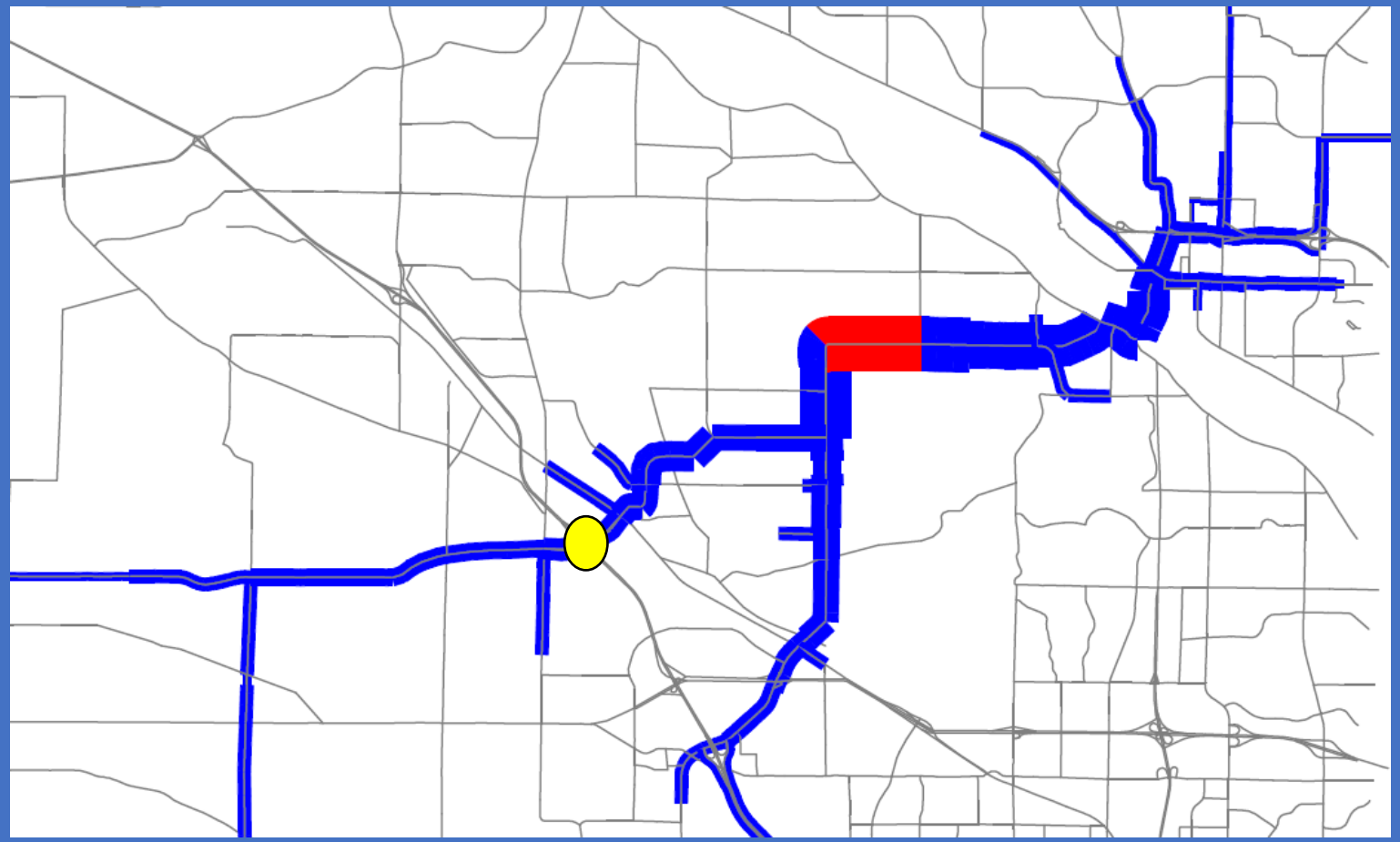
Who is using these routes?

- Selected-link analysis – captures general travel patterns through a point or segment of road

129th Trip Pattern

Who is using these routes?

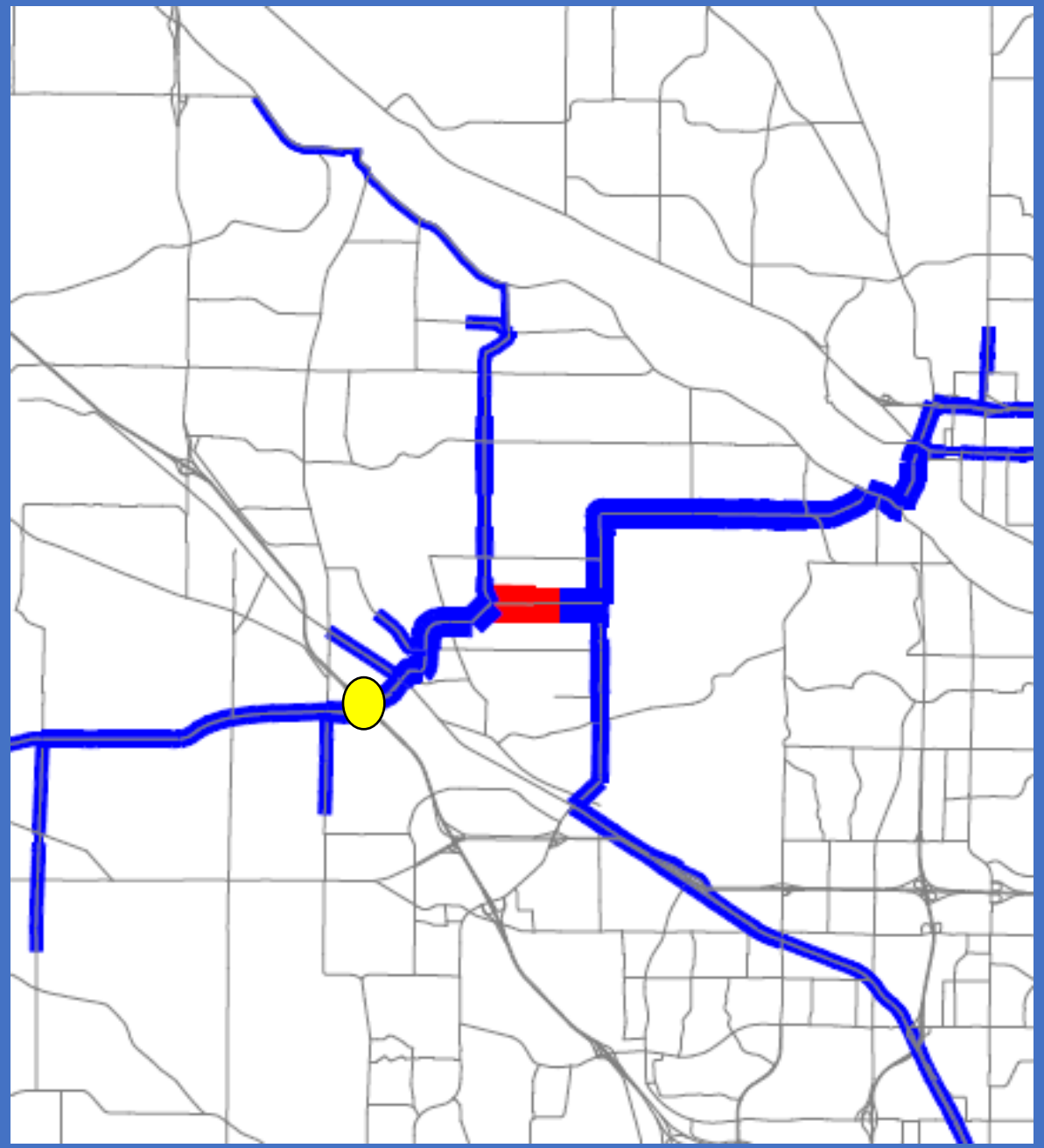
- North – South Pattern
- Southwest – Northeast Pattern



East – West Link Trip Pattern

Who is using these routes?

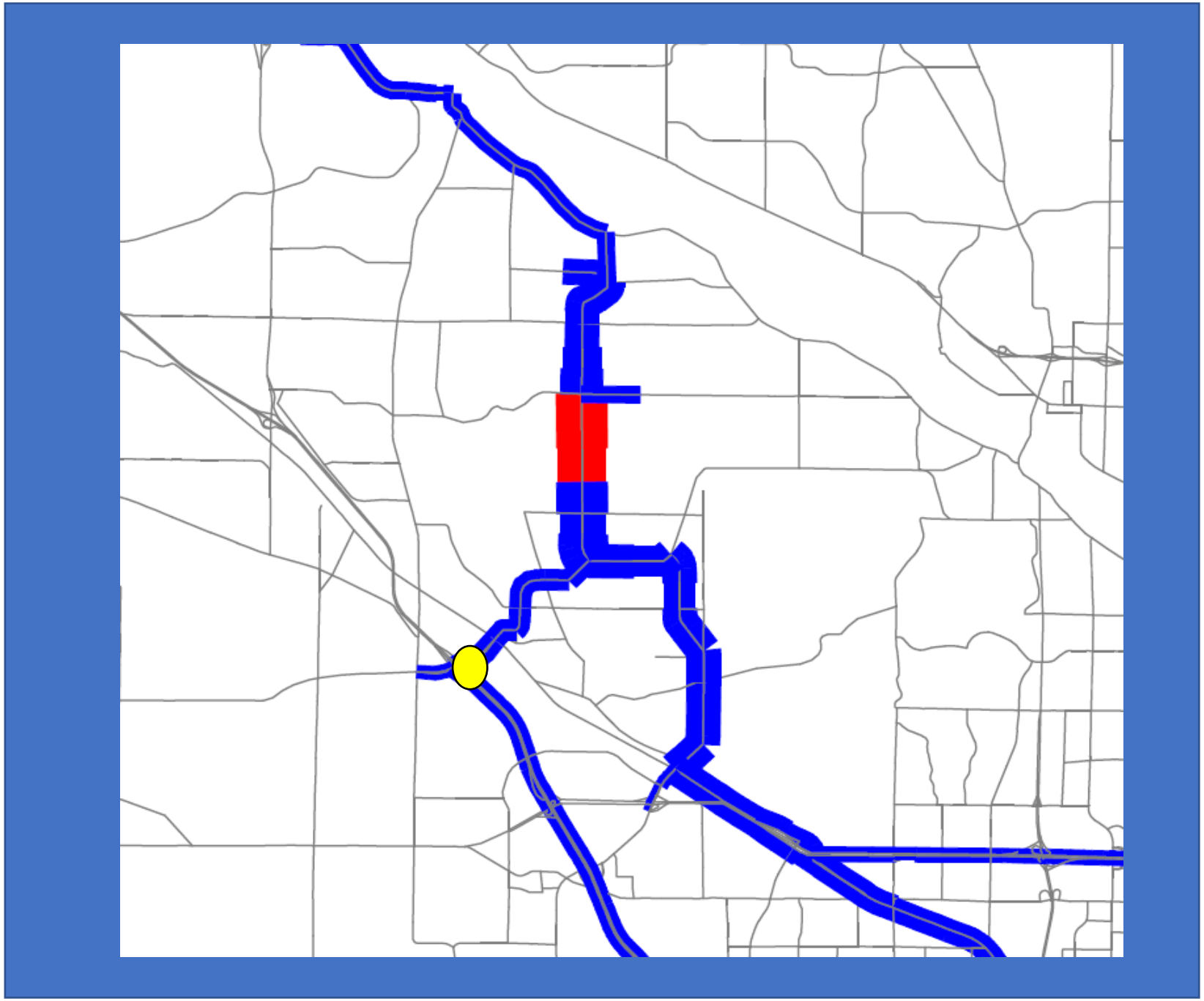
- Northwest – Southeast Pattern
- Southwest – Northeast Pattern



Zanzibar Trip Pattern

Who is using these routes?

- Northwest – Southeast Pattern
- North – South Pattern

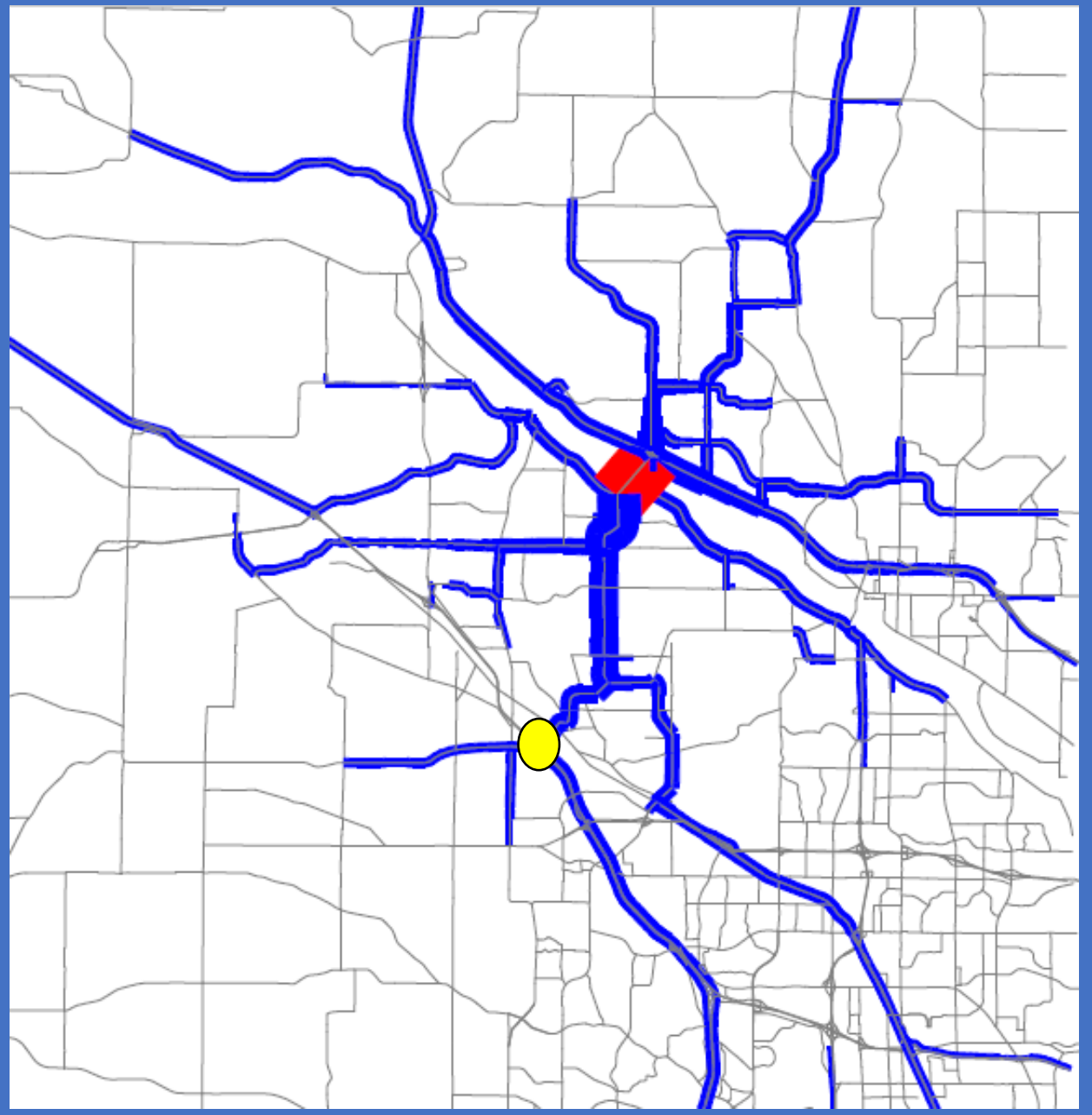


New River Crossing Trip Pattern

Who is using these routes?

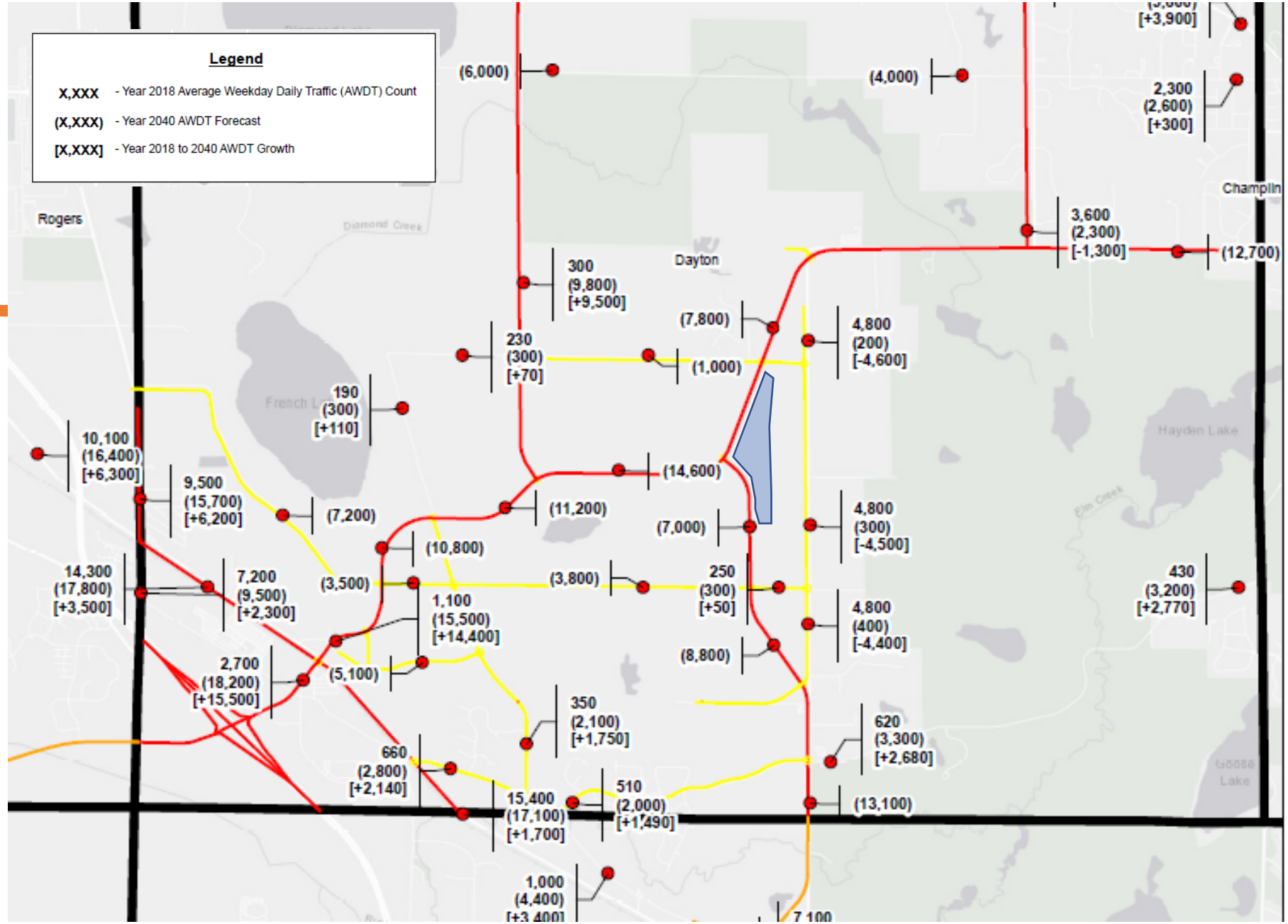
- Well rounded pattern

Zanzibar to Dayton Parkway is predominate route; however, Fernbrook to Zanzibar, South Diamond Lake and the River Road also take significant trips.



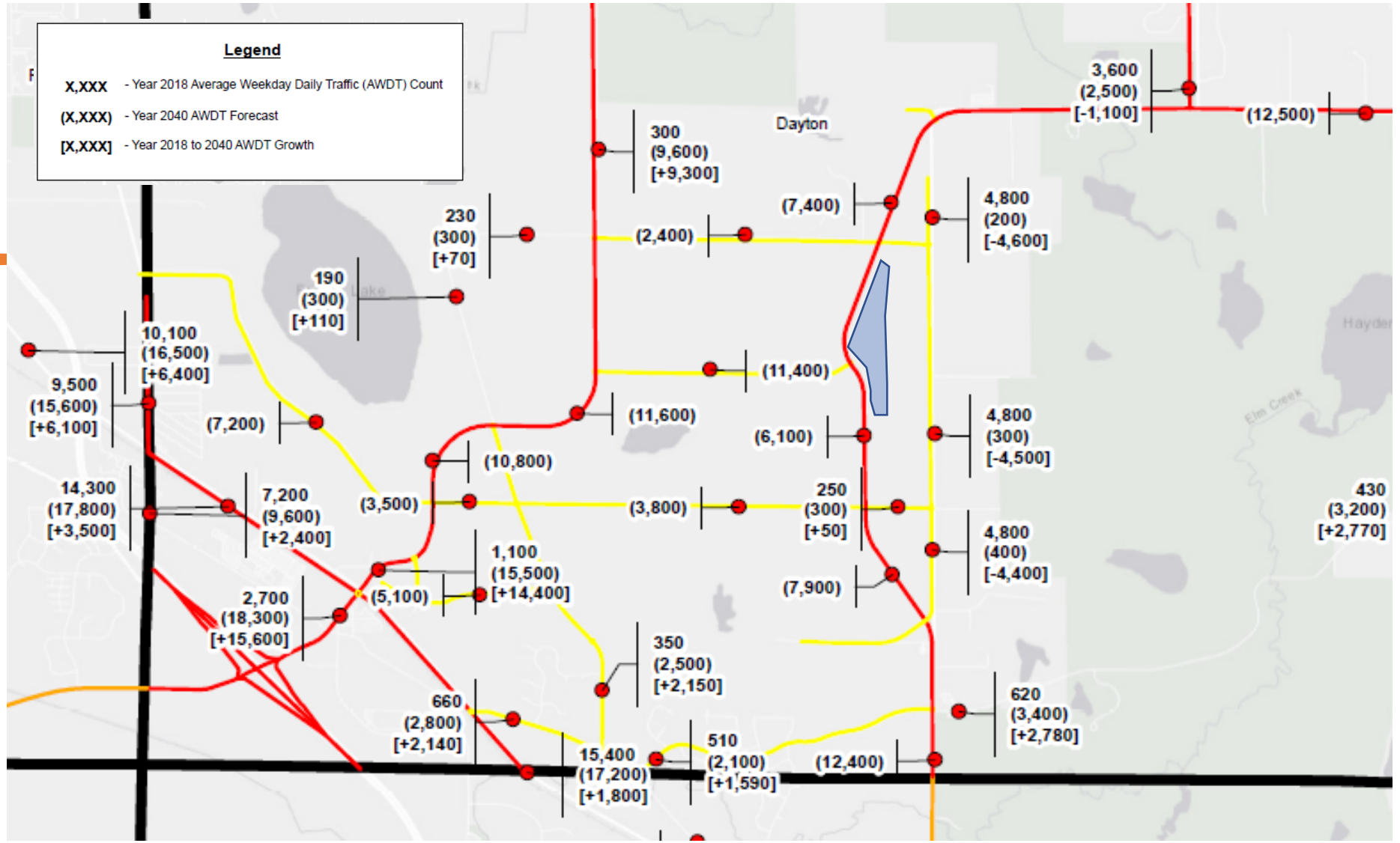
2040 Volumes

Option E



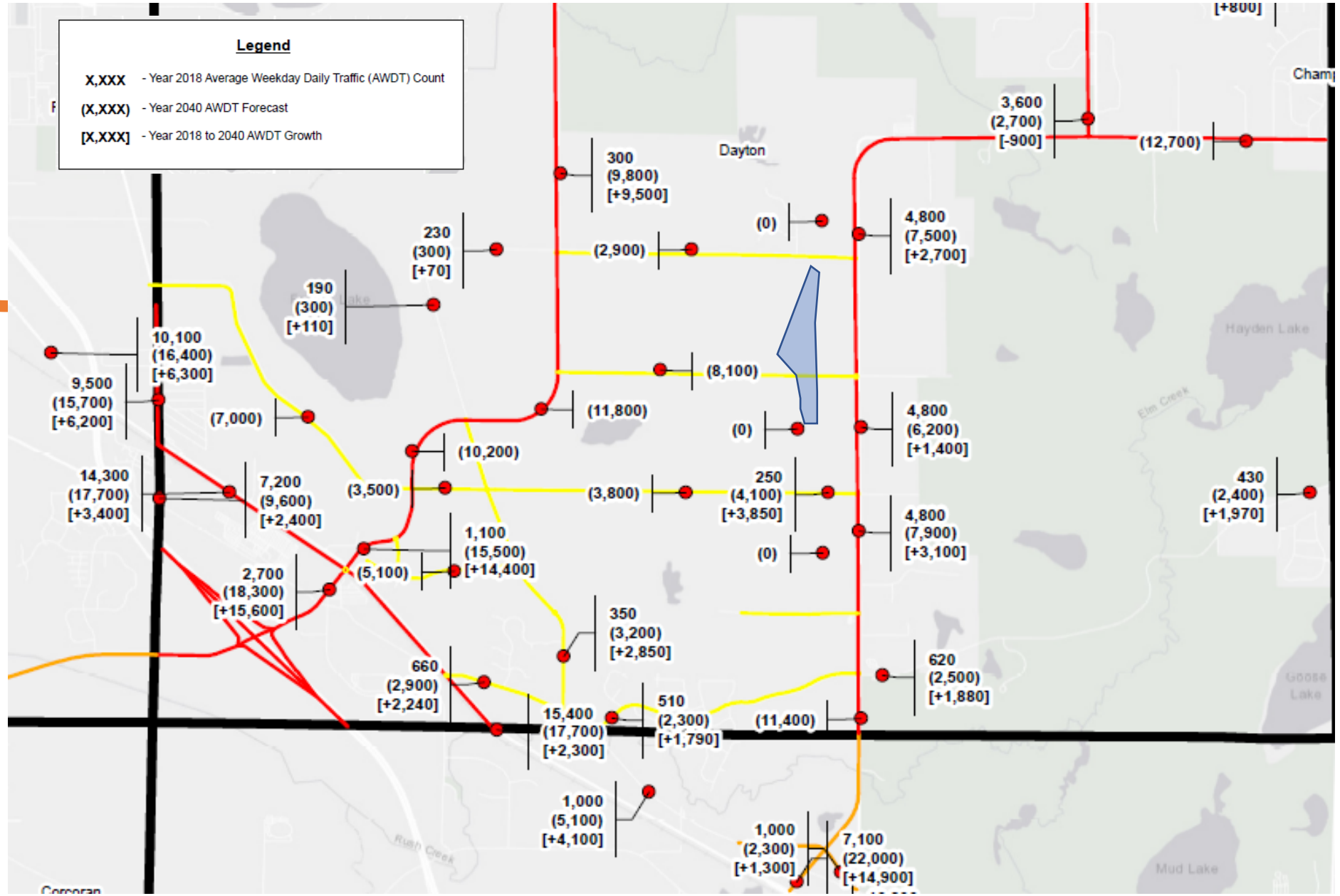
2040 Volumes

Option D



2040 Volumes

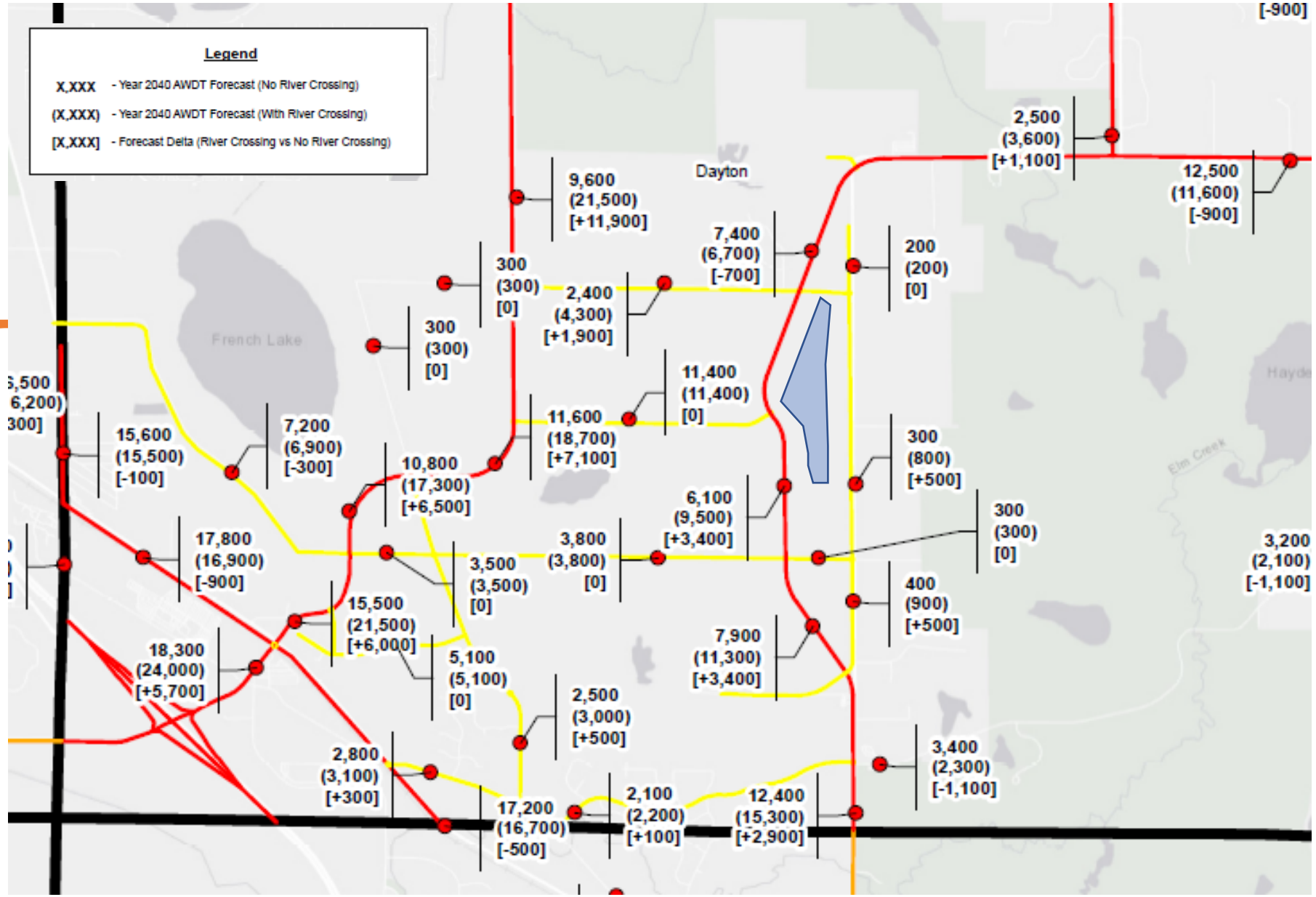
Option B1



2040 Volumes W/River Xing

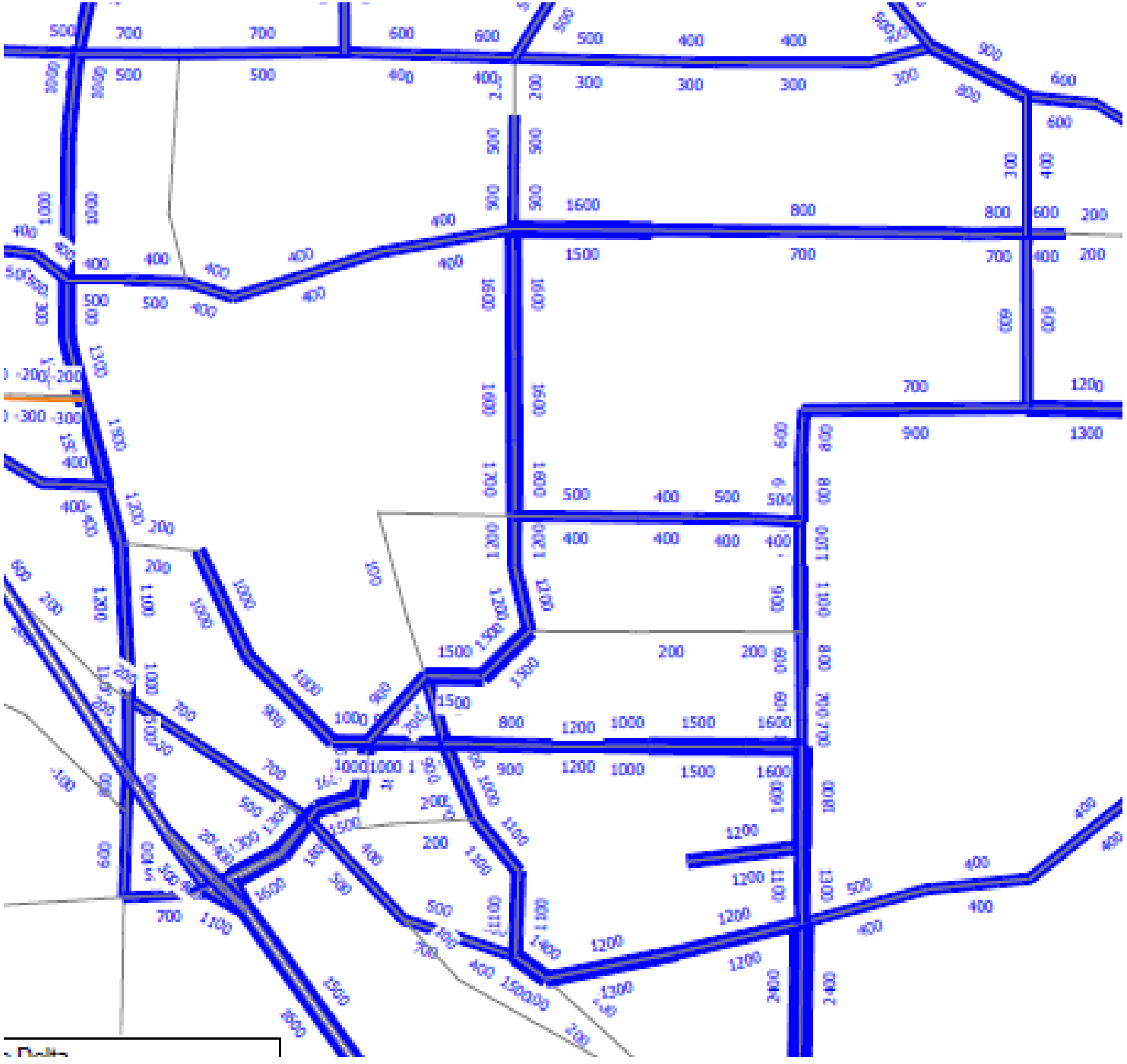
Option D

- Impacts mainly Dayton Parkway
- Requires 4-lane route



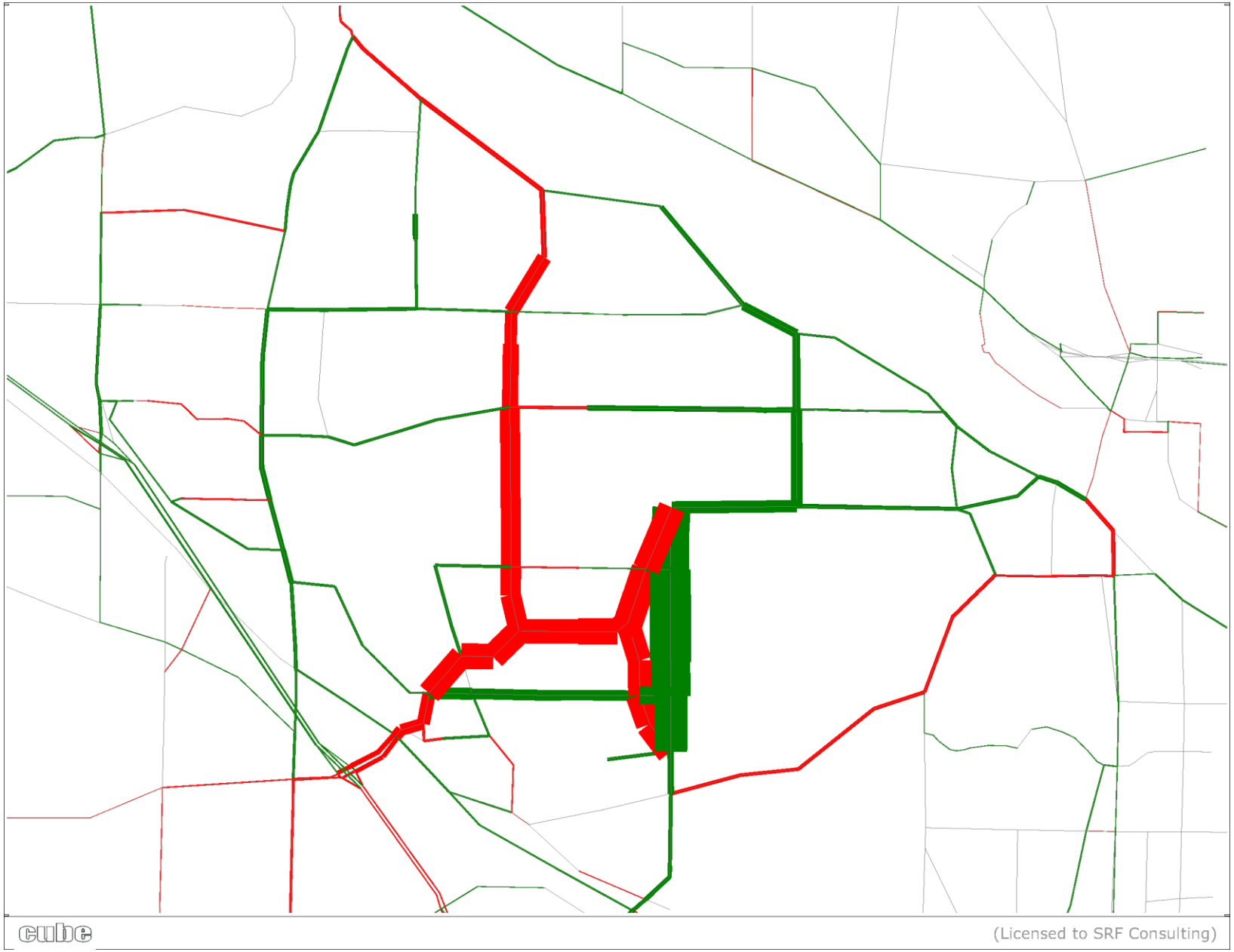
Build-out Volumes

- Adds 0-4,000 trips to various links; most routes in the 1000 to 2500 trips
- Greatest impacts to Zanzibar, South Diamond, 117th



2040 No Build vs Build-out Volumes

- Higher volumes on existing Fernbrook alignment
- Fernbrook volumes +4,000-5,000 in no build



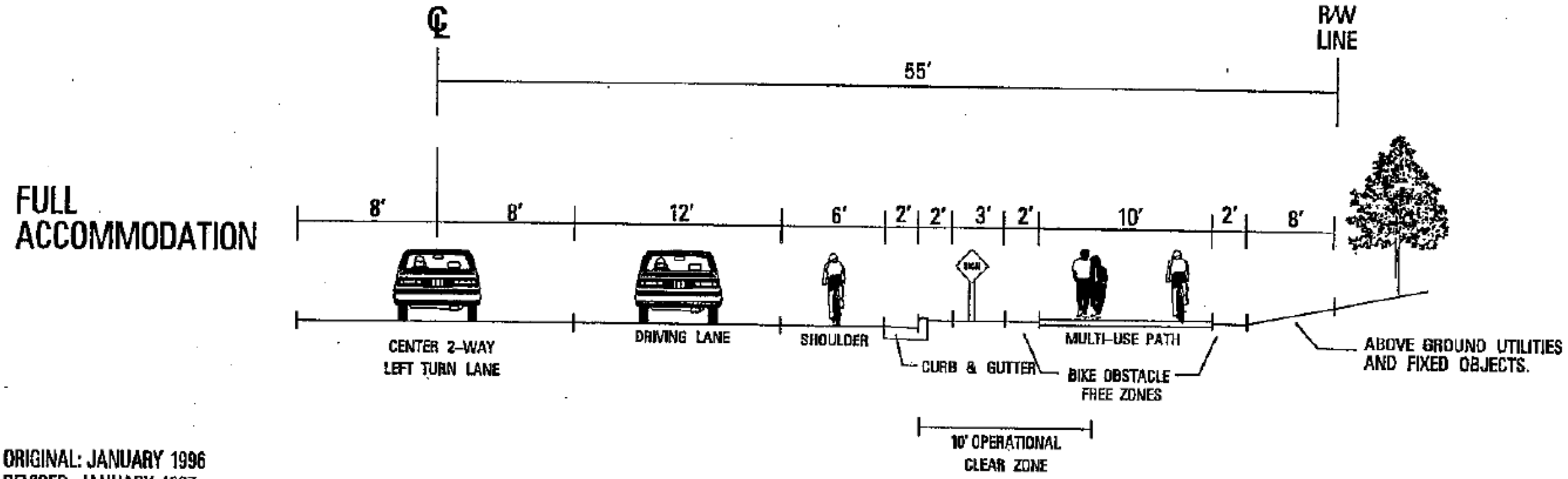
Cost Assumptions

Fernbrook Considerations

- Option B1.
- County/Maple Grove coordinating realignment of the south end of Fernbrook (CSAH 121) to Maple Grove Parkway @ CSAH 81.
- Existing Major Collector, Future Minor Arterial.
- 130’ of ROW needed in the future (4-lane divided with trail).
- Recommend ¼ to ½ mile for full access.

Typical Section – Minor Arterials
Three-lane Urban

Volumes 4,000 to 17,000 ADT
Depending on Access/Speeds

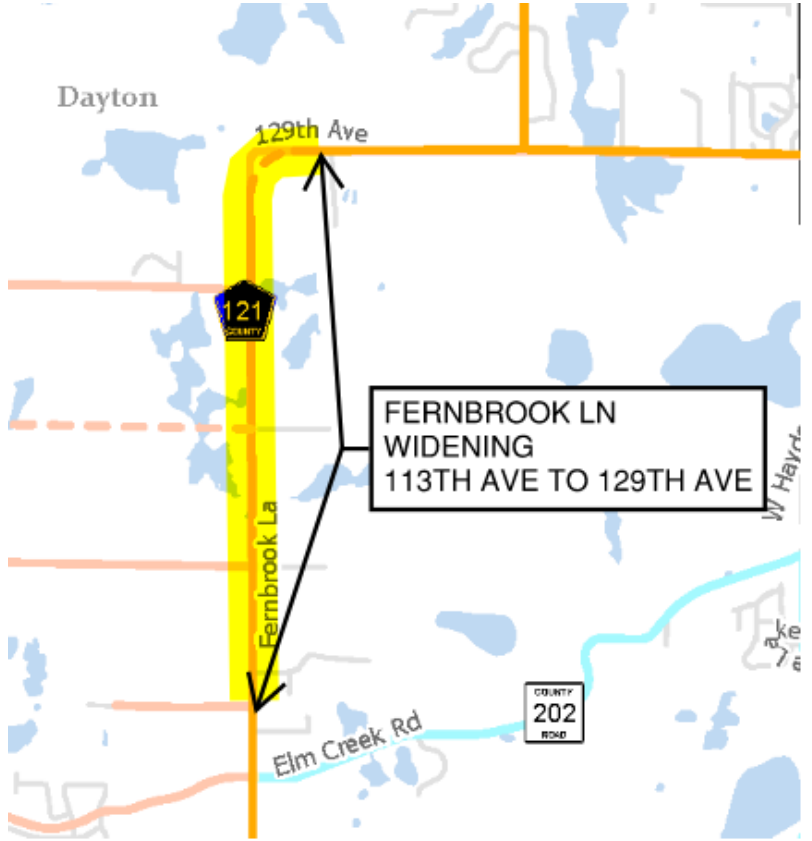


ORIGINAL: JANUARY 1996
REVISED: JANUARY 1997

FIGURE 6.3

Fernbrook Ln Widening Cost

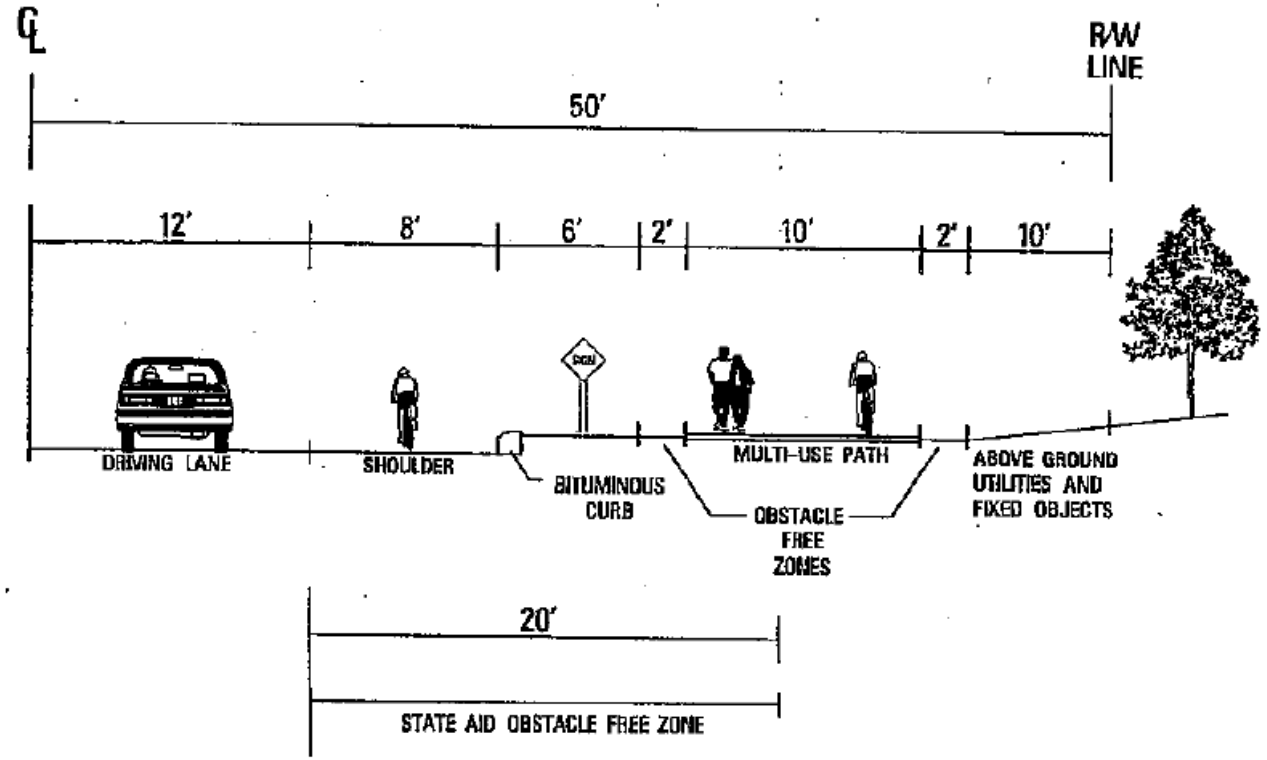
- $11 million construction dollars
- $2 million R/W dollars
  - Assumes 11 acres of partial strip acquisitions across 46 parcels.
- Assumes 2 miles of widening existing two-lane to three-lane section with curb, and trails
- Assumes traffic control at major intersections
- R/W acquisition required



Typical Section – Minor Arterials
Two-lane Urban

Volumes 4,000 to 10,000 ADT
Depending on Access/Speeds

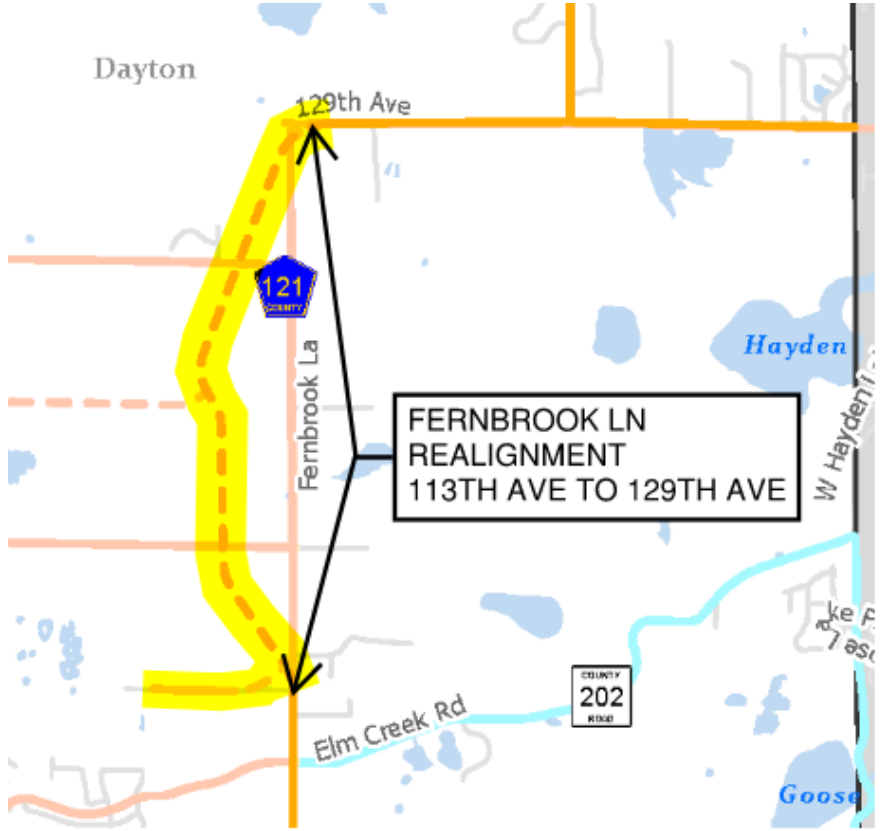
FULL
ACCOMMODATION



ORIGINAL: JANUARY 1996

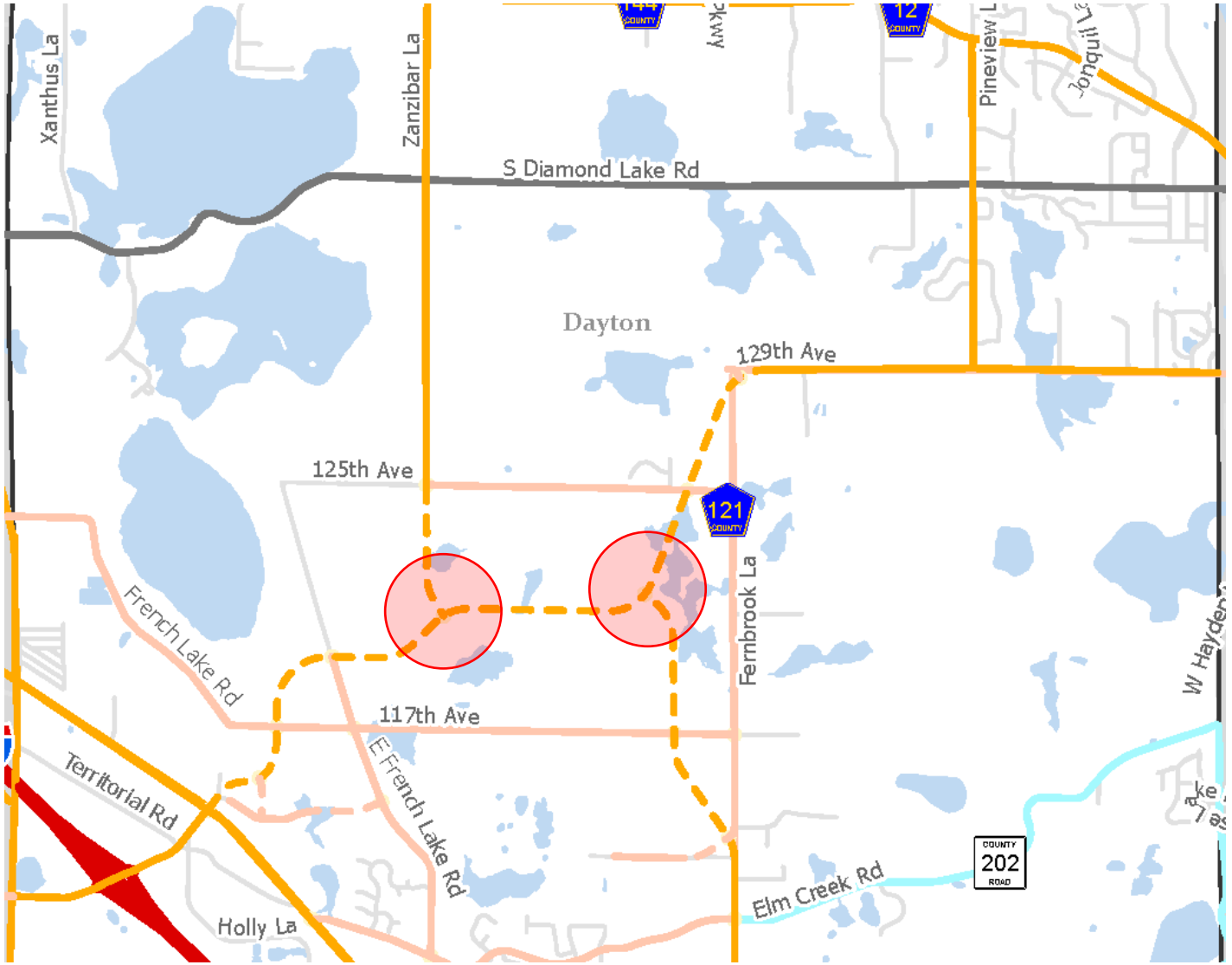
Fernbrook Ln Realignment Cost

- $11 million construction dollars
- $1.3 million R/W dollars
  - Assumes 32 acres of partial strip acquisitions across 14 parcels
- Assumes 2.2 miles of new two-lane section with curb and trails
- Assumes traffic control at major intersections
- Assumes no work on current Fernbrook Ln alignment
- R/W reserved through development process



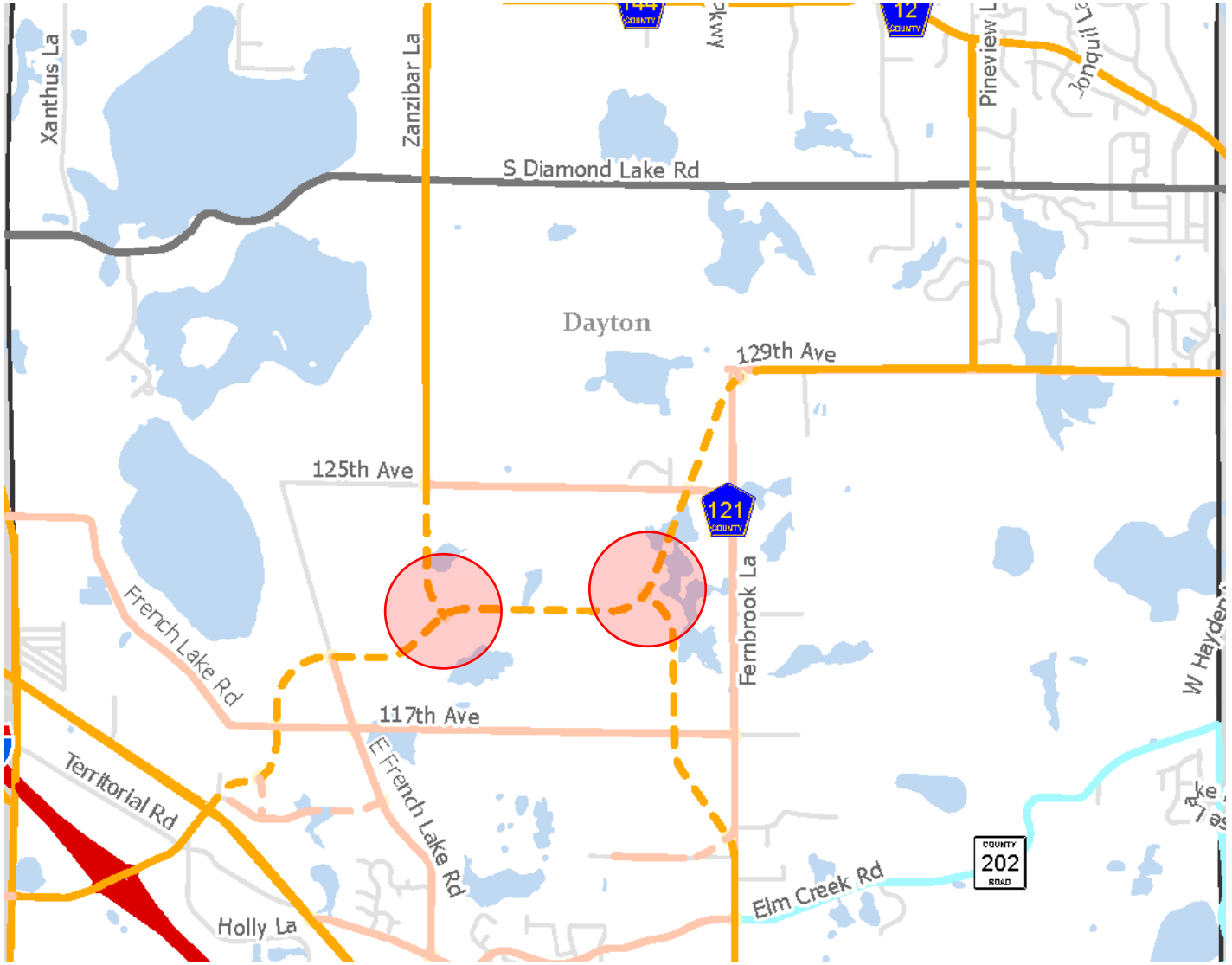
Recommendations

- Option E = No River Xing
- Option D = River Xing
- Costs are similar between Option D/E and B1
- Manage access on arterials and higher-level collectors to a minimum of ¼-mile full access with 1/8-mile RIRO.
- Option to preserve additional ROW on Zanzibar if River Xing is to be kept as future option



Recommend ations

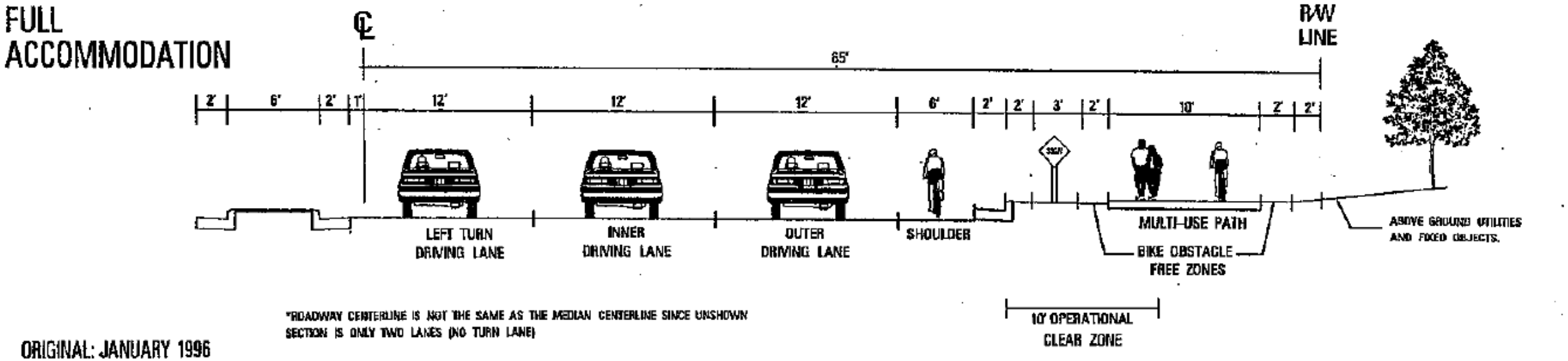
- Preserve 130 feet of ROW for Dayton Parkway up to Fernbrook (4-lane)
- Preserve 130 of ROW north of Dayton Parkway on Zanzibar if considering a future river crossing
- Other collector/arterial routes preserve 110 feet of ROW (3-lane)
- Consider roundabouts at Dayton Parkway/Zanzibar and Dayton Parkway/Fernbrook



Questions/Discussion

Typical Section – Minor Arterials
Four-lane Urban Divided

Volumes 8,000 to 30,000 ADT
Depending on Access,
Intersections and Peak Flows



Full Build-out Assumptions

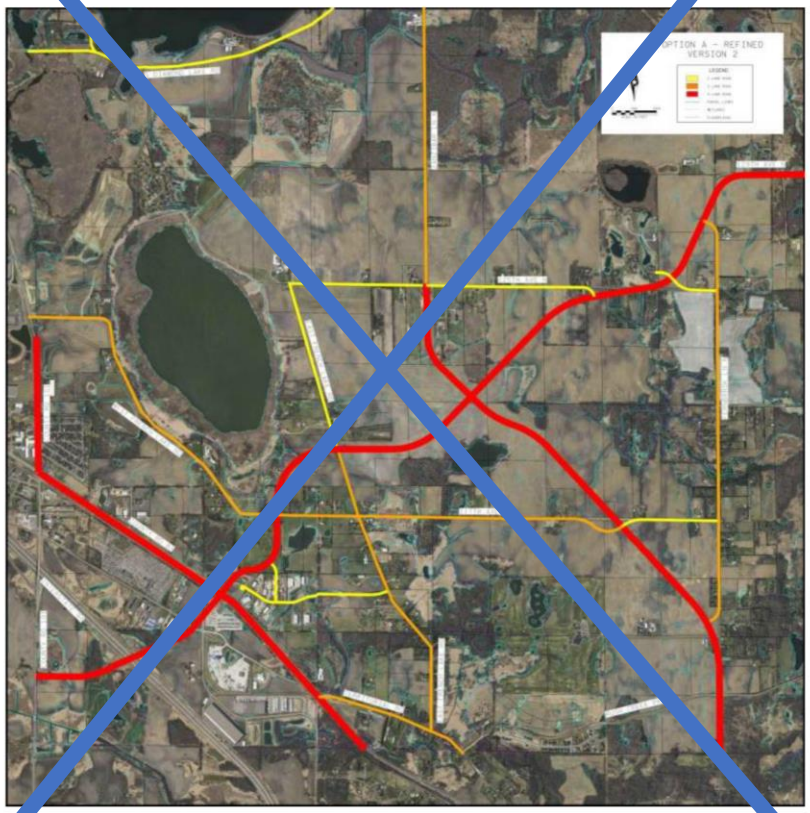
Methodology for developing socioeconomic assumptions for the full build out scenario

1. Calculated total acres in area beyond 2040 (future development stages)
2. Removed Wetland, Water, and Parkland to calculate developable area
3. Intersected developable area with future land uses (LD, MD, and HD residential, Neighborhood commercial, and mixed use)
4. Assumed 20% of developable area for ROW
5. Applied assumptions of previous Dayton Corridor study to the remaining developable acreages/land uses
    a. 2.5 DU/acre for LD Housing, 3.5 DU/acre for Low-Med Den Housing, 5 DU/acre for MD Housing, 10 DU/acre for HD Housing
    b. Commercial (Retail/Office) building FAR 0.3
    c. Office - 3 Employees per KSF
    d. Retail - 2 Employees per KSF
    e. Industrial and Business Park - 1.5 Employees per KSF

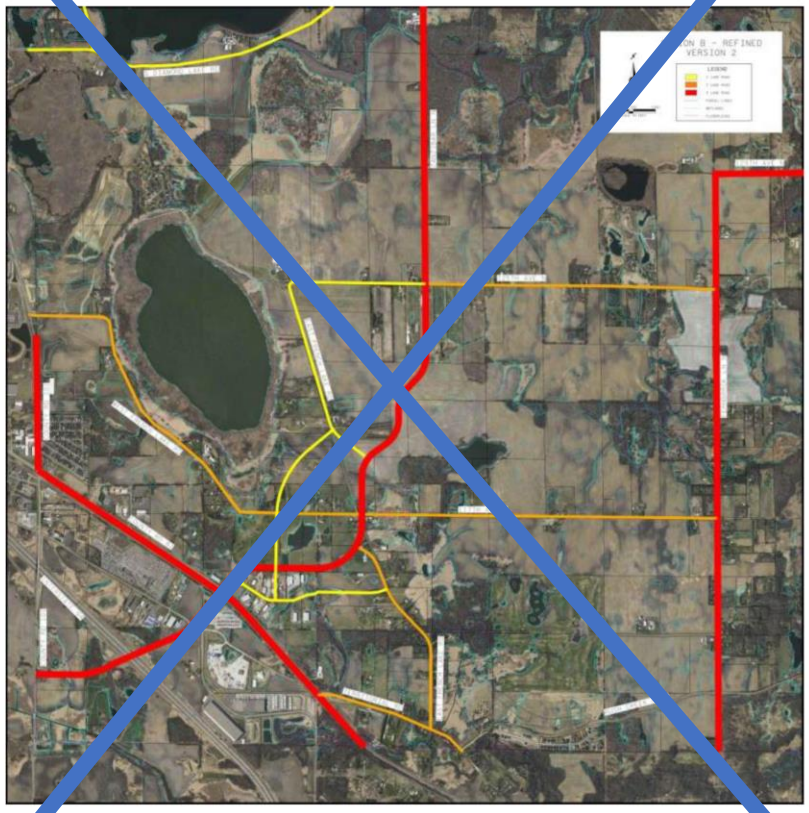
2019 Dayton Parkway Corridor Study Options

New Options Developed

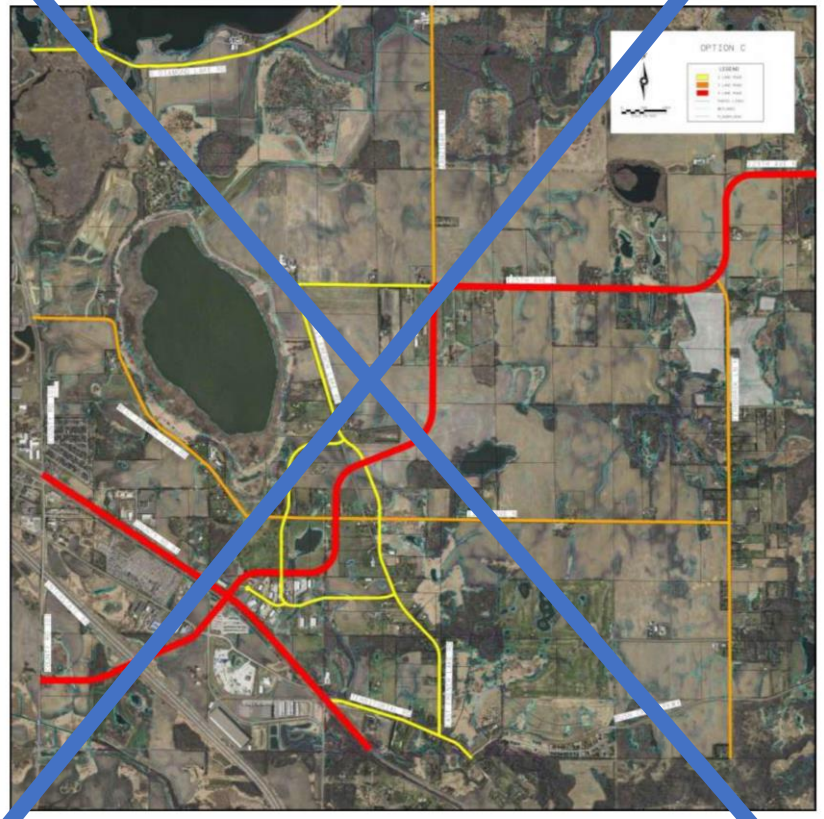
Option A (East-West)



Option B (North-South)

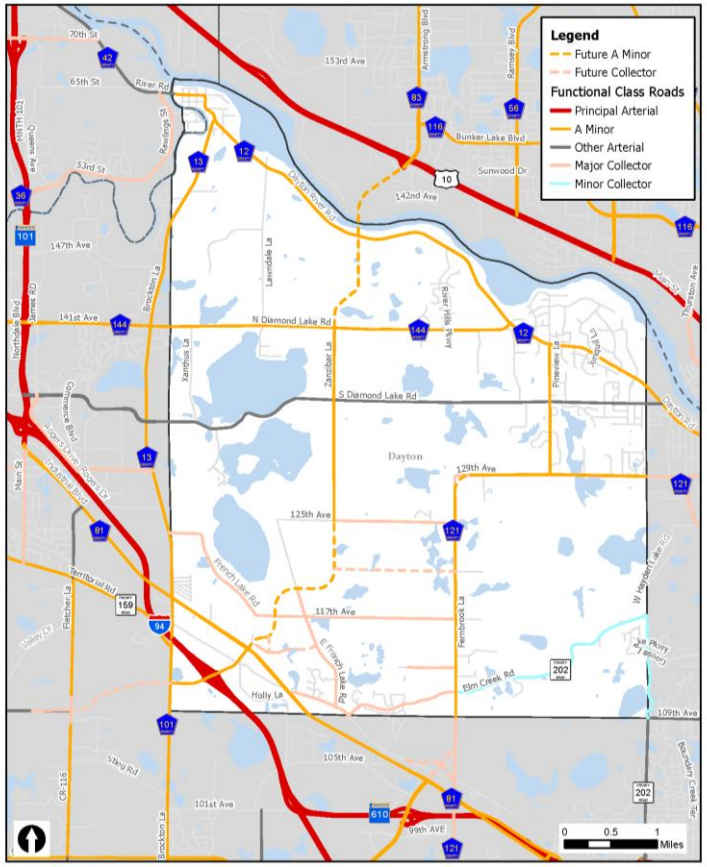


Option C (Hybrid)

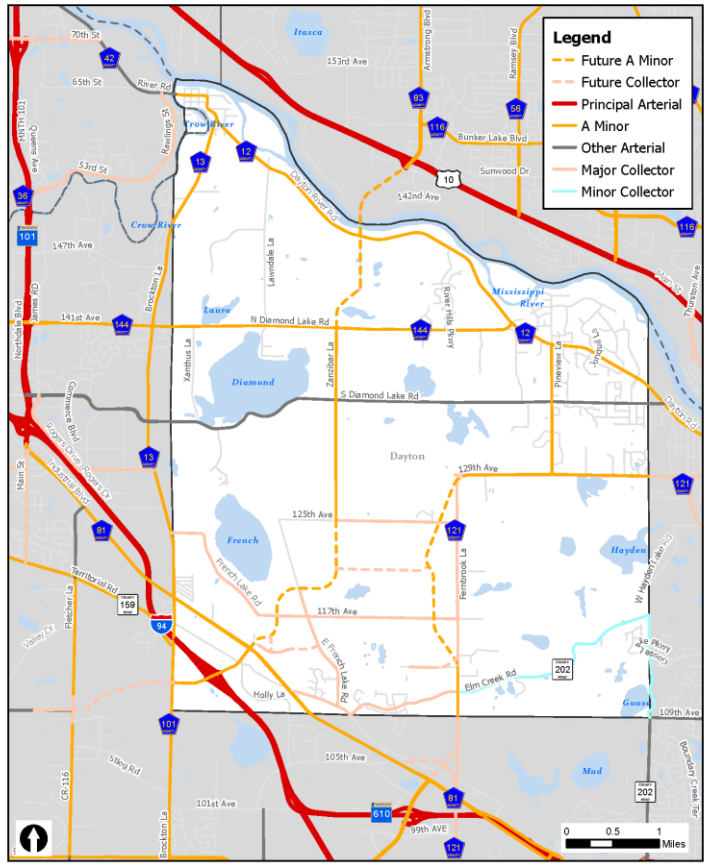


2022 System Options

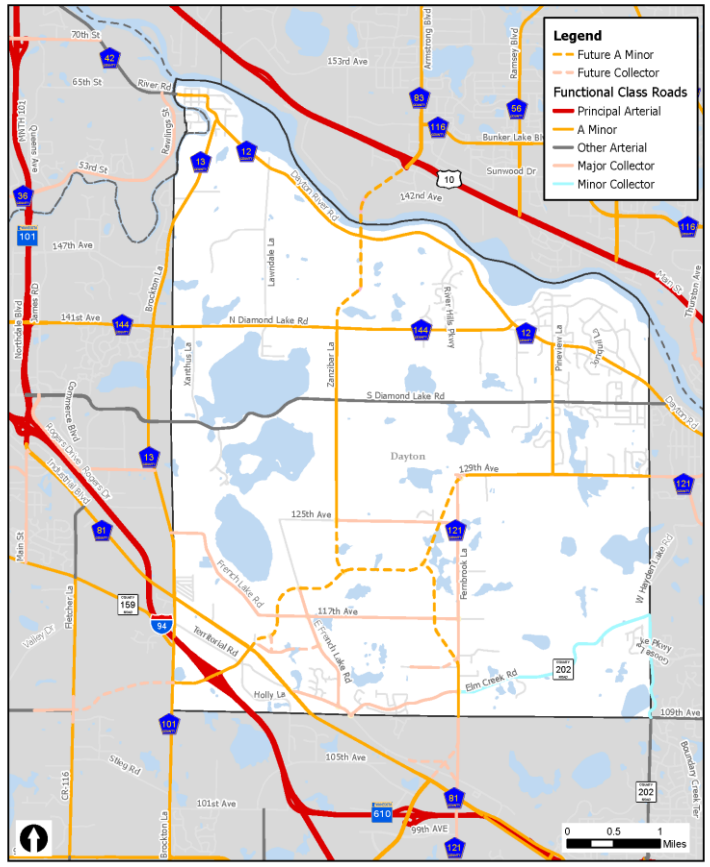
Option B1



Option D (N-S)



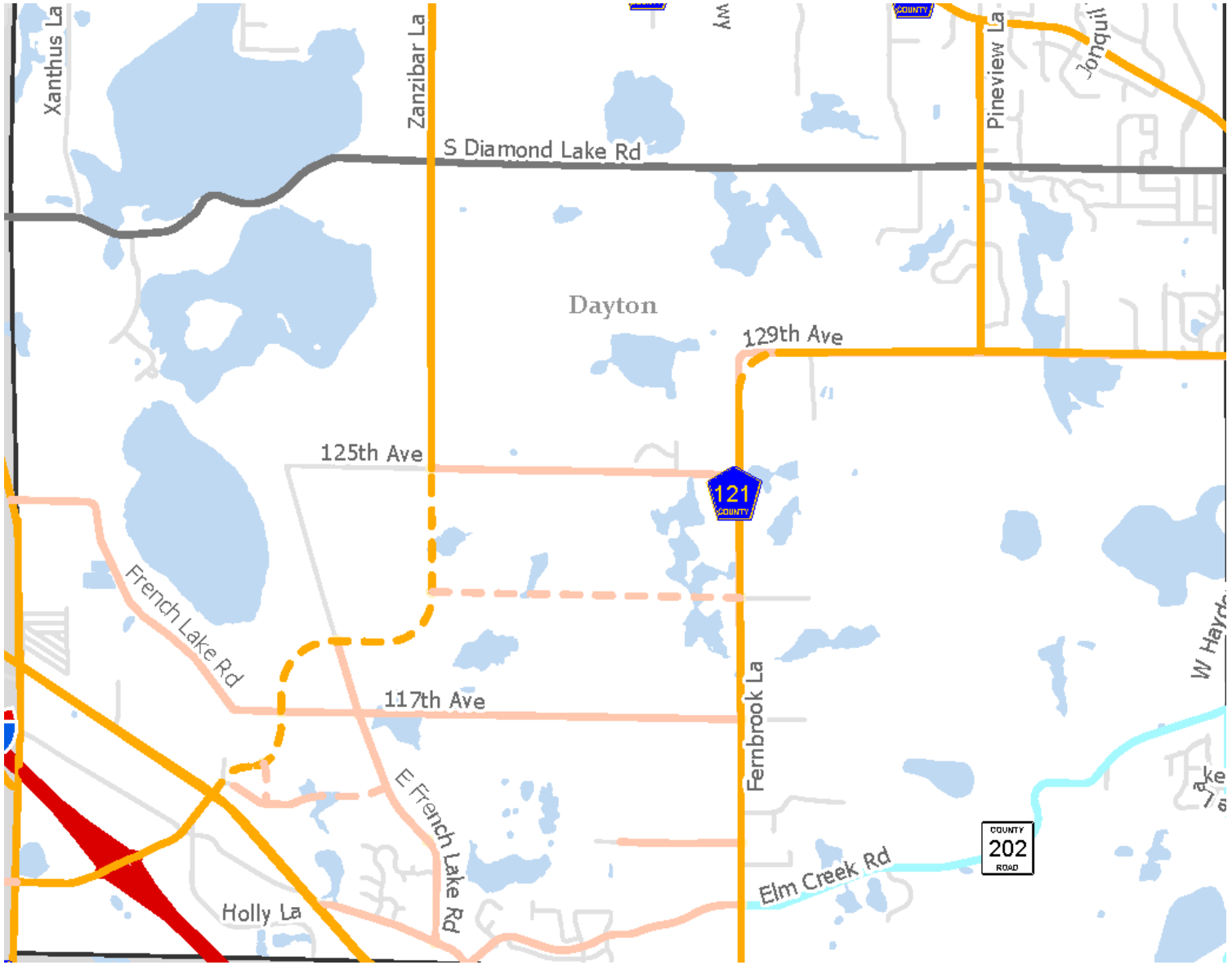
Option E (NE-SW)



Considerations

- Utilizes existing Fernbrook

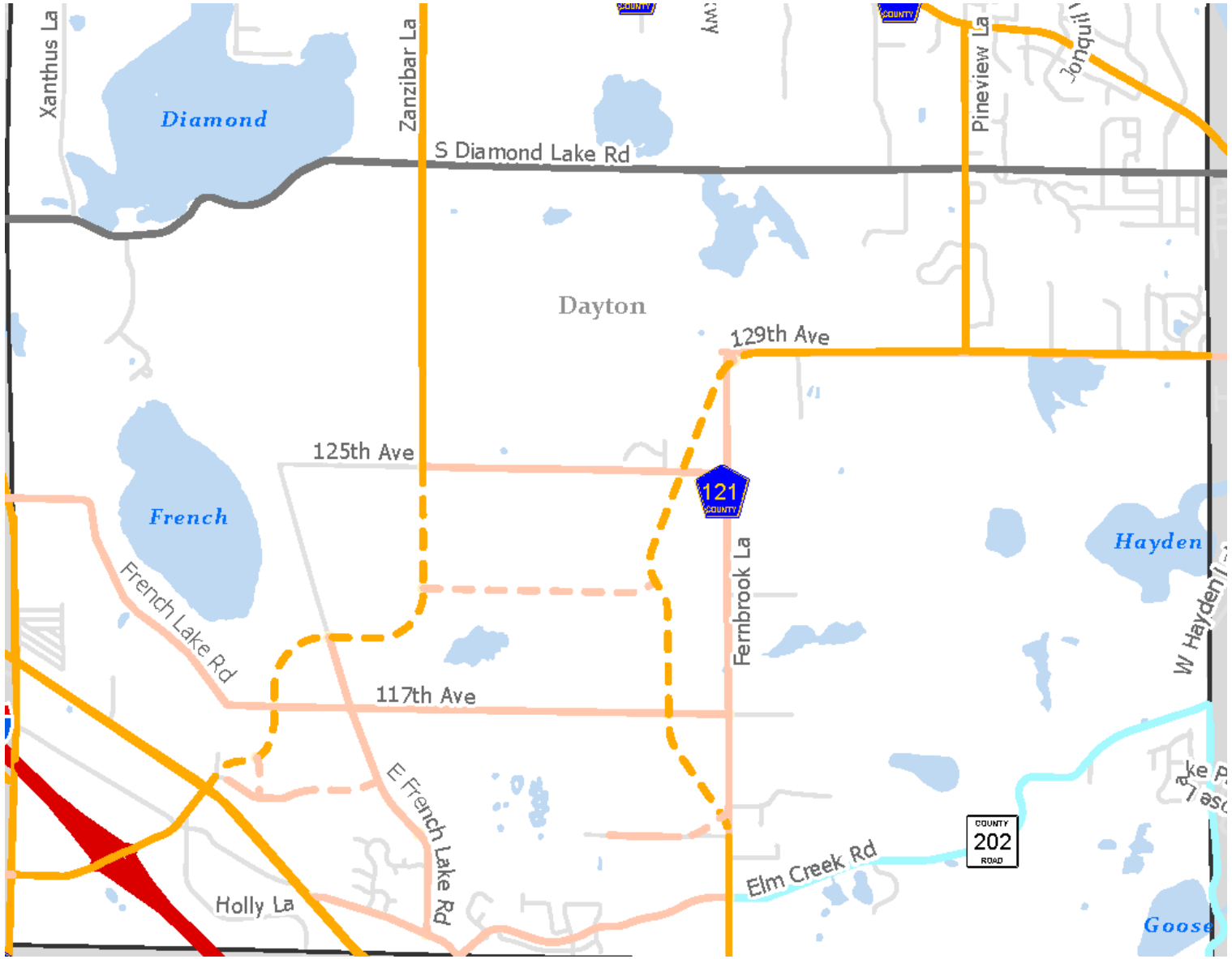
Option B1



Considerations

- Realigns Fernbrook
- Focus on N-S traffic flow

Option D (N-S)



Considerations

- Realigns Fernbrook
- Focus on NE-SW traffic flow

Option E (NE-SW)