WESTERN SARPY COUNTY
Planning & Environmental Linkages Study

DECEMBER 2022

Submitted by: Alfred Benesch & Company in coordination with Hg Consult, Vireo, and Cambridge Systematics

benesch

Sarpy County Board of Commissioners

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ADMINISTRATOR Dan Hoins
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CHIEF FINANCIAL OFFICER Bill Conley

December 6, 2022

Director John Selmer
NDOT Headquarters
1500 Nebraska Highway 2
Lincoln, NE 68502

RE: Western Sarpy County Planning & Environmental Linkages (PEL) Study - I-80 Interchange

Director Selmer:

I am writing to you today on behalf of Sarpy County in support of the recommendations from the Western Sarpy County Planning and Environmental Linkages (PEL) study. Our community was a partner on this collaborative, multi-jurisdictional project to evaluate the need for additional interchange access along the I-80 corridor between the existing Highway 370 and Nebraska Highway 31 (N-31) interchanges.

The recommendations of this study are clear. The two existing interchanges along I-80 at N-370 and N-31 are experiencing unacceptable traffic levels of service (LOS) which are projected to get worse over the course of the next several years. Sarpy County is already experiencing the largest population growth in the region—16% between the 2010 and 2020 Censuses—and that growth is expected to increase exponentially as new land becomes available. As the Sarpy County and Cities Wastewater Agency begins providing sewer infrastructure to new areas of Sarpy County, the demands on the county's transportation infrastructure will continue to grow.

We urge the Nebraska Department of Transportation to quickly move the proposed I-80 interchange into the next phase of the project development process. Each step in the federal-aid process takes years to complete, and the current growth experienced by communities in western Sarpy County is showing no signs of slowing down. Providing clear, timely guidance to private development partners about infrastructure access within the region will allow communities to leverage private investment in support of our community's land use goals and construct the infrastructure necessary to support growth and development within the study area.

As the Nebraska Department of Transportation (NDOT) presents its annual Program Book to the Nebraska Legislature, we urge you to include the needs identified within the PEL report, which embodies the goals and outcomes envisioned by the Metro Area Travel Improvement Study (MTIS). Additionally, as NDOT coordinates with the Metropolitan Area Planning Agency

(MAPA) on the development of the Transportation Improvement Program (TIP), we urge you to program the funding necessary to complete the preliminary engineering, environmental decision-making, and Interchange Justification Report (IJR) to expeditiously move this project toward implementation.

Thank you for your consideration of this letter and we look forward to working with NDOT and MAPA to implement this important project for the Omaha-Council Bluffs metropolitan area.

Sincerely,

Don Kelly
Chairman
Sarpy County Board of Commissioners

cc: Khalil Jaber, NDOT Deputy Director - Engineering
Ryan Huff, Chief Strategy Officer
Timothy Weander, NDOT District 2 Engineer
Deb Houghtaling, Sarpy County Clerk/Register of Deeds

SARPY COUNTY

Dennis L. Wilson, P.E., PhD
Sarpy County Engineer

PUBLIC WORKS DEPARTMENT
15100 South 84th Street • Papillion, NE 68046-4627
Phone (402) 537-6900 • FAX (402) 537-6955 • www.sarpy.com

December 19, 2022

Director John Selmer
NDOT Headquarters
1500 Nebraska Highway 2
Lincoln, NE 68502

RE: Western Sarpy County Planning & Environmental Linkages (PEL) Study - I-80 Interchange

Director Selmer:

I am writing to you today on behalf of Sarpy County in support of the recommendations from the Western Sarpy County Planning and Environmental Linkages (PEL) study. Our community was a partner on this collaborative, multi-jurisdictional project to evaluate the need for additional interchange access along the I-80 corridor between the existing Highway 370 and Nebraska Highway 31 (N-31) interchanges.

The recommendations of this study are clear. The two existing interchanges along I-80 at N-370 and N-31 are already experiencing unacceptable traffic levels of service (LOS) which are projected to get worse over the course of the next several years. Sarpy County is already experiencing the largest population growth in the region—16% between the 2010 and 2020 Censuses—and that growth is expected to increase exponentially as new land becomes available. As the Sarpy County and Cities Wastewater Agency begins providing sewer infrastructure to new areas of Sarpy County, the demands on the county's transportation infrastructure will continue to grow.

We urge the Nebraska Department of Transportation to quickly move the proposed I-80 interchange into the next phase of the project development process. Each step in the federal-aid process takes years to complete, and the current growth experienced by communities in western Sarpy County is showing no signs of slowing down. Providing clear, timely guidance to private development partners about infrastructure access within the region will allow communities to leverage private investment in support of our community's land use goals and construct the infrastructure necessary to support growth and development within the study area.

As the Nebraska Department of Transportation (NDOT) presents its annual Program Book to the Nebraska Legislature, we urge you to include the needs identified within the PEL report, which embodies the goals and outcomes envisioned by the Metro Area Travel Improvement

Study (MTIS). Additionally, as NDOT coordinates with the Metropolitan Area Planning Agency (MAPA) on the development of the Transportation Improvement Program (TIP), we urge you to program the funding necessary to complete the preliminary engineering, environmental decision-making, and Interchange Justification Report (IJR) to expeditiously move this project toward implementation.

Thank you for your consideration of this letter and we look forward to working with NDOT and MAPA to implement this important project for the Omaha-Council Bluffs metropolitan area.

Sincerely,

Dennis L. Wilson, PE, PhD
Sarpy County Engineer
15100 South 84th Street
Papillion, NE 68128

CC Khalil Jaber, NDOT Deputy Director - Engineering
Ryan Huff, Chief Strategy Officer
Timothy Weander, NDOT District 2 Engineer

CITY OF PAPILLION
David P. Black, Mayor

122 East Third Street
Papillion, Nebraska 68046
Phone: 402-827-1111
Fax: 402-339-0670

November 28, 2022

Director John Selmer
NDOT Headquarters
1500 Nebraska Highway 2
Lincoln, NE 68502

RE: Western Sarpy County Planning & Environmental Linkages (PEL) Study - I-80 Interchange

Director Selmer:

I am writing to you today on behalf of the City of Papillion in support of the recommendations from the Western Sarpy County Planning and Environmental Linkages (PEL) study. Our community was a partner on this collaborative, multi-jurisdictional project to evaluate the need for additional interchange access along the I-80 corridor between the existing Highway 370 and Nebraska Highway 31 (N-31) interchanges.

The recommendations of this study are clear. The two existing interchanges along I-80 at N-370 and N-31 are already experiencing unacceptable traffic levels of service (LOS) which are projected to get worse over the course of the next several years. Sarpy County is already experiencing the largest population growth in the region — 16% between the 2010 and 2020 Censuses — and that growth rate is expected to increase as new land becomes available as a result of the Sarpy County and Cities Wastewater Agency provides sewer infrastructure to currently unserved areas of Sarpy County. As development continues, the demands on the county's transportation infrastructure will increase.

We urge the Nebraska Department of Transportation to quickly move the proposed I-80 interchange into the next phase of the project development process. Each step in the federal-aid process takes years to complete and the current growth experienced by communities in western Sarpy County is showing no signs of slowing down. Providing clear, timely guidance to private development partners about infrastructure access within the region will allow communities to leverage private investment in support of each jurisdiction's land use goals and construct the infrastructure necessary to support growth and development within the study area.

As the Nebraska Department of Transportation (NDOT) presents its annual Program Book to the Nebraska Legislature, we urge you to include the needs identified within the PEL report, which embodies the goals and outcomes envisioned by the Metro Area Travel Improvement Study (MTIS). Additionally, as NDOT coordinates with the Metropolitan Area Planning Agency (MAPA) on the development of the Transportation Improvement Program (TIP), we urge you to program the funding necessary to complete the preliminary engineering, environmental decision-making, and Interchange Justification Report (IJR) to expeditiously move this project toward implementation.

Thank you for your consideration of this letter and we look forward to working with NDOT and MAPA to implement this important project for the Omaha-Council Bluffs metropolitan area.

Sincerely,

David P. Black
Mayor

CC Khalil Jaber, NDOT Deputy Director - Engineering
Ryan Huff, Chief Strategy Officer
Timothy Weander, NDOT District 2 Engineer

City of Gretna
204 N McKenna Avenue
P.O. Box 69
Gretna, NE 68028

November 21, 2022

Director John Selmer
NDOT Headquarters
1500 Nebraska Highway 2
Lincoln, NE 68502

RE: Western Sarpy County Planning & Environmental Linkages (PEL) Study - I-80 Interchange

Director Selmer:

I am writing to you today on behalf of the City of Gretna, Nebraska, to voice our support of the recommendations from the Western Sarpy County Planning and Environmental Linkages (PEL) study. Our community is a partner on this collaborative, multi-jurisdictional project to evaluate the need for additional interchange access along the I-80 corridor between the existing Highway 370 and Nebraska Highway 31 (N-31) interchanges.

The recommendations of this study are clear. The two existing interchanges along I-80 at N-370 and N-31 are already experiencing unacceptable traffic levels of service (LOS) which are projected to get worse over the course of the next several years. Sarpy County is already experiencing the largest population growth in the region—16% between the 2010 and 2020 Censuses. That growth is expected to increase exponentially as new land becomes available through the provision of sewer infrastructure by the Sarpy County and Cities Wastewater Agency. This growth will apply additional increased demands on the county's transportation infrastructure.

We urge the Nebraska Department of Transportation to quickly move the proposed I-80 interchange into the next phase of the project development process. Each step in the federal-aid process takes years to complete, and the current growth experienced by communities in Western Sarpy County is showing no signs of slowing down. Providing clear, timely guidance to private development partners about infrastructure access within the region will allow communities to leverage private investment in support of our community's land use goals and construct the infrastructure necessary to support growth and development within the study area.

As NDOT presents its annual Program Book to the Nebraska Legislature, we also urge you to include the needs identified within the PEL report, which embodies the goals and outcomes envisioned by the Metro Area Travel Improvement Study (MTIS). Additionally, as NDOT coordinates with the Metropolitan Area Planning Agency (MAPA) on the development of the

Transportation Improvement Program (TIP), we urge you to program the funding necessary to complete the preliminary engineering, environmental decision-making, and Interchange Justification Report (IJR) to expeditiously move this project toward implementation.

These steps taken today will ensure the future land use and economic development opportunities of our cities, county, state and region. We thank you for your consideration of this letter and we look forward to working with NDOT and MAPA to implement this important project for the Omaha-Council Bluffs metropolitan area.

Sincerely,

Michael D. Evans, Mayor
City of Gretna, Nebraska

CC Khalil Jaber, NDOT Deputy Director - Engineering
Ryan Huff, Chief Strategy Officer
Timothy Weander, NDOT District 2 Engineer

springfield
NEBRASKA

December 6, 2022

Director John Selmer
NDOT Headquarters
1500 Nebraska Highway 2
Lincoln, NE 68502

RE: Western Sarpy County Planning & Environmental Linkages (PEL) Study - I-80 Interchange

Director Selmer:

I am writing to you today on behalf of the City of Springfield in support of the recommendations from the Western Sarpy County Planning and Environmental Linkages (PEL) study. Our community was a key stakeholder on this collaborative, multi-jurisdictional project to evaluate the need for additional interchange access along the I-80 corridor between the existing Highway 370 and Nebraska Highway 31 (N-31) interchanges.

The recommendations of this study are clear. The two existing interchanges along I-80 at N-370 and N-31 are already experiencing unacceptable traffic levels of service (LOS) which are projected to get worse over the course of the next several years. Sarpy County is already experiencing the largest population growth in the region—16% between the 2010 and 2020 Censuses—and that growth is expected to increase exponentially as new land becomes available. As the Sarpy County and Cities Wastewater Agency begins providing sewer infrastructure to new areas of Sarpy County, the demands on the county's transportation infrastructure will continue to grow.

We urge the Nebraska Department of Transportation to quickly move the proposed I-80 interchange into the next phase of the project development process. Each step in the federal-aid process takes years to complete, and the current growth experienced by communities in western Sarpy County is showing no signs of slowing down. Providing clear, timely guidance to private development partners about infrastructure access within the region will allow communities to leverage private investment in support of our community's land use goals and construct the infrastructure necessary to support growth and development within the study area.

As the Nebraska Department of Transportation (NDOT) presents its annual Program Book to the Nebraska Legislature, we urge you to include the needs identified within the PEL report, which

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springfieldne.org

embodies the goals and outcomes envisioned by the Metro Area Travel Improvement Study (MTIS). Additionally, as NDOT coordinates with the Metropolitan Area Planning Agency (MAPA) on the development of the Transportation Improvement Program (TIP), we urge you to program the funding necessary to complete the preliminary engineering, environmental decision-making, and Interchange Justification Report (IJR) to expeditiously move this project toward implementation.

Thank you for your consideration of this letter and we look forward to working with NDOT and MAPA to implement this important project for the Omaha-Council Bluffs metropolitan area.

Sincerely,

Robert Roseland

Robert Roseland, Mayor
City of Springfield, NE

CC Khalil Jaber, NDOT Deputy Director - Engineering
Ryan Huff, Chief Strategy Officer
Timothy Weander, NDOT District 2 Engineer

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PEL STUDY DISCLAIMER

The Sarpy County I-80 Interchange PEL Study was prepared between 2020 and 2022 and represents the best information available at that time. The Study Team understands that the Study Area is continuously changing, including City Limits and Extraterritorial Jurisdictions (ETJ) boundaries, and that the maps provided in this document may quickly become out-of-date. As this study progresses from a PEL study to a NEPA study(ies) and into design the expectation is that the information will be updated accordingly.

Sarpy County I-80 Interchange PEL Study

Chapter 1 | Introduction

MAPA

Omaha - Council Bluffs
Metropolitan Area
Planning Agency

The Metropolitan Area Planning Agency (MAPA), in coordination with the Federal Highway Administration (FHWA); Nebraska Department of Transportation (NDOT); Sarpy County, Nebraska (NE); as well as the cities of Papillion and Gretna, NE, has conducted a Planning and Environmental Linkages (PEL) study for an area in western Sarpy County that includes the Interstate 80 (I-80) Corridor between the Pflug Road overpass on the west and the N-370 interchange on the east. MAPA has prepared this PEL study in accordance with FHWA guidance for improving and streamlining the environmental process for transportation projects.

PROJECT OVERVIEW

Interchanges that exist in the Alternatives Study Area (Study Area) today have operational and capacity challenges, and with continued growth within the Study Area, will fail. Current and future development in the Study Area will both impact the operations and capacity of the existing interchanges and interstate and could influence the possible alternatives to address the interchange capacity and operations issues. Likewise, the solution to address this I-80 issue could influence the alignment and termini of the local road networks within the Study Area.

Therefore, the purpose of this PEL study is to consider the existing and reasonably foreseeable planned developments and roadway network within the Study Area, and make an assessment regarding how these factors will influence the operation and capacity of the interstate, including connectivity to the interstate. This information would be used to develop a range of preliminary alternatives to consider as part of future transportation projects and NEPA analyses. Furthermore, as part of this PEL study, anticipated impacts from these alternatives to growth, the transportation network, and human and natural resources would be assessed to help determine if fatal flaws exist to any of the identified alternatives, making them unreasonable to carry forward.

STUDY LOCATION

The study focused on western Sarpy County in the southwest corner of the existing Omaha Metropolitan Area (Figure 1-1 | Environmental Review Area and Alternatives Study Area). The Environmental Review Area (Review Area) identified for the PEL Study covered an area sufficient in size to address the environmental considerations reasonably expected to occur as a result of any of the proposed improvement strategies.

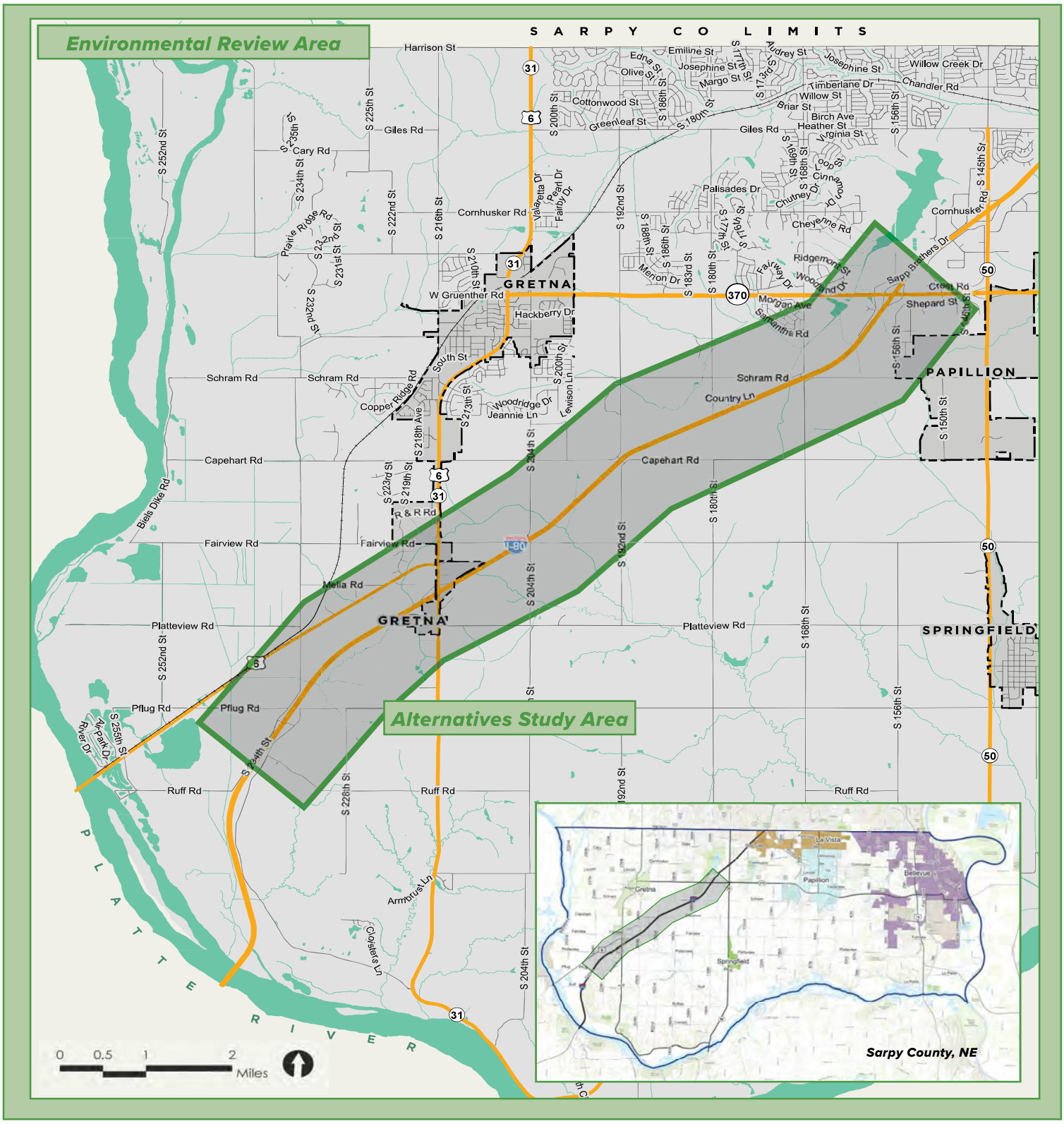
WHY A PEL STUDY?

A PEL Study is a high-level planning process that considers environmental, community and economic goals early in project development and carries them through the environmental decision-making process, design and construction. The goal of a PEL Study is to gather feedback during planning to inform the environmental review process, including the National Environmental Policy Act (NEPA).

State and local agencies can achieve significant benefits by incorporating environmental and community values into transportation decisions early in planning and carrying these considerations through project development and delivery. Benefits include but are not limited to:

- **Relationship Building.** The PEL approach enables agencies to be more effective players in the transportation decision-making process through its focus on building inter-agency relationships. By encouraging resource and regulatory agencies to get involved in the early stages of planning, agencies have an opportunity to help shape transportation projects.
- **Improved Project Delivery.** The PEL approach improves process efficiencies by minimizing potential duplication of planning and NEPA processes, creating one cohesive flow of information. In addition, improvements to inter-agency relationships may help to resolve differences on key issues as transportation programs and projects move from planning to design and implementation.
- **On-the-ground Outcome Benefits.** When transportation agencies conduct planning activities equipped with information about resource considerations and in coordination with resource agencies and the public, they are better able to design transportation programs and projects that serve the community's transportation needs more effectively. The PEL approach provides agencies with tools to design better projects while avoiding and minimizing impacts to environmental resources.

Figure 1-1 | Environmental Review Area and Alternatives Study Area



*The **Environmental Review Area** includes all of western Sarpy County (full map above) and was used to collect relevant social, economic and environmental data.*

*The **Alternatives Study Area** has been centered along I-80 from just west of Pflug Road to just east of the N-370 interchange. The Study Area also includes a small buffer both north and south of I-80 to encompass any necessary roadway connections. The Study Area establishes the limits of any proposed improvement strategies.*

It also built upon previous studies completed and considered other projects already being planned, designed or constructed that could influence the decision-making process of this study. The Study Area is centered along I-80 from just west of the Pflug Road overpass to the southwest and just east of the N-370 interchange to the northeast. Neighboring communities include Gretna, just north and west of the Study Area, Papillion to the east and Springfield to the southeast.

PLANNING CONTEXT

The interest in improving connectivity to I-80 within Sarpy County has been discussed and studied for over two decades (Appendix B | Planning Context/Summaries of Previous Studies). These previous studies were reviewed by the project team and their findings have been incorporated into the PEL Study.

Overall, the history of the area as presented in these previous reports describes an area that has seen dramatic growth and documents the various jurisdictions' efforts to respond to, plan for, and accommodate that growth. Some of those plans have been constructed, such as the new US 34 Missouri River Bridge, and several others are in various stages of development, such as the reconfiguration of the 180th and 192nd Street corridor north of N-370.

LAND USE PLANNING

The planning process for the PEL Study included a "future land use scenario planning" effort to help understand the jurisdictions' vision for future development, and to provide a way to visualize and discuss the overlaps and interactions between several different plans from the different jurisdictions within the Review Area. The effort provided the project partners with a land use tool with which they may jointly pursue alternatives that are consistent with existing plans, provide necessary coordination between plans, and identify opportunities and constraints for flexible implementation while also accomplishing local goals and policies. The planning effort began with creating a Land Use Profile, which evaluated the general demographics and land use character of the Review Area. The land use scenario planning efforts included stakeholder visioning sessions, interviews, workshops and public feedback, and culminated in a combined land use scenario for the entire Review Area. These efforts are summarized in Appendix C | Land Use Planning.

OTHER TRANSPORTATION PROJECTS

There are numerous existing and planned roadway projects in western Sarpy County that may have an effect on travel patterns in the future. While all of these projects have their own histories, studies, and justifications, many will have an impact on the study need and potential alternatives developed as part of this PEL Study. The PEL Study incorporated each of the projects listed below into the overall alternatives development and screening process.

BUILDING ON PREVIOUS STUDIES

This PEL Study was not completed in isolation but, instead, built upon the work completed over the last several years in and around Sarpy County. All of those studies have been reviewed and summaries provided in Appendix B.

One study in particular, the Metro Area Travel Improvement Study or MTIS, provided the initial background information that provided the impetus to investigate the potential need for a new I-80 interchange and is summarized here:

Metro Area Travel Improvement Study (2015-2019) - This three-phased study explored the existing and future no-build travel conditions in the greater Omaha region and then explored possible travel improvements to address the identified travel deficiencies. Among other projects/improvements, Phases 2 and 3 specifically explored the possibility of adding an additional I-80 interchange in Sarpy County. The results of that study indicated that a new interchange would have positive benefits to the existing I-80 interchanges at N-31 and N-370, would not degrade operations along mainline I-80, and would improve merge/diverge and weaving problems along mainline I-80. However, the additional interchange would not resolve all the traffic congestion issues at the N-370 interchange, so the study recommended that N-370 be upgraded to a Diverging Diamond Interchange (DDI), in addition to the new interchange, to improve overall traffic operations.

N-370 NDOT STIP Commitment - In 2022, NDOT placed the DDI interchange at the N-370 interchange on their five-year State Transportation Improvement Program (STIP). A STIP designation is a commitment from NDOT to fully fund that improvement project.

- 180th/192nd re-alignment from Giles Road to N-370
- 168th Street widening north of N-370 to Harrison Street
- Capehart Road improvements (N-31 to 204th Street)
- 192nd Street improvements from Schram Road to N-370
- I-80/N-370 Interchange Improvements

STUDY PURPOSE

Previous studies, such as the Metro Area Travel Improvement Study (2015-2019), have documented the current and forecasted traffic deficiencies at both the N-370 and N-31 interchanges with I-80. Current and future development planned in western Sarpy County will continue to impact the operations and capacity of the existing interchanges and could influence the possible alternatives developed to address these issues.

More specifically, the PEL Study should accomplish the following three overarching goals:

- Develop and Document the Purpose & Need. Through coordination with relevant political jurisdictions, regional stakeholders, various resource agencies, and the general public, the PEL Study should identify the overall project purpose and the specific needs used to help develop and screen each of the identified alternatives.
- Work with Area Stakeholders to Develop a Combined Land Use Vision. The PEL Study Area sits between several political jurisdictions (Papillion, Gretna, and Sarpy County) each with their own land use plans. This PEL Study engaged each of these jurisdictions to establish a combined future vision for the Review Area.
- Evaluate a Broad Range of Alternative Strategies. The PEL Study will document the analysis of alternatives, including the rationale for determining both the reasonableness of those alternative(s) carried forward and the rationale for eliminating any alternatives.

PLANNING & ENVIRONMENTAL LINKAGES

This PEL Study provides the framework for the potential long-term implementation of the recommended strategies. The PEL Study has identified issues that will require additional investigation, but the findings in this PEL Study may be used in future NEPA studies based on the guidance provided in NDOT's "Planning and Environmental Linkages Guidance Document" from November 2022. The PEL process does not reduce the overall documentation required for NEPA but provides improved "linkages" from the early, up-front planning activities to the subsequent environmental compliance requirements. As an example of those linkages, the PEL Study includes several components intended to provide supporting information for future NEPA studies, including:

- **Chapter 2 | Purpose & Need.** Documents the overall project purpose and the specific project needs to help frame the alternatives development and screening process.
- **Chapter 3 | Affected Environment**. Identifies the environmental context used to develop possible screening criteria and identified subsequent environmental studies that will need to be completed.
- **Chapter 4 | Alternatives Development.** Using a Value Planning methodology, this chapter presents the process for idea speculation and development of the initial range of alternatives, as well as the analysis of functions, and the preliminary screening to arrive at a range of Practicable Alternatives.
- **Chapter 5 | Alternatives Evaluation and Screening.** Continuing the Value Planning methodology, this chapter presents the development of performance and acceptance screening criteria, and evaluates the alternatives for reasonableness. This chapter then presents the Reasonable Alternatives along with their benefits and potential impacts.
- **Chapter 6 | Public & Resource Agency Coordination.** Documents the initial outreach activities completed with both the public and the resource agencies. Compliance with required outreach activities is critical to ensure decisions made during the PEL Study can be carried forward into NEPA.
- **Chapter 7 | Next Steps.** Finally, the implementation plan laid out in this Chapter serves as a road map to move the recommendations identified in Chapter 5 from the PEL Study into subsequent NEPA studies, preliminary and final design, and ultimately construction.

The identification of a range of reasonable alternative strategies is consistent with FHWA's PEL process and their objective of identifying meaningful solutions on a broad scale sufficient to help eliminate unreasonable options and to better inform local decision-makers on potential costs and impacts. Due to funding constraints, the reasonable strategies identified in this study might need to be implemented in phases over time. Each phase will require an appropriate level of NEPA analysis and documentation and should be evaluated based on the following criteria:

- Independent Utility & Logical Termini. Each phase needs to be able to stand on its own even if other phases are not completed.
- Purpose & Need. Each phase needs to contribute to meeting the overall purpose and need.
- Environmental Impacts. Each phase should avoid introducing substantial environmental impacts that cannot be avoided or mitigated.

PUBLIC AND AGENCY COORDINATION

The PEL Study involved a diverse group of stakeholders to gather information about their current operations and future plans that could shape development trends in the region and in the Review Area. These included businesses and large installations such as Amazon, Facebook, Google, and Offutt Air Force Base; development groups such as Sarpy County Economic Development Corporation, Metro Smart Cities, and the Greater Omaha Chamber of Commerce; transportation and civic agencies such as Metro Transit and ConnectGO, and other affected municipalities such as Springfield, La Vista, and Bellevue. The Sarpy County Comprehensive Plan also provided a wealth of representatives from local agencies who were engaged for additional input.

Resource agency involvement was also used to gather information about possible protected environmental resources and to provide an opportunity for each agency to engage in the PEL Study. More details related to resource agency coordination has been provided in Chapter 6 | Public & Resource Agency Coordination.

Sarpy County I-80 Interchange PEL Study

Chapter 2 | Purpose & Need

MAPA

Omaha - Council Bluffs
Metropolitan Area
Planning Agency

This chapter of the PEL Study identifies the overall project purpose and the specific transportation needs in the Study Area to be addressed by the proposed improvement strategies. The specific project needs, along with several additional project goals, will be used to develop, analyze and compare the various alternative strategies. The Purpose and Need identified in this chapter may be carried forward in subsequent NEPA studies prior to the determination of a final preferred alternative(s).

PROJECT PURPOSE

The two existing interchanges along I-80 at N-370 and N-31 are already experiencing traffic congestion and will exceed acceptable levels of service (LOS) over the course of the next several years. Sarpy County is already experiencing tremendous growth and that growth is expected to increase exponentially as new land becomes available. A report prepared in 2015 by the University of Nebraska at Omaha estimated that Sarpy County's population was on track to grow by almost 20% between 2020 and 2030, pushing the population to more than 233,000 by 2030; and to ultimately reach nearly 320,000 by 2050 (University of Nebraska-Omaha, Nebraska County Population Projections: 2010 to 2050, December 2015).

With that understanding, this project must address the project needs while balancing the role of I-80 as a long-distance travel way for both passenger vehicles and freight. The challenge is to seek the most functional approach to improving access to I-80, including the development of alternative strategies, which, when implemented, will meet the identified current and future needs, will achieve as many of the project goals as reasonable, all while balancing the interests of the various stakeholders.

More specifically, the project purposes are to:

- Mitigate Deficient Traffic Operations at I-80 and N-370 and N-31 Interchanges. The MTIS Study identified the need for additional access to I-80 in western Sarpy County to eliminate the need for significant improvements to the N-31 interchange and to compliment the proposed improvements at the N-370 interchange[1] in order to achieve the desired traffic operational benefits. The first purpose of this project is to mitigate both existing and future traffic operational deficiencies at both the N-31 and N-370 interchanges with I-80.
- Provide Regional Connectivity to I-80. In addition, western Sarpy County continues to develop rapidly and recent Sarpy County plans are expected to significantly increase the pace and scale of that development. The new development will certainly generate additional traffic needing to access I-80 - both commuters getting to and from their businesses/ residences and truck-based freight needing access to the interstate highway network. With the ongoing development in western Sarpy County and the pace of development expected to grow exponentially, the second purpose of this project is provide the necessary system linkage (i.e. additional connectivity

BALANCING COMPETING INTERESTS

A critical component of this study has been the balancing of two competing interests: maintaining the viability of I-80 for long-distance travel with the need to provide additional access to I-80 in western Sarpy County. More specifically, those interests include:

- **Federal/State** — The federal interest includes maintaining the viability of the interstate highway system for long-distance travel. The state interest includes improving the condition of the transportation assets on the state highway network, providing opportunities for improved goods movement, and improving the travel conditions for long-distance travel.
- **Regional/Local** — The regional interest includes improving the ability of the traveling public to efficiently access I-80 either north or south of the existing highway for work, services, recreation, or commerce, as well as accommodating anticipated growth in the Study Area. This entails maintaining the economic viability of the Study Area, including adjacent future developments and economic centers, through improved accessibility, modal options, and environmental sustainability.

1 The MTIS Study proposed a Diverging Diamond Interchange (DDI) at the N-370 interchange and concluded that, even with that improvement, additional improvements would be necessary to meet a LOS C. The MTIS Study proposed a new I-80 interchange as a potential strategy. The DDI interchange option has recently been programmed for construction in the STIP.

to I-80) to adequately connect the local county road network to whatever improvement is proposed along I-80. In other words, this purpose is not intended to improve all the local roadways in the Study Area but, instead, to ensure there are appropriate linkages to I-80 within the Study Area.

PROJECT NEEDS

Based on feedback from the project stakeholders and the evaluation of collected data by the Study Team (Appendix C | Land Use Planning), the PEL process identified two specific project needs and five additional project goals. The specific project needs include:

- Need 1: Unacceptable Traffic Operations — Recent growth, especially in proximity to the N-370 and N-31 interchanges, has created traffic operational deficiencies within the Study Area. Those operational deficiencies are expected to worsen over the next thirty years as the area continues to develop.
- Need 2: Lack of I-80 Connections — As development continues to occur in the Study Area, the need exists to provide improved connectivity to and from I-80. The two current I-80 interchanges are spaced six miles apart and future development will create additional out-of-distance travel to serve the traffic generated by the new development.

PROJECT GOALS

In addition to the to the primary project needs identified above, the PEL Study also has developed a series of project goals (call-out box to the right). These goals were developed in coordination with the study partners, input from the public, and during discussions with regional stakeholders. These goals have been established to help differentiate between the various improvement strategies but would not have to be fully resolved or mitigated in the same manner as a project need.

PROJECT GOALS

Goal 1: Accommodate Regional Freight Movements — The additional truck-based industries being built along I-80 have created a desire to provide improved access to I-80 for long-distance semi-trucks with either an origin or destination in the Study Area. In addition, the planned improvements to Platteview Road are expected to increase truck-based freight wanting to connect from I-29/US 34 on the east to I-80 on the west. The goal would be to improve connectivity (e.g. travel time reliability, out-of-distance travel, etc.) to I-80 for both the existing and future freight-based industries in and around the Study Area, as well as additional freight movement along I-80 and other regional corridors such as N-370, N-31, and Platteview Road.

Goal 2: Complement Existing and Planned Improvements — Numerous roadway projects are happening now, such as Platteview Road, 192nd Street, Capehart Road, 180th Street, to accommodate development activities in the Study Area. In addition, most of the local roadways in the Study Area are currently unpaved and/or typical rural roadways. The development and evaluation of alternatives should include an analysis of how well each accommodates these planned improvements and how well they tie into the local roadway network.

Goal 3: Encourage Economic Vitality and Placemaking — The creation of the Wastewater Agency has been a pivotal turning point for the future of Sarpy County, and has resulted in the re-examination of comprehensive plans to prepare for the development of several thousand acres in the Review Area. This goal includes the relative merit of each alternative to help Sarpy County and cities to promote quality growth and support comprehensive and inclusive planning activities.

Goal 4: Foster Environmental Sustainability — The current rural nature of the Review Area, as well as the existing natural features, especially along the bluffs north of the Platte River, are a community asset frequently discussed by the project stakeholders. In the Review Area, areas identified as highly sensitive are the Platte River floodplain and stream buffers. This goal would be to promote environmental sustainability and minimize impacts to sensitive and protected environmental resources.

Goal 5: Provide for Multi-Modal Connectivity – As development continues to occur in the Review Area, community leaders and regional stakeholders have expressed the desire to promote opportunities for integrating multi-modal transportation options, minimizing barriers to multi-modal integration, and to provide for improved connectivity for those modes. This goal would be to promote regional trail networks, connectivity to regional parks, new or extended transit routes and stations, as well as other bicycle and pedestrian facilities.

NEED 1 | UNACCEPTABLE TRAFFIC OPERATIONS

The large and growing traffic volumes along the N-370 (168th Street to US 50) and N-31 corridors have created growing levels of traffic congestion, large traffic queues trying to access I-80, long delays, and poor levels of service (Appendix D | Traffic Operations). Recent growth within the Review Area has resulted in reduced traffic operations as more and more people live, work, and recreate. That growth is expected to increase exponentially as more and more land becomes developed, creating further travel demand on the already congested I-80 interchanges.

TRAFFIC FORECASTING METHODOLOGY

Both the existing (2020) and future year (2050) traffic conditions were evaluated to understand both the existing traffic congestion levels and the expected future levels. For this study, both the existing and future traffic conditions were based on the analysis completed from 2015 to 2019 by MAPA as part of their MTIS Study (see call-out box on the bottom right). The expectation is that, as this study progresses into NEPA, future study efforts will further refine both the existing and forecasted travel demand.

The MTIS analysis also included both a segmental analysis and an interchange turning movement analysis:

- Roadway Segments. Various roadway segments in the Study Area were evaluated based on their average daily traffic and corresponding levels of service.
- Interchange Turning Movements. Both the N-31 and N-370 interchanges with I-80 were evaluated based on a peak hour (both AM and PM) turning movement and the overall level of service at each of the ramp terminal intersections.

ROADWAY SEGMENT LEVELS OF SERVICE

Figure 2-1 | Existing & Forecasted Traffic Volumes & Segment Levels of Service shows both the existing and future LOS conditions for most of the Study Area roadway corridors. More specifically, none of the area roadways currently (2020) experience a poor LOS (LOS D or worse). However, in the future (2050), several of those same roadways will experience significant increases in the total amount of traffic and a corresponding reduction in their LOS.

- N-31 Corridor. By 2050, N-31 is expected to have traffic volumes between 42,000 and 53,000 vehicles per day north of I-80 and approximately 29,000 vehicles per day south of I-80. That represents a LOS F north of I-80 and a similarly poor LOS D south of I-80.
- N-370 Corridor. By 2050, N-370 is expected to have traffic volumes over 56,000 west of I-80 and 45,000 east of I-80. In both locations, N-370 will be operating at a LOS F.
- Other Corridors. In addition, there are three other roadway segments in the Study Area that will also have poor LOS. Platteview Road just west of N-31 will have 13,000 vehicles per day (LOS D); N-50 just south of N-370 will have 49,500 vehicles per day (LOS F); and 168th Street just north of N-370 will have 13,000 vehicles per day (LOS D).

PERFORMANCE CRITERIA FOR NEED 1?

Traffic congestion is traditionally evaluated based on the LOS criteria, ranging from A to F, where LOS A refers to free flow, unimpeded traffic and LOS F refers to gridlock. For this study it was determined that improving LOS to a typically acceptable level of A, B, C or D would be impossible because of latent demand. Instead the study evaluated this need based on a combination of improved LOS and reduced travel volumes along both N-370 and N-31. This Need corresponds with Performance Criteria 1 Relieve N-370 Volumes and 2 Relieve N-31 as further defined in Chapter 5, specifically in Figure 5-2.

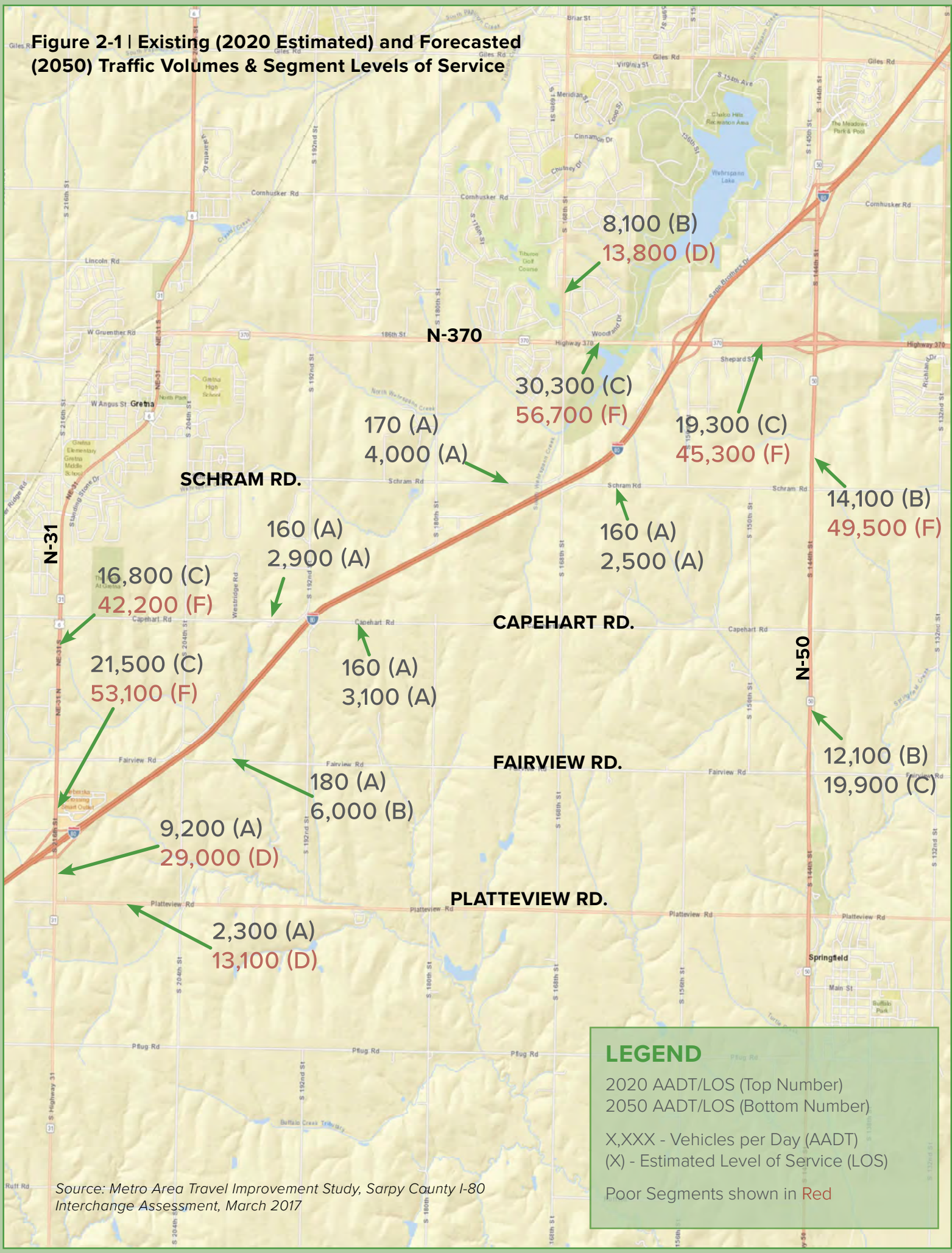
P1 P2

TRAFFIC FORECASTING METHODOLOGY FOR PEL STUDY

The existing and forecasted traffic projections, including estimated levels-of-service for both roadway segments and intersection turning movements, were compiled from the Sarpy County I-80 Interchange Assessment; a sub-area operations assessment completed as part of the Metro Area Travel Improvement Study in April 2017. When the PEL Study recommendations are further evaluated, including the required NEPA decision-making process, the traffic numbers will be further refined.

Metro Area Travel Improvement Study

Figure 2-1 | Existing (2020 Estimated) and Forecasted (2050) Traffic Volumes & Segment Levels of Service



LEGEND

2020 AADT/LOS (Top Number)
2050 AADT/LOS (Bottom Number)

X,XXX - Vehicles per Day (AADT)
(X) - Estimated Level of Service (LOS)

Poor Segments shown in Red

Source: Metro Area Travel Improvement Study, Sarpy County I-80 Interchange Assessment, March 2017

INTERCHANGE TURNING MOVEMENT LEVEL OF SERVICE

The I-80 corridor within the Study Area is currently serviced by two interchanges: the I-80 and N-31 interchange on the western end and south of Gretna and the I-80 and N-370 interchange on the eastern end and on the west side of Papillion. N-31 serves as a southern gateway into Gretna and N-370 provides a western gateway into Papillion and an eastern gateway into Gretna.

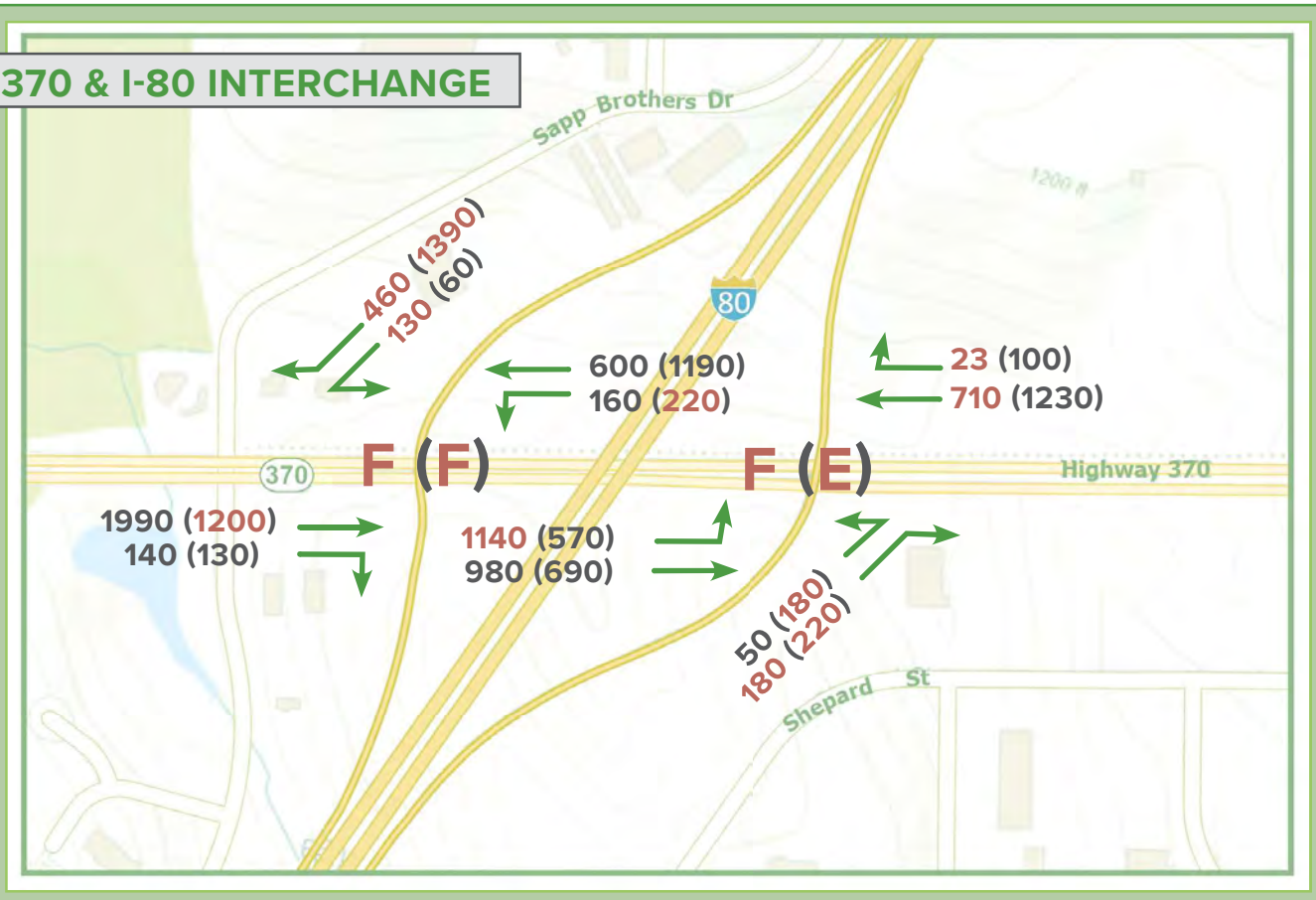
Figure 2-2 | Existing Levels of Service shows the existing (2020) and Figure 2-3 | Projected Levels of Service shows future (2050) LOS conditions for both the N-370 and N-31 interchange ramp terminals. In the future, both interchanges experience poor LOS. More specifically:

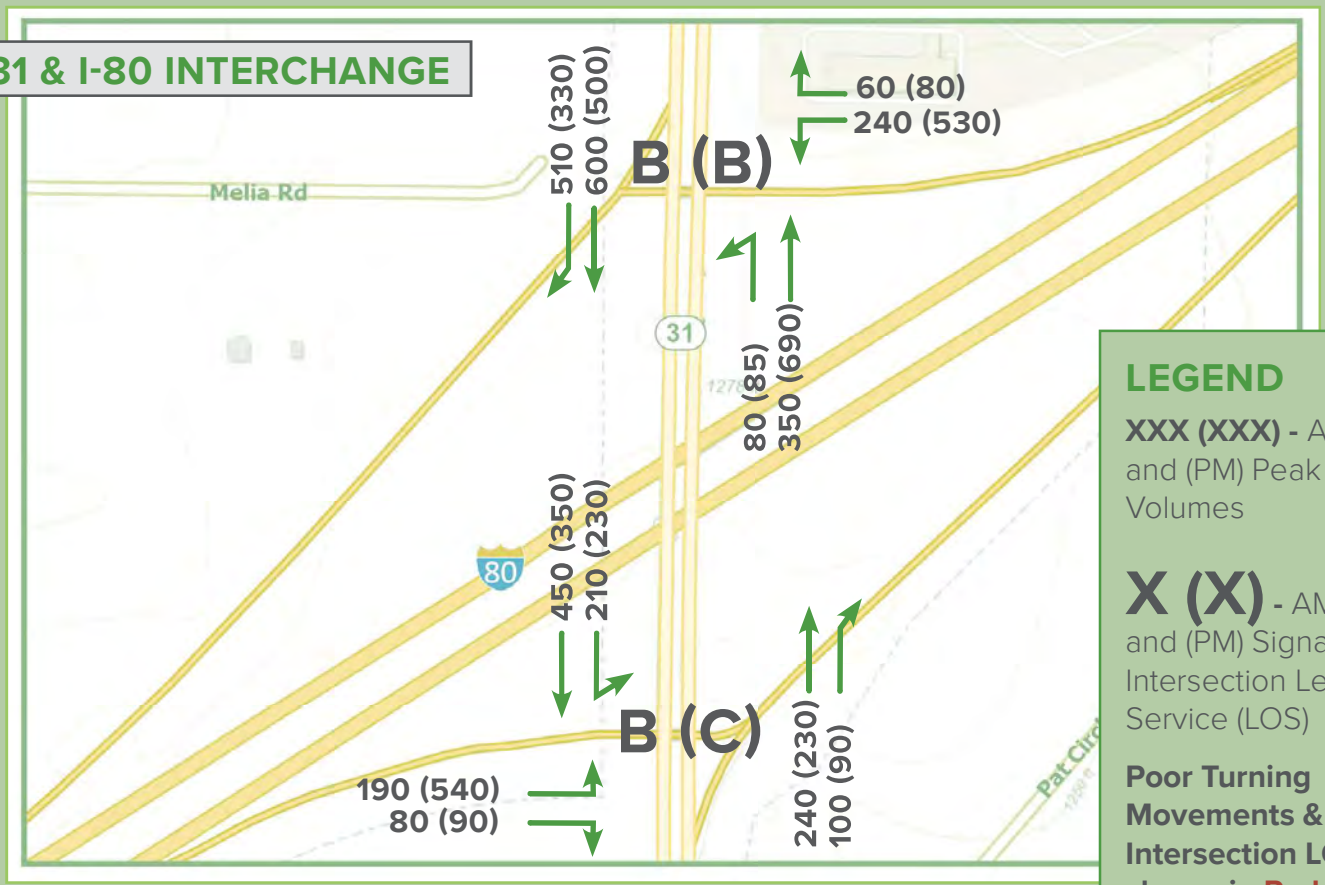
- N-31 & I-80 Interchange. Today, both ramp terminals on the N-31 interchange operate at an acceptable LOS, with LOS B or C in both the AM and PM peak periods. By 2050, the eastbound I-80 interchange ramp would be expected to operate with a LOS F during both the AM and PM peak periods. The westbound I-80 interchange ramp would be expected to operate with a LOS F during the AM and LOS E during the PM peak periods.
- N-370 & I-80 Interchange. Today, this interchange is already experiencing poor LOS with either LOS E or F in both the AM and PM peak periods. By 2050, the eastbound I-80 interchange ramp would be expected to operate with a LOS F during both the AM and PM peak periods. The westbound I-80 interchange ramp would be expected to operate with a LOS F during both the AM and PM peak periods.

TRAFFIC CONGESTION CONTINUES TO INCREASE

As more people and businesses continue to locate in western Sarpy County, the more the existing transportation network continues to deteriorate. Both the N-370 corridor between Gretna and Papillion and the N-31 corridor south of Gretna are starting to experience significant levels of congestion and, by 2050, are expected to operate at unacceptable levels of service. The pictures below show an increasingly common sight - long queuing as more and more vehicles try to access I-80.

Figure 2-2 | Existing Levels of Service at Interchanges (2020)





LEGEND

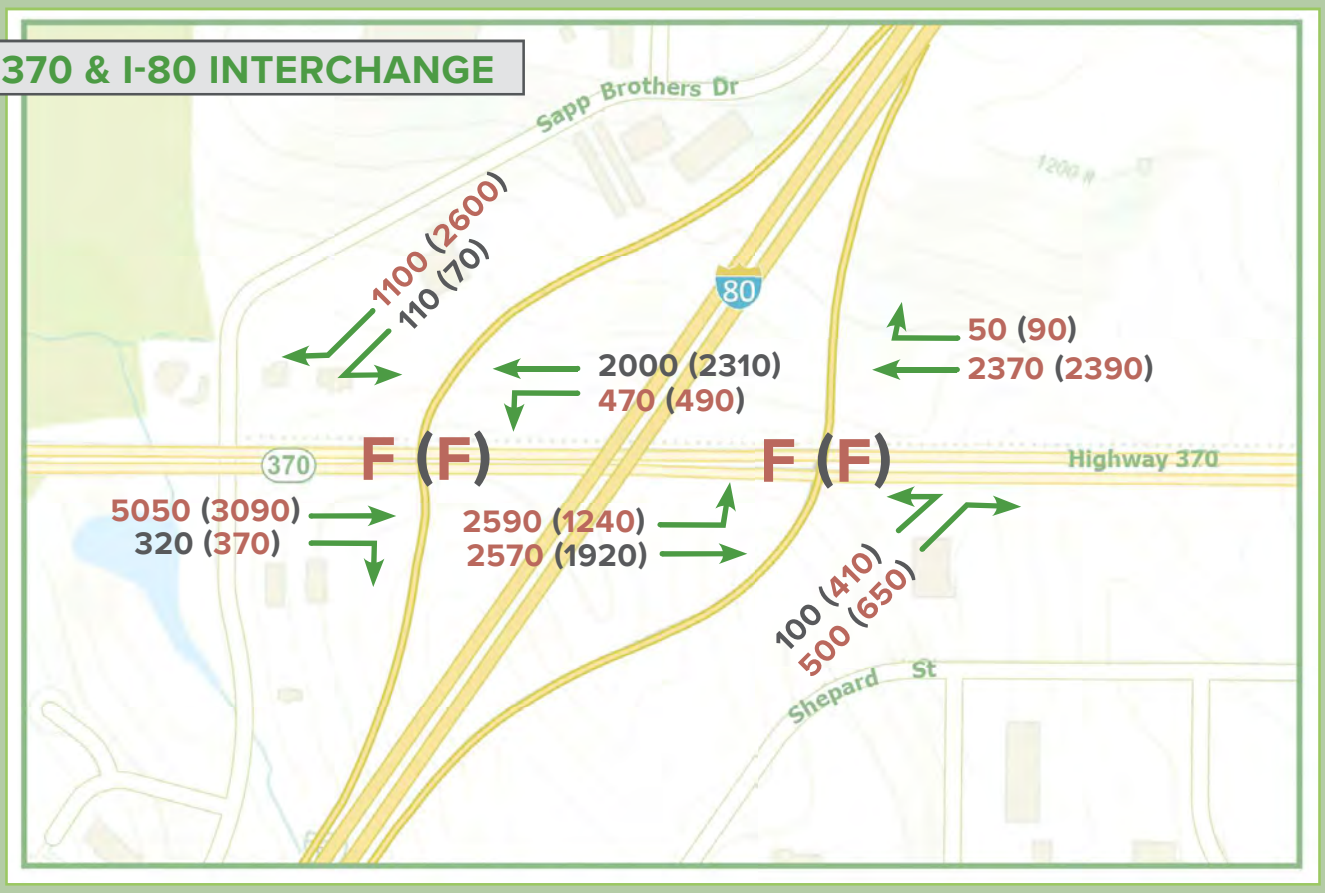
XXX (XXX) - AM and (PM) Peak Hour Volumes

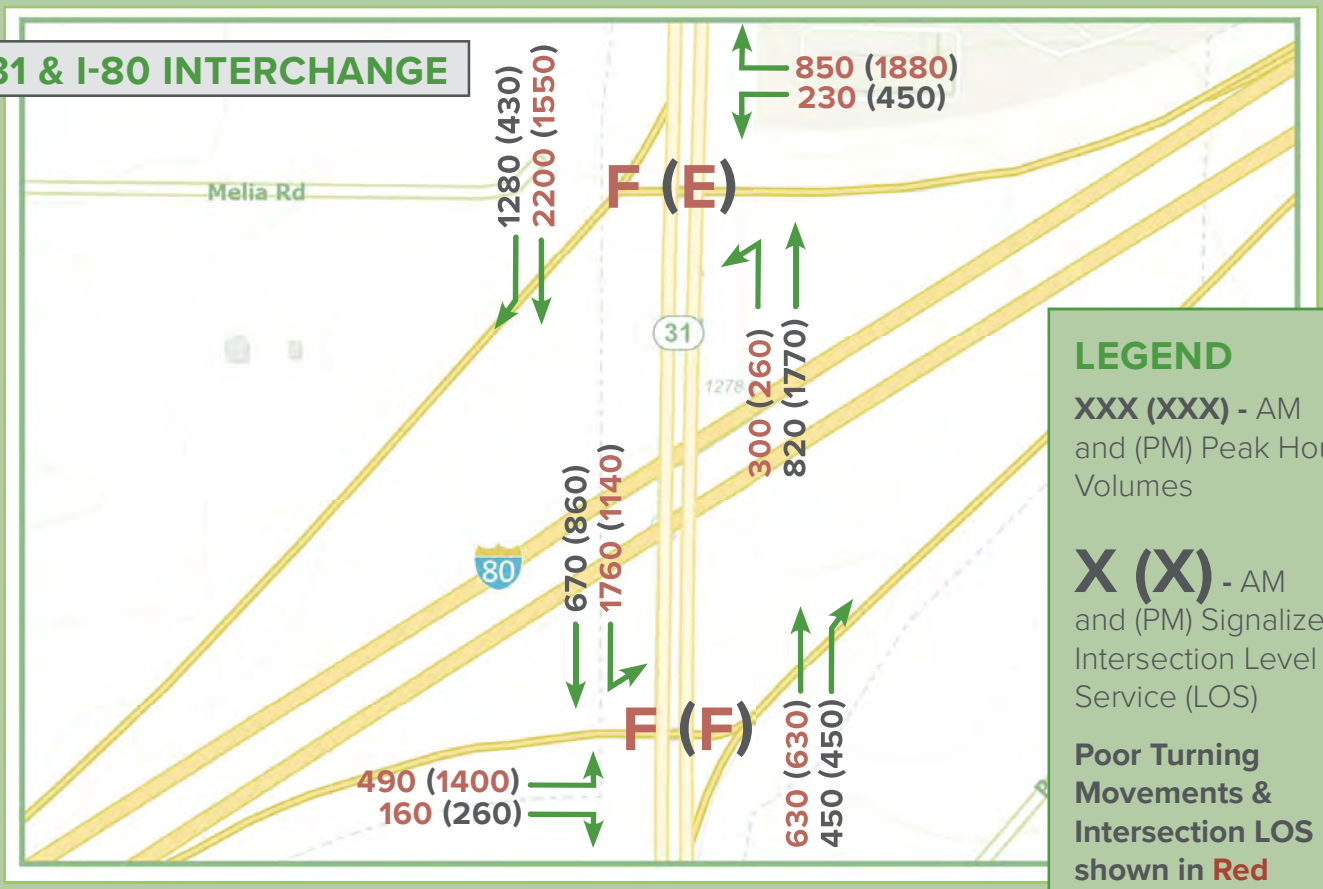
X (X) - AM and (PM) Signalized Intersection Level of Service (LOS)

Poor Turning Movements & Intersection LOS shown in Red

Source: NDOT provided counts for 2018 (Adjusted to 2020 by Benesch)

Figure 2-3 | Projected Levels of Service at Existing Interchanges (2050)





Source: Metro Area Travel Improvement Study, Sarpy County I-80 Interchange Assessment, March 2017 (Adjusted to 2050 by Benesch)

REGIONAL FREIGHT CONTRIBUTES TO POOR TRAFFIC OPERATIONS

The transportation of freight by truck has become fundamental to the region's economic prosperity. Freight systems are how goods produced by area businesses get to market and how consumer goods and business supplies produced elsewhere get to local end users. The freight industry continues to support numerous jobs in the region.

Facilities that rely on transporting truck-based freight are common within the Review Area and are especially concentrated in and around the N-370 & I-80 Interchange. As illustrated in Figure 2-4 | Existing & Forecasted Freight Generating Facilities, the expectation, based on numerous conversations with local officials (Land Use Planning Charrette, 2020), is that additional development to the south and west of the N-370 interchange will likely include more and more businesses that rely on truck-based freight.

While great for job creation, the continued growth in truck-based businesses will exacerbate the already existing transportation needs. Most freight generating facilities require efficient access to the interstate network to both deliver finished product and for the delivery of incoming supplies. Both short-distance trips to Omaha and longer-distance trips to destinations like Chicago or the east coast all require access to I-80 heading east. The same is true for destinations requiring access to I-80 heading west, whether the trip is a short-distance haul to Lincoln or a longer distance trip to the west coast. The existing N-370 and N-31 interchanges with I-80 are already projected to operate with substandard levels of service. As additional truck traffic is generated in the Study Area, the level of congestion at those interchanges as well as the connecting network will continue to worsen. Increasing the amount of time trucks are required to stack up and wait in longer queues increases the cost of doing business, adds to air and noise pollution, and contributes to driver frustration.

PERFORMANCE CRITERIA FOR ACCOMMODATING FREIGHT?

Evaluating the ability of each improvement option to accommodate freight has also been detailed in Chapter 5. For this study, the evaluation included assessing the change in truck percentages along both the N-370 and N-31 corridors...both corridors with high truck percentages and on-going congestion.

P5

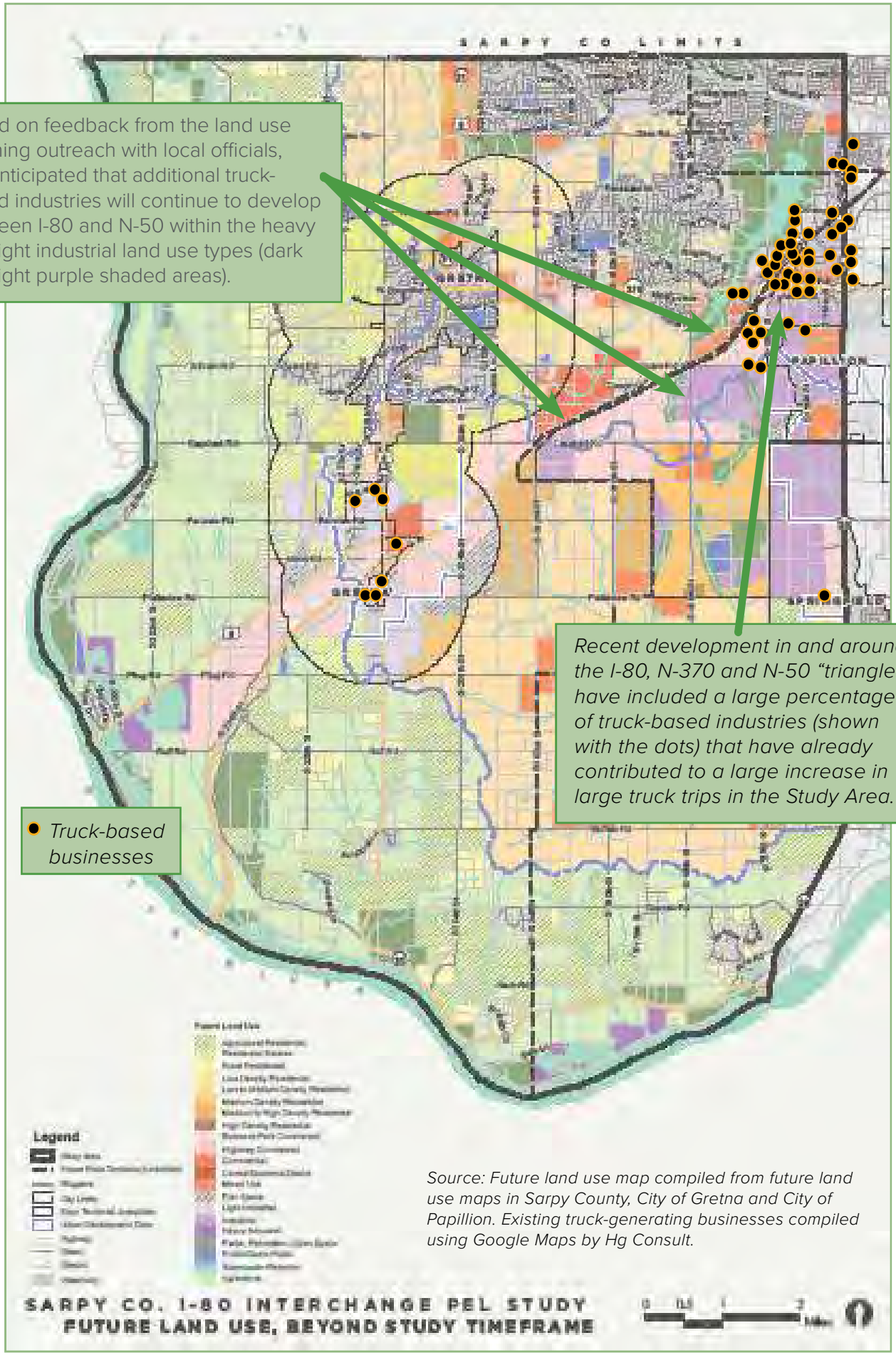
Amazon delivery trucks queuing along N-370 just east of the I-80 interchange.

New Amazon facility being constructed near the N-50 and N-370 intersection.

NEW DISTRIBUTION CENTERS ADDING TO GROWING TRUCK TRAFFIC

A new Amazon Distribution Center has already significantly increased the number of delivery trucks that travel along roadways within the Study Area. With the new fulfillment center at N-50 and N-370, the number of trucks entering and exiting this facility is expected to grow. The new facility is expected to employ 1000 employees with hundreds of truck-based trips coming and going per day.

Figure 2-4 | Existing and Forecasted Freight Generating Facilities



Source: Future land use map compiled from future land use maps in Sarpy County, City of Gretna and City of Papillion. Existing truck-generating businesses compiled using Google Maps by Hg Consult.

NEED 2 | LACK OF I-80 CONNECTIONS

As growth continues within the Review Area, the demands on the existing transportation network will continue to increase and the lack of connectivity to I-80 will result in an increased use of existing local roads and increased demands on the two existing I-80 interchanges (N-370 and N-31); both of which are expected to operate at an unacceptable level-of-service in the near future - sometime between now and 2050 (MTIS, 2017).

To better understand this need, it is important to provide additional details on the various land use planning activities taking place in the community starting with the recent development of the Sarpy County and Cities Wastewater Agency and the expected growth in the Review Area.

SARPY COUNTY AND CITIES WASTEWATER AGENCY

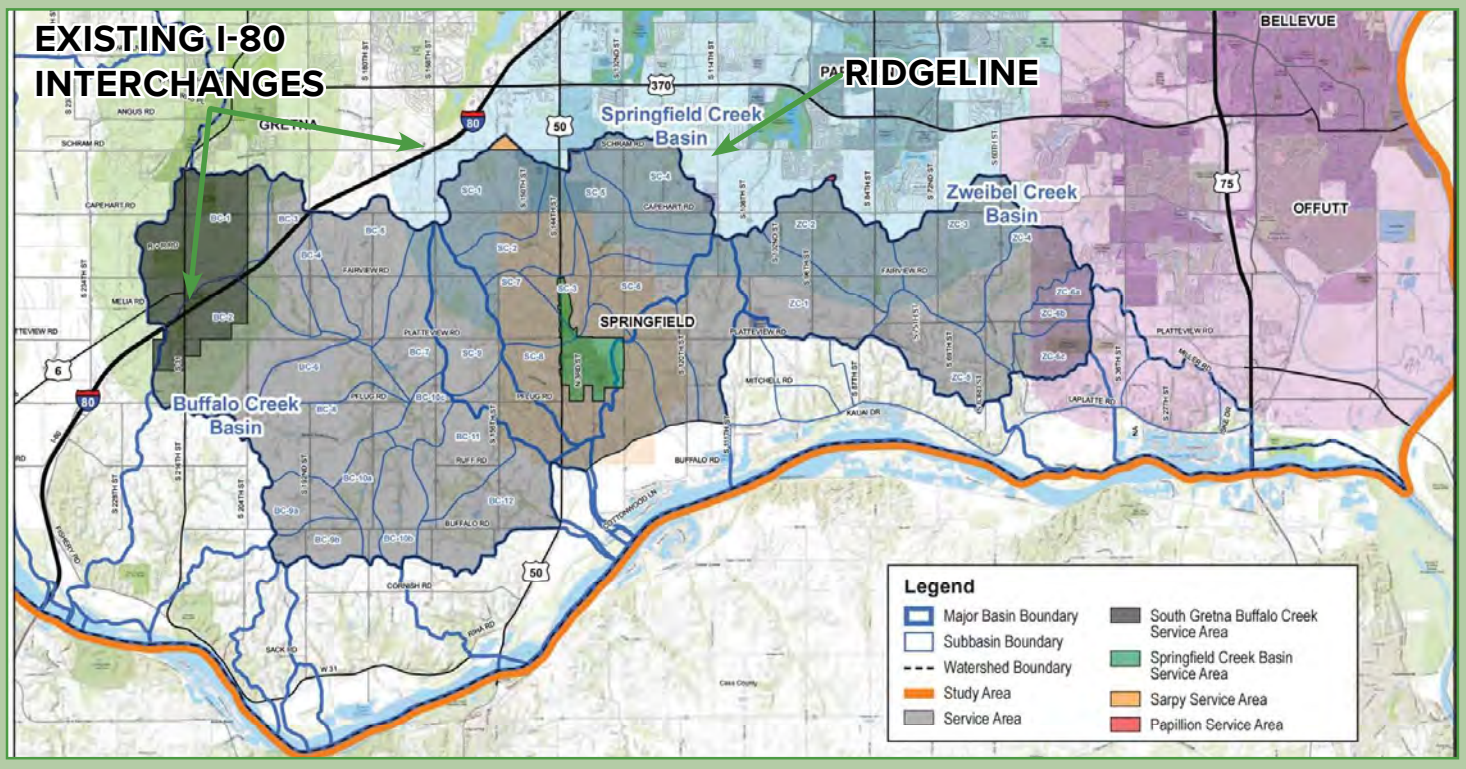
Beginning in 2007, and continuing to the present time, numerous studies have been conducted that ultimately culminated in the implementation of a combined regional approach to handling development and wastewater treatment south of the "ridgeline" that runs across the middle of Sarpy County. North of this ridgeline (highlighted in map below), water flows into the Papillion Creek Watershed, and eventually to the Missouri River; south of the ridgeline, water flows to the Platte River, and then into the Missouri River. Sanitary sewer treatment in the Papillion Creek Watershed is handled by the City of Omaha with a treatment plant along the Missouri River in Bellevue - the Papillion Creek Wastewater Treatment Plant. For decades, it has been known that this ridgeline has been an impediment to growth, effectively cutting off nearly 90,000 acres of developable land in Douglas and Sarpy Counties from orderly growth.

PERFORMANCE CRITERIA FOR NEED 2?

Evaluating connectivity for Need 2, as further explained in Chapter 5, was based on regional improvements in both Vehicle Miles of Travel (VMT) and Vehicle Hours of Travel (VHT). VMT measures the ability of each alternative to minimize indirect travel while VHT measures the alternative's ability to reduce regional congestion. In other words, how does each alternative compare related to reducing the distance traveled and/or the amount of time in travel.

P3 P4

Figure 2-5 | Additional Developable Land in Sarpy County



Approximately 40,000 acres of additional developable land in Sarpy County has resulted from the Wastewater Agency's plan to provide sewer services to the area shown in gray. Within the Study Area, the Wastewater Agency's plan will provide sewer to most of the area not already developed. If development occurs as expected, there will be a growing need to provide improved transportation services and accessibility to the regional transportation network. (Source: Sarpy County Wastewater Agency, Growth Management Plan, Sept. 2020)

Due to the efforts of Sarpy County and the Sarpy County cities of Gretna, Springfield, Papillion, LaVista, and Bellevue, a new inter-governmental agency was formed following the passage of LB 253 by the Nebraska Legislature in 2017. Since this time, the Wastewater Agency has worked to prepare cost estimates, development plans, enact agreements, and has engaged developers, real estate professionals, the public, and surrounding agencies to prepare a plan for orderly growth across the ridgeline and to construct the needed infrastructure to treat wastewater in this area. These efforts culminated in September 2020, when the Wastewater Agency approved an agreement with the City of Omaha to pipe all sewage in this area to the Papillion Creek Wastewater Treatment Plant at the confluence of the Missouri and Platte Rivers. Figure 2-5 | Additional Developable Land in Sarpy County (previous page) illustrates the overall Wastewater Agency service area approved in 2019 and the approximately 40,000 acres that the Wastewater Agency has jurisdiction over (shown as the "service area" in gray) in Sarpy County.

FUTURE LAND USE

The creation of the Wastewater Agency and the approval of the agreement with the City of Omaha has reshaped the discussion of every aspect of development in Sarpy County, and has set the stage for numerous other planning efforts to rethink their future growth plans. As a result, almost all planning in Sarpy County has now been or is being updated to reflect the new assumptions of a county poised for a population of almost 320,000 and the infrastructure needed to support it.

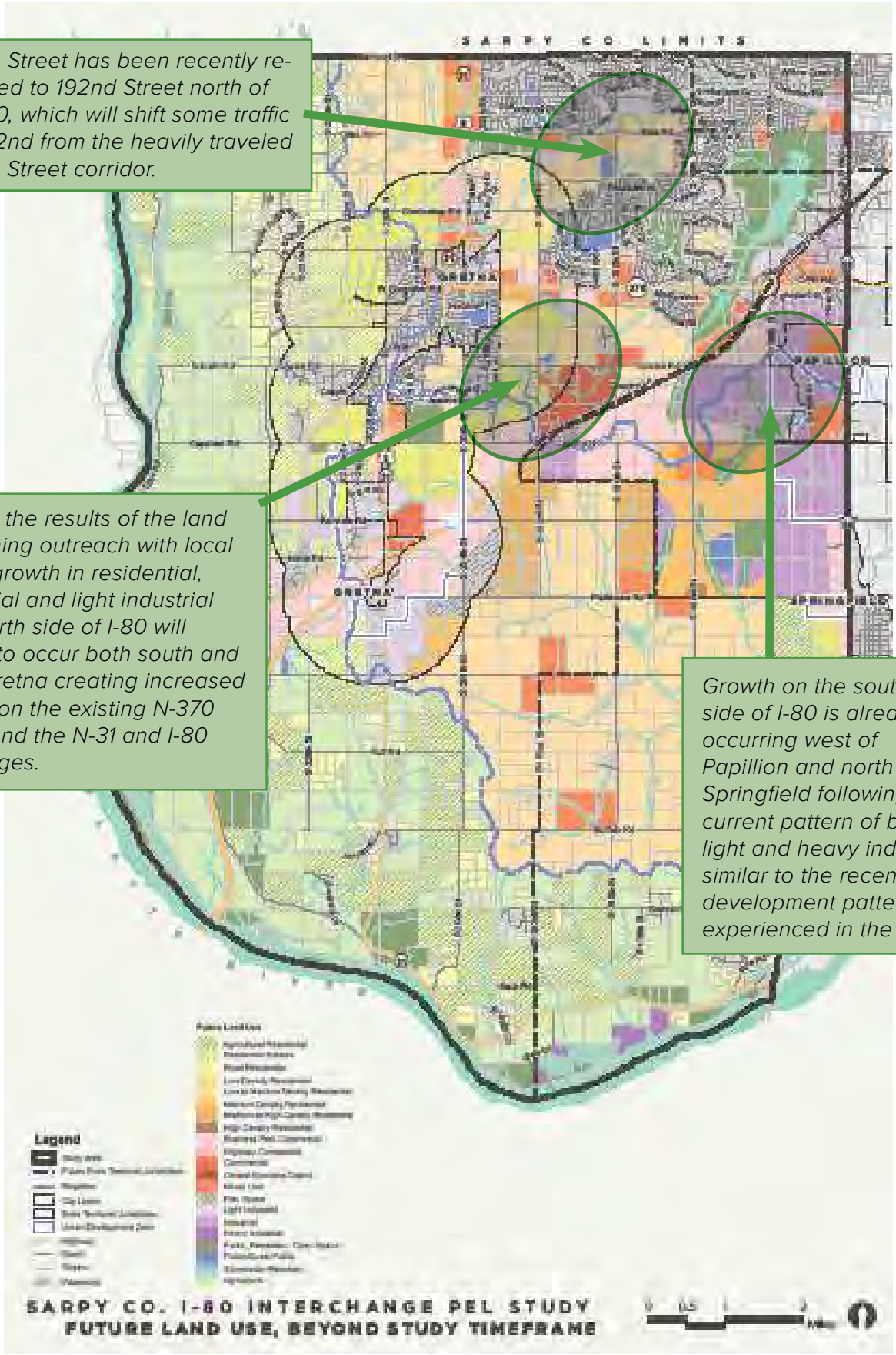
To better understand the impact the planned Wastewater Agency projects will have on future land development, the Study Team worked with representatives from MAPA, Sarpy County and the cities of Papillion and Gretna, as well as dozens of interested agencies and stakeholders to develop a combined future land use plan for the Review Area. The land use planning, documented in Appendix C | Land Use Planning, included combining the various land use plans from the different municipalities and then working through a series of charrettes to better understand what the future land use in the Review Area would be. Figure 2-6 | Future Land Use Planning illustrates the expected development within the Review Area and the representative distribution between residential, commercial, and industrial. In summary, the future land use plans in the area include extensive development in and around the I-80 corridor including extensive commercial and industrial development with lower density residential expected further away from I-80.

The Study Team also worked to better understand the phasing and timing of this planned development. As expected, the timing and phasing of development correlates directly with the improvements being planned and funded by the Wastewater Agency. Figure 2-7 | Growth Management Plan provides the detailed phasing plan for development within the Review Area. Areas shaded in yellow (Phase 1A) and blue (Phase 1B) are expected to in-fill first, followed by areas shaded in green (Phase 2) and finally in red (Phase 3).

More specifically, the land use planning activities and the phasing plan tells three different stories that all contribute to the overall need to strengthen regional connections.

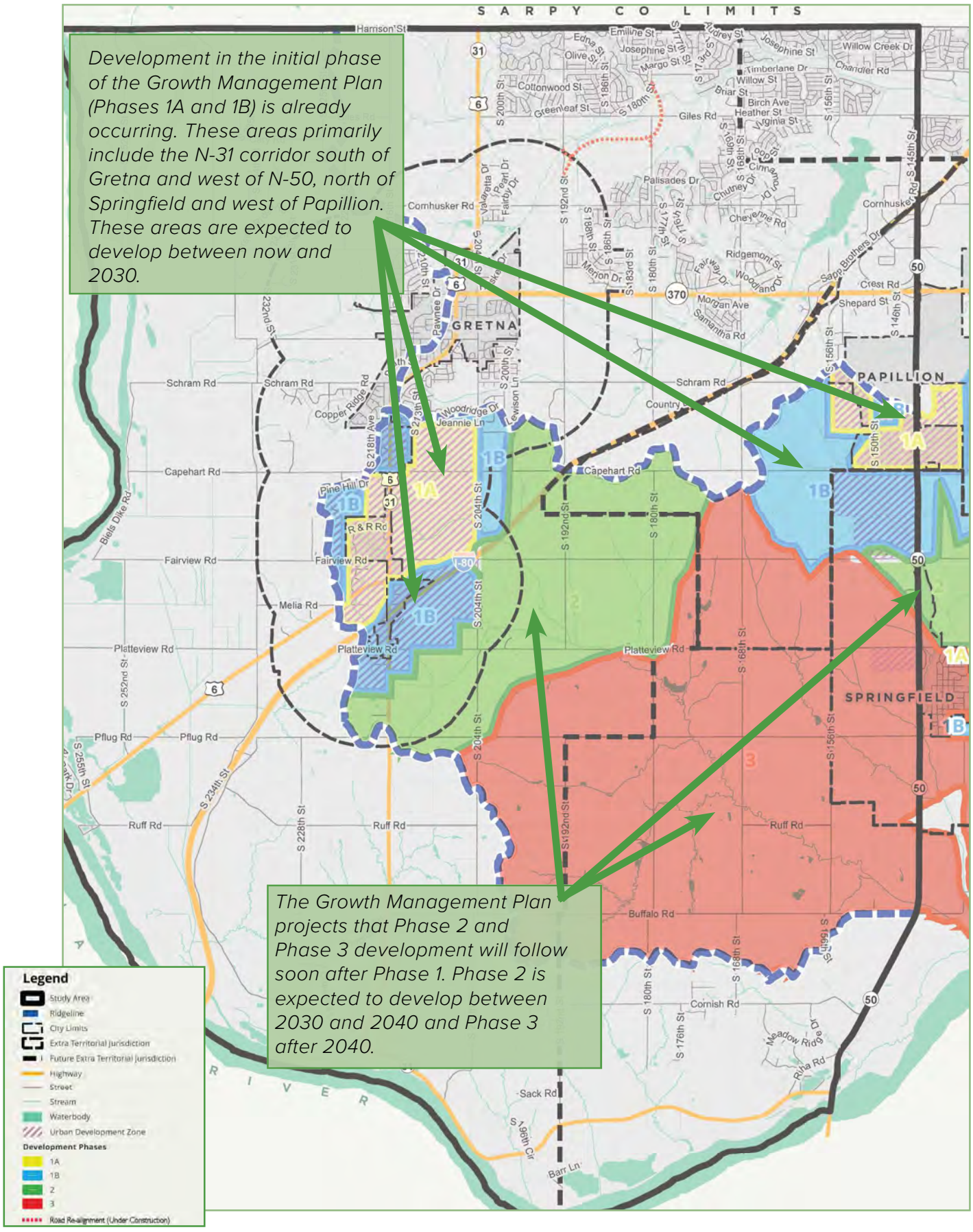
- West of Papillion (South of I-80). The area west of Papillion and north of Springfield has already started to see extensive development in and around the N-370 and N-50 corridors. Based on the future land use plans, that development is expected to continue on the south side of I-80 pushing further to the west. Without additional transportation access, the traffic generated from this additional growth will continue to rely on the N-370 and I-80 interchange that is already reaching its capacity.
- Southeast Gretna (North of I-80). The area south and southeast of Gretna is also expected to experience an increase in development as the community grows toward the interstate. Additional traffic generated in this high growth area currently utilizes the existing N-370 corridor to access the N-370 and I-80 interchange to head east or the existing N-31 and I-80 interchange to head west.
- Southwest Douglas County / Access to I-80. Currently, traffic generated in southern Douglas County utilizes 168th Street and N-370 to access I-80 contributing to the growing congestion on N-370 between 168th and I-80. Sarpy County has recently undergone a project to mitigate that problem by shifting some of the 168th Street traffic to 180th and then to 192nd via a new roadway connection (Figure 2-8 | Roadway Improvements).

Figure 2-6 | Future Land Use Planning in the Study Area



Source: Future land use map compiled from future land use maps in Sarpy County, City of Gretna and City of Papillion.

Figure 2-7 | Growth Management Plan



Source: Sarpy County Wastewater Agency – Growth Management Plan, 2020

Figure 2-8 | Roadway Improvements at 180th and 192nd Streets

The realignment of 180th Street to 192nd Street from Giles Road to N-370 (construction picture to the right) is intended to provide relief from the growing traffic congestion on 168th Street for travelers trying to access I-80. However, the realignment will only encourage more traffic from southern Omaha to utilize the N-370 corridor to access I-80. These capacity increasing projects will only lead to further stress to the existing I-80 interchanges. (Project 20-12 in Sarpy County One and Six Year Road Project Program)

There are also discussions to widen 168th Street south of Harrison Street but that project is not in the current LRTP. After the improvements are completed, without any additional improvements, traffic on 168th Street and 192nd Street will still need to use the N-370 corridor to access I-80.

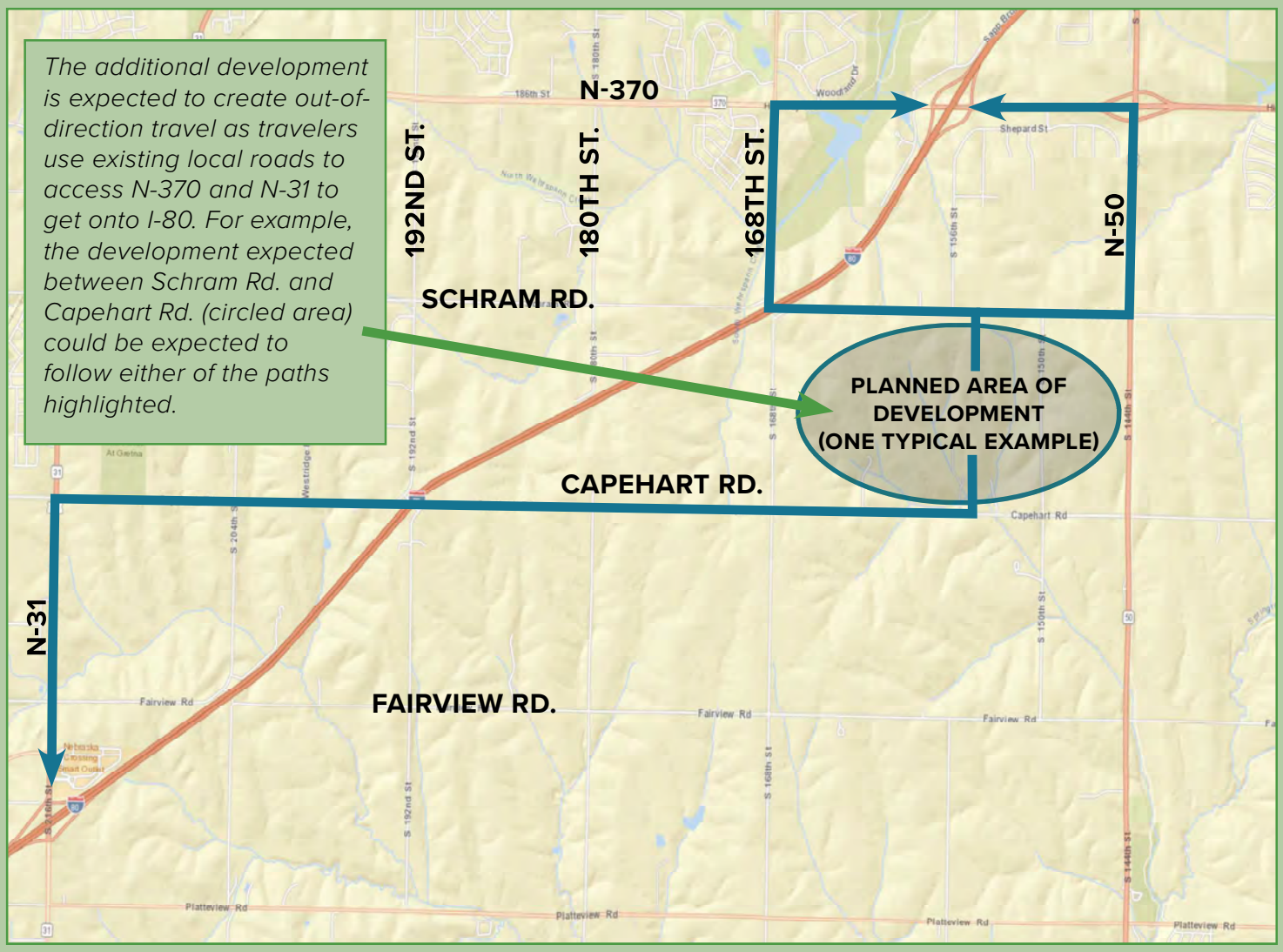
The additional traffic generated based on the future land use activities will further stress the existing N-370 and N-31 interchanges with I-80 already expected to exceed their capacities (MTIS, April 2017).

PROBLEMS RESULTING FROM PLANNED DEVELOPMENT

The additional traffic generated based on the future land use activities will further stress the existing I-80 interchanges in these ways:

- Increased Traffic Congestion at Existing I-80 Interchange. The additional development will add both vehicular and truck traffic to both the N-370 and N-31 interchanges with I-80, which are already expected to exceed their capacities (MTIS, April 2017).
- Greater Out-of-Distance Travel. The traffic generated by the additional development will also be required to navigate the existing local roadway network to access either the N-370 or N-31 interchanges. Depending on where the development occurs, this could result in significant out-of-distance travel. Figure 2-9 | Example of Additional Development's Impact on Local Network shows just one example of how this might work.

Figure 2-9 | Example of Additional Development's Impact on Local Network



SUMMARY OF PURPOSE & NEED

The existing development patterns in western Sarpy County have already begun to overwhelm the transportation network, especially in and around the N-31 and N-370 interchanges with I-80. Transportation improvements will need to be made to address these growing deficiencies. In addition, the recent plans being implemented by the County will exponentially increase both the pace and the scale of new development over the next thirty years. There exists a specific need to develop a long-term transportation strategy that addresses the traffic operational deficiencies at the N-31 and N-370 interchanges while at the same time providing improved connectivity to I-80 that can efficiently handle the additional traffic demand expected in the future.

Sarpy County I-80 Interchange PEL Study

Chapter 3 | Affected Environment

MAPA

Omaha - Council Bluffs
Metropolitan Area
Planning Agency

This chapter presents the results of social, economic, and environmental investigations conducted in support of this PEL Study being undertaken to evaluate possible solutions to the transportation problems explained in greater detail in Chapter 2 | Purpose & Need of this study. This chapter explains the existing conditions of the transportation network, existing and future land use, and a range of natural and socio-economic environmental resources that may be affected by these solutions. The intent of this chapter is to explore these resources, identify those that could constitute a fatal flaw to the development of alternatives, to help inform the alternatives evaluation process, and to present the necessary steps that may need to be taken in the future to comply with federal, state, and local regulatory requirements.

ENVIRONMENTAL REVIEW AREA

The Review Area for the PEL Study generally encompasses an area of sufficient size to address environmental matters on a broad scale for a wide range of potential transportation improvements. It also considers other nearby projects and studies that may warrant coordination with the Sarpy County I-80 PEL Study, such as the Platteview Road Corridor Study. It should be noted that several environmental resources with regulatory requirements were not evaluated because they are either not applicable to the environmental Review Area, such as Wild and Scenic Rivers or Coastal Zone Management, or because it is too premature to evaluate them, such as noise impacts. Where applicable, for some resources, preliminary data has been provided in this analysis to assist future planners when more detailed analyses are conducted, and to provide background on the conditions as they exist today. The Review Area is shown in Figure 1-1 | Environmental Review Area and Alternatives Study Area in Chapter 1 | Introduction, which includes most of western Sarpy County. The Review Area is considerably larger, by design, from the Study Area to ensure an adequate understanding of all the potential environmental resources in the area. The Review Area is bounded approximately on the south and west by the Platte River, on the east by N-50, and by Harrison Road on the north.

TRANSPORTATION RESOURCES

EXISTING ROADWAYS

The following sections describe the existing street network in the Review Area. Generally, the Review Area is undeveloped, with many gravel or unpaved roads. Where local roads are paved, they are two lanes, or in some cases, three lanes. The major highways are four-lane divided roadways, with varying levels of access control. For an overview of different road types, see Figure 3-1 | Existing Street Network Connections. Due to the development pressure in the area, segments of local roads have been or are currently being paved to connect with the highways. In some cases, road segments are missing, or are being re-aligned to accommodate impending development plans. It is very likely that at the time of publication of this report, the conditions described below will already be out of date. Where information is available, the plans for these roads are explained in the sections below, while information on other regional roadway projects was provided in Chapter 1 | Introduction.

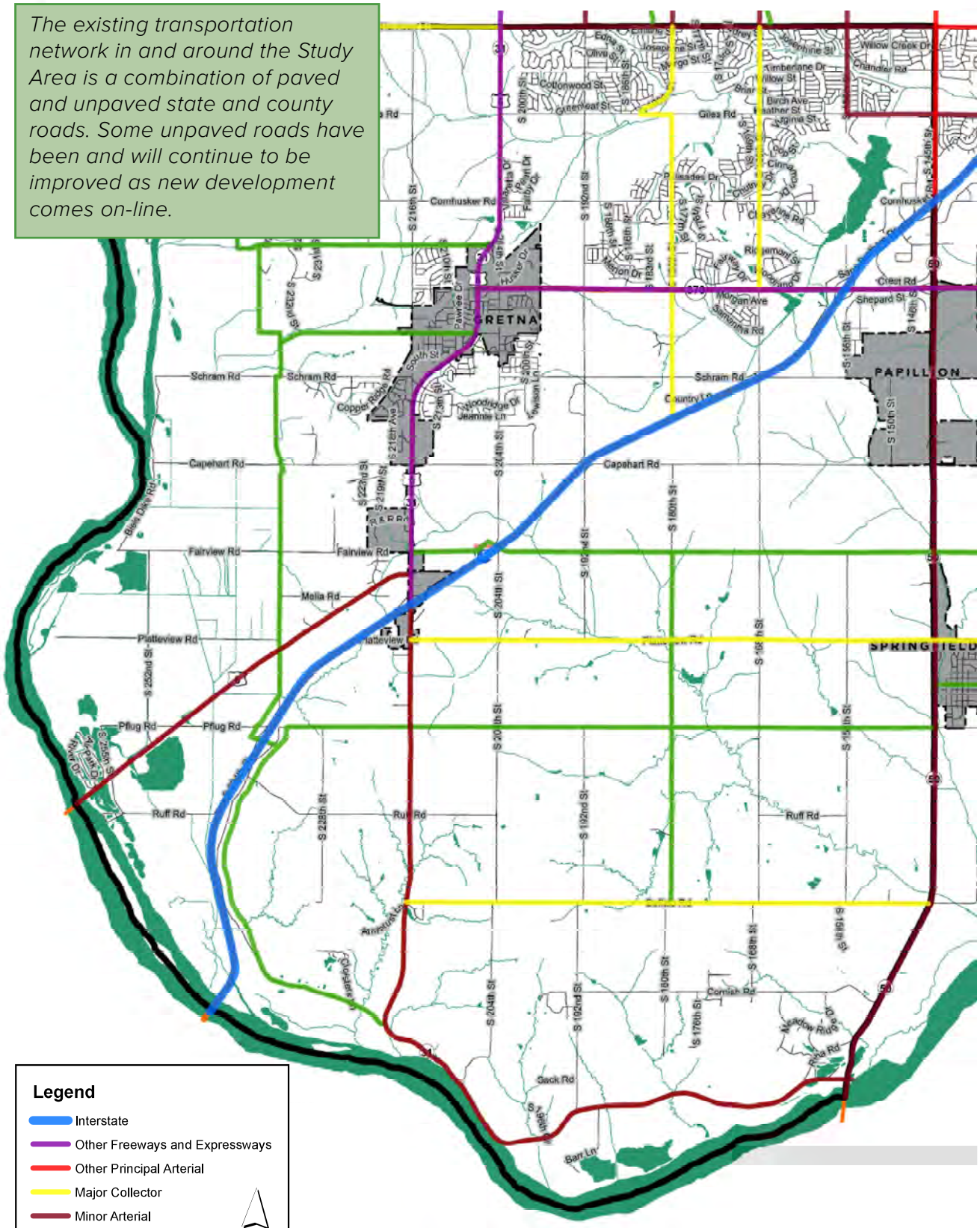
PEL STUDY VS. NEPA?

This PEL Study is being conducted in accordance with PEL guidance for improving and streamlining the environmental process for transportation projects by conducting planning activities before the start of the NEPA process. Under NEPA, federally funded projects are required to document compliance with federal regulations and to incorporate public involvement and agency participation during project development. This PEL Study is intended to provide the framework for future NEPA processes once funding is available.

PEL represents a collaborative and integrated approach to transportation decision-making that 1) considers environmental, community, and economic goals early in the transportation planning process, and 2) uses the information, analysis, and products developed during planning to inform the NEPA environmental review process. More information about the PEL process can be found on the FHWA website at https://www.environment.fhwa.dot.gov/env_initiatives/pel.aspx.

Figure 3-1 | Existing Street Network Connections

The existing transportation network in and around the Study Area is a combination of paved and unpaved state and county roads. Some unpaved roads have been and will continue to be improved as new development comes on-line.



Source: MAPA, FHWA, NDOT, IDOT - Federal Functional Classification Map, 2020

N-370

N-370 is a four-lane divided highway that runs from US 6 to US 75 in Sarpy County. According to MAPA's Federal Functional Classification (FFC) map, N-370 is classified as "other freeway or expressway" from US 6/N-31 to US 75. It is then classified as an "other principal arterial" from US 75 to Galvin Road South. N-370 has a posted speed limit of 45 miles per hour (mph) from US 6/N-31 to 200th Street and a posted speed limit of 55 mph from 200th Street to US 75. The roadway is primarily a four-lane divided highway except from I-80 to 168th Street where three westbound lanes are provided.

N-31

N-31 is a two-lane highway that runs west from N-50 (just north of the Platte River) to Platteview Road where it transitions to a four-lane divided highway, and continues north outside the Review Area and into Douglas County. The posted speed is 55 mph for the majority of the Study Area and 45 mph within Gretna city limits. It is classified as both a rural principal arterial and a minor arterial according to the FFC map.

N-50

N-50 is a paved, two-lane highway that enters the Review Area after it crosses the Platte River from Cass County, and then transitions to a four-lane divided highway at Springfield with a posted speed limit of 50 mph. N-50 continues north and shares its alignment with 144th Street as it extends through Sarpy County and into Douglas County. N-50 is classified as a minor arterial in MAPA's FFC map.

US 6

US 6 is a two-lane paved highway with paved shoulders that runs from the Platte River to N-31 in Sarpy County with a speed limit of 65 mph. It is classified as a rural principal arterial according to MAPA's FFC map. US 6 turns north at N-31, and is then coincident with N-31 through Gretna and north into Douglas County.

Capehart Rd.

Capehart Road is a two-lane, unpaved, local roadway that begins at the Platte River on the west side of Sarpy County, and extends east to I-80, where it crosses the interstate at 192nd Street. Capehart Road continues east to approximately 150th Street where it becomes a three-lane paved roadway to 144th Street/N-50. East of N-50 it is again unpaved to 84th Street, where it becomes a three-lane paved roadway, and then extends to 48th Street. East of 48th Street, Capehart Road reverts to a two-lane paved road to just west of 25th Street, and then changes to a four-lane divided arterial roadway that terminates at the main gate of Offutt Air Force Base. The speed limit varies along its length depending on the roadway surface and lane configuration.

EXISTING ARTERIALS

Existing N-370 (top) provides an important east-west connection, connecting Gretna and Papillion to each other, as well as to I-80. In addition, N-31 and N-50 (bottom) provide similar north-south connectivity on the western and eastern portions of the Study Area, respectively.

UNIMPROVED LOCAL ROADS

Capehart Road (top) and 192nd Street (bottom), similar to other existing roadways in the Study Area, are currently unimproved gravel roads. (Pictures from Oct 2019)

Schram Rd.

Schram Road is a two-lane, unpaved, rural roadway that begins at the Elkhorn River on the west side of Sarpy County, and extends east to Copper Ridge Road, where it becomes a two-lane paved road. Schram Road continues to the east and crosses N-31, where it becomes a four-lane paved road, and then dead-ends approximately ¼ mile to the east. Schram Road picks up again east of this location at 204th Street as a two-lane paved road for a half mile, and then becomes gravel again west of 192nd Street, and continues east, crosses I-80 and to approximately 156th Street, where it changes again to a paved two-lane roadway. Schram Road continues east of N-50 as a paved roadway, and with a brief unpaved section between 140th and 132nd Street, is paved all the way to 72nd Street, varying from a two-lane, three-lane, or four-lane roadway. The speed limit varies along its length depending on the roadway surface and lane configuration.

Fairview Rd.

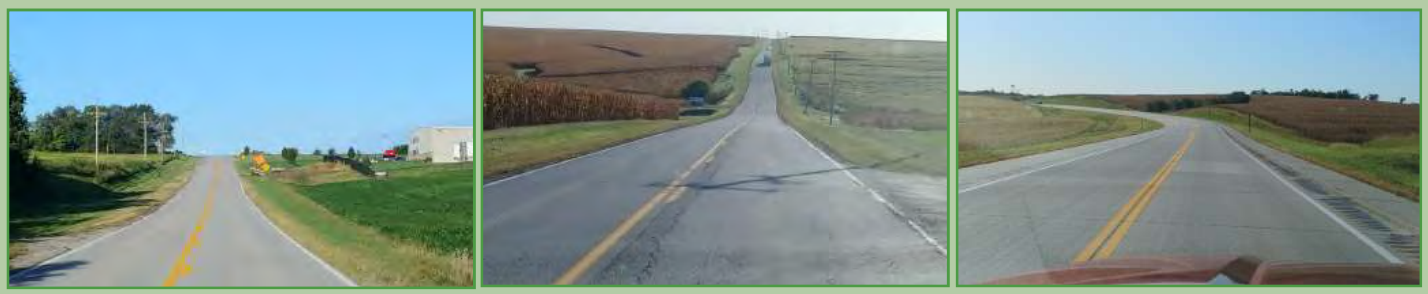
Fairview Road is primarily a two-lane, unpaved, local roadway that begins at the Platte River on the west end of the county and extends to the east, crossing I-80 at 204th Street, and then runs to 72nd Street with a 50 mph speed limit. Most of Fairview Road is unpaved, with the exception of sections between 156th Street and N-50, and between 108th Street and 105th Street. Fairview Road ends at 72nd Street, and then picks up again at 25th Street in Bellevue where it is a paved two-lane roadway until US 75. The 204th Street/Fairview Road Bridge at I-80 is an overpass bridge with a 30-foot wide concrete deck with no pavement markings.

RECENT ROADWAY IMPROVEMENTS

As development continues in the Study Area, several local roads are being improved to accommodate the additional traffic. For example, 192nd (top) and 168th (bottom), south of N-370, have both recently been paved. (Pictures from March 2021)

Platteview Rd.

Platteview Road is a paved two-lane roadway that begins at N-31 on the west and spans the entire county to US 75 where it becomes US 34. US 34 crosses the Missouri River and connects with Interstate 29 in Iowa. The cross-section of Platteview Road is mostly a two-lane roadway with grassed shoulders but varies at 108th Street where it has been widened to provide additional left-turn lanes for Platteview High School, and between Dyson Hollow Road and US 75 where the roadway includes paved shoulders and the road widens to four lanes. The posted speed is 45 mph from 84th Street to 132nd Street and 55 mph elsewhere. The corridor is currently being designed to widen Platteview Road from a two-lane roadway to a four-lane expressway from 108th Street to the US 75 interchange and re-align Platteview Road near the 36th Street and 84th Street intersections. Design is anticipated to be completed by early 2022, with construction starting by 2025.



Existing Platteview Road, located at the south end of the Study Area, is expected to be an improved four-lane expressway from US 75 on the east to, potentially, a new connection to I-80 on the west. (Pictures from Oct 2019)

168th St.

168th Street is classified as a minor arterial north of N-370 and a local road south of N-370. The roadway cross-section varies from an unpaved two-lane roadway, to a paved two-lane or three-lane roadway. South of N-370, 168th Street is a two-lane, local roadway with a 50-mph speed limit. North of N-370, 168th Street is currently a three-lane paved roadway with turn lanes at strategic intersections. The posted speed limit is 45 mph. This section has both ditches and curb/gutter. The 168th Street/Schram Road Bridge at I-80 is an overpass bridge with a 32-foot wide concrete deck with no pavement markings. There has been some discussions about widening 168th south of Harrison Street but the project has not been included in the long range plan.

180th St.

180th Street is an unpaved, two-lane roadway from Cornish Road to Capehart Road, where it ends. 180th Street picks up again just north of I-80 as an unpaved two-lane roadway to Schram Road, where it becomes a paved roadway with two lanes and a posted speed limit of 45 mph from Schram Road to Giles Road where it ends again. 180th Street picks up to the west of the BNSF railroad crossing on Giles Road, and continues to the north as a paved two-lane roadway to Harrison Street. It is classified as a minor collector road from Buffalo Road to Fairview Road and an Major Collector from its terminus north of I-80 to Harrison Street, according to MAPA's FFC map. 180th Street is currently being paved and re-configured to intersect with the new Meridian Street just south of Giles Road, and will eventually cross the BNSF railroad tracks to the north of Giles Road.

192nd St.

192nd Street is primarily a two-lane, unpaved local roadway within the Review Area. It begins south of the Review Area at N-31 and ends at Pflug Road. It begins again at Platteview Road, extends north, crosses I-80 at Capehart Road and continues north to N-370. North of N-370, the first 1/2 mile is a paved three-lane rural roadway section. North of this location, the roadway reverts back to an unpaved two-lane roadway to Giles Road, where it reverts again to a three-lane paved roadway. 192nd Street is classified as a local road in MAPA's functional classification map. 192nd Street is currently being paved south of N-370 to Schram Road, as well as north of N-370 and is being connected to the new Meridian Street south of Giles Road, which will ultimately connect with 180th Street to the north. The 192nd Street/ Capehart Road Bridge at I-80 is an overpass bridge with a 28-foot wide concrete deck with no pavement markings.

204th St.

204th Street is an unpaved, two-lane, local roadway that begins at N-31 near the Platte River, and extends north to Buffalo Road, and then crosses I-80 at Fairview Road. It continues as an unpaved roadway north to just past Capehart Road where it becomes a two-lane paved roadway. Just north of Schram Road, 204th Street widens to a three-lane paved roadway and continues north to N-370 where it no longer functions as an arterial. North of Gretna, 204th Street then shares an alignment with N-31/US 6 into Douglas County.

Pflug Rd.

Pflug Road is an unpaved, two-lane roadway that begins west of I-80, and extends east to 132nd Street where it ends. Pflug Road is classified as a minor collector in MAPA's functional classification map.

EXISTING I-80 OVERPASS BRIDGES

Existing I-80 overpass structures at 168th (top picture), 192nd (second), 204th (third) and Pflug (bottom) provide opportunities for easier integration of future interchanges with I-80. (Aerial pictures from Nov 2020, non-aerial picture from Oct 2019))

EXISTING INTERSTATE 80 (I-80)

Existing I-80 forms the backbone of the transportation network within the PEL Study Area. I-80 is currently a six-lane (three lanes in each direction) access controlled interstate highway throughout the Study Area. Access is limited to the N-31 interchange south of Gretna on the western end of the Study Area and the N-370 interchange east of Gretna and west of Papillion on the eastern end of the Study Area. I-80 is currently classified as "rural" up to N-370 based on cross-section, horizontal and vertical alignments, speeds, etc. and is classified as "urban" east of the N-370 interchange.

Existing I-80 is a six-lane access controlled interstate with two interchanges: N-31 and N-370. (Pictures from Oct 2019)

TRAFFIC SAFETY

A review of crash data provided by NDOT was completed for the highways located within the Study Area. The crash data provided was for the years 2015 through 2019. Table 1 | Crash Data Summary provides a summary of the available crash data.

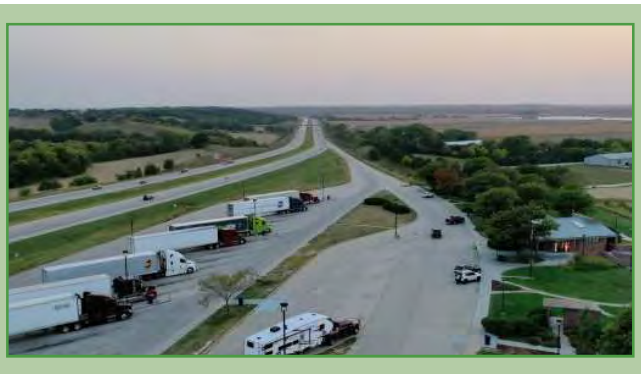
- N-370. N-370 is classified as an expressway and currently has a crash rate of 6.721 crashes per million vehicle miles (MVM) from 168th Street to I-80 and 3.248 crashes per MVM from I-80 to N-50. The statewide average for an urban expressway is 1.254 crashes per MVM.
- N-31. The crash rate for N-31 was calculated to be 5.354 crashes per MVM for the segment from US 6 to I-80 and 6.201 crashes per MVM for the segment from I-80 to Platteview Road. N-31 is classified as a four-lane rural arterial. The statewide average for other four-lane roadways is 3.285 crashes per MVM.
- US 6. The crashes reported for US 6 were primarily located at the intersection with N-31. US 6 is a two-lane rural principal arterial. The statewide crash rate for a two-lane roadway with surfaced shoulders is 0.916 crashes per 100 MVM.

Table 3-1 | Crash Data Summary

SEGMENT	Property Damage Only (PDO)	INJURY	FATALITY	TOTAL	CRASH RATE (MVM)
N-370 (168th to I-80)	220	144	0	360	6.721
N-370 (I-80 to N-50)	51	66	0	17	3.248
N-31 (I-80 to US 6)	43	31	0	74	5.354
N-31 (Platteview Rd to I-80)	17	25	0	42	6.201
US 6 (West of N-31)	48	27	0	75	5.012

MELIA HILL REST AREA - WESTBOUND I-80

An existing interstate rest area, in the westbound direction only, exists approximately 0.8 miles west of the I-80 and N-31 interchange. Access in and out of the rest area, as well as proximity issues to a new interchange or improvements to N-31, will need to be considered during the alternatives development phase, as well as in future studies. (Picture from Google Maps User Contribution - 2020)



FREIGHT OPERATIONS

To understand the role freight traffic has on existing and projected traffic congestion, traveler safety, and economic development opportunities it is important to know where freight traffic is being generated and how it currently connects to I-80. Understanding the role of freight within the Review Area will ultimately provide valuable insight into the future need for new access to I-80 as well as help, assuming there is a need, in locating that additional access location.

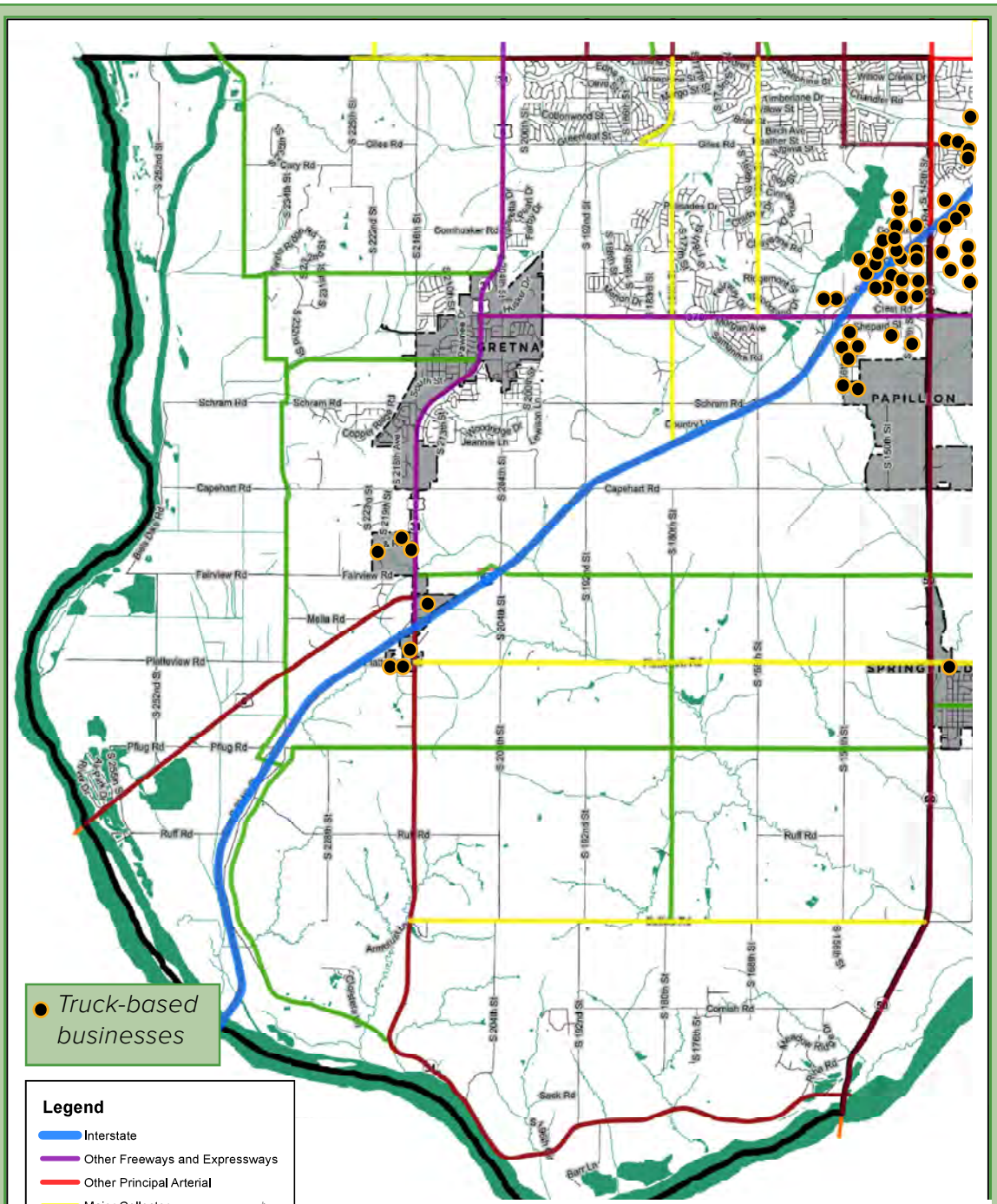
To help better understand the freight operations in the Review Area, the study team used several sources including Google Earth, the Nebraska State Freight Plan, Nebraska Trucking Association and Sarpy Chamber of Commerce directories, and Google Street View to locate potential freight generators within Sarpy County. A map of freight generators (Figure 3-2 | Freight Locations) was developed to show the concentration of freight generators in western Sarpy County. Some takeaways from this information:

- The largest clusters of freight generators are located at the I-80/N-370 and I-80/N-50 Interchanges, located on both sides of I-80 in the area, and extending north and west to the Sarpy/Douglas County Line. Recent growth in new freight generating facilities, like the existing Amazon Distribution Center (south of N-370 at 153rd Street) and the future Amazon Fulfillment Center (northeast of the corner of N-370 and N-50 interchange), are frequently occurring to the south and west of this location. Future land use plans show this area continuing to grow with additional freight generating land uses in the future.
- Smaller clusters of freight generators can be found at the I-80/N-31 interchange and north into Gretna. These clusters are also expected to expand in the future based on future land use plans.
- The continued increase in freight-based truck shipments has already started to create traffic congestion concerns, especially in and around the I-80/N-370 interchange. As development continues truck-related congestion is expected to increase as more and more trucks are trying to access I-80 to head either east toward Omaha and destinations further to the east or west toward Lincoln and the west coast.
- Other factors, such as expanded truck trips using the N-370 corridor for longer-distance trips and the eventual expansion of the Platteview Road Expressway from US 34 to I-80, will create additional concerns related to increased congestion and the potential for additional car/truck interactions at intersections and interchanges.
- N-370 has also been observed to be carrying oversized loads, such as wind turbines manufactured by Vestas in Colorado, to destinations in Iowa because of temporary width restrictions on I-80 during construction. N-370 will continue to serve as a detour route for truck traffic during both on-construction and traffic incident detouring along I-80.

AMAZON FULFILLMENT FACILITY

This facility will employ 1,000 full time workers; will have parking for over 1,800 cars and 400 truck trailers; and will have nearly 100 loading bays. The new facility will add nearly $204 million to the local economy each year by providing $15/hour (starting wage) jobs with benefits, and supporting an additional 600 workers in the community. (Picture from March 2021)

Figure 3-2 | Freight Locations



Source: MAPA, FHWA, NDOT, IDOT - Federal Functional Classification Map, 2020. Existing truck-generating businesses compiled using Google Maps by Hg Consult.

PEDESTRIAN AND BIKE FACILITIES

The Review Area is predominantly agricultural land, with some areas along the main highways becoming developed into commercial, industrial, and other higher intensity uses. There are scattered residences, most of which are single family residential dwellings on farm properties, with some small rural subdivisions. Therefore, there are very few pedestrian or bike facilities in the area. There are no designated trails outside of the few recreational parks (Whersphann Lake), and the Mo-Pac Trail, which is generally located along the Platte River south of N-31, and east of N-50 up to the City of Springfield. Sidewalks, sidepaths, and bike lanes are essentially non-existent in the Study Area.

LAND USE

EXISTING LAND USE

The area is predominantly undeveloped, consisting mostly of rural agricultural land, interspersed with rural farmsteads. There are a few areas of higher density residential developments, including the Westridge Farms subdivision in Gretna, northwest of 192nd Street and Capehart Road; the Green Acres subdivision southwest of 192nd Street and Schram Road; the Country Estates subdivision north of I-80 and east of 180th Street; and the Pebblebrooke subdivision southwest of 168th Street and N-370. There are also a few acreage developments south of I-80 at 186th Street and Fairview Road, 162nd Street and Capehart Road, and around 204th Street and Platteview Road. There are also several new residential subdivisions in the planning stages or being constructed at the time of this report, including the Harvest Hills and Hidden Hollow subdivisions northeast of 192nd Street and Schram Road. (See Figure 3-3 | Existing Land Use)

Along the major highways around the perimeter of the Study Area, there are several industrial, commercial, and technological developments, including the Nebraska Crossing Outlet Mall at N-31 and I-80 and associated truck related businesses; the Facebook and Google data centers and other industrial and warehousing development along N-50 between Springfield and I-80; and numerous commercial developments along N-370, between 168th Street and N-50.

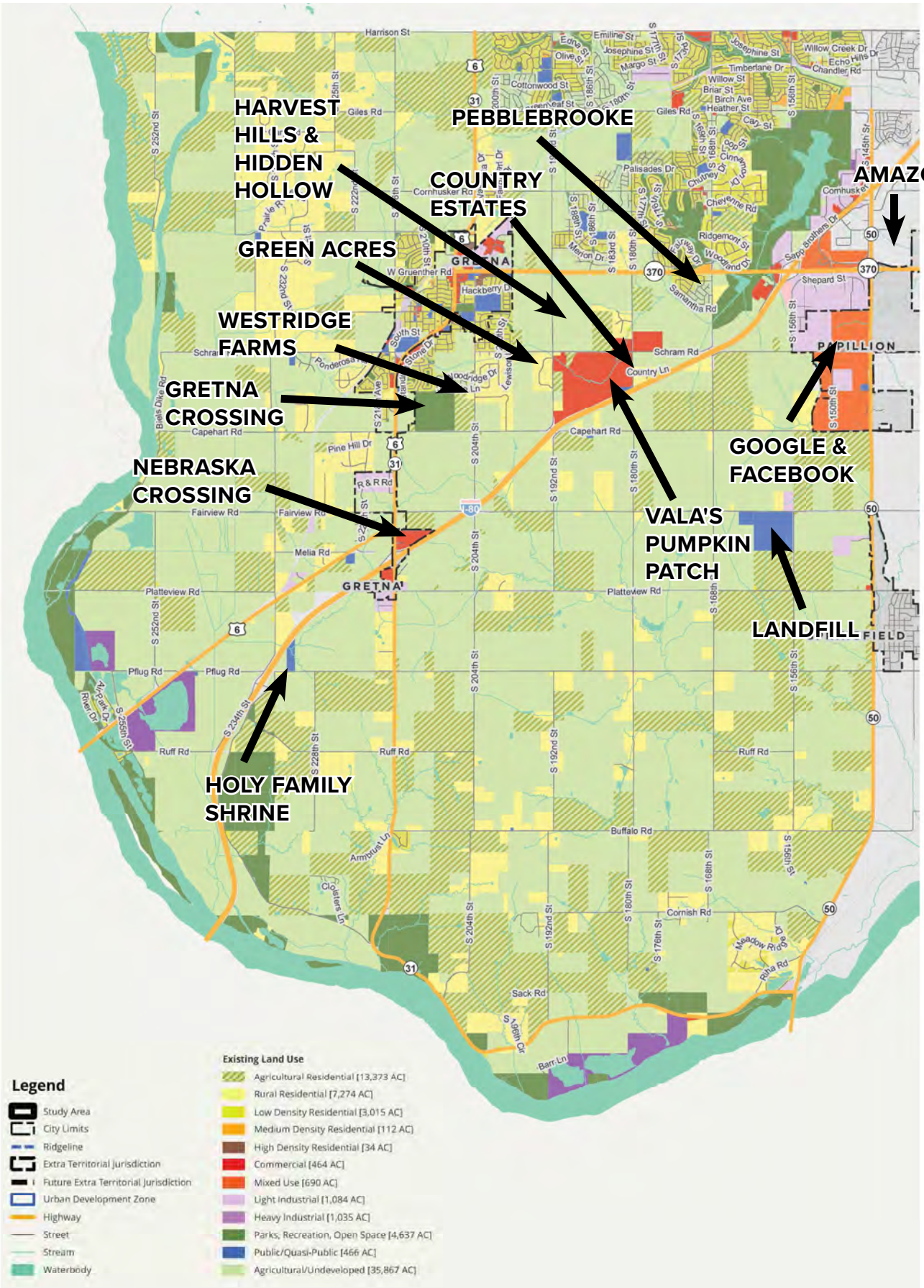
There are several points of interest within the Study Area, including the Holy Family Shrine on Pflug Road just east of I-80, Vala's Pumpkin Patch & Apple Orchard south of Schram Road between 192nd Street and 180th Street, Gretna Crossing (existing and future recreational fields and facilities) north of Capehart Road just east of N-31, Nebraska Crossing Outlet Mall at N-31 and I-80, Chalco Hills Recreation Area, Tiburon Golf Club north of N-370 and west of 168th Street, and the KOA Campground west of N-31 along US 6. Just outside the Study Area, the Cities of Gretna, Springfield, and Papillion offer numerous other points of interest, including dining, recreation facilities, shopping, and more.

View showing the rural character of much of the Study Area, taken from the 204th Street bridge over I-80 looking northeast. (Picture from October 2019)

Entrance to the Facebook data center along N-50. (Picture from October 2019)

Vala's Pumpkin Patch is situated immediately north of I-80 between 192nd and 180th Street. (Picture from Valas on Google Images)

Figure 3-3 | Existing Land Use



Source: Existing land use map compiled from existing land use maps in Sarpy County, City of Gretna and City of Papillion.

FUTURE LAND USE

A number of future land use plans, planning documents, and regional visions are currently guiding future land use and development patterns in the Review Area. Generally, these plans promote development that is sensitive to environmental assets, such as the Platte River and steep slopes of the Loess Hills, and other resources identified during their planning processes. Future municipal growth for Papillion, Gretna, and Springfield is also coordinated with Sarpy County via growth boundaries governed by an extraterritorial zoning for each municipality. Anticipated future land use data from the County sometimes differs from the future land uses the cities recommend. However, the County has advised that municipal recommendations are to be followed in such instances.

Adopted plans guide development, recommending nearly half of the Review Area's land area to be developed for residential uses of various densities; the balance of which would be non-residential development of several types (See Figure 3-4 | Future Land Use). The Sarpy County Comprehensive Plan includes four designated growth zones: Conservation, Urban Reserve, Urban Development, and Rural. The largest is the Urban Reserve Zone, which is located on both the north and south sides of I-80.

The most dominant future land uses in the Urban Reserve Zone include medium to high density residential (MHDR), business park, and general commercial. The Sarpy County plan recommends that MHDR (5 to 10 units per acre) be connected to transportation routes and located near opportunities for employment. Recommended business parks will include office and/or light industrial activities. Large-sized business parks may include commercial uses, hospitals, and educational campuses. General commercial uses will be positioned at intersections for major arterial roads, highways, and/or interstates.

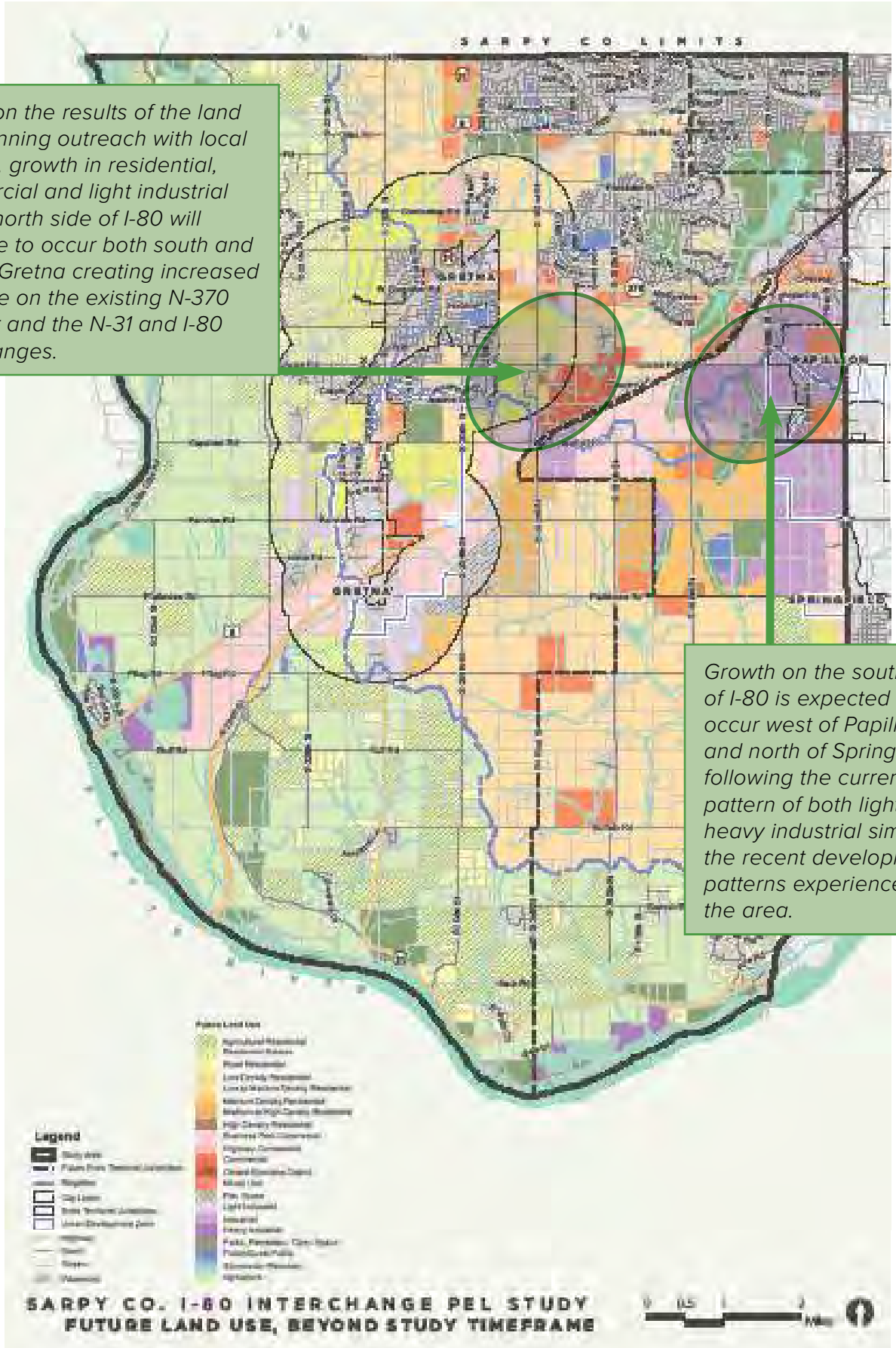
Notably, a large amount of "suburban-style" residential is recommended in the southern portion of the Review Area along with mixed and commercial uses (retail or office). The area includes several section line roads / major streets, such as 192nd Street, that could develop commercially as future growth extends to the south. Intersections of major streets would be appropriate locations for more intensive development, including a mix of uses such as commercial/office/civic.

The establishment of the Sarpy County and Sarpy Cities Wastewater Agency in 2017 and the actions taken by the agency since that time have been a significant step in opening the southern portion of the County for development. Approving development that will cross over the Papillion Creek/Platte River watersheds ridgeline, the agency's plans include phased development based on service areas (i.e., those areas that can be served by sanitary sewer lines would be assessed development fees to pay for their expansion). Top priority areas are identified as Urban Development Zones that will provide contiguous development on Gretna's south side and between Papillion and Springfield. Subsequent phases will allow development to continue moving south into the Urban Reserve Zones. See Figure 3-5 | Urban Development Zones and Phases.

PAPILLION/GRETNA BOUNDARY AGREEMENT (APRIL 2019)

In 2017, the Cities of Papillion and Gretna each made attempts to annex land in the Study Area, which resulted in a lawsuit filed by Sarpy County against the City of Gretna. This lawsuit spurred discussions between the two cities, and ultimately resulted in an agreement between them for a future city limits boundary agreement that would follow the interstate between 192nd Street and N-50, providing each of them access to future development areas on either side of the interstate. The boundary line is currently codified as a future ETJ line on zoning and comprehensive plan maps, as it would be the ultimate meeting point between the cities as they grow together. The location of the boundary at 192nd Street assumed that a new interchange would be built at this location, but the boundary can shift between 198th Street and 180th Street should the location of the interchange shift.

Figure 3-4 | Future Land Use

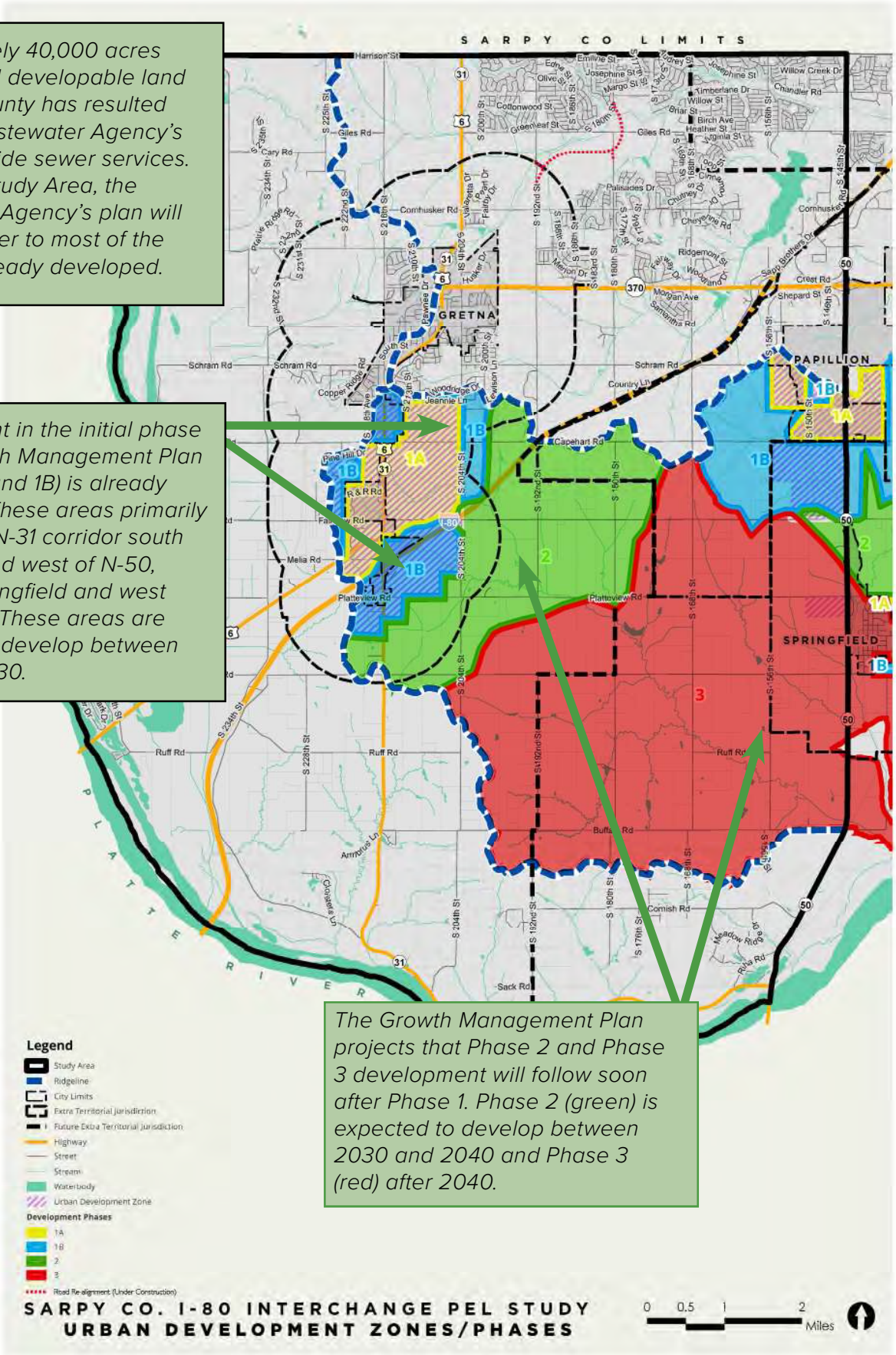


Source: Future land use map compiled from future land use maps in Sarpy County, City of Gretna and City of Papillion.

Figure 3-5 | Urban Development Zones and Phases

Approximately 40,000 acres of additional developable land in Sarpy County has resulted from the Wastewater Agency's plan to provide sewer services. Within the Study Area, the Wastewater Agency's plan will provide sewer to most of the area not already developed.

Development in the initial phase of the Growth Management Plan (Phases 1A and 1B) is already beginning. These areas primarily include the N-31 corridor south of Gretna and west of N-50, north of Springfield and west of Papillion. These areas are expected to develop between now and 2030.



The Growth Management Plan projects that Phase 2 and Phase 3 development will follow soon after Phase 1. Phase 2 (green) is expected to develop between 2030 and 2040 and Phase 3 (red) after 2040.

Source: Sarpy County Wastewater Agency Plan, 2020.

ZONING

Generally, existing zoning (See Figure 3-6 | Existing Zoning) is more intensive than existing land use in the developed portions of the Review Area (i.e., there are areas of land that are zoned for development types that have not yet been fully developed). Example locations include the north and south portions of Gretna, the N-370 corridor between Gretna's eastern city limits and Sapp Brothers Drive, and the amount of industrial development zoned in Papillion. Land is also largely agricultural in Springfield west of N-50, but zoning is slightly more intensive, as agriculture residential districts are present.

On the other hand, existing zoning is generally less intensive than adopted future land uses in the Review Area (i.e., zoning has not yet been applied to many areas that are slated for much higher intensity future land uses). Most of the undeveloped portions are zoned agriculture, agricultural residential, rural residential estate, and transitional agriculture districts, while the recommended future land uses for undeveloped areas include residential (low, medium, and high density), commercial, industrial, and mixed use. Developers will need to go through the County or municipal development processes and present proposed projects to Planning Commissions and City Councils for rezoning when they propose to develop uses that are more intensive than those allowed in the designated zoning district(s).

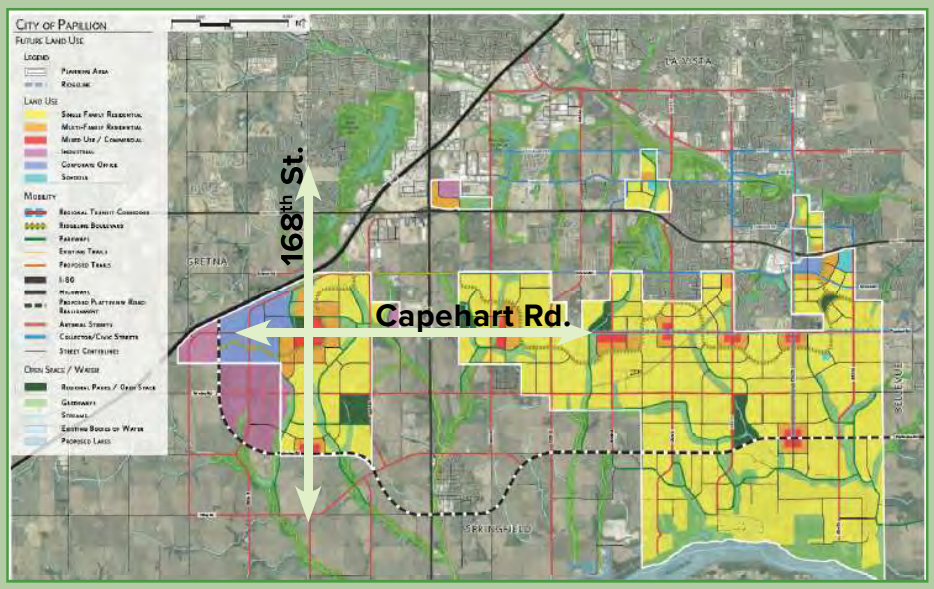
Zoning is an ever-changing process, and as new developments are proposed, this process ensures that future land use recommendations either become reality, or that there is consideration of the changes proposed.

TRANSIT FACILITIES AND ELECTRIC VEHICLE INFRASTRUCTURE

No transit routes currently exist in the Study Area; however, during the public outreach efforts of the Sarpy County Transit Feasibility Study, residents did express interest in bus service and transit hubs. Capehart Road and 168th Street have been identified as possible transit corridors within Sarpy County and would provide connectivity to population and employment centers in the region. Additional development and population densities (residential and employment) as well as a more complete roadway network are likely to be necessary before such services will become available.

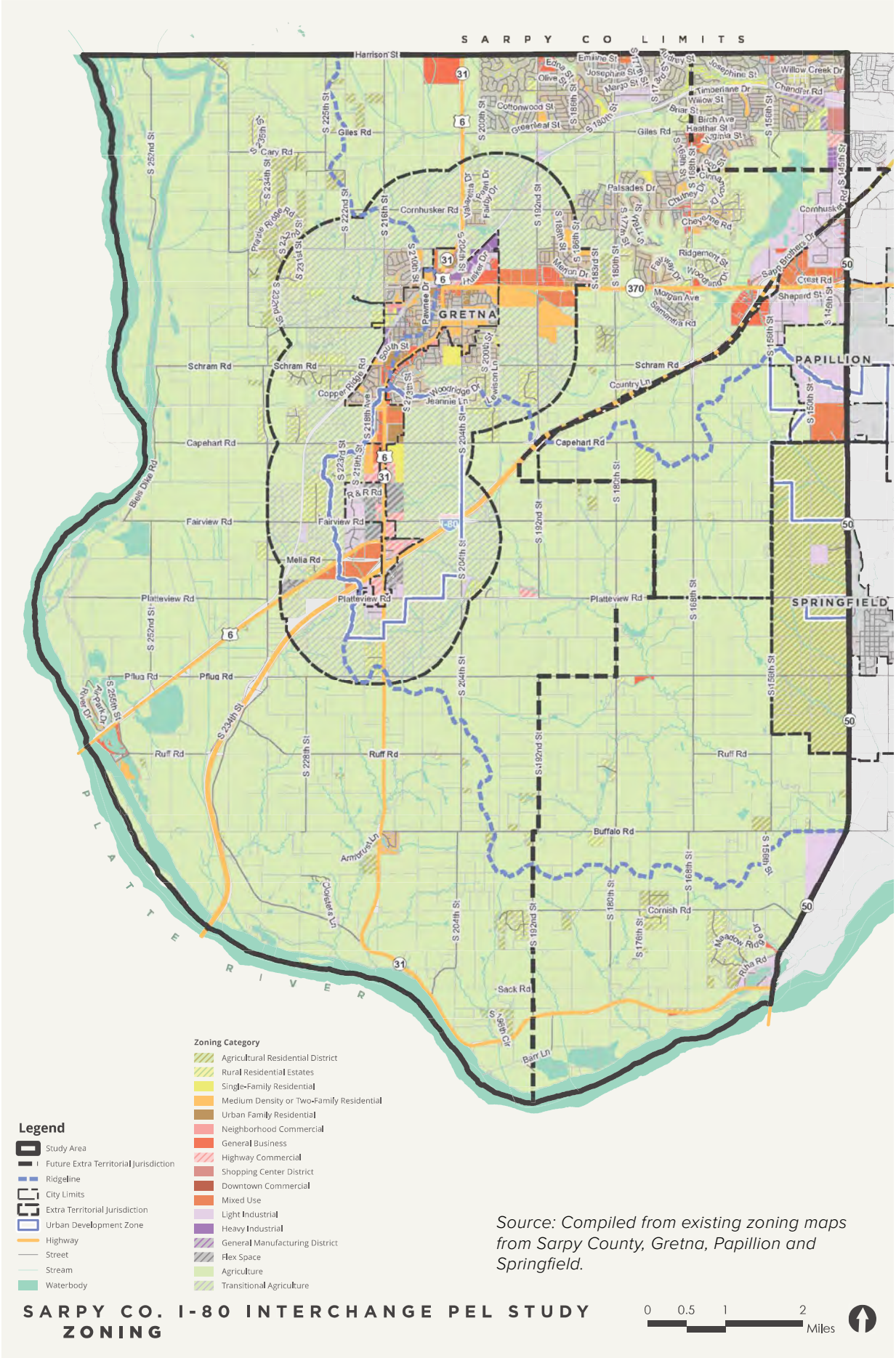
There are two (2) electric vehicle (EV) charging stations known to be present within the Study Area, both of which are located at the Nebraska Crossing Outlet Mall property. Two additional EV charging station are located just outside the Study Area. One station is located at the City of Gretna Municipal office at the corner of North McKenna Avenue and Wallace Street and the other is located at the Chalco Hills Recreation Area parking lot at 154th Avenue (near the administrative offices).

Furthermore, plans are being developed to implement an intercity bus service with three routes between Omaha and Lincoln along I-80 and US 6. Specific stops and boarding locations have not been finalized, but preliminary plans have discussed using the Nebraska Crossing Shopping Center parking lot as a stop along two of the routes, and also the Walmart parking lot at the N-370 interchange for one of these routes.



The City of Papillion's Future Land Use Plan identifies both Capehart Road and 168th Street as Regional Transit Corridors. (Source: City of Papillion 2020)

Figure 3-6 | Existing Zoning



Source: Compiled from existing zoning maps from Sarpy County, Gretna, Papillion and Springfield.

PUBLIC FACILITIES AND UTILITIES

A variety of public facilities (See Figure 3-7 | Public Facilities) are present in the Review Area, including roadways, schools, fire stations, hospitals, libraries, museums, parks and recreation areas, police stations, post offices, public works buildings, recycling facilities, trails, and pathways. Most public facilities, specifically sewer lines, arterial roadways, and collector streets, are located within the urbanized portions of the Review Area. Several specific public facilities are described in further detail below, including schools, landfills, private airports, utilities, and power generating facilities.

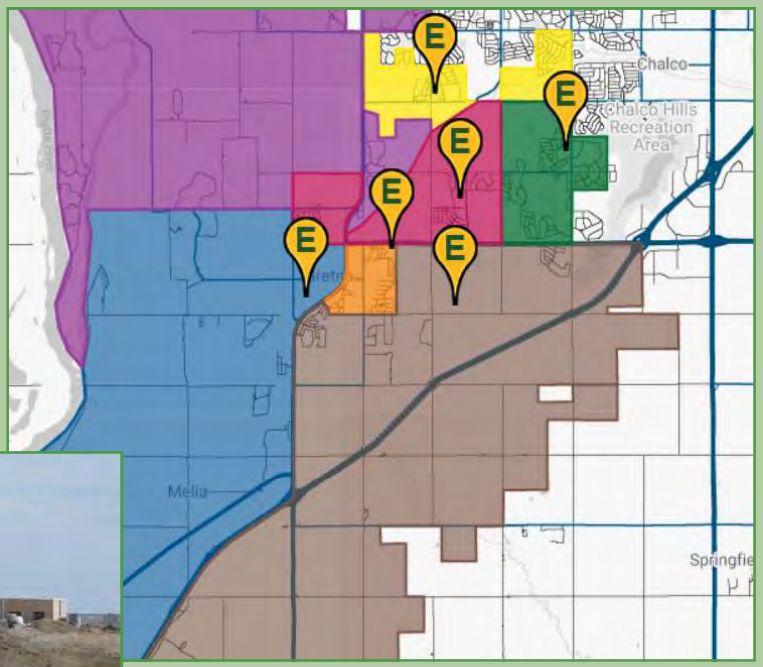
Schools

The Gretna Public Schools District covers most of the greater Review Area, with the Springfield/Platteview School District covering the southeast corner. There are several public schools in this area, including: Gretna High School, Gretna Middle School, Gretna Elementary School, Squire Thomas Elementary School (all located along N-370 and N-31 within the Gretna City Limits), Aspen Creek Elementary School and Aspen Creek Middle School (located north of N-370 near 180th Street), as well as Springfield Elementary School (located west of N-50 in Springfield). A new elementary school, Harvest Hills Elementary, was recently constructed at the northeast corner of 192nd Street and Schram Road. Attendance boundaries for this new elementary school will serve the better portion of the Study Area. With the growth of the area, it is anticipated that these boundaries will continue to shift over the next decade.

Given the anticipated growth of the area, it is also anticipated that additional schools will be planned and constructed in the Review Area; however, these plans have not been determined yet. A second high school for the Gretna Public Schools was approved by voters in 2020, and it is expected to open in the fall of 2023; and a third middle school would open in 2025. These schools would be expected to satisfy the growth for well into the future, as secondary schools can be expanded and attendance areas can be re-distributed to balance them for the foreseeable future. It is possible though that several new elementary schools could be constructed for both districts.

PLANNED EDUCATIONAL FACILITIES

Given the anticipated growth in the area, additional schools will need to be planned and constructed in the Review Area. For example, as this study began Harvest Hills Elementary school was under construction (pictured below) at the northeast corner of 192nd Street and Schram Road and opened in the fall of 2021. A second High School for the District is being constructed near 180th Street and Cornhusker Road and is scheduled to open in 2023.



Existing elementary school attendance areas (above) and new elementary school under construction at 192nd and Schram Road (left). (Picture from March 2021; Map from GPS Board of Education, March 8, 2021)

Figure 3-7 | Public Facilities

Source: Compiled from multiple sources, Sarpy County GIS, Vireo, and Benesch.

Landfills

The Sarpy County Landfill, a closed facility, is located southwest of Fairview Road and 156th Street. The 160-acre landfill operated from 1990 until 2019, outlasting its original 18-year life expectancy. The landfill has been capped and is now generating methane gas which is recaptured at a small adjacent facility. The landfill gatehouse and sorting building now serve as a transfer station for trash collected in Sarpy County, which is trucked to the Waste Connections owned David City landfill, about 60 miles west of the Study Area. The Sarpy County auto impound lot is also located at the landfill property, along 156th Street. Long term plans for the landfill include possible uses for green space and park facilities.

The Sarpy County Landfill currently operates as a transfer station where waste is collected and compacted, placed on trucks, and shipped to the David City landfill. (Photo provided by Schemmer)

Public and Private Airports

There are no public use airports in the Review Area. There are two private airfields indicated on FAA airport maps. The first is a grass landing strip, located south of Pflug Road, and just east of 216th Street (N-31). The John Koke Airfield (NE49) is not attended and has certain restrictions for landing at various times of the year, including grazing and center-pivot irrigation equipment that crosses the grass runway at times. The second is a now-defunct grass land strip located northeast of 156th Street and Pflug Road. This landing strip, J&J Airport (72NE) appears to have been plowed under in approximately 2012 and is no longer in use.

Public Utilities and Power Facilities

There are numerous public utilities in the Review Area, including high voltage transmission lines, substations, water lines, sewer lines, fiber optic lines, natural gas transmission lines, public water wells and water storage facilities, sewage treatment facilities (including lift stations, private lagoons, and septic systems), as well as numerous electrical, telephone, and cable provider distribution lines.

Some of these utility lines are within the existing ROW, and others are within separate utility easements that may run adjacent to or within the ROW. Utility companies that typically operate utilities in the area, include, but are not limited to:

- Alltel Communications
- Metropolitan Utilities District (MUD)
- AT&T
- CenturyLink (formerly Qwest)
- Black Hills Energy
- Sprint-Nextel
- Cox Communications
- Magellan Midstream Partners
- Galaxy/Dark Fiber Solutions
- National Cooperative Refinery Association
- MCI
- Verizon Company
- Northern Natural Gas
- Windstream
- Omaha Public Power District (OPPD)

A natural gas line owned by Black Hills Energy and Northern Natural Gas runs north and south, east of 180th Street (approximately 174th Street). There are small compressor stations situated where this line crosses underneath Fairview Road and Schram Road.

There is a sewage treatment plant located at the Nebraska Crossing Outlet Mall, as well as a water storage tank. The outlet mall is served by Gretna and Metropolitan Utilities District for water service.

There are currently no electrical generation stations in the Review Area. There is one OPPD electrical substation located just north of I-80, and just west of 180th Street (adjacent to Vala's), and another located just west of N-50 between Capehart Road and Schram Road for the rapidly developing data center developments along the highway (e.g., Facebook and Google).

OPPD has recently proposed the construction of a natural gas fired power generation plant at the southeast corner of 168th Street and Fairview Road, and immediately adjacent to the Sarpy County Landfill. The facility would be a 'peak-shaving facility' and would not operate continuously. OPPD has also been pursuing the construction of a 600 MW solar facility somewhere in its jurisdiction, potentially in Sarpy County.

OPPD has also proposed new substation and transmission line projects within the Review Area that would connect to the new natural gas power generating facility. These transmission lines would generally follow existing roadway corridors or half-section lines, and connect to existing substations. (https://www.oppdcommunityconnect.com/sarpy-sw)

There are also several wireless and radio communication transmitters and towers in the Study Area, including an approximately 1,500-foot-tall broadcast tower located south of Pflug Road between 192nd Street and 204th Street. This tower is operated by KPTM-TV and KEFM-FM, and also provides additional broadcast and telecommunications equipment for other users, including the Sarpy and Cass County 911 systems. Two smaller, sub 500-foot towers are also located along the south side of Capehart Road, just east of 192nd Street. These towers are owned by private telecommunications companies (currently Verizon and SBA Communications). Two other privately-owned communications towers (also sub 500-foot) are located on the north side of Pflug Road, west of N-31.

Substation along N-50 for Facebook and Google data centers. (Picture from March 2021)

Wireless transmitter along Capehart Road east of 192nd Street. (Picture from October 2019)

NATURAL AND SOCIO-ECONOMIC ENVIRONMENT

To determine if any social, economic, or natural environmental issues exist within the Review Area, known and potential environmental resources were researched and identified. This section specifically discusses those environmental, social, and economic resources typically evaluated during the NEPA process along with their specific regulatory requirements, such as the Endangered Species Act and Clean Water Act. Potential resources evaluated in this study include:

- Wetlands and Other Waters of the U.S.
- Floodways and 100-year Floodplains
- Groundwater and Surface Water Resources
- Historic Resources
- Hazardous Materials
- Parks and Recreational Areas
- Wildlife/Threatened and Endangered Species
- Prime Farmland
- Civil Rights and Environmental Justice

Each subsection provides information on applicable regulations; methodology used to inventory the environmental resources; findings of this evaluation; and where appropriate, additional considerations for future NEPA studies. While there may be additional environmental resources present within the Review Area and will be investigated as part of subsequent NEPA studies, no additional resources were identified through either the agency coordination or public engagement activities.

WETLANDS AND WATERS OF THE UNITED STATES

Regulatory Background

Wetlands and other waters of the United States are regulated by FHWA under Section 23 CFR 777, the USACE under Section 404 of the CWA and are also protected under EO 11990 - Protection of Wetlands, which requires federal agencies (including FHWA) to implement “no net loss” measures for wetlands (42 FR 26961). These no net loss measures include a phased approach of wetland impact avoidance, then minimization of impacts if wetlands cannot be avoided, and finally mitigation.

Wetlands are areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated-soil conditions. In addition to providing ecological benefits, such as supporting commercial fisheries and performing water filtration, they provide habitat for many plant and animal species, including economically valuable waterfowl and one-third of the nation’s endangered species.

Methodology

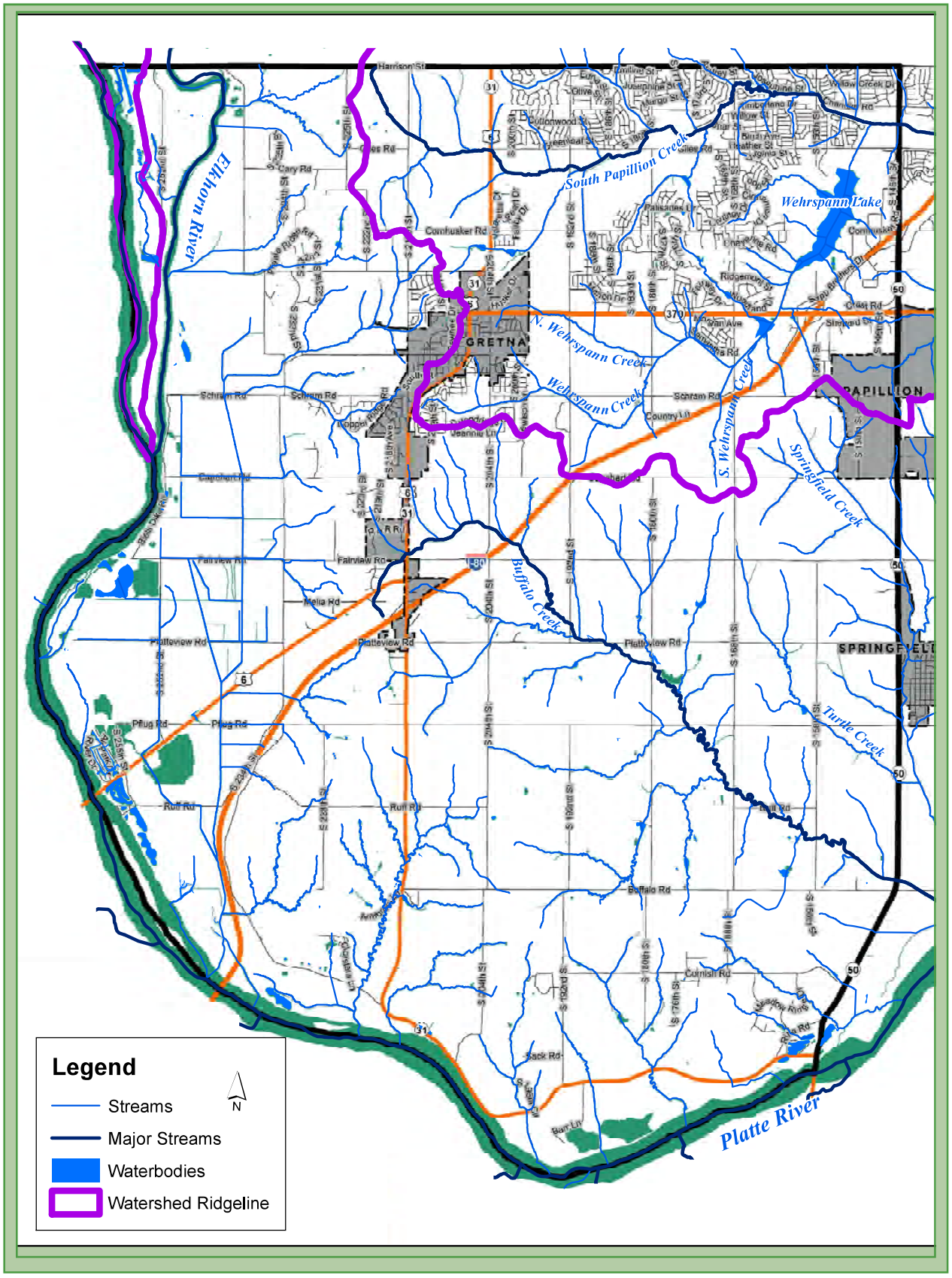
The National Hydrography Dataset (NHD), National Wetland Inventory (NWI), and aerial photos were used to assess the potential presence of wetlands and Waters of the United States (WUS).

Findings

The NHD and NWI depict numerous streams within the Review Area. The NWI also depicts emergent, forested, and/or scrub-shrub wetlands along some streams. The following named streams and their tributaries are located within the Review Area and are shown on Figure 3-8 | Streams and Watersheds.

- Springfield Creek
- Buffalo Creek
- Turtle Creek
- Wehrspann Creek
- South Wehrspann Creek
- North Wehrspann Creek

Figure 3-8 | Streams & Watersheds



Source: USGS, National Hydrography Dataset (NHD) and Sarpy County GIS.

FLOODPLAINS

Regulatory Background

EO 11988 – Floodplain Management, requires federal agencies to, among other directives, avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. Agencies shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out their responsibilities. Specifically, FHWA shall comply with EO 11988 in providing for federally-undertaken, financed, or assisted construction and improvements (i.e. a federally funded roadway project).

23 CFR 650 Subpart A – Location and Hydraulic Design of Encroachments on Flood Plains prescribes FHWA policies and procedures for the location and hydraulic design of highway encroachment on floodplains. 23 CFR 650A states that a proposed action which includes a significant encroachment shall not be approved unless FHWA finds that the proposed significant encroachment is the only practicable alternative. 23 CFR 650 Subpart A ensures that FHWA complies with EO 11988 and is consistent with National Flood Insurance Program (NFIP) regulations and standards.

Methodology

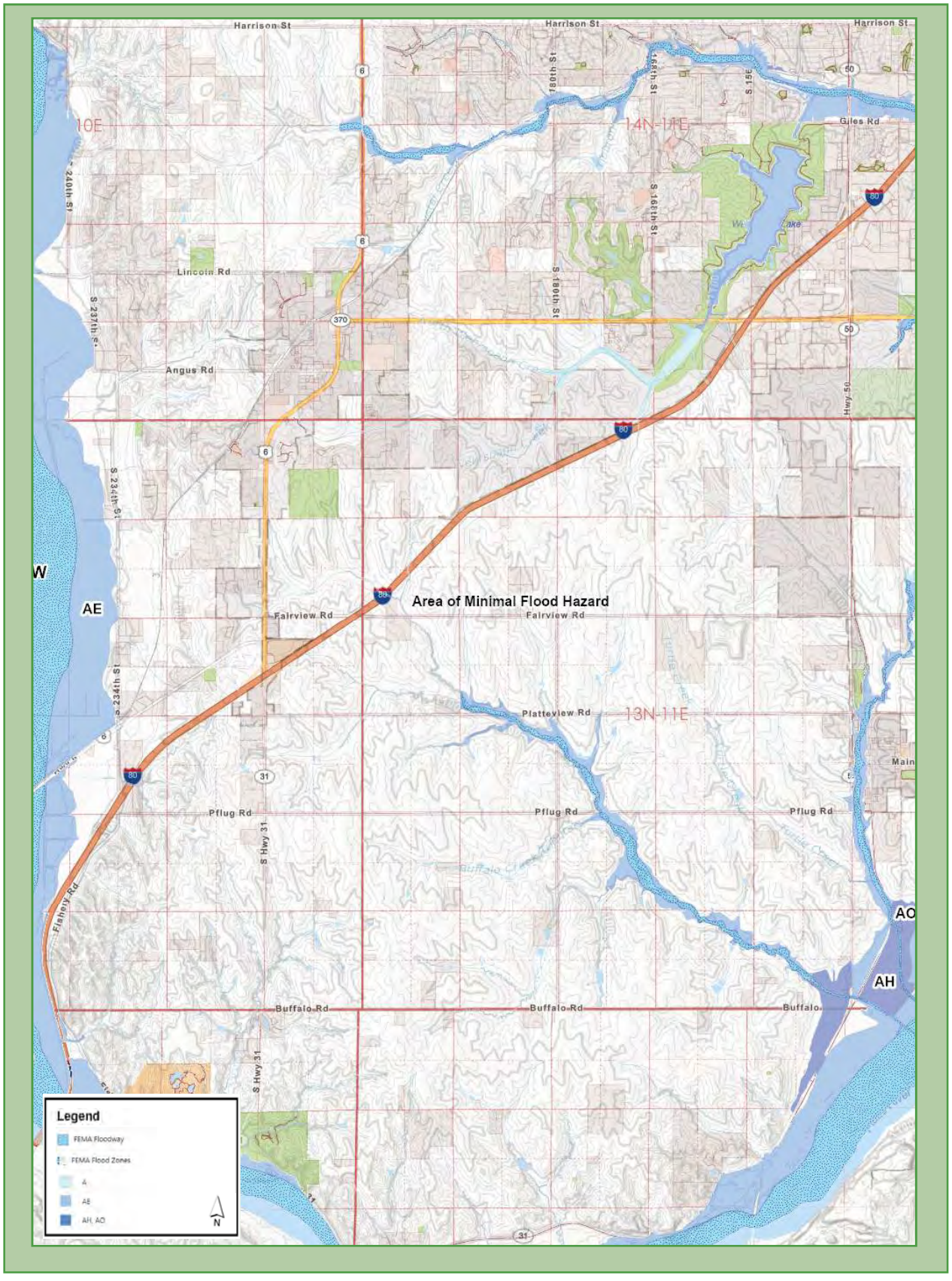
The Federal Emergency Management Agency's (FEMA) National Flood Hazard Layer (NFHL) was used to identify floodplains and floodways within the Review Area.

Findings

Three major streams and their tributaries have associated floodplains/floodways within the Review Area: Wehrspann Creek, Buffalo Creek, and the Platte River (Figure 3-9 | Floodplains). As projects progress through NEPA, consideration for EO 11988, and 23 CFR 650A will need to be taken for each of these floodplains, and floodplain permits may need to be obtained from local County officials. At this time, there are currently no regulatory floodplains along the I-80 corridor within the Study Area; however, other roadway improvements may result in the need for permits due to crossing impacts. Furthermore, as the Review Area becomes more developed, future projects may need to consider revised or expanded regulatory floodplains based on updated conditions and hydraulic or risk-analysis studies.

- Wehrspann Creek: Zone A floodplains are situated along Wehrspann Creek, North Wehrspann Creek, and South Wehrspann Creek. The Zone A floodplains along Wehrspann and North Wehrspann Creeks begin near 180th Street, approximately 1,370 feet and 2,350 feet north of Schram Road, respectively. They merge just east of 180th Street and continue east to South Wehrspann Creek, which has its confluence near 168th Street. Zone A floodplains are also present along South Wehrspann Creek, which begins near 168th Street, approximately 100 feet north of Schram Road (360 feet northwest of I-80). These floodplains merge near 168th Street and continue northeast through Highway 370 and to Wehrspann Lake.
- Buffalo Creek: Zone AE floodplains with floodway are associated with Buffalo Creek and several of its tributaries. The floodplains and floodway begin near the intersection of 192nd Street and Platteview Road and extends southeast out of the Review Area. This floodplain is situated approximately 1.2 miles from I-80.
- Platte River: The Zone AE floodplain associated with the Platte River lies within the Review Area, near the intersection of Platteview Road and 234th Street. This floodplain is situated approximately 0.5 mile from I-80 and is separated from I-80 by US 6 and the BNSF Railway line, which parallels US 6.

Figure 3-9 | Floodplains



Source: Federal Emergency Management Agency (FEMA)
Note: The NDR and NRD are working on updates to some of the floodplains in the Study Area. The preliminary maps do not appear to have any major impacts on the development or screening of alternatives and when the new maps are finalized the potential for impacts would be reconsidered at that time.

WATER RESOURCES AND WATER QUALITY

Regulatory Background

The Clean Water Act of 1972 (CWA), the Safe Drinking Water Act of 1974, and several other laws provide protection for water quality and public water systems. Therefore, potential impacts to water resources were considered with respect to groundwater and surface water resources, quantity and quality of runoff, and regulatory requirements. Several agencies, including the Nebraska Department of Natural Resources (NDNR), the Nebraska Department of Environment and Energy (NDEE), the Cities of Papillion, Gretna, and Springfield, the USACE, the P-MRNRD, and the Southern Sarpy Watershed Partnership have primary responsibilities for these resources.

Surface Water Resources

The northern half of the Review Area is within the Papillion Creek Watershed. The southern half of the Review Area is within the Platte River Watershed, or more specifically, the sub-watersheds of Buffalo Creek and Springfield Creek.

Surface water in the Review Area either flows to the northeast (in the northern portion) or to the southeast (in the southern portion). Most areas are in agricultural use, so there are a series of grassed drainages that lead to small tributaries that lead to the larger streams such as North and South Wehrspann Creek, Buffalo Creek, and Springfield Creek, before entering the Papillion Creek or Platte River, and eventually flowing to the Missouri River.

- Impaired Waters: Among other regulations and requirements, the CWA requires states to prepare a list of impaired surface waters every even numbered year. From this list, referred to as the 303(d) List of Impaired Waters, states prepare Total Maximum Daily Loads (TMDLs) that include the pollution control goals and strategies necessary to improve the quality of these waters and remove the identified impairments. The waters on the 303(d) list do not support their assigned beneficial uses as listed in Title 117 – Nebraska Surface Water Quality Standards. NDEE is also required to provide a surface water quality report every two years, known as the Section 305(b) Water Quality Integrated Report, which describes the status and trends of existing water quality for all waters of the state and provides information as to the extent to which designated uses are supported (NDEE, 2018).

  NDEE's 2018 Water Quality Integrated Report and the 303(d) list were approved by the U.S. Environmental Protection Agency (EPA) on April 1, 2018. The Integrated Report identifies five categories of waters, with Category 5 being the most impaired. There are only two Category 2 impaired waters within the Review Area: Wehrspann Creek and Buffalo Creek. Category 2 impaired waters are not given specific impairments and are not otherwise protected. The closest Category 5 impaired waters are Wehrspann Lake (impaired for aquatic life – fish consumption) and the Platte River (impaired for recreation and aquatic life – fish consumption). While these waters are not in the immediate Study Area, surface water within the Study Area eventually flows into both of these waters. (303d list – impaired waters http://deq.ne.gov/Publica.nsf/Pages/WAT251 (2018 integrated report) (NDEE))

- Regional Water Quality: The Omaha Regional Stormwater Design Manual, prepared by the Papillion Creek Watershed Partnership (Papio Partnership), a regional coalition of cities and municipalities, governs the design for stormwater runoff and conveyance systems, as well as requirements for improving stormwater quality in the overall Papillion Creek Watershed, which covers an area approximately 402 square miles in size (Papio Partnership, 2009). As noted earlier, the northern portion of the Review Area is in the Papillion Creek Watershed.

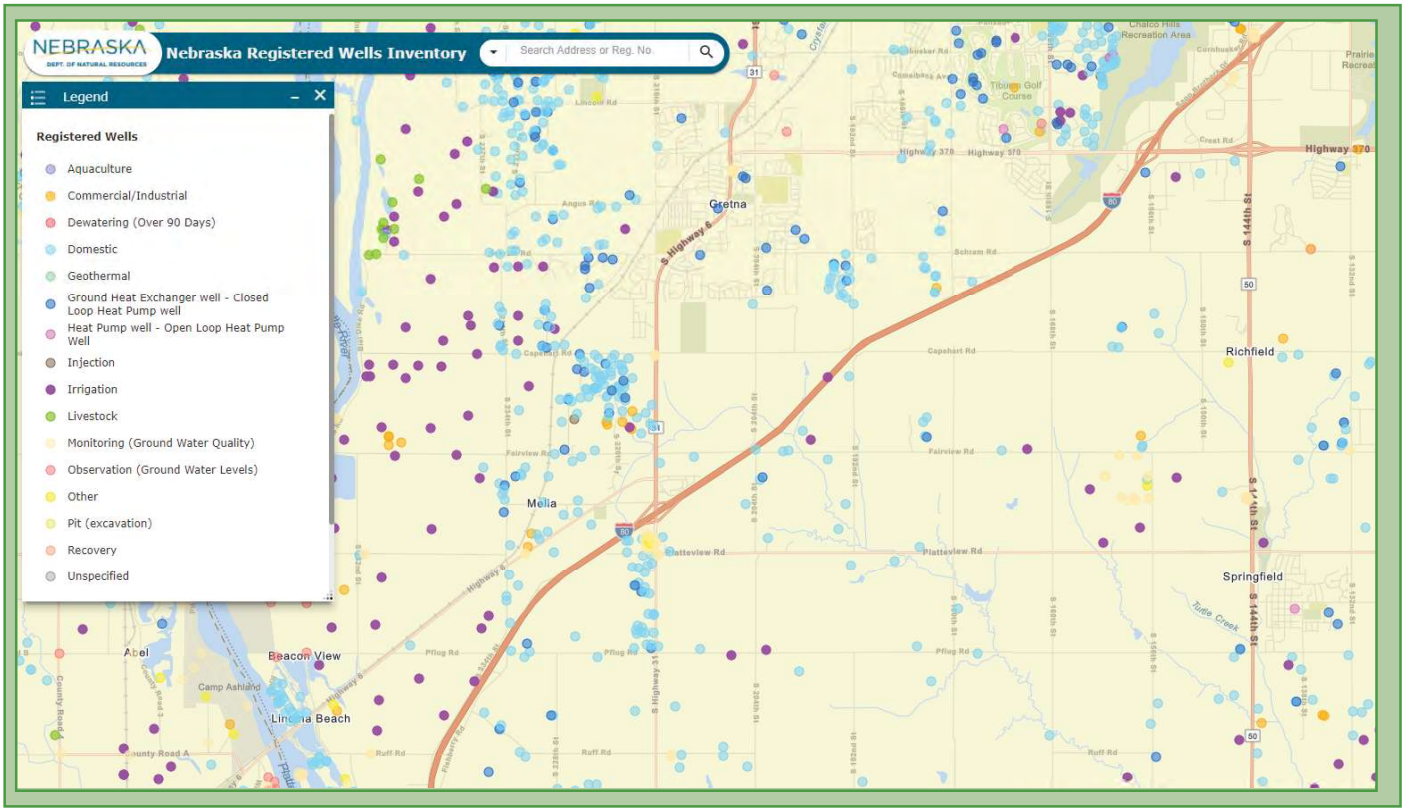
  The Southern Sarpy Watershed Partnership was formed in 2016 through an interlocal agreement between the Cities of Bellevue, Gretna, Papillion, Springfield, Sarpy County, and the Papio-Missouri River Natural Resources District. The purpose of the Partnership is to make sure that a watershed management plan is in place before the area is developed. (http://www.southernsarpy.org/) The Southern Sarpy Watershed Partnership is currently in the process of developing a watershed management plan that will guide future development, determine the optimal and proposed locations for flood control features, and will provide protection to water quality for the nearly 40,000 acres that have now been opened for development south of the ridgeline.

Groundwater Resources

Current Nebraska law requires that all water wells must be registered with the State. Exceptions to the law include test holes in existence for ten days or less, dewatering wells with intended use of ninety days or less, and domestic or livestock wells completed prior to September 9, 1993. In addition to private groundwater wells, municipalities maintain groundwater wells for public drinking water supplies.

- Registered Wells: Numerous groundwater wells are located within the Review Area (Figure 3-10 | Registered Wells). These wells are used for domestic, commercial, livestock, irrigation, monitoring, and other uses. Groundwater wells are more highly concentrated in the western portion of the Review Area between the

Figure 3-10 | Registered Wells



Source: Nebraska Department of Natural Resources (DNR), 2021

Elkhorn River and 204th Street from Pflug Road to Harrison Street. The majority of wells used for livestock and irrigation are located within this area, as well as many of the domestic wells. Domestic wells are also highly concentrated in the neighborhood west of Chalco Hills Recreation Area along 168th Street from N-370 to Giles Road.

The number of groundwater wells is generally lower along the I-80 corridor, with a few exceptions. A cluster of domestic wells are located at the intersection of I-80 and N-31. These wells are located alongside N-31 from Pflug Road to Capehart Road. A group of groundwater quality monitoring wells are centered on the truck stop and industrial area located at the intersection of N-31 and Platteview Road, as well as around the Sarpy County Landfill at 156th Street and Fairview Road. A few irrigation wells are located directly adjacent to I-80 between Fairview Road and Capehart Road, with domestic wells scattered along the corridor as well.

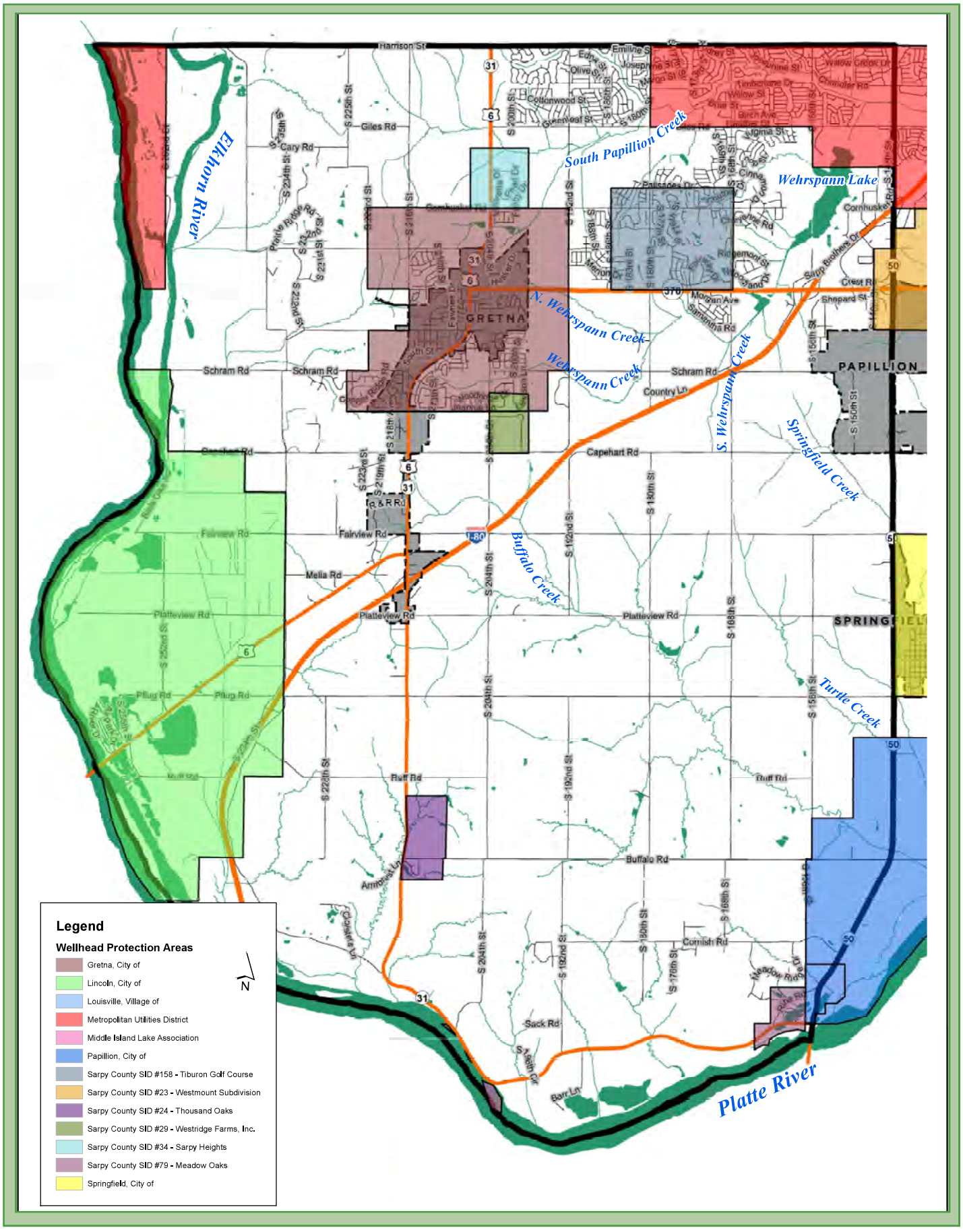
- Municipal Wells and Wellhead Protection: The goal of Nebraska's Wellhead Protection Program is to protect the land and groundwater surrounding public drinking water supply wells from contamination. Since approximately 85 percent of Nebraskans receive their drinking water from groundwater, preventing groundwater contamination is vital (NDEE, Wellhead Protection, 2012).

  Nebraska's Wellhead Protection Program is a voluntary program which assists communities and other public water suppliers in preventing contamination of their water supplies. The Nebraska Legislature passed LB 1161 in 1998 (Neb. Rev. Stat. §46-1501 – 46-1509), authorizing the Wellhead Protection Area Act. This Act sets up a process for public water supply systems to use if they choose to implement a local Wellhead Protection Area (WHPA). The NDEE is the lead agency for approval of WHPA and Wellhead Protection Plans (WHPP). WHPAs are drawn to encompass the 20-year time-of-travel for protected wells. Often times, the extents of a WHPA are generalized, and follow commonly recognized straight-line boundaries such as major roads and property or section lines. WHPAs are not routinely updated on a regular basis, and do not always reflect the abandonment or closure of municipal wells, or the addition of new wells.

  It is important to identify WHPAs at this point in the planning process in order to mitigate potential challenges in the future. By being aware of the WHPAs that are already in place, the project can develop more feasible transportation alternatives and avoid potential roadblocks. The WHPAs listed below represent areas that should be considered in the future as projects are further developed. While the private wells located within WHPAs do not fall under regulatory jurisdiction, pollution of these wells could affect the safety of the nearby public wells.

  There are five WHPA located in the Study Area (Figure 3-11 | Wellhead Protection Areas (WHPA)). Sarpy SID #29 (Westridge Farms) WHPA covers approximately 230 acres and is located south of the Gretna and north of I-80. The City of Gretna WHPA covers approximately 3,800 acres including the City of Gretna. Sarpy SID #158 (Tiburon Golf Course) WHPA covers approximately 1,200 acres and is located at 168th Street and N-370. Sarpy SID #34 (Westmont) WHPA covers approximately 1,100 acres and is located at 144th Street and N-370. The City of Lincoln WHPA covers over 25,000 acres, protecting the Platte River and the land directly east of the river.

Figure 3-11 | Wellhead Protection Areas (WHPA)



Source: Nebraska Department of Environment and Energy (NDEE), 2021

HISTORIC AND ARCHAEOLOGICAL RESOURCES

Regulatory Background

Section 106 of the *National Historic Preservation Act of 1966* (NHPA) requires that Federal agencies take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on such undertakings. The revised regulation, *Protection of Historic Properties* (36 CFR Part 800), which became effective on January 11, 2001, outlines the guidelines for federal agencies to comply with Section 106. The *Archaeological and Historic Preservation Act of 1960* (16 USC 469-470), and EO 11593 – *Protection and Enhancement of the Cultural Environment*, issued in 1971, provide additional directives to Federal agencies on historic preservation.

The Section 106 compliance process consists of the following steps:

- Identify consulting parties (includes tribes and local historic preservation entities).
- Identify and evaluate historic properties located within the Area of Potential Effects (APE) established for an undertaking.
- Assess adverse effects to properties listed on, or eligible for listing on, the National Register of Historic Places (NRHP).
- Consult with the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (THPO), and, as appropriate, the ACHP and other interested parties to resolve adverse effects.

The *Nebraska Unmarked Human Burial Sites and Skeletal Remains Act* (Neb. Rev. Stat. § 12-1201 to 12-1212) provides protection for unmarked human burial sites and human skeletal remains located on all private and public lands within the state. This Act prohibits disturbance of unmarked human burial sites; establishes procedures for the care and protection of unmarked human burial sites, human skeletal remains, and burial goods within the state; and ensures that all unmarked human burial sites discovered in this state are to be left undisturbed to the maximum extent possible.

Methodology and Findings

- Known archaeological sites: Archaeological information is sensitive and protected and is therefore not readily available through publicly accessible sources. However, based upon data obtained from History Nebraska pertaining to archaeological sites, it does appear likely that archaeological sites are present in the Review Area. There are no archaeological sites listed on the National Register of Historic Places (NRHP or Register); however, a review of available data provided by the Nebraska State Archaeologist reveals that there are numerous sections of land that have known sites within them. These sites may be known from previously completed surveys or may have been random findings during previous ground disturbance activities. For those areas that have been surveyed, the surveys may also have only had a limited scope for their investigation, therefore, there may be additional sites at deeper or shallower locations in the soil profile. Furthermore, simply because a section does not have known sites within it, does not mean that surveys have even been conducted there, and additional surveys may need to be conducted again in areas previously investigated. Overall, from a review of the available data, it is clear that there is the likelihood of finding archaeological sites in the Review Area, and additional investigations and surveys will need to be conducted as projects are advanced following this study.
- Historic buildings, bridges, sites, and districts: According to the NRHP Interactive Map (https://www.nps.gov/maps/full.html?mapId=7ad17cc9-b808-4ff8-a2f9-a99909164466), there are no NRHP-listed historic buildings, sites, or districts within the Review Area. There are, however, based upon data obtained from History Nebraska, numerous sites that have been evaluated for the potential inclusion on the Register, several of which have been noted as eligible for listing on the Register. Because the evaluations for these properties (mostly farmsteads, but also bridges and other standing structures) were conducted in the early 2000s, several of these properties are now non-extant (i.e., demolished) and would no longer be eligible for listing.

Furthermore, some properties that were considered eligible previously may now no longer retain the character needed to be listed. Conversely, properties that may not have previously met the criteria for listing on the Register may now be considered eligible due to their increased age. Not all properties in the Review Area were evaluated in these previous investigations, and some were only evaluated from a distance. Additional evaluations and determinations would be needed as projects advance following this study.

Although there are no listed properties, there may be NRHP-eligible properties within the Review Area. For example, it is likely that some of the buildings or structures at the various farmsteads (e.g., houses, barns) within the Review Area are now (or would be at the time of projects coming out of this study) greater than 50 years old and would require further evaluation to determine their eligibility for listing on the NRHP. There are also at least two bridges within the Review Area that have been previously identified as eligible for the NRHP and would require further evaluation. Further investigations, including an architectural and structural evaluation, will be required in the future.

Example of an older bridge in the Review Area that may or may not be historic, and would require further investigation.

Examples of farmsteads and homes in the Study Area that would need to be further evaluated for historic eligibility. Top picture from Oct 2019; middle two pictures from Mar 2021; bottom picture from Oct 2019 and used with Lori Baber's permission.)

HAZARDOUS MATERIALS AND RECOGNIZED ENVIRONMENTAL CONDITIONS

Regulatory Background

Environmental risk sites are those facilities and/or locations where hazardous substances, hazardous waste, or petroleum products were or can be released into the ground water, surface soils, or subsurface sediments. The term "Recognized Environmental Conditions" (RECs) means the presence of, or likely presence of, any hazardous substances or petroleum products on a property under consideration that may indicate an existing release, past release, or a material threat of a release of any hazardous substance or petroleum into the groundwater, surface water of that property or neighboring properties. RECs do not include "de minimis" conditions that do not present a threat to human health or the environment and that generally would not be subject to enforcement or regulation.

Methodology

Several databases maintained by the NDEE and EPA were reviewed for known locations of regulated facilities and sites of concern.

Findings

There are no known uncontrolled hazardous materials sites, Superfund sites, brownfields, or other known contaminated sites along the interstate in the Study Area. Numerous regulated sites do exist, including gas stations and other underground or above ground fuel storage tanks, livestock waste control sites, onsite wastewater treatment (e.g., septic systems and lagoons), SARA Title III, integrated waste management sites, or resource conservation recovery sites, among other programs. Some facilities in the Study Area may have small amounts of potential hazardous materials such as PCBs, asbestos containing materials, lead based paint, or other substances that need to be tested to determine their effect on the design of future projects. These facilities may include bridges, buildings to be demolished, utility substations, natural gas pipelines, or other similar locations. More detailed studies will need to be conducted in the future to determine the possibility of spills or other hazards that may affect construction methods or worker safety.

PARKS, RECREATION AREAS, AND TRAILS (SECTION 4(F) RESOURCES)

Regulatory Background

Section 4(f) of the U.S. Department of Transportation Act of 1966, states that FHWA "…may approve a transportation program or project…requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance, or land of an historic site of national, State, or local significance (as determined by the Federal, State, or local officials having jurisdiction over the park, area, refuge, or site) only if…there is no prudent and feasible alternative to using that land; and…the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use" (49 USC 303[c]) (emphasis added).

Section 4(f) protection applies to parks, recreation, and refuge areas where the property is publicly owned, open to the public, its major purpose must be for park, recreation, or refuge activities, and it must be significant. Section 4(f) protection applies to historic sites of national, state, or local significance that are on, or eligible for listing on, the National Register of Historic Places (NRHP), regardless of ownership.

A "use" of a Section 4(f) resource, as defined in 23 CFR 774.17, occurs: (1) when land is permanently incorporated into a transportation facility, (2) when there is a temporary occupancy of land that is adverse in terms of the statute's preservationist purpose, or (3) when there is a "constructive" (i.e. indirect) use of land. A constructive use of a Section 4(f) resource, which is rare, occurs when the transportation project does not incorporate land from the Section 4(f) resource, but the project's proximity and impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired. For example, a publicly owned property considered a Section 4(f) resource based on peace and tranquility could have noise or vibration impacts from a nearby project.

Methodology

Publicly owned parks, recreational areas, and wildlife refuges were identified within the Review Area and surrounding areas. County ownership records, existing recreation management plans, local officials, recreation departments, agency records, and future recreation plans were consulted.

Public Parks and Recreational Resources

Within the immediate Study Area along the interstate, there are only a few recreational resources and parks. These include Chalco Hills Recreation Area (and Whersphann Lake), located north and east of 168th Street and Schram Road, and Gretna Crossing, located northwest of 204th and Capehart Road.

Chalco Hills Recreation Area includes the 250-acre Whersphann Lake, walking trails, camping areas, horse trails, and fishing opportunities. The park extends south of N-370 to include a water quality/sediment control wetland, that is undeveloped. In total, the property is quite expansive, covering nearly 1,200 acres.

Gretna Crossing is Gretna's newest park facility, and currently includes several soccer and baseball fields, but will eventually include a water park, multiple ball fields, a dog park, and walking trails. At nearly 160 acres, it will be developed into a regionally important destination park.

The Sarpy County Trails Master Plan includes several potential trails in the area, two of which would cross I-80 using the existing bridges at 204th Street and Fairview Road, and at 168th Street and Schram Road. There would also be a trailhead and parking area somewhere in the vicinity of 198th Street and Fairview Road. These trails and recreational facilities have not been designed yet, nor has ROW been acquired for their construction. It is anticipated that as the area develops, plans for these trails would be finalized and land would either be dedicated or purchased for them, and that they would most likely follow existing stream or roadway corridors, and would connect to existing recreational properties such as Chalco Hills and Gretna Crossing, or other trails such as the Mo-Pac Trail or the Schram Road Trail.

Wildlife Refuges or Wildlife Management Areas

There are no designated wildlife refuges or wildlife management areas within the Review Area.

Findings

Future projects will need to consider these properties (and others that may be developed in the future) as Section 4(f) properties and follow the guidelines for avoiding "use" to the extent possible after considering feasible and prudent alternatives. Impacts to these properties would be considered potential fatal flaws during the planning and evaluation of alternatives.

GRETNA CROSSING

Located north of Capehart Road and west of 204th Street, Gretna Crossing is being developed into a 160-acre regional recreational destination. Improvements to Capehart Road are currently being constructed and will provide enhanced connectivity to N-31. The new destination park will add additional traffic to the surrounding network and is expected to stimulate additional economic development.

Conceptual image of Gretna Crossing looking northwest from Capehart Road. (Artist's rendering from JEO Consulting Group for City of Gretna)

THREATENED, ENDANGERED, AND PROTECTED SPECIES

Endangered Species Act

Federally threatened and endangered species are protected under the ESA, as amended (16 USC 1531 et seq.). Significant adverse effects to a federally listed species or its habitat require consultation with the United States Fish and Wildlife Service (USFWS) under Section 7 of the ESA. Section 7 requires federal agencies to ensure that actions which they authorize, fund, or carry out are not likely to jeopardize the continued existence of currently listed or proposed threatened or endangered species or result in the destruction or adverse modification of their critical habitat. State listed threatened and endangered species are protected by NGPC under Nebraska's Non-Game and Endangered Species Conservation Act (Nebraska Revised State Statutes 37-801 to 37-811).

Migratory Bird Treaty Act

Under the Migratory Bird Treaty Act of 1918 (MBTA) (16 USC 703-712: Chapter 128) construction activities in grassland, wetland, stream, and woodland habitats, and those that occur on bridges or culverts (e.g. which may affect swallow nests on bridge girders) that would otherwise result in the taking of migratory birds, eggs, young, and/or active nests should be avoided.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act of 1940 (16 USC 668-668c), as amended, provides protection for bald and golden eagles by prohibiting the take, possession, sale, purchase, barter, offer to sell, purchase or barter, transport, export or import, of any bald or golden eagle, alive or dead, including any part, nest, or egg, unless allowed by permit.

Methodology and Findings

Based on the Nebraska Game and Parks Commission Threatened and Endangered Species Range Maps, the Review Area is within the mapped ranges for the following threatened and endangered species: western prairie fringed orchid, interior least tern, piping plover, and northern long-eared bat.

- Western Prairie Fringed Orchid. The entire Review Area lies within the range for the western prairie fringed orchid (WPFO). Suitable habitat consists of mesic to wet unplowed tallgrass prairies and meadows, old fields, and roadside ditches. While there are roadside ditches and may be some old fields, the Review Area is largely agricultural land with scattered pockets of development or residences and lacks large areas of suitable habitat for the WPFO.
- Interior Least Tern & Piping Plover. The ranges of the interior least tern and piping plover are associated with the Platte River and are situated at the southwest end of the Review Area. Suitable habitat for the interior least tern and piping plover includes sparsely-vegetated midstream sandbars, as well as human created habitats such as sand and gravel mines and dredging and construction operations along the Platte and Elkhorn Rivers. Based on review of aerial photography, there is no suitable habitat for the interior least tern and piping plover within the Study Area; however, there may be suitable habitat along the Platte River.
- Northern Long-Eared Bat. The entire Review Area lies within the range for the northern long-eared bat. Wooded locations, such as riparian areas along streams, may provide habitat for the northern long-eared bat. It is likely that conservation conditions would be required at these locations to minimize potential adverse effects to this species.

PRIME FARMLAND

Regulatory Background

The Farmland Protection Policy Act (FPPA) is intended to minimize the impact Federal programs have on the unnecessary and irreversible conversion of farmland to non-agricultural uses. It assures that to the extent possible federal programs are administered to be compatible with state, local units of government, and private programs and policies to protect farmland. Federal agencies are required to develop and review their policies and procedures to implement the FPPA every two years.

The FPPA does not authorize the Federal Government to regulate the use of private or non-federal land or, in any way, affect the property rights of owners.

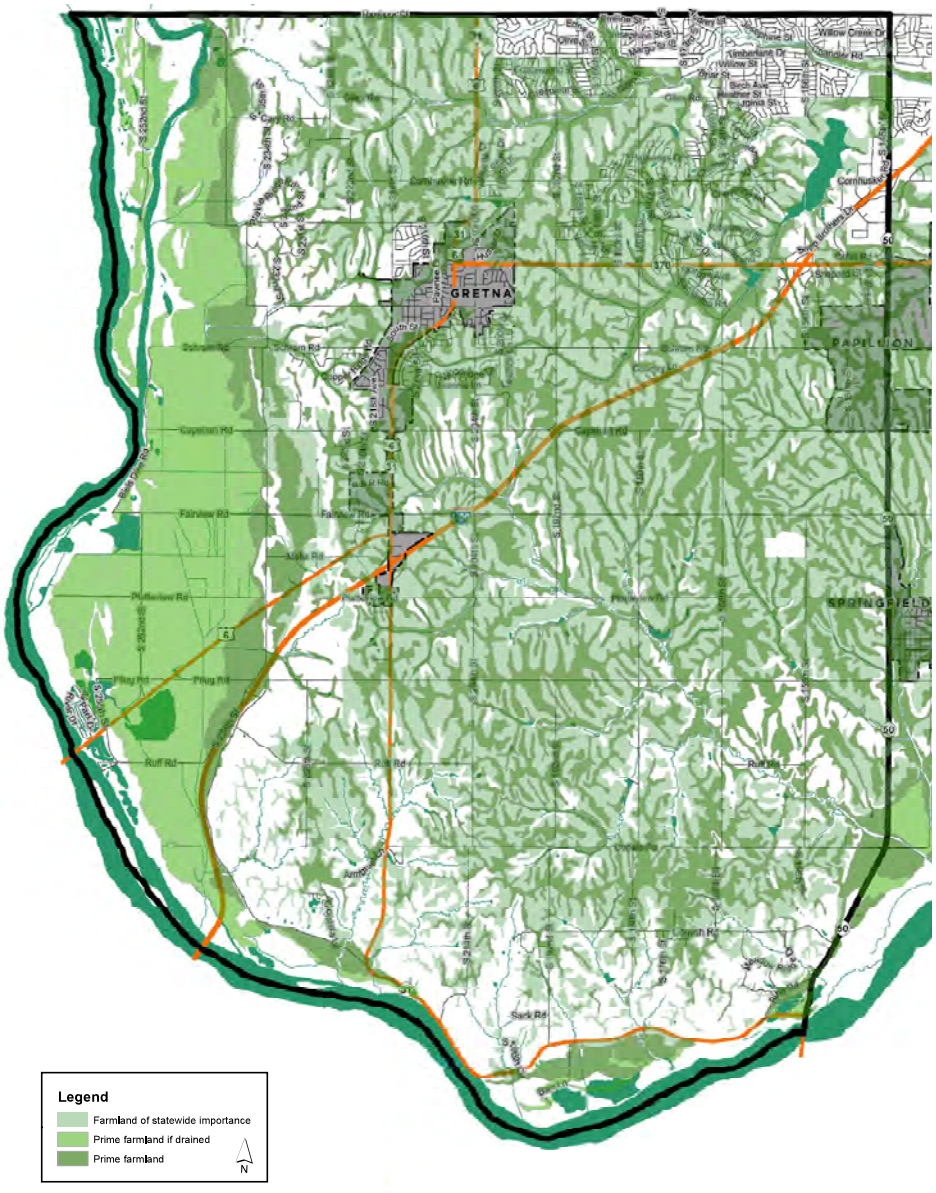
For the purpose of FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements does not have to be currently used for cropland. It can be forest land, pastureland, cropland, or other land, but not water or urban built-up land. Figure 3-12 | Prime Farmland shows the distribution of farmland within the Review Area.

Projects are subject to FPPA requirements if they may irreversibly convert farmland (directly or indirectly) to nonagricultural use and are completed by a Federal agency or with assistance from a Federal agency.

Methodology and Findings

Because most of the Study Area along I-80 would be considered prime farmland, it is likely that any alternative would have direct and indirect impacts to prime farmland. The extent to which these impacts are considered fatal flaws or red flags will depend on the amount of land that is removed from agricultural production over the next decade, the relative importance of the land that is being removed, and the changeover to a more urbanized landscape in the Review Area. Coordination with the NRCS, and the Farmland Conversion Impact Rating Form for Corridors (CPA-106) will need to be completed to determine these impacts for future projects.

Figure 3-12 | Prime Farmland



Source: US Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey, 2021.

TITLE VI AND ENVIRONMENTAL JUSTICE

Regulatory Background

Title VI of the Civil Rights Act of 1964 and related laws and regulations assure that individuals and groups are not excluded from participation in, denied the benefit of, or subjected to discrimination under any program or activity receiving federal financial assistance on the basis of race, color, or national origin.

Executive Order (EO) 12898 on Environmental Justice (EJ) was signed by President Clinton on February 11, 1994, and requires that, to the extent practicable and permitted by law, low-income or minority populations may not receive "disproportionately high and adverse" human health or environmental effects as a result of a proposed project. Federal agencies must take the appropriate and necessary steps to identify and address "disproportionately high and adverse" effects of federal projects on the health or environment of low-income and minority populations. Also, representatives of any low-income or minority populations in the community that may be affected by a project must be given the opportunity to be included in the impact assessment and public involvement process.

On June 14, 2012, FHWA issued Order 6640.23A – Actions to Address Environmental Justice in Minority Populations and Low-Income Populations , which established policies and procedures for the FHWA to use in complying with Executive Order 12898. As defined in FHWA Order 6640.23A, a "disproportionately high and adverse effect" on minority and low-income populations means "an adverse effect that: (1) is predominantly borne by a minority population and/or a low-income population; or (2) will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low-income population."

FHWA Order 6640.23A defines a minority as a person who is:

- Black: a person having origins in any of the black racial groups of Africa;
- Hispanic or Latino: a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race;
- Asian American: a person having origins in any of the original peoples of the Far East, Southeast Asia or the Indian subcontinent;
- American Indian and Alaskan Native: a person having origins in any of the original people of North America, South America (including Central America), and who maintains cultural identification through tribal affiliation or community recognition; or
- Native Hawaiian and Other Pacific Islander: a person having origins in any of the original peoples of Hawaii, Guam, Samoa or other Pacific Islands.

FHWA Order 6640.23A defines a low-income individual as a person whose median household income is at or below the Department of Health and Human Services poverty guidelines.

Minority and low-income populations are any readily identifiable group of these respective persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who will be similarly affected by a proposed FHWA program, policy, or activity.

County population characteristics

Table 3-2 | Sarpy County Racial and Income Demographics by Census Tract and Figure 3-13 | Census Tracts include county-wide demographic and income information by census tracts within the Review Area and by totals for Sarpy County. According to the 2015-2019 U.S. Census Bureau American Community Survey (ACS), Sarpy County has a population of 181,232. Caucasians make up approximately 81% of the population. Hispanic/Latinos account for 9% of the population, African Americans make up 4% of the population and Asians make up 3% of the population. Native Americans and Pacific Islanders account for less than 1% of the population each, with the remaining 3% reporting two or more races. The five-year (2015-2019) household income is below $15,000 for 4% of the population; $15,000-$25,000 for 6% of the population; $25,000-$50,000 for 17% of the population; $50,000-$75,000 for 18% of the population; and above $75,000 for 55% of the population. The five-year median per capita income is $33,103.

In addition, the 2015-2019 ACS indicates the Review Area has a population of 50,992; the average median household income is $98,997; and there are an estimated 17,922.8 total households. Caucasians account for approximately 91% of the population. Hispanic/Latinos make up 4% of the population, African Americans account for 1% of the population and Asians make up 2% of the population. Native Americans account for less than 1% of the population, with the remaining 2% of the population reporting two or more races. The per capita income within the Review Area is estimated to be $34,796.

Limited English Proficiency Analysis

LEP persons include all persons who speak a language other than English, and also speak English 'Less Than Very Well,' as defined by the NDOT, "American Community Survey." Based on data from the 2015-2019 ACS, 92% of Sarpy County's population speaks only English. 8% of the population does not speak English at home but, with 97% of the population classifying themselves as speaking English "very well" and 3% "less than very well". Less than 1% of people in Sarpy County are Linguistically Isolated. An estimated 5% of people in Sarpy County speak Spanish at home, 1% Indo-European languages, 2% speak Asian-Pacific Island languages, and less than 1% other languages.

THRESHOLDS FOR LOW-INCOME, MINORITY, AND LIMITED ENGLISH PROFICIENCY (LEP) POPULATIONS

Low-income and minority populations are considered to be present whenever there are: 1) readily identifiable groups or clusters of low-income or minority persons, 2) when the low-income or minority population (census tracts in this case) exceeds 50%, and 3) when the population is meaningfully greater (6-8%) than the surrounding population (census tracts compared to Sarpy County as a whole). For the first criteria, the Review Area was evaluated to determine if there were any major employers or low-income housing areas, and none were identified. For the second two criteria, using data in Table 3-2, there are no populations of low-income or minority populations in any census tract individually, or when compared to Sarpy County as a whole, that meet these criteria.

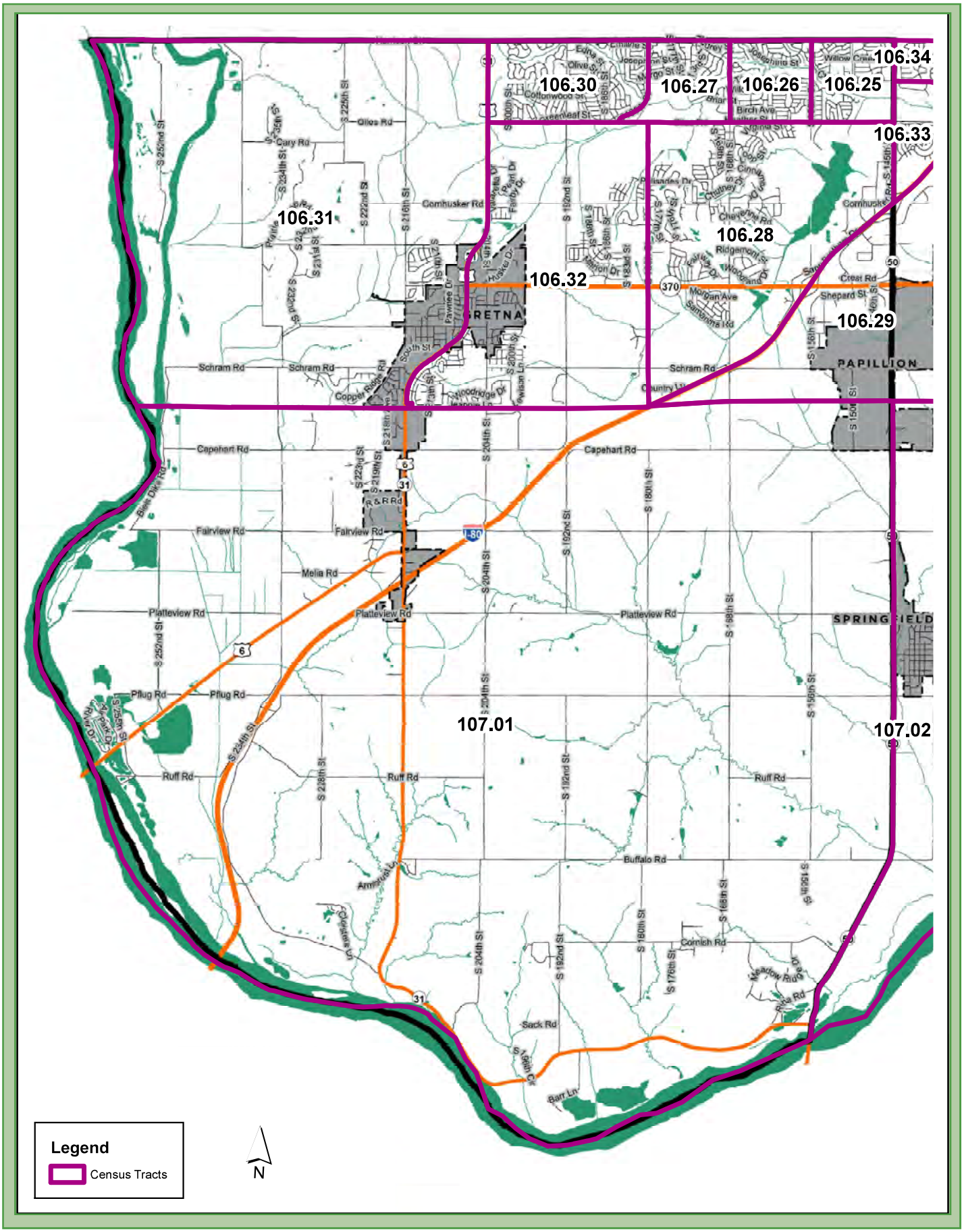
Persons with Limited English Proficiency are those who speak a language other than English, and who also speak English "less than very well" as defined by the American Community Survey data. If a language other than English is spoken, and English is spoken less than very well by 5% or greater of the population, or greater than 1,000 person for any specific language, then LEP requirements would apply. As noted, the population of the Review Area was determined to be approximately 50,000 people, and 1% of these persons speaks English less than very well. Therefore, the estimated number of people who speak a language other than English and speak English less than very well would be approximately 500 persons, so neither criteria would be met.

Table 3-2 | Sarpy County Racial and Income Demographics by Census Tract

Area	Black/ African American	American Indian/ Alaskan Native	Asian	Native Hawaiian/ Pacific Is-lander	Hispanic	Total % Minority	Low Income Population
Tract 106.25	4%	1%	1%	0%	4%	10%	6.3%
Tract 106.26	1%	1%	4%	0%	4%	9%	2.4%
Tract 106.27	0%	0%	3%	0%	3%	6%	3.9%
Tract 106.28	0%	0%v	1%	0%	2%	3%	1.8%
Tract 106.29	0%	1%	0%	0%	2%	3%	2.7%
Tract 106.30	0%	0%	6%	0%	4%	9%	0%
Tract 106.31	1%	0%	0%	0%	1%	2%	1.3%
Tract 106.32	1%	0%	0%	0%	4%	5%	4.1%
Tract 106.33	1%	0%	3%	0%	6%	10%	10.6%
Tract 106.34	2%	1%	0%	0%	6%	7%	5.1%
Tract 107.01	0%	0%	0%	0%	2%	2%	1.0%
Sarpy County	***4%***	***0%***	***3%***	***0%***	***9%***	***16%***	***6%***

Source: 2015-2019 American Community Survey (ACS) obtained through the US Census Bureau

Figure 3-13 | Census Tracts



Source: US Census Bureau

Within the Review Area, 98% of the population speaks only English at home. An estimated 2% of the population does not speak English at home, but 99% classifies themselves as speaking English "very well". Like Sarpy County as whole, less than 1% of people within the Review Area are Linguistically Isolated. Approximately 2% speak Spanish, 1% Indo Indo-European languages, 1% Asian-Pacific Island languages, and less than 1% other languages.

Findings

From the available information above, it appears that there are not any minority populations, low-income groups or groups who are linguistically isolated. The threshold for LEP is 5% of population or 1,000 persons. Population of the Review Area was 50,992, and the percentage of the population who speaks English "less than very well" is 1%, or approximately 501 persons, which does not trigger either threshold. Future projects will need to evaluate these factors in more detail as projects are developed, and as smaller study areas are generated. Furthermore, as Sarpy County develops and more residents are added, there will be more people living and working in these areas, and these statistics may change over time.

NOISE IMPACTS

Regulatory Background

Title 23, Section 772 of the U.S. Code of Federal Regulations (23 CFR 772) was written by FHWA to provide procedures for noise studies, and noise abatement measures to help protect the public health and welfare, to supply Noise Abatement Criteria (NAC), and to establish requirements for traffic noise information to be given to those officials who have planning and zoning authority in the project area. The NAC are based on the Equivalent Continuous Noise Level (Leq) descriptor. Leq(h) is the equivalent steady state sound level, which during the hour under consideration contains the same acoustic energy as the time-varying traffic sound level during that same hour. Figure 3-14 | Typical Sound Pressure Levels describes the upper limits of hourly Leq(h) desirable noise levels that are part of the NAC established by 23 CFR 772. Any noise levels that approach or exceed these criteria would not be desirable, and would be referred to as a noise impact (FHWA, 2010).

Methodology and Findings

Detailed noise studies were not performed for this PEL study. The methods for determining potential noise impacts were focused on identifying potential sensitive noise receptors within the Study Area, and identifying a plan of action for evaluating potential impacts during future studies.

The predominant noise activity categories in the Study Area consist of Activity Category B (residences) and Activity Category F (non-sensitive uses, such as agricultural land). Several Activity Category C receptors, including Vala's Pumpkin Patch, recreational lands associated with Chalco Hills (i.e. surrounding the Wehrspann sedimentation area), etc. are also present within the Study Area. The only apparent property that may be considered an Activity Category A land use within the Study Area is the Holy Family Shrine located on the north side of Pflug Road, just east of I-80.

During future NEPA efforts, an evaluation for Activity Category G (Undeveloped lands that are not permitted) lands should also occur as the land uses are subject to change prior to future noise analyses.

TYPICAL SOUND PRESSURE LEVELS

The graphic below compares the range of common noise levels from everyday activities for a point of reference compared to the relative dBA sound pressure level.

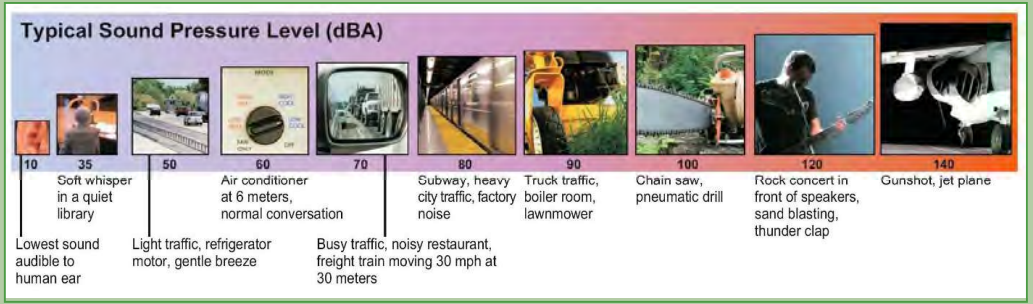


Figure 3-14 | Typical Sound Pressure Level (A-weighted decibels (dBA))

Activity Category	Activity Leg(h)	Evaluation Location	Activity Description
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[2]	67	Exterior	Residential homes.
C[2]	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structure, radio stations, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, trail crossings.
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structure, radio studios, recording studios, schools, television studios.
E[2]	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D, or F.
F	---- --	----------	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities, (water resources, water treatment, electrical), and warehousing.
G	-----	----------	Undeveloped lands.

AIR QUALITY, MOBILE SOURCE AIR TOXICS, AND GREENHOUSE GASES

Regulatory Background

Motor vehicle emissions are one of the major sources of air pollution. Such emissions vary with traffic volumes, distances traveled, travel speeds, and vehicle types. This section focuses on the current air quality of the Study Area to determine the potential for air quality degradation with an increase in vehicles, due both to background socioeconomic growth and improvements that increase a facility's attractiveness to drivers.

The Federal Clean Air Act of 1970 (CAA), and last amended in 1990, forms the basis for the national air pollution control effort. Basic elements of the act include National Ambient Air Quality Standards (NAAQS) for major air pollutants, hazardous air pollutants standards, state attainment plans, motor vehicle emissions standards, stationary source emissions standards and permits, acid rain control measures, stratospheric ozone protection, and enforcement provisions. Under the CAA, the EPA regulates air quality. Areas of the country where air pollution levels persistently exceed that NAAQS may be designated as "non-attainment" areas.

Methodology and Findings

According to the EPA's Interactive Map of Air Quality Monitors (https://www.epa.gov/outdoor-air-quality-data/interactive-map-air-quality-monitors), all portions of the Review Area are currently in attainment, or unclassifiable with respect to all pollutants for which a NAAQS exists.

In 2018, NDOR and NDEE signed an Air Quality Memorandum of Understanding (MOU) identifying the minimum threshold requirements for detailed air quality analysis on federal-aid roadway projects in the State of Nebraska (NDOR, NDEE, and FHWA, 2018). Future air quality considerations will be required as part of this MOU for specific projects that may result from this study.

https://dot.nebraska.gov/media/12081/ndot-ndeq-air-mou.pdf

https://dot.nebraska.gov/media/12082/2016-msat-guidance.pdf

Sarpy County I-80 Interchange PEL Study

Chapter 4 | Alternatives Development

MAPA

Omaha - Council Bluffs
Metropolitan Area
Planning Agency

The next two chapters of the PEL Study present the alternatives development and preliminary screening process. As has been explained in previous chapters, there have been many efforts to study possible solutions to provide additional access and solve transportation problems such as congestion at the existing interstate I-80 interchanges in the Study Area. Chapter 4 explains the process to speculate solutions and formulate viable alternatives, and Chapter 5 presents the process to screen them for potential fatal flaws or other criteria that would remove them from future studies.

The No-Action Alternative was also carried forward as a baseline for consideration and comparison of impacts and benefits. The No-Action Alternative does not meet the purpose and need for a proposed solution, but was carried forward to serve as a baseline to compare the various options.

The goal of this process was to only eliminate those alternatives that were considered "unreasonable" and also to not present a preferred alternative, but rather to present each of the reasonable alternatives with their benefits and potential impacts. The process followed an industry-accepted methodology called Value Planning.

VALUE PLANNING

After the team collected information on existing conditions, heard stakeholder expectations, and developed land use and traffic data, the Value Planning methodology was utilized to assess alternatives and make recommendations. This process engaged people with varying perspectives to help determine what alternatives could potentially address the purpose and need. Public input through meetings, surveys and web-based comments were sought. Both the Core Team and the Technical Advisory Group were engaged in more detail on community expectations and vision for the corridor. With information that defined the corridor vision, the design team, working with the Core Team, was able to develop ideas and evaluate them, ultimately leading to an array of reasonable alternatives.

For the purposes of this study, Value Planning encompasses four phases:

- Information Phase
- Function Analysis Phase
- Speculation Phase
- Evaluation Phase

Chapter 4 will explain and detail the first three phases and Chapter 5 will explain the evaluation phase in more detail.

VALUE PLANNING ACHIEVES FOUR GOALS:

1. Fully documents the data collection and decision-making process in a transparent manner, allowing stakeholders to see how recommendations were made.
2. Accounts for the expectations of stakeholders in the decision-making process.
3. Maximizes creativity.
4. Facilitates a selection process to rate alternatives and recommendations that perform well, meet stakeholder expectations

INFORMATION PHASE

The purpose of the information phase is to define what the project is and what it is supposed to do. For the Study Area, this involved exploring what the transportation issues were, identifying mobility issues from the stakeholders' perspectives, and developing a vision for the future. This phase was partially conducted in the Land Use planning phase (Appendix C | Land Use Planning), where stakeholders and the public provided insight to the problems they have encountered in the Study Area, and where the stakeholders came together to present a combined land use vision for the future.

The next step was organizing the information. This information helps facilitate the identification of the potential functions. Information was gathered from a number of sources and are discussed in more detail in Chapter 3 | Affected Environment.

Project Stakeholders. Also, defining the project's stakeholders and their expectations are crucial to the process. **Table 4-1 | Potential Project Owners, Users and Stakeholders** identifies the team's list of identified project stakeholders. Understanding and documenting the stakeholders assures that the team is considering various perspectives. The table is broken into owners, users and stakeholders.

Constraints, Necessities and Desires. Once the stakeholders have been identified, the next step in defining the project vision is determining the constraints, necessities, and desires. From these parameters, the team was able to define the important functions and graphically illustrate various proposals. **Table 4-2 | Potential Stakeholder Constraints, Necessities and Desires** summarizes the stakeholder's constraints, necessities and desires created by the team and based on stakeholder input.

- Constraints are requirements that cannot be violated without significant reason. Major constraints identified were maintaining compliance with substantive environmental laws, not violating minimum merging and weaving zones along the interstate, and not making additional modifications to existing interchanges beyond what has already been proposed in MTIS. Additionally, the team identified Sarpy County's commitment to exploring the Platteview Expressway as an important factor to consider and which could become a constraint in the future.
- Necessities are the things stakeholders expect to be accomplished provided they do not violate the constraints. The stakeholders clearly identified that reducing congestion at the existing interchanges, providing I-80 access to and from the Alternatives Study Area, and improving connectivity between communities were the highest priorities. Compliance with non-substantive environmental requirements, consistency with regional planning, accommodating freight, and supporting regional economic development were also considered as necessities.
- Desires are expectations of stakeholders that should be pursued if cost is not a factor. Several desires such as minimizing impacts to specific environmental and social resources, accommodating multi-modal transportation, re-using existing infrastructure, minimizing changes to the local street network and right-of-way (ROW) impacts, as well as creating a sense of place, and accommodating local land use plans were identified as desires.

OWNERS, USERS & STAKEHOLDERS

Owners are those individuals or groups that are financially responsible for funding the project, share in funding of the project, or represent the owner's interests. This category includes the study's sponsors which include the Metropolitan Area Planning Agency (MAPA), Sarpy County, the Cities of Papillion and Bellevue, as well as NDOT and FHWA.

Users are those that actively use or maintain the project. This category includes various transportation mode users and types of traffic. Any entity that has a use for I-80 or the local roadway network within the Alternatives Study Area were included in this category.

Stakeholders are those that are impacted by the project in other ways. They may be financially affected by the project, environmentally concerned about the project, or disturbed by a required change in habit or travel patterns. This includes various regulatory agencies, commercial business owners, and a variety of other entities.

FUNCTION ANALYSIS PHASE

With input from both the Core Team and the Technical Advisory Group, as well as input previously gathered from the public and stakeholders on the Community Advisory Group, various functions for alternatives were defined and subsequently organized into a graphical representation called a **Customer Function Model** (The Customer Function Model is shown and explained in greater detail in Chapter 5).

Functions are essentially two-word representations defining actions and expectations for the project. This helps to answer the questions: What is it? What does it do? What should it do? One overarching function, called the Task, is determined by the team to define the purpose of the overall project. Other function categories support the task. Basic Functions define the very minimum needed to fulfill the Task. Enhancing Functions make the Task better and include the categories of Dependability, Convenience, Satisfying Stakeholders, and Attracting Stakeholders.

Table 4-1 | Potential Project Owners, Users and Stakeholders

OWNERS	USERS	STAKEHOLDERS	
Financially responsible for funding the project, shares in the funding, represents the Owner's Interests, manages the project.	*Actively uses or maintains the project.*	*Financially affected by the project, environmentally concerned about the project, disturbed by a required change in habits or travel.*	
NDOT	State Patrol	NDEE	Sarpy County Economic Development
City of Gretna	Amazon Freight Traffic	EPA	Nebraska Home Builders' Association
City of Papillion	Commercial Freight	Vala's Pumpkin Patch	Bicyclists
Sarpy County	Local Traffic	Area Businesses	Sarpy Chamber
FHWA	I-80 Through Traffic	Adjacent Property Owners	Gretna Chamber
	OWOS Loads	Papio Missouri River NRD	OPPD
	Amazon Employee Traffic	US Congress Persons	Facebook
	Air Force Base Traffic	Land Developers	Google
	N-370 Traffic	State Representative	City of Bellevue
	Farm to Market Traffic	MAPA	City of Springfield
	Ag Vehicles	Local Ward Representatives	County Commissioners
	DOT Maintenance	Contractors	Sarpy County Residents
	Emergency Responders	Amazon	Future Businesses
	School Buses	Offutt Air Force Base	Sapp Brothers Truck Stop
	Sarpy County Maintenance	Environmental Advocates	Nebraska Crossings Outlet Mall
	Rural Sarpy-Lincoln Commuter	USACE	Love's Travel Stop
	Rural Sarpy-Omaha Commuter	FEMA	Farmers
	West Omaha Commuters	Flying J Truckstop	Utilities
	Sarpy County Commuters	School Districts	Cell Phone Tower Owners
	N-31 Traffic	USFWS	MUD Water
		Nebraska Game and Parks	WW Agency
		Advocacy Groups	Metro Home Builders' Association
		Metro Transit	

Table 4-2 | Potential Stakeholder Constraints, Necessities and Desires

CONSTRAINTS	NECESSITIES	DESIRES
Legal requirement standards of the owner, physical conditions of the site, commitments to stakeholders.	*Expectations that must be fulfilled by the project if constraints are not violated, limitations or restrictions that are imposed by stakeholders but which can be violated.*	*Expectations that should be fulfilled if cost is not a factor.*
Compliance with substantive environmental laws	Improve connectivity between communities	Minimize impacts to natural and social environmental resources
No modifications to proposed improvements to existing interchanges	Reduce congestion at existing interchanges	Reuse existing bridge at Capehart/192nd
One mile spacing minimum on interchanges	Provide access to local street network	Accommodating bicyclists
Local commitment to Platteview as an expressway	Develop a system to accommodate 2050 volumes	Comply with relevant stormwater requirements
	Consistency with MAPA LRTP	Manage noise
	Compliance with procedural environmental laws	Accommodate local combined future land use plan
	Accommodate through freight	Maximize opportunities for local municipalities
	System that supports the Growth Management Plan	Shorten commute time to Omaha
	Connections that support regional road network in Sarpy County	Shorten commute time to Lincoln
	Reduce congestion at N-31 Interchange	Facilitate Placemaking
	Reduce congestion at N-370 Interchange	Facilitate Economic Development
	Disperse freight movements	Avoid undevelopable property remnants
		Provide for Multi-Modal Connectivity
		Two-mile spacing between interchanges
		Minimize Changes to Existing Street Network
		Avoid Vala's Pumpkin Patch
		Respect Gretna and Papillion boundary agreement
		Accommodate Amazon Freight
		Accommodate South Sarpy County Watershed Dam
		Accommodate OPPD Gas Plant
		Reduce crashes at existing interchanges
		Minimize ROW taking
		Minimize Impacts to Parks
		Minimize Impacts to Existing Developments

Basic and Dependability functions tend to be data driven and measurable. Functions that make the project convenient can also be measurable, but they can also be subjective in meeting stakeholder expectations. It is important that the project not only perform well through basic, dependable and convenience functions but it should also appeal to stakeholders in a more subjective manner. These types of functions satisfy stakeholders and attract stakeholders and are captured under those classifications. Table 4-3 | Customer Functions illustrates the Customer Functions for the Sarpy County I-80 corridor.

For this study, the Task was determined to be Improve Mobility. The Basic Functions for fulfilling this task are to Improve Access and Improve Connectivity. It should be noted that these terms align closely with the Purpose and Need statements described in Chapter 2 of reducing congestion at and around the interchanges of N-31 and N-370 with I-80 and of proving additional regional connections to and from I-80 from within the Study Area. Additional enhancing functions for performance and acceptance are also shown on the diagram.

Brainstorming the functions and categorizing them helps the team to clearly communicate with each other and stakeholders where the project is going and what is important to the project. In addition, this process aides in promoting creativity of ideas and helps keep team focused on what the stakeholders expect.

SPECULATION PHASE

Following the identification of functions and assembling them into the Customer Function Model (See Chapter 5), the next step in the process was to answer the question, “What else will do the job?” This is the key question in the speculation phase. The Value Planning team, which included members of the consultant team, the project sponsors, and members of the Core Team, brainstormed ideas for addressing the project and its functions. Criticism was not allowed, while creativity and quantity were encouraged.

Table 4-3 | Customer Functions

FUNCTIONS	DEPENDABILITY	CONVENIENCE	IMPROVE ACCEPTANCE	ATTRACT STAKEHOLDERS	BASIC FUNCTION	TASK
Improve Connectivity					X	
Support Growth			X			
Manage Congestion	X					
Reduce Indirect Travel		X				
Support Freight	X					
Accommodate Multi-Modal				X		
Minimize Takings			X			
Respect Network			X			
Encourage Economic Activity				X		
Promote Placemaking				X		
Connect Communities			X			
Minimize Utility Impacts			X			
Reduce Conflicts	X					
Manage Access	X					
Minimize Environmental Impacts			X			
Manage Freight	X					
Improve E/W Connectivity			X			
Improve N/S Connectivity		X				
Promote Resiliency	X					
Foster Sustainability			X			
Integrate Technology		X				
Accommodate Future	X					
Encourage Aesthetics				X		
Harmonize Viewshed				X		
Facilitate Expandability		X				
Improve Access					X	
Improve Mobility						X
Simplify Movements		X				
Benefit Municipalities			X			
Balance Opportunities			X			
Manage Growth			X			
Safeguard Users	X					
Facilitate Commuters		X				
Create Stability			X			
Define Direction				X		
Unify Purpose				X		
Promote Recreation				X		

UNIVERSE OF IDEAS

DEVELOPING THE UNIVERSE OF IDEAS

As described in Appendix B | Planning Context/Summaries of Previous Studies, numerous studies and reports have presented possible ideas for a new interchange to I-80 between Pflug Road and N-370 in western Sarpy County. More specifically, these studies have presented new interchanges at multiple locations, including Pflug Road, 192nd Street/Capehart Road, 180th Street, and 168th Street/Schram Road. There have also been various iterations or variations of possible interchange placements, and connections to the local roadway network. Also, during the Land Use Planning workshops held during 2020, local land use planners and officials suggested additional locations that could be considered as potential solutions to the problems identified in the Alternatives Study Area. Finally, there are several existing bridges/overpasses, which represent places where existing infrastructure could be utilized to construct a new interchange and realize some cost-savings. These locations include Pflug Road, 204th Street/Fairview Road, 192nd Street/Capehart Road, and 168th Street/Schram Road.

As part of the Speculation Phase, the study team collected and mapped these past studies and asked for any additional suggestions during the various stakeholder engagement meetings. All suggestions were mapped and presented below (Figure 4-1 | Universe of Ideas & Alternative Speculation) and are included in Table 4-4 | Initial Alternatives Speculation & Screening. Table 4-4 also includes a grouping of each alternative to help better define the alternative as well as a preliminary screening recommendation for each of those alternatives. More details of that screening process has been provided in the next few sections of this chapter.

Figure 4-1 | Universe of Ideas & Alternative Speculation

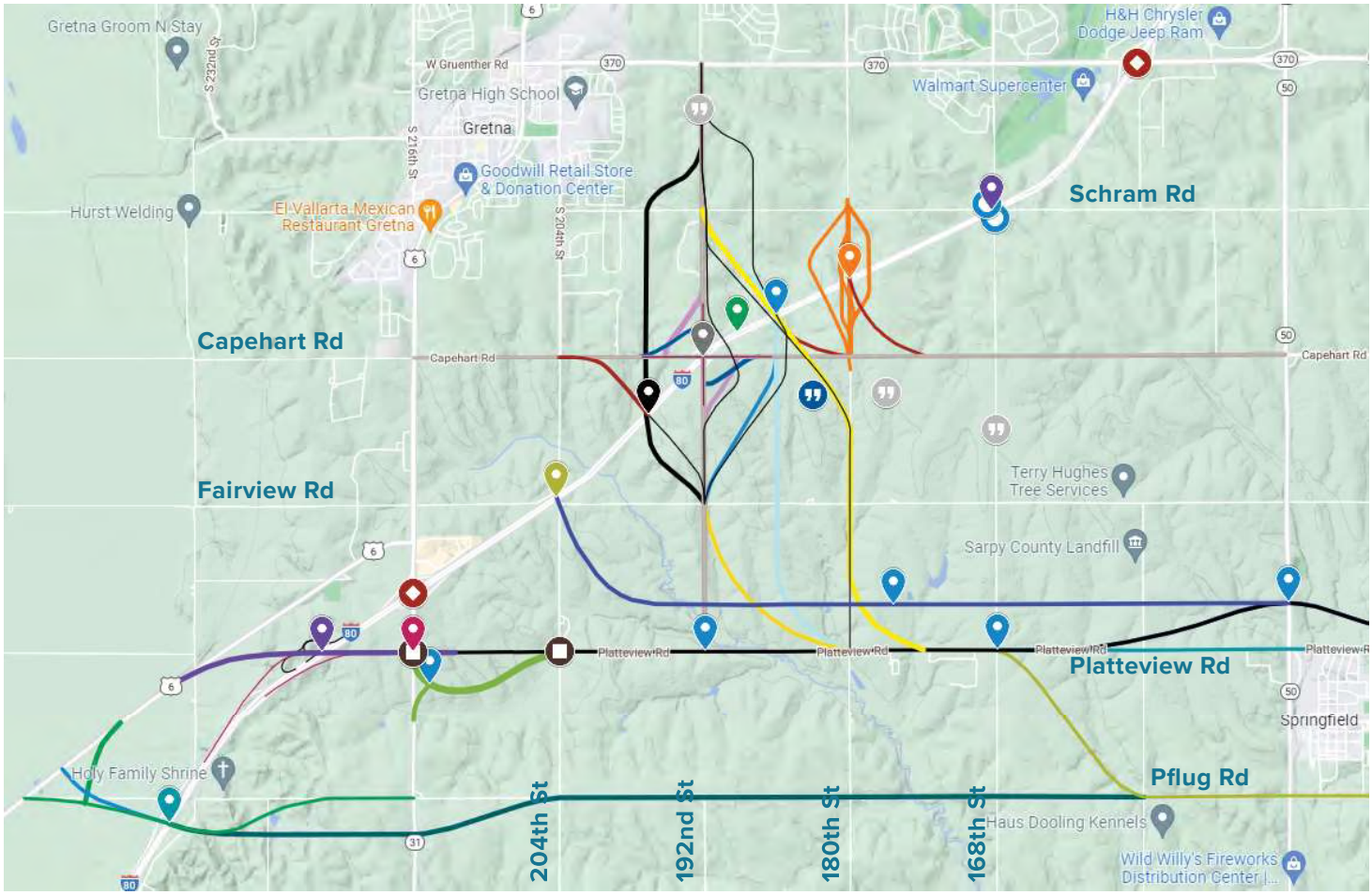


Table 4-4 | Initial Alternatives Speculation & Screening

IDEA DESCRIPTION	GROUPING	SCREENING	REASON
Interchange at 192nd & Capehart (Full Connections)	Interchange	Carried Forward	Potentially addresses identified need
Platteview Road (4-lane Expressway with Direct Connection to I-80 (Fly over))	Interchange	Carried Forward	Potentially addresses identified need
Platteview Road (4-lane Expressway) North of Springfield	Arterial	Eliminated	Outside scope/beyond Study Area
Platteview Road (4-lane Expressway) South of Springfield	Arterial	Eliminated	Outside scope/beyond Study Area
Platteview Road (Thru Springfield)	Arterial	Eliminated	Outside scope/beyond Study Area
Platteview Road with at-grade intersections at 204th, 192nd, 180th, etc.	Arterial	Eliminated	Does not address need
Platteview Road with Interchanges at arterials (204th, 192nd, etc.)	Arterial	Eliminated	Does not address need
Capehart Road (3-lane Arterial)	Arterial	Eliminated	Already planned
Capehart Road (4-lane Divided Arterial)	Arterial	Eliminated	Already planned
192nd Street (3-lane Arterial)	Arterial	Eliminated	Already planned
192rd Street (4-lane Divided Arterial)	Arterial	Eliminated	Already planned
168th Street (3-lane arterial)	Arterial	Eliminated	Already planned
168th Street (4-lane Divided Arterial)	Arterial	Eliminated	Already planned
180th Street Interchange	Interchange	Carried Forward	Potentially addresses identified need
168th Street Interchange	Interchange	Carried Forward	Potentially addresses identified need
204th Street Interchange	Interchange	Carried Forward	Potentially addresses identified need
180th Street (3-lane arterial)	Arterial	Eliminated	Already planned
180th Street (4-lane Divided Arterial)	Arterial	Eliminated	Already planned
204th Street (3-lane arterial)	Arterial	Eliminated	Already planned
204th Street (4-lane Divided Arterial)	Arterial	Eliminated	Already planned
N-370 DDI	Interchange	Eliminated	Already planned
N-31 DDI	Interchange	Eliminated	Already planned
New Interchange - DDI	Design Idea	Eliminated	Interchange options determined later
New Interchange - Full Cloverleaf	Design Idea	Eliminated	Interchange options determined later
New Interchange - Urban Diamond	Design Idea	Eliminated	Interchange options determined later
New Interchange - SPUI	Design Idea	Eliminated	Interchange options determined later
New Interchange - Roundabout Interchange (at Ramps)	Design Idea	Eliminated	Interchange options determined later
New Interchange - Large Single Roundabout	Design Idea	Eliminated	Interchange options determined later
New Interchange - Partial Cloverleaf	Design Idea	Eliminated	Interchange options determined later
Platteview Road curves north connects with 192nd at I-80	Connection	Eliminated	Not address need
Platteview Road with connection to N-31 with Half SPUI	Connection	Carried Forward	Potentially addresses identified need
Platteview Road connects with Pflug Road at I-80	Connection	Carried Forward	Potentially addresses identified need
Platteview Road (4-lane Divided Arterial)	Arterial	Eliminated	Already planned
Schram Road (3-lane Arterial)	Arterial	Eliminated	Already planned
Schram Road (4-lane Divided Arterial)	Arterial	Eliminated	Already planned
Fairview Road (3-lane Arterial)	Arterial	Eliminated	Already planned
Fairview Road (4-lane Divided Arterial)	Arterial	Eliminated	Already planned

Table 4-4 (Cont'd) | Initial Alternatives Speculation & Screening

IDEA DESCRIPTION	GROUPING	SCREENING	REASON
Platteview Road curves north connects with 192nd at I-80 (No Connection to Capehart)	Connection	Eliminated	Does not address need
Pflug Road connects to US 6 & N-31 with I-80 interchange	Connection	Eliminated	Does not address need
186th Street Interchange	Interchange	Carried Forward	Potentially addresses identified need
192nd Street swings to 186th Street	Arterial	Eliminated	Does not address need
N-31 Roundabout Interchange	Interchange	Eliminated	Already planned
N-31 SPUI Interchange	Interchange	Eliminated	Already planned
N-31 Improved Diamond Interchange	Interchange	Eliminated	Already planned
Connect US 6 with Platteview Road with SPUI at N-31	Connection	Eliminated	Does not address need
Platteview Road interchange with N-50	Interchange	Eliminated	Outside scope/beyond Study Area
Platteview Road curves north to connect with 196th Street for Interchange Location	Connection	Eliminated	Does not address need
196th Street Interchange	Interchange	Carried Forward	Potentially addresses identified need
Pedestrian Trail Crossing across I-80	Modal	Eliminated	May be integrated into other options
168th Street Roundabout with Existing Street Network	Connection	Carried Forward	Potentially addresses identified need
Capehart Road connects to 180th St	Connection	Eliminated	Does not address need
Platteview Road thru connect to N-31	Connection	Eliminated	Does not address need
189th Crossing using Natural Topography for I-80 Crossing	Connection	Eliminated	Does not address need
Connect US 6 with Pflug Road Alignment (US 6 North becomes Old US 6)	Connection	Eliminated	Does not address need
Trail Crossing at 204th and I-80	Modal	Eliminated	May be integrated into other options
Utilize Existing Bridge 204th and Fairview for Interchange	Interchange	Carried Forward	Potentially addresses identified need
Utilize Existing Bridge 192nd and Capehart for Interchange	Interchange	Carried Forward	Potentially addresses identified need
Capehart Connect to I80 at 204th	Connection	Carried Forward	Potentially addresses identified need
Platteview Rd 1/4 north of existing Platteview Rd	Connection	Eliminated	Does not address need
186th Street Interchange with connection to Platteview Rd	Interchange	Carried Forward	Potentially addresses identified need
Platteview Rd turns north into 186th St	Connection	Eliminated	Does not address need
168th St as partial interchange to west (Ex N-370 remains)	Interchange	Carried Forward	Potentially addresses identified need
168th Street traditional interchange	Interchange	Carried Forward	Potentially addresses identified need

DEVELOPING THE UNIVERSE OF IDEAS

Unique ideas or idea components were generated during the speculation process, which varied from larger macro solutions like new interchange locations or roadway re-alignments, to micro solutions like suggesting right-in/right-out access at specific intersections or different ramp terminal configurations. Some ideas pushed the bounds of reasonableness such as adding a light rail system or utilizing a circular roadway system with two bridges at one interchange location. Regardless, creativity was encouraged so that new reasonable ideas could spring from any proposed ideas.

UNIVERSE OF IDEAS ELIMINATED FROM CONSIDERATION

Following the initial speculation phase, the resulting Universe of Ideas was refined to those ideas that would best address the Purpose and Need. Ideas or idea components were eliminated that would violate a constraint, were not feasible, or were duplicative ideas. The resulting alternatives that remained were then grouped into the Initial Range of Practicable Alternatives.

From the initial range of ideas developed, the alternatives listed below were eliminated from consideration for the following reasons:

- System Management, Demand Management, and Multi-Modal Options. Several improvement suggestions related to non-build alternatives fell within the categories of system improvements, demand management or multi-modal options. Two suggestions from Table 4-4 include providing improved trail connections across I-80. While each of these options provide merit, they do not, when looked at in isolation, address the purpose and need for this project. Instead, the recommendation is to evaluate whether to incorporate these alternatives, including improved pedestrian access across I-80, into the final preferred alternative during subsequent study phases.
- Design Considerations. Several options presented were considered design considerations and were not independent alternatives. For example, there were several interchange types suggested for any new interchange along I-80. These suggestions were dismissed because detailed design considerations are out of the scope of this study and more relevant in future studies. These design considerations will be incorporated in future studies that delve into mored detailed design options.
- Local Connections. There were numerous suggestions related to providing new connections from the existing arterial network to a new proposed interchange location along I-80. While there are potential benefits to these connections they are not distinct from the discussion of the new interchange location. So, individually these connection options were not carried forward but they have, in fact, been incorporated into the alternatives that provide a new interchange along I-80.
- Arterial Improvements. Similarly, there were several options presented that proposed improving the existing arterial roadway network. While there are benefits to improving the arterial network it was determined that, by themselves, none of these improvement options satisfied the purpose and need for the project. In addition, several of the suggestions are already being planned and/or constructed or are reasonably anticipated to be improved in the near future.
- Improvements to Existing I-80. Improvements either to the two existing interchanges along I-80 (N-31 and N-370) or improvements to mainline I-80 were also considered and

MTIS Study Recommendations
N-31 & N-370 interchanges

Previous MTIS Recommendations. As described in the MTIS Phase 3 report (MAPA 2019), there are already future plans to convert several interchanges along I-80 from regular diamond interchanges to Diverging Diamond Interchanges (DDI), which would help alleviate some localized problems at these locations. These interchanges include N-370, N-50 and several others outside the Study Area. MTIS also described possible improvements to N-31 as a DDI, unless a new interchange could be built that might alleviate some of these issues.

While the improvements to these interchanges might help with localized issues or may improve turning movements, they would not address this study's purpose and need. More specifically, these improvements would not address the congestion on surrounding roadways or provide additional access to I-80 for the rapidly growing and developing Alternatives Study Area. For this reason, solely making improvements to the N-31 and N-370 interchanges were removed from consideration as standalone alternatives. As funding becomes available through the MTIS program and other changes are seen within the system, these improvements may be made regardless of other alternatives considered.

Validity of those MTIS Recommendations. Understanding that time has passed since the completion of the MTIS study, the study team reviewed those recommendations, discussed the details with the MTIS study team, and re-evaluated the recommendations. The study team found the recommendations to be consistent with existing conditions.

Recommendations for N-31 and N-370. The recommendations from MTIS, including placing the N-370 improvements on the most recent STIP, are at various stages in the project development process and are assumed for this study to be part of the committed network.

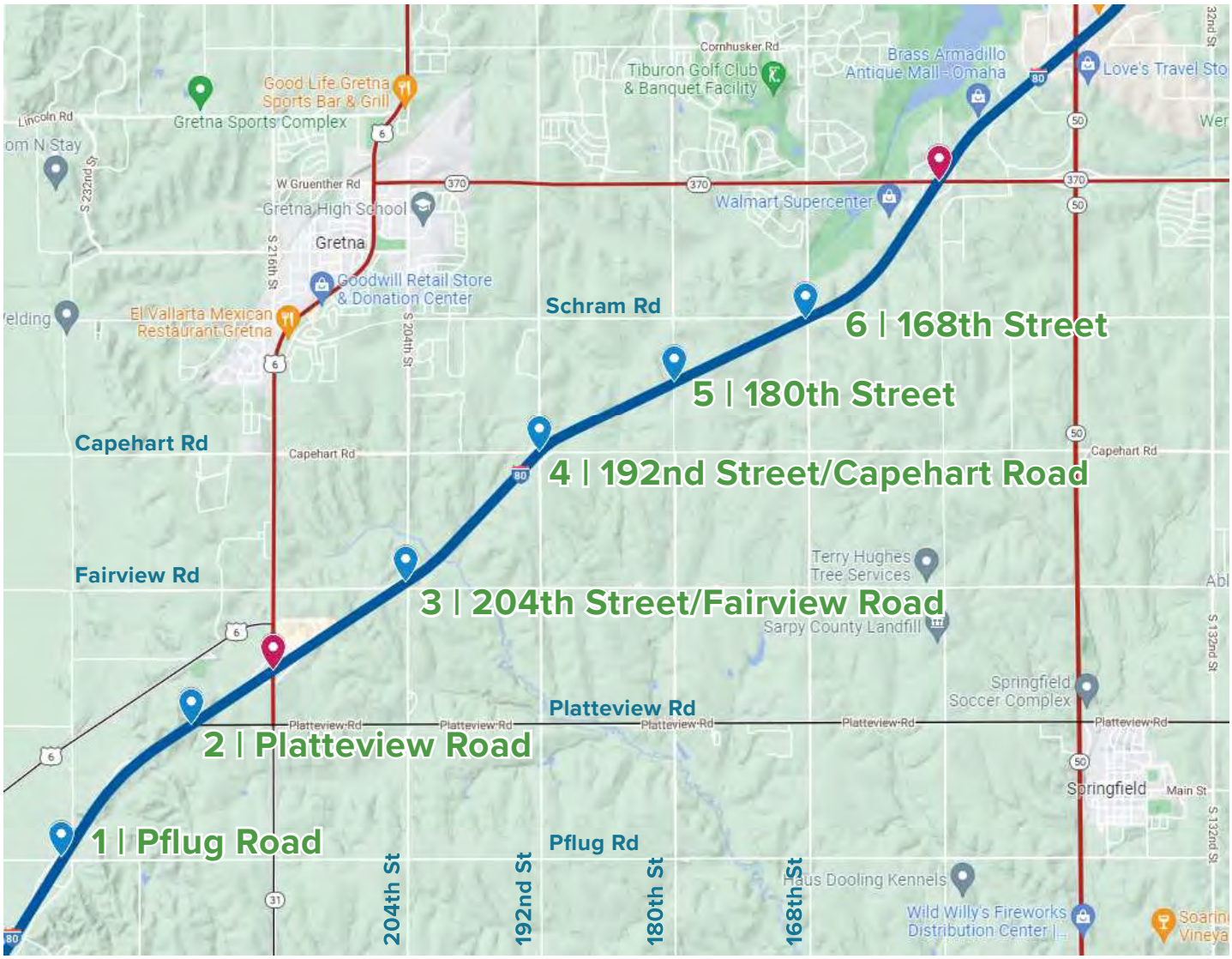
eliminated. Capacity along mainline I-80 was not identified as a study need and widening the facility would not satisfy the purpose and need for this project. In addition, improvements to both N-370 and N-31 have already been identified as part of the MTIS study and plans are in place to begin implementing those recommendations (see call-out box on previous page for additional information). For example, the N-370 interchange was recently added to the STIP for reconstruction as a DDI interchange. Further improvements to the two interchanges above what has already been planned were not recommended from either MTIS or this study.

- New Interchange Options. The remaining suggestions related to potential locations along I-80 for a new interchange. Locations for a possible interchanges were suggested at numerous locations along the entire corridor. Many of these locations did not line up with the existing arterial street network, or were too close to the existing interchanges. The next section discusses how the study team consolidated the new interchange locations into six that made the most sense.

UNIVERSE OF IDEAS CARRIED FORWARD AND/OR GROUPED FOR CONSIDERATION

While there were numerous possible solutions, variations, and multiple possible configurations for many of the alternative ideas, the study team condensed these ideas and suggestions into six (6) groups (or concepts) centered around the existing roadway network (Figure 4-2 | Practicable Alternatives). This facilitated two major items: it made referring to various alternatives simpler and allowed for the travel demand modeling to be simplified.

Figure 4-2 | Practicable Alternatives



PRACTICABLE ALTERNATIVES

Following the removal of the two existing I-80 interchanges, six (6) locations remained, and were determined to be the Practicable Alternatives. It should be noted that these alternative concepts actually include many variations within one half mile at each location, and do not address a specific interchange type, even though there were many additional ideas that were developed around each location. The following alternatives are described from west to east, with a list of possible considerations and possible benefits or opportunities.

OPTION 1 | PFLUG ROAD CONCEPT

This concept was included because Pflug Road has an existing bridge over I-80 and has been considered in numerous previous studies for an interchange. It may provide possible benefits of utilizing the existing bridge and roadway network and may provide opportunities to connect to US 6, as well as a western extension of the Platteview Expressway in the future. There would need to be reconfigurations of the immediate roadway network because the bridge is offset from the mile-line grid, which could have additional impacts to surrounding natural features, such as the steep bluffs, the Platte River floodplain, the Holy Family Shrine, potential historic resources, and a new residential subdivision platted north of Pflug Road and east of 228th Street.

POSSIBLE CONSIDERATIONS

- Holy Family Shrine
- Steep bluffs
- Platte River Floodplain
- Existing bridge over I-80
- Recently platted residential subdivision north of Schram Road
- Potential Historic resources/ buildings

OPTION 2 | PLATTEVIEW ROAD CONCEPT

Platteview Road is an existing roadway that connects to US 75 on the east end of Sarpy County. As previous plans have indicated, Platteview Road is being considered for the location of an expressway to connect I-80 to US 75 and ultimately to I-29 in Iowa. The western connection has been discussed as connecting to I-80 anywhere from Pflug Road to 192nd Street. For this alternative, it was assumed that Platteview Road would extend straight west from N-31 and would connect directly to I-80 and possibly to US 6.

POSSIBLE CONSIDERATIONS

- Proximity to existing N-31/I-80 interchange
- Existing development, truck stops, outlet mall
- Platted new development north of Platteview and east of N-31 (Gretna Logistics Park)
- Configuration issues with US 6
- Melia Hill Rest Area on westbound I-80
- Potential Historic resources/ buildings

OPTION 3 | 204TH STREET/FAIRVIEW ROAD CONCEPT

The 204th Street and Fairview Road concept was considered because of an existing bridge over I-80. Both roads are on the mile grid and provide opportunities to connect new residential, industrial, and commercial developments to I-80. 204th Street becomes more of a 'local' road north of Capehart Road as it enters Gretna, and eventually passes by several schools, making it less than desirable for expansion into a major arterial roadway connection.

POSSIBLE CONSIDERATIONS

- Proximity to existing N-31/I-80 interchange
- 204th becomes more 'local' road to the north into Gretna
- Existing bridge

OPTION 4 | 192ND STREET/CAPEHART ROAD CONCEPT

This alternative concept was included due to the presence of an existing bridge over I-80 that carries 192nd Street and Capehart Road, and its location on the mile-grid system. 192nd Street has also been recently paved to the north of Schram Road to N-370, and north of this point it has been realigned to become a major arterial into Douglas County to the north. Also, Capehart Road has been recently paved to the west of the interchange and is being paved from the east at N-50. The property north and east of this location is owned by Vala's and is used for commercial pumpkin growing. This location is also the 'agreed upon' location by both Papillion and Gretna for a future boundary agreement line that was recently approved and confirmed by Gretna's annexation of nearby land north of the interstate.

POSSIBLE CONSIDERATIONS

- Advancing development plans
- Communication towers
- Existing bridge
- Potential Historic resources/ buildings
- Vala's Pumpkin Patch and Apple Orchard
- Green Acres residential subdivision west of 192nd and south of Schram Road

OPTION 5 | 180TH STREET CONCEPT

180th Street has been the subject of several previous planning studies, which at the time they were conducted, indicated that 180th Street would be a major arterial north to the Douglas County line. With recent planning and changes to the roadway network north of N-370, 180th Street will now only be a minor arterial, with three lanes from this location to the north. There are also several electrical transmission line poles along 180th Street, as well as a transmission line that crosses I-80 to connect to the OPPD substation situated just north of I-80 and west of 180th Street. Previous planning efforts for 180th Street included various options to bridge over or tunnel under I-80, and various ways to swerve around the residential subdivision on the east side or to avoid Vala's Pumpkin Patch on the west side. All of these concepts would likely have more impacts to both of these resources and could be very expensive to construct.

POSSIBLE CONSIDERATIONS

- Vala's Pumpkin Patch and Apple Orchard
- OPPD Substation and Transmission towers along 180th Street to the north
- Country Estates (residential subdivision) to the east of 180th north of I-80
- Topography (180th is much lower than I-80 at this location)
- Needs a new bridge over I-80, or a new bridge over 180th Street
- 180th Street becomes more 'local' road north of N-370
- Potential Historic resources/ buildings

OPTION 6 | 168TH STREET/SCHRAM ROAD CONCEPT

This concept was considered due to the location of an existing bridge over I-80 at Schram Road and 168th Street. This location offers opportunities to connect to the local roadway network without major changes to the mile-grid, but it is somewhat close to the existing N-370 interchange. This location may offer an opportunity to provide inter-connected access (i.e. on and off I-80 within a shorter distance that is desirable for freight and truck movements) similar to the N-370/N-50 area.

POSSIBLE CONSIDERATIONS

- Wehrsphann Lake
- New development approaching on the west, east and north
- Existing Bridge
- Floodplains
- Potential Historic resources/ buildings

Sarpy County I-80 Interchange PEL Study

Chapter 5 | Alternatives Evaluation and Screening

MAPA

Omaha - Council Bluffs
Metropolitan Area
Planning Agency

This chapter continues the Value Planning methodology that began in Chapter 4 | Alternatives Development. As explained previously, Value Planning is a transparent and data-driven process to document decisions made by the project team, to evaluate alternatives based on how well they perform, and understand how well they meet stakeholder expectations.

CUSTOMER FUNCTION MODEL

As described in Chapter 4, the functions developed by the project team were organized into a Customer Function Model, which is shown in Figure 5-1 | Customer Function Model. Based on these functions, screening criteria for evaluating each concept were selected. For evaluating Performance (P1-P5), five criteria were selected from the Basic, Dependability and Convenience categories. For evaluating Acceptance (A1-A4), four criteria were selected from the Improve Acceptance and Attract Stakeholders categories.

SCREENING CRITERIA

Specific functions within the performance functions were selected as criteria to apply measurable metrics to evaluate each alternative's performance, which includes relieving N-370 and N-31 traffic volumes (measured in reduction of average annual daily traffic or AADT), reducing indirect travel times (measured in vehicle miles traveled or VMT), reducing congestion (measured in vehicle hours traveled or VHT), and accommodating freight (measured in reductions to truck VHT).

Additional acceptance functions were selected as criteria to align with the project goals which include complementing existing and planned improvements, encouraging economic vitality and placemaking, fostering environmental sustainability, and accommodating multi-modal transportation connectivity.

INCORPORATING THE TRAVEL DEMAND MODEL

For the PEL Study, MAPA's region wide Travel Demand Model (TDM) was used to estimate changes in average annual daily traffic (AADT), vehicle miles traveled (VMT) and vehicle hours of travel (VHT) for each of the proposed alternative strategies. At this level of analysis, the TDM software cannot decipher the difference between a connection to the interstate at 180th or 186th Street, or if an individual roadway was slightly modified to avoid any particular resource. The main use of the TDM software was to create a macro-scale diagram of possible roadway configurations/connections or possible interchange locations along the interstate, and then run the model with the future land use plans to generate traffic volumes and see where they are distributed within the model.

Land Use Consolidation

The Study Team modified the existing MAPA TDM to better represent the future land use development expected to occur in western Sarpy County. The detailed land use changes incorporated into the model were based on the land use charrette process used to develop a consolidated land use vision for western Sarpy County, including the communities of Gretna and Papillion. Details of how this was completed can be found in Appendix C | Land Use Planning.

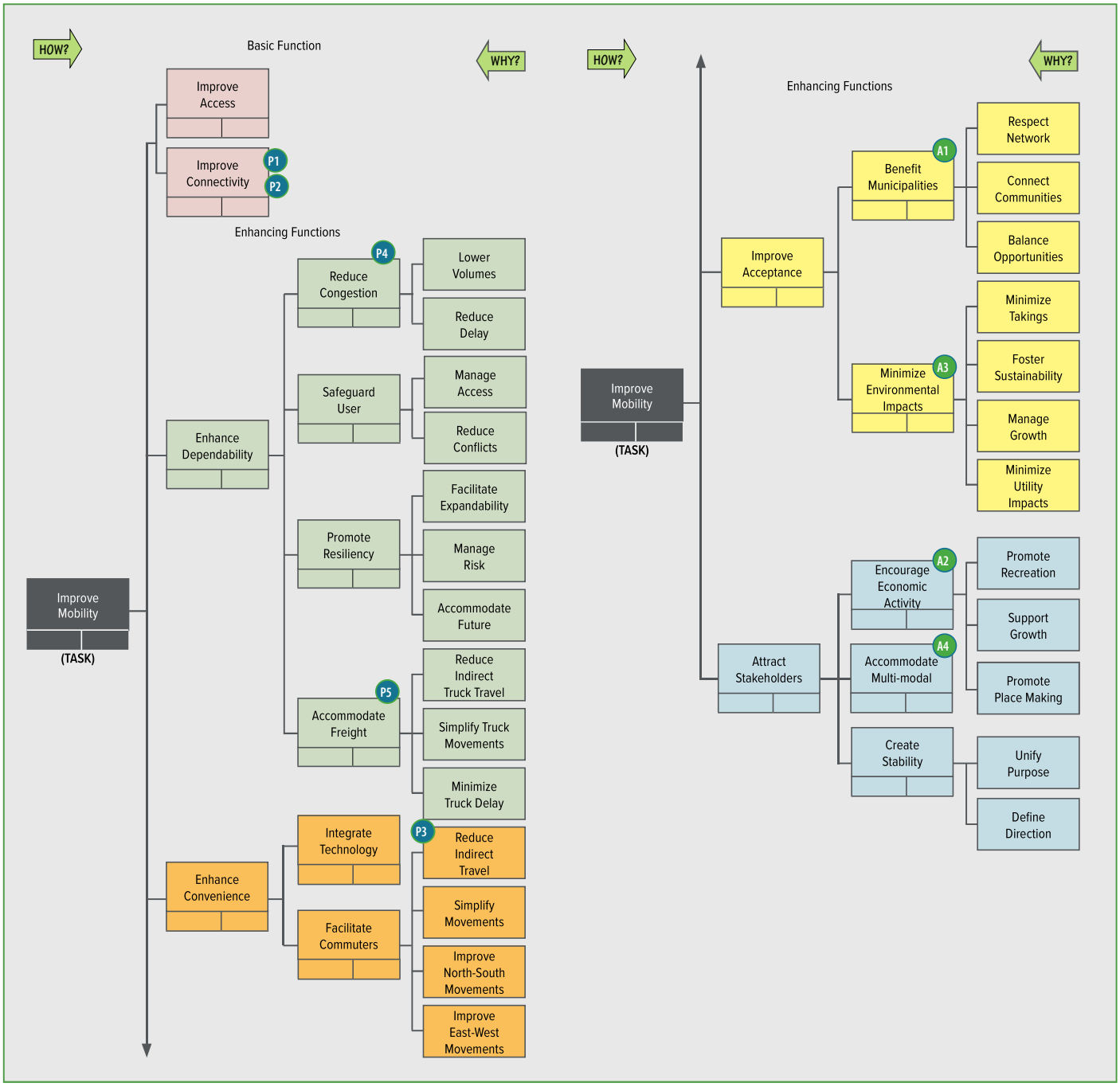
Baseline TDM Forecasts

The process outlined above was used to generate the social-economic inputs to the model. The model was then run using the new updated inputs for the forecast year (2050). The network used in this model was modified from MAPA's forecast year network by increasing capacity on the key north-south and east-west roadways in the Study Area and adopting a limited access facility type for Platteview Road. These changes were adopted so that the baseline forecast network would be consistent for the six alternative interchange design scenarios as described later.

Alternatives Comparison

For the six alternative interchange design scenarios, the trip tables from the baseline forecast were extracted. It was assumed that the trip tables for the alternative scenarios would be identical to those of the baseline scenario. This approach was used to isolate the impacts of the network changes while avoiding spurious differences in forecasts of the distribution of trips.

Figure 5-1 | Customer Function Model



THE DIAGRAM CAN BE READ AS FOLLOWS:

If the Basic Task is to Improve Mobility, one would ask the question "How do we Improve Mobility?" One would then move to the right to find answers such as by "Improving Access" and "Improving Connectivity." One could then ask the question "How can I Enhance Dependability?" Moving to the right one would find answers such as by "Managing Congestion" and "Safeguarding the User." Going further to the right, and asking the question "How do I accomplish each action to the left?" one would encounter answers such as by "Lowering Volumes" and "Reducing Delay" or "Managing Access" and "Reducing Conflicts." Moving back across the table from right to left, the question becomes "Why are we doing each of these things?" with the answer being found to the left of each function. For example, the question "Why do we minimize property takings?" would be answered "to Minimize Environmental Impacts, which in turn Improves Acceptance, which enhances the basic task of Improving Mobility." Going back and forth across the table with each function allows the team to verify each function's correct placement in the diagram.

EVALUATION PHASE

As discussed in the previous sections, looking at the Performance criteria is where the engineering elements come into the Value Planning process. Identified as a concern in the MTIS study, the existing N-31 and N-370 interchanges with I-80 have seen an increase in congestion during the peak commuter periods. MTIS identified that the addition of an interchange could provide benefit to the existing interchanges. Identifying the key functions to evaluate the alternatives based on performance is an important phase of study. Evaluating a new interchange along I-80 should be based on the amount traffic that can be redirected from N-31 and N-370 to the new interchange to serve the Sarpy County and west Omaha.

PERFORMANCE VERSUS ACCEPTANCE CRITERIA

Performance criteria measure how well each alternative will accomplish the task at hand, while acceptance criteria measure how much opposition or support there may be for each alternative. Those that perform well and are accepted should merit consideration to be carried forward. Those that do not perform well, and are also not accepted well, should be not be considered further or carried forward.

It should be noted that based on the travel demand modeling, the amount of volume change along N-370 does not reduce significantly with any alternative. MAPA has stated they have noticed the same trend with N-370 because the regional significance of N-370 and how I-80 flows through Sarpy County. Reducing volumes will still impact traffic operation along both corridors, but it should be noted that this study is not looking at the geometric modifications to the existing interchanges, which could address traffic operation more effectively. Even with interchange modifications at both interchanges, a need for a new interchange along I-80 is important to the growth in Sarpy County and west Omaha. A new interchange provides an opportunity for drivers to reduce the amount of indirect travel to access I-80, thereby reducing travel times and congestion.

PERFORMANCE CRITERIA

Each alternative was evaluated using the performance criteria discussed previously. Within each criterion, a score was assessed for each alternative compared to the No-Build condition. The Performance criteria was given a score that was then summarized into a matrix providing a summary for each alternative using the Performance criteria.

Performance evaluation criteria are more technical in nature and can be measured based on data, traffic analysis results, and engineering judgment. The following Performance criteria align closely with the Purpose and Need statements, and one of the project Goals, as identified in Chapter 2 | Purpose & Need and illustrated in Figure 5-2 | Linkages between Purpose & Need, Project Goals and Performance Criteria and described in greater detail in Figure 5-3 | Performance Criteria.

Figure 5-2 | Linkage between Purpose & Need, Project Goals and Performance Criteria

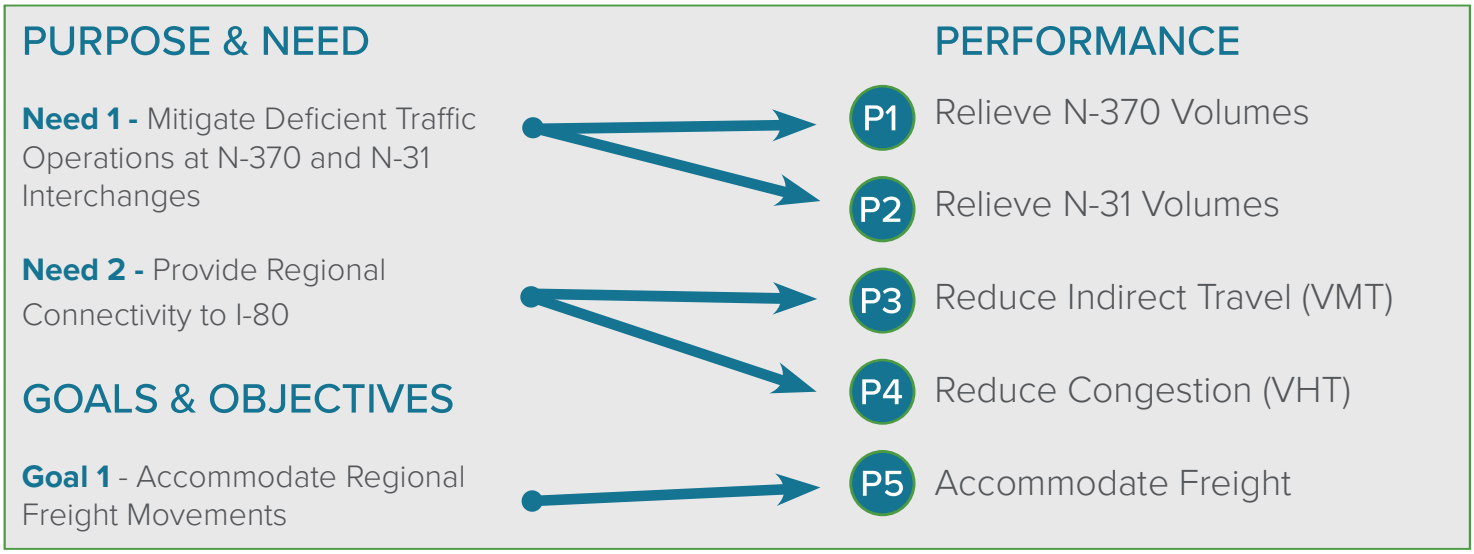


Figure 5-3 | Performance Criteria

P1 **Relieve N-370 Volumes -** N-370 has been experiencing increasing congestion for several years and the amount of traffic at the I-80 interchange continues to increase with recent development activities in the area. The N-370 interchange was studied previously as part of the MTIS study which reported that the interchange levels of service will continue to degrade over the next twenty years. As part of this study, a TDM analysis was completed for the proposed interchange locations. To meet this performance criteria, projects coming out of this study should reduce N-370 traffic and help improve the overall traffic operation of the interchange. The amount of traffic volume difference for each alternative was compared to the base travel demand model with only the N-370 interchange in order to demonstrate any reductions or increases.

P2 **Relieve N-31 Volumes -** Similar to N-370, N-31 has experienced an increase in traffic volumes at the interchange with I-80. The N-31 interchange provides west Omaha traffic an option to use US Highway 6/N-31 through Gretna to access the western edge of Omaha, or vice-versa for traffic coming from west Omaha that wants to travel west on I-80. The N-31 interchange was studied previously as part of the MTIS study which reported that the interchange levels of service will continue to degrade over the next twenty years. As part of this study, a TDM analysis was completed for the proposed interchange locations. To meet this performance criteria, projects coming out of this study should reduce N-31 traffic and help improve the overall traffic operation of the interchange. The amount of traffic volume difference for each alternative was compared to the base travel demand model with only the N-31 interchange in order to demonstrate any reductions or increases.

P3 **Reduce Indirect Travel -** The addition of a new interchange along I-80 in between the existing N-31 and N-370 interchanges should reduce the amount of indirect travel for drivers wishing to access I-80 from the north in west Omaha and from elsewhere within Sarpy County. The indirect travel was measured using MAPA's TDM that was adjusted with the proposed land use identified through the planning efforts from this study. The measure of effectiveness (MOE) unit used for the comparison of alternatives is the amount of vehicle miles traveled (VMT) in the travel demand model. The VMT for each interchange location was compared the base scenario that includes only the N-31 and N-370 interchanges.

P4 **Reduce Congestion -** The addition of a new interchange along I-80 in between the existing N-31 and N-370 interchanges should reduce congestion along the N-31 and N-370 corridors. Congestion within the interchanges of N-31 and N-370 were not analyzed on a typical capacity analysis level because both interchanges were analyzed in the MTIS study which provided geometric modification recommendations for each interchange. For this study, the measure of effectiveness unit used for the evaluation of alternatives is the reduction in vehicle hours traveled (VHT). VHT is a unit that is a commonly used MOE that is directly pulled from the Travel Demand Model. VHT is the measurement of time a vehicle travels along a link or waits to access a link. The VHT from the travel demand model is a total for the links within the model. The VHT for each interchange alternative was compared the base travel demand model scenario that includes only the N-31 and N-370 interchanges.

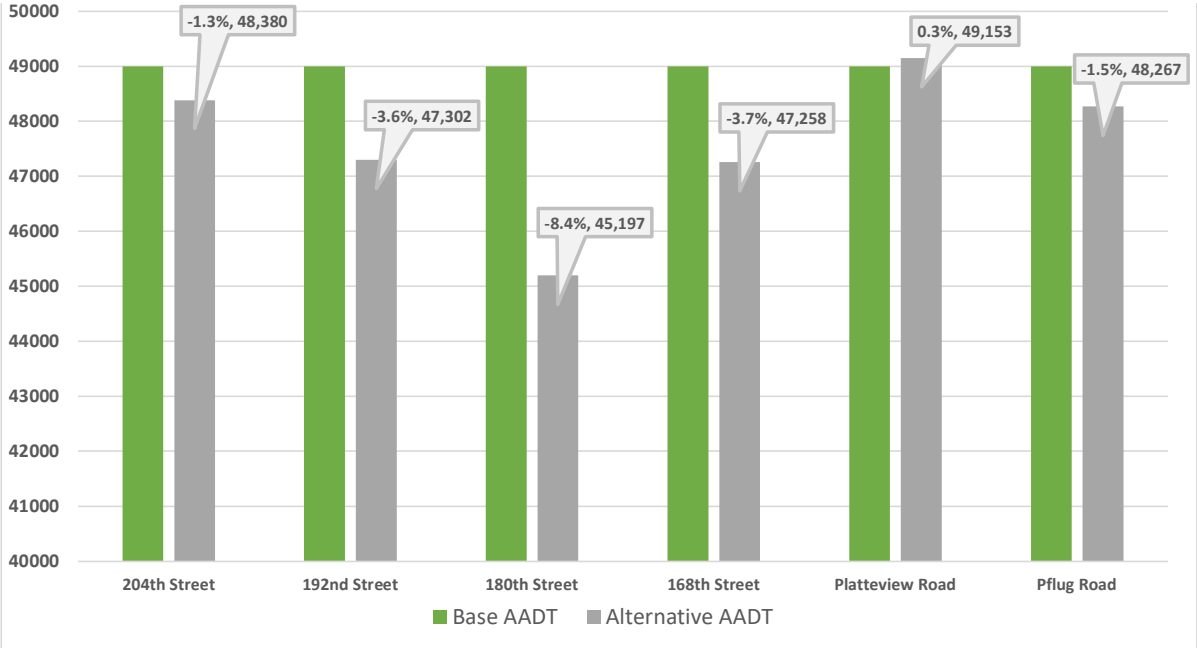
P5 **Accommodate Freight -** The N-370 corridor has experienced a significant growth of trucks with the recent development of numerous distribution centers for Amazon, HyVee, Papillion Foods, Walmart, Oxbow Animal Health, Omaha Steaks, among others. There are also several new distribution centers planned in the vicinity of N-370 and I-80 including a new Amazon Fulfillment Center, and a FedEx distribution center. The N-31 interchange connects with US 6 which serves western Omaha, providing more opportunities for freight movement into and out of Omaha. The addition of a new interchange along I-80 would provide alternative routes for freight to serve Sarpy County and western Douglas County. Projects coming out of this study should therefore reduce the amount of truck traffic using N-31 and N-370. The amount of traffic volume difference for each alternative will be compared to the base travel demand model with only the N-31 and N-370 interchanges.

P1 RELIEVE N-370 VOLUMES

P1 RESULTS

Using the Travel Demand Model, the AADT volumes were pulled for the segments of N-370 located east and west of the I-80 interchange. The AADT volumes used in the evaluation are the projected 2050 volumes from the travel demand model. The No-Build alternative (Base Alternative) had an anticipated AADT of 49,000 vehicles. Figure 5-4 | N-370 Corridor AADT Volume Change provides a summary of the six alternatives in comparison to the 2050 No-Build scenario.

Figure 5-4 | N-370 Corridor AADT Volume Change



P1 CRITERIA

The scoring used for the "Relieve N-370 Volumes" criteria is defined in table to the right. Alternatives that had an increase in traffic volumes received a -1 score; from zero to -3% change received a 0; from -3% to -6% decrease received a score of 1; and volume changes greater than -6% received a score of 2.

% Change in Vehicles per Day	Criteria Score
>0%	-1
0% to -3%	0
-3% to -6%	1
<-6%	2

P1 SUMMARY

The interchanges at 192nd Street, 180th Street and 168th Street all provided a reduction of traffic along N-370 greater than 3 percent and, therefore, received a positive score.

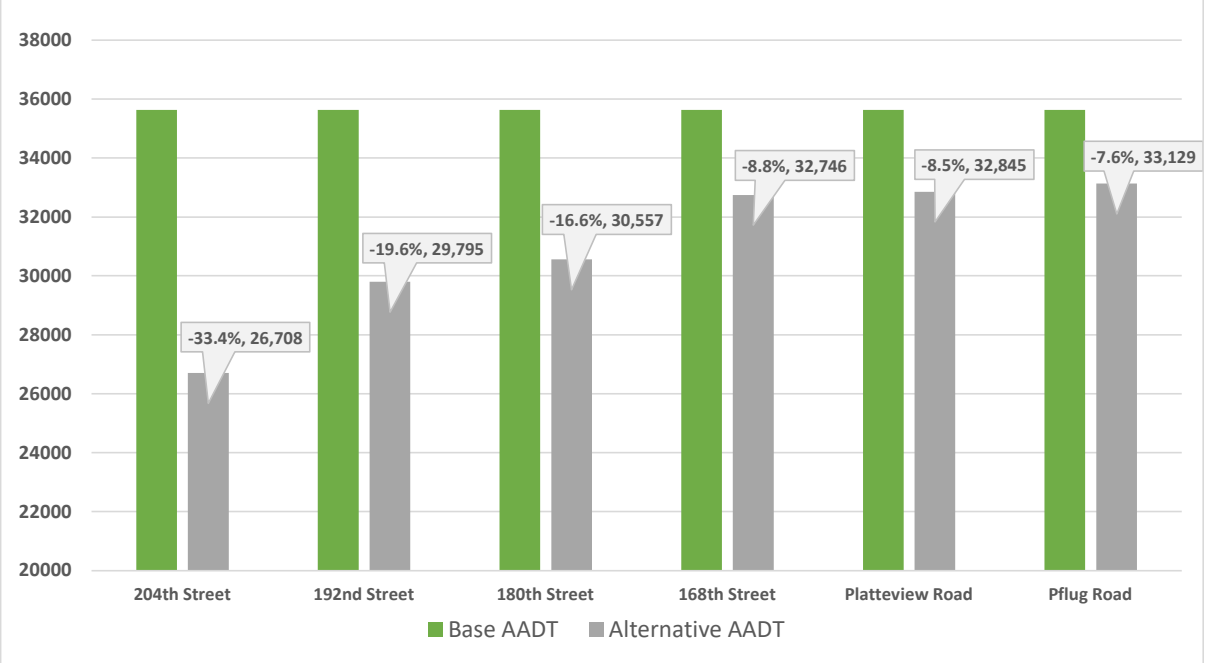
Alternative	Criteria Score
204th Street	0
192nd Street	1
180th Street	2
168th Street	1
Platteview Road	-1
Pflug Road	0

P2 RELIEVE N-31 VOLUMES

P2 RESULTS

The AADT volumes used in the evaluation are the projected 2050 volumes from the travel demand model. The AADT volumes were pulled for the N-31 segments located north and south of I-80. The No-Build alternative (Base Alternative) had an anticipated AADT of about 35,600 vehicles. Figure 5-5 | N-31 Corridor AADT Volume Change provides a summary of the six alternatives in comparison to the 2050 No-Build scenario.

Figure 5-5 | N-31 Corridor AADT Volume Change



P2 CRITERIA

The scoring used for the "Relieve N-31 Volumes" criteria is defined in the table on the right. Alternatives that had an increase in traffic volumes received a -1 score; from zero to -5% change in volume received a 0; a -5% to -15% decrease received a score of 1; and volume changes greater than 15% received a score of 2.

% Change in Vehicles per Day	Criteria Score
>0%	-1
0% to -5%	0
-5% to -15%	1
<-15%	2

P2 SUMMARY

All six alternatives had a positive impact on traffic using the N-31 corridor, with 204th Street, 192nd Street, and 180th Street providing the greatest improvement.

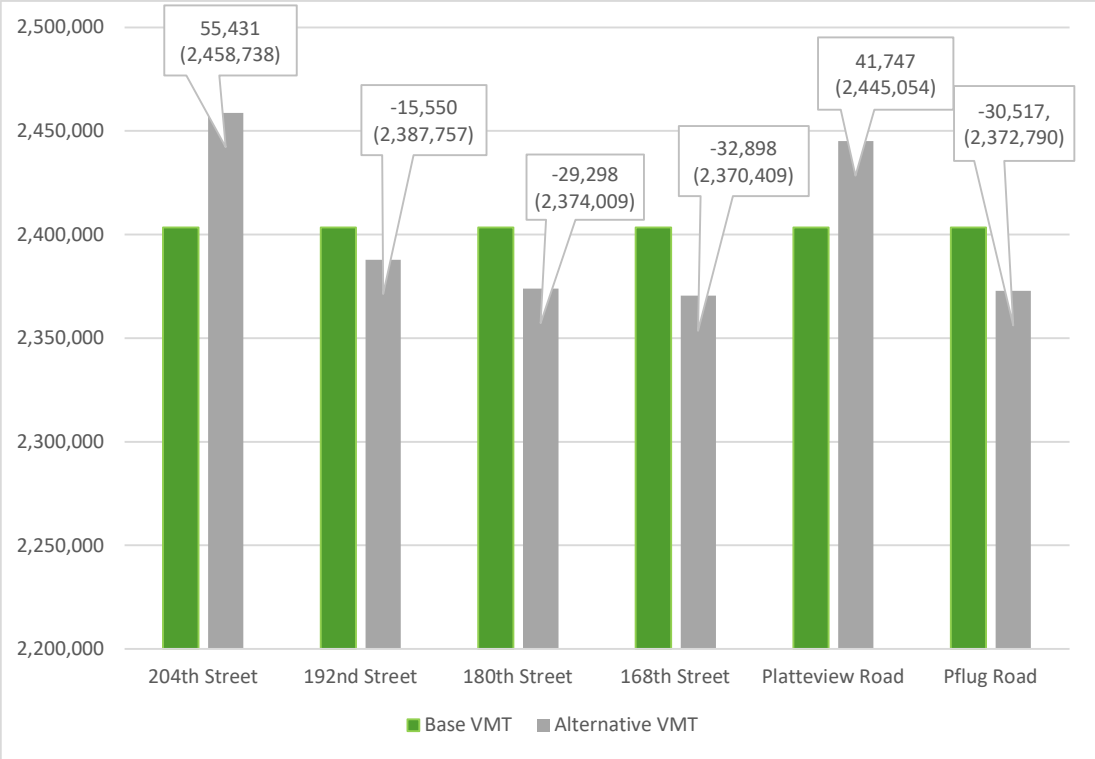
Alternative	Criteria Score
204th Street	2
192nd Street	2
180th Street	2
168th Street	1
Platteview Road	1
Pflug Road	1

P3 REDUCE INDIRECT TRAVEL (VMT)

P3 RESULTS

Vehicle Miles Traveled (VMT) was used to evaluate the amount of indirect travel drivers would expect for each interchange alternative when compared to the base travel demand model scenario. The base scenario has a VMT of 2.4M vehicle miles traveled. Figure 5-6 | Change in Vehicle Miles Traveled (VMT) details how each interchange alternative compares with the 2050 No-Build scenario.

Figure 5-6 | Change in Vehicle Miles Traveled (VMT)



P3 CRITERIA

The scoring used for the "Relieve Indirect Travel" criteria is defined in table to the right. Alternatives that increase the amount of VMT greater than 20,000 received a -2 score; from 20,000 to 10,000 increase received a score of -1; from 10,000 to -10,000 increase received a score of 0; from -10,000 to -20,000 decrease received a score of 1; and a decrease greater than -20,000 received a score of 2.

Amt of VMT Change	Criteria Score
>20,001	-2
20,000 to 10,001	-1
10,000 to -10,000	0
-10,001 to -20,000	1
>-20,001	2

P3 SUMMARY

The interchange at either 204th Street or Platteview Road increased the total regional VMT while the other four alternatives resulted in a reduction of VMT greater than -10,000.

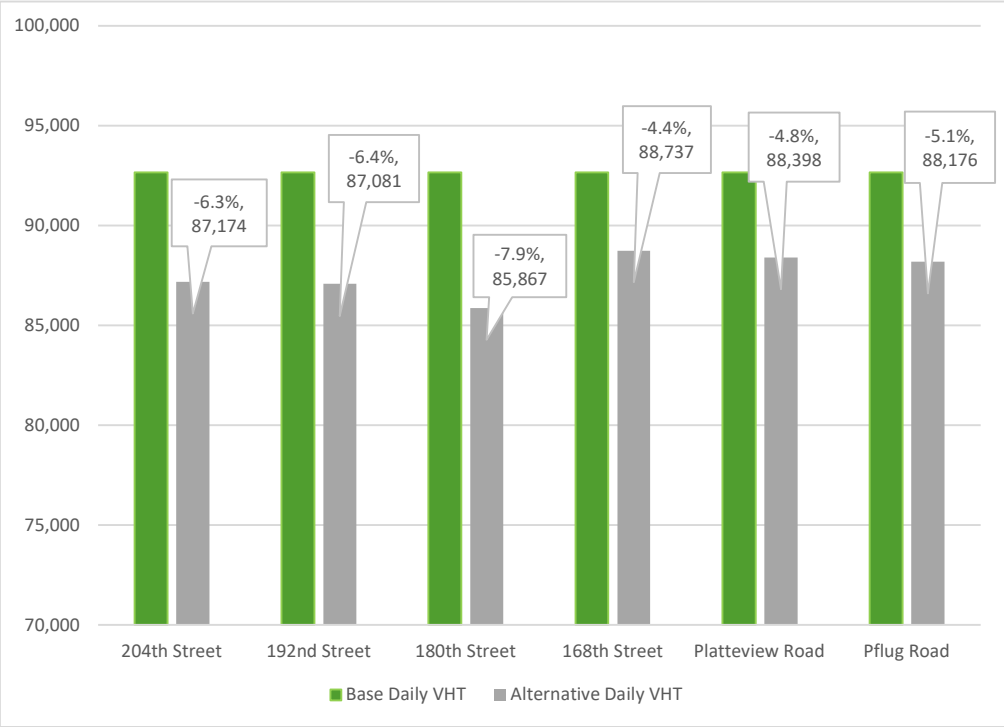
Alternative	Criteria Score
204th Street	-2
192nd Street	1
180th Street	2
168th Street	2
Platteview Road	-2
Pflug Road	2

P4 REDUCE CONGESTION (VHT)

P4 RESULTS

Vehicle Hours Traveled (VHT) is a unit that is a commonly used measure of effectiveness that is directly pulled from the Travel Demand Model. VHT is the measurement of time a vehicle has traveled along a link or has been waiting to access a link. The VHT from the travel demand model is a total for the links within the model. The VHT for each interchange alternative was compared the base travel demand model scenario that includes only the N-31 and N-370 interchanges. The base scenario experienced 92,650 vehicle hours traveled. Figure 5-7 | Change in Vehicle Hours of Travel (VHT) details how each interchange alternative compares with the 2050 No-Build scenario.

Figure 5-7 | Change in Vehicle Hours of Travel (VHT)



P4 CRITERIA

The scoring used for the "Reduction of Congestion" criteria is defined in the table to the right. Alternatives that had an increase in VHT received a -1 score; from zero to -5% change in VHT received a 0; -5% to -10% decrease received a score of 1; and VHT change greater than 10% received a score of 2.

Amt of VHT Change	Criteria Score
>0%	-1
0% to -5%	0
-5% to -10%	1
<-10%	2

P4 SUMMARY

The reduction in VHT was similar for all six alternatives ranging from a reduction between 4 and 8 percent. Alternatives at 204th Street, 192nd Street, 180th Street and Pflug Road scored slightly better than the others.

Alternative	Criteria Score
204th Street	1
192nd Street	1
180th Street	1
168th Street	0
Platteview Road	0
Pflug Road	1

P5 ACCOMMODATE FREIGHT

P5 RESULTS

The amount of truck AADT along both N-370 and N-31 were used to evaluate how each interchange would accommodate freight. The amount of change in truck percentages was measured for each alternative when compared to the 2050 base model scenario. N-370 and N-31 have an average 2050 truck AADT of 1,744 and 3,470 trucks per day, respectively, for the base model scenario. Figure 5-8 | N-370 Truck Volume Change) and Figure 5-9 | N-310 Truck Volume Change provide a summary of the six alternatives in comparison to the 2050 No-Build scenario for both N-370 and N-31.

Figure 5-8 | N-370 Truck Volume Change

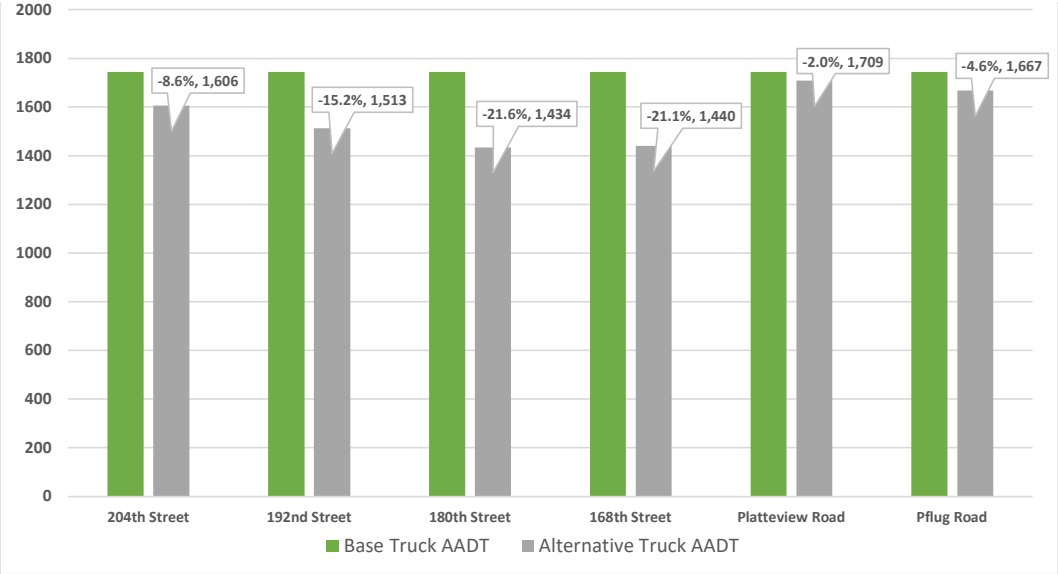
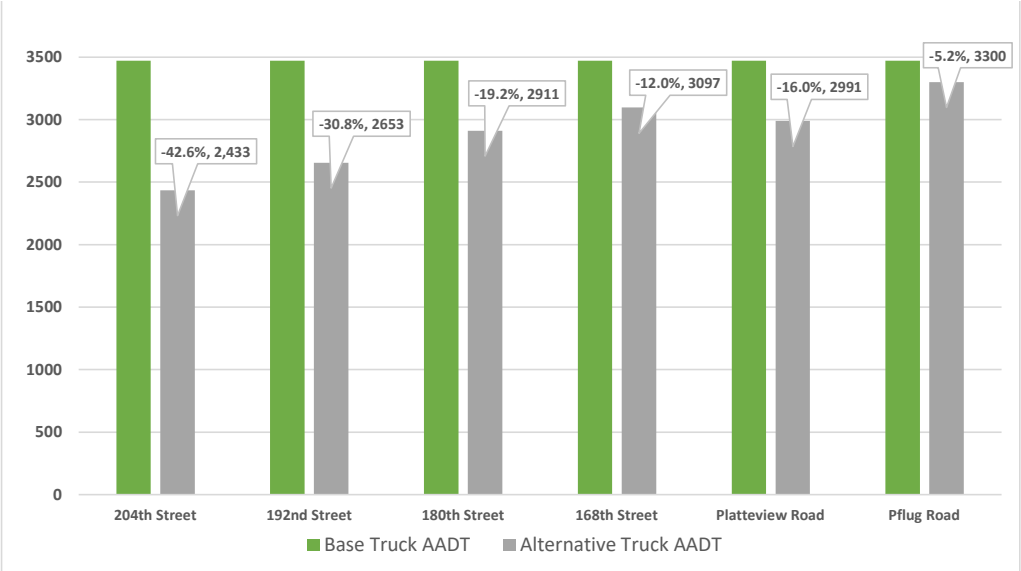


Figure 5-9 | N-31 Truck Volume Change



P5 CRITERIA

Developing the scoring criteria for Accommodate Freight involved combining the impacts to both N-370 and N-31. So, a criterion for both N-370 and N-31 were scored and then were combined for a total. Alternatives that had an increase in truck volumes received a -1 score; from zero to -5% change in volume received a 0; -5% to -15% decrease received a score of 1; and volume changes greater than 15% received a score of 2.

Amt of VHT Change	Criteria Score
>0%	-1
0% to -5%	0
-5% to -15%	1
<-15%	2

P5 SUMMARY

The four interchange options between N-31 and N-370 all resulted in a reduction of truck volumes greater than 15% while both Platteview Road and Pflug Road had minor reductions overall.

Alternative	Criteria Score
204th Street	1+2=3
192nd Street	2+2=4
180th Street	2+2=4
168th Street	2+1=3
Platteview Road	0+2=2
Pflug Road	0+1=1

P PERFORMANCE CRITERIA SUMMARY

The results of the Performance Criteria analysis has been summarized in Table 5-1 | Performance Criteria Summary. Based on the established Performance Criteria, the interchange alternatives for 192nd Street, 180th Street and 168th Street have higher overall scores when compared with the other alternatives.

Table 5-1 | Performance Criteria Summary

Alternative	P1 Relieve N-370 Volumes	P2 Relieve N-31 Volumes	P3 Reduce Indirect Travel (VMT)	P4 Reduce Congestion (VHT)	P5 Accom-modate Freight	Total
204th Street	0	2	-2	1	3	4
192nd Street	1	2	1	1	4	9
180th Street	2	2	2	1	4	11
168th Street	1	1	2	0	3	7
Platteview Road	-1	1	-2	0	2	0
Pflug Road	0	1	2	1	1	5

Source: The rankings in this table are the compilation of the ratings from each of the Performance Criteria (P1-P5) above and based on the data presented in Figures 5-4 through 5-9.

ACCEPTANCE CRITERIA

Recognizing the overall vision for the Study Area and meeting stakeholder expectations are addressed by the more subjective categories for Acceptance. These criteria are drawn from the function categories of Improve Acceptance and Attract Stakeholders. The following acceptance criteria closely align with the remaining four Goals presented in Chapter 2 | Purpose & Need and illustrated in Figure 5-10 | Linkages between Project Goals and Acceptance Criteria and further described in Figure 5-11 | Acceptance Criteria.

The public was presented with each of the alternatives and asked how well they felt that each alternative met each Acceptance criteria. A total of 1,811 survey questions were answered with 159 individual comments received. The participant breakdown shows a good diversity in the responses: 33% property owners, 19% commuters, 31% residents, 7% from the Community Advisory Group, 2% from the resource agencies and 7% from other. See Chapter 6 | Public & Resource Agency Coordination for more details on the public response.

Figure 5-10 | Linkage between Project Goals and Acceptance Criteria

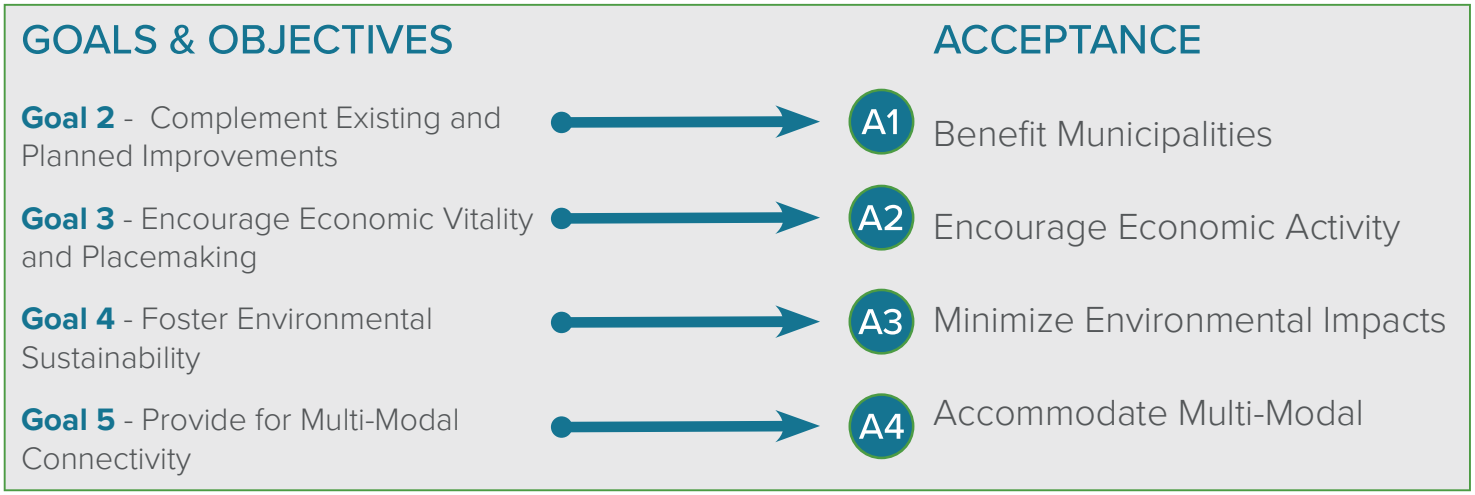


Figure 5-11 | Acceptance Criteria

A1 **Benefit Municipalities -** Sarpy County has been growing rapidly in the last decade, and continues to grow at a rapid pace. Nearly $20M in roadway improvements have been recently completed north of the study area to develop a new roadway system in a 9-square mile area, and more improvements are planned. Gravel roads in the Study Area are being paved as new development occurs. Projects coming out of this study should complement and accommodate these existing and planned improvements.

A2 **Encourage Economic Activity / Create Stability -** Growth in the Study Area will accelerate as the new Sarpy County Wastewater Agency expands new sewer infrastructure across its service areas over time. New urban growth areas may be added as new developments are proposed and funds additional improvements. New access to the Interstate may focus development in the immediate area of an interchange, so any projects coming out of this study should be evaluated for how well they encourage the appropriate growth and encourage vitality in line with the plans by the Wastewater Agency. Furthermore, they should be evaluated for how well they contribute to a sense of place in keeping with the Cities' comprehensive plans.

A3 **Minimize Environmental Impacts -** There are numerous resources in the Study Area that may be impacted by a new access to the interstate, including streams, floodplains, historic resources, prime farmland, residential homes, commercial businesses, utilities, and more. Minimizing impacts to property owners and these resources should be a priority, and projects coming out of this study should be sensitive to them.

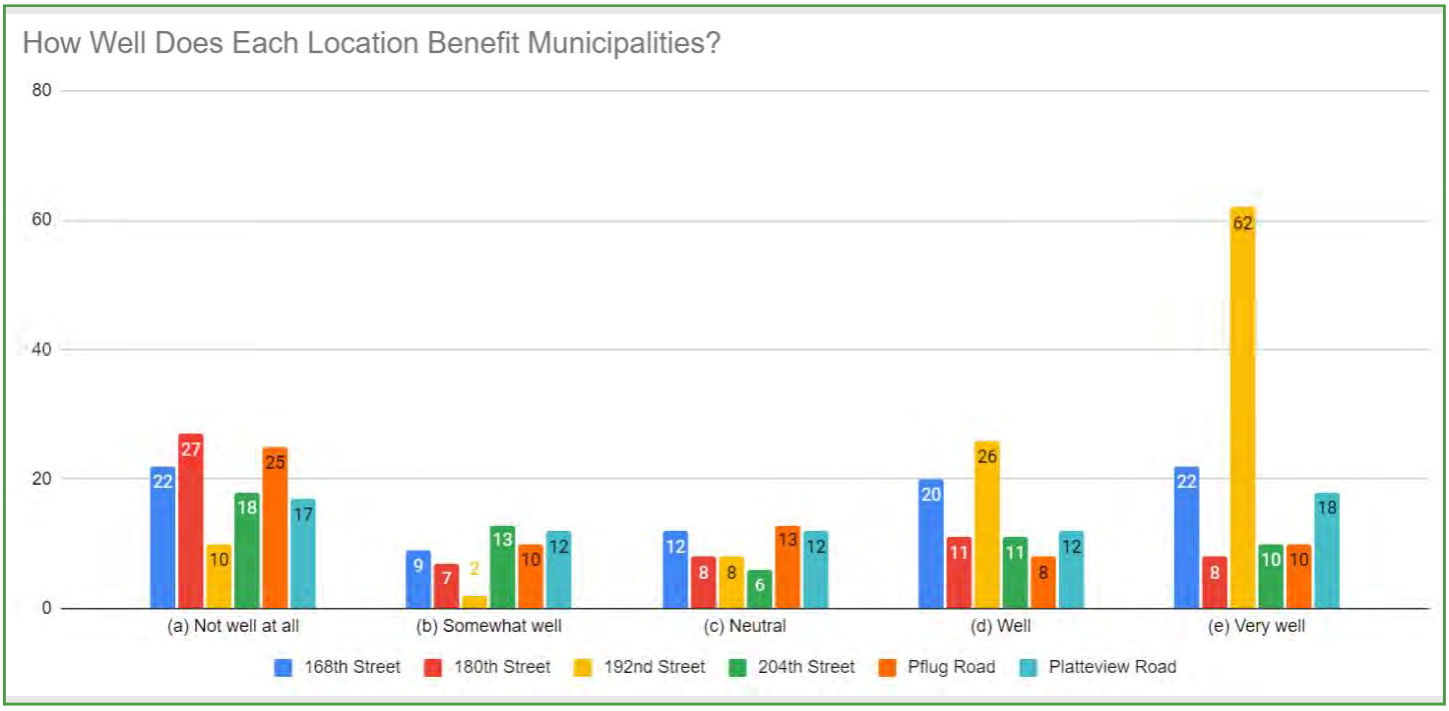
A4 **Accommodate Multi-Modal -** With new development already occurring, there is a growing need to plan for future multi-modal connectivity in the Study Area. With plans in place for future transit corridors, any projects coming out of this study should be evaluated for their ability to accommodate these future plans, and provide for connections to trails and recreational features, transit routes, and possibly inter-city routes (i.e. between Omaha and Lincoln, and between Sarpy County and Omaha).

A1 BENEFIT MUNICIPALITIES

A1 RESULTS

Sarpy County has been growing rapidly in the last decade, and continues to grow at a rapid pace. Nearly $20M in roadway improvements have been recently completed north of the Study Area to develop a new roadway system in a 9-square mile area, and more improvements are planned. Gravel roads in the Study Area are being paved as new development occurs. Projects coming out of this study should complement and accommodate these existing and planned improvements. Figure 5-12 | Benefit Municipalities Public Rankings provide a summary of each of the six alternatives scored for this criteria based on feedback provided by the public.

Figure 5-12 | Benefit Municipalities Public Rankings



A1 SUMMARY

Based on the public response, the majority believe the 192nd Street alternative best supports the local municipalities with the 168th and Platteview Road alternatives trailing behind in a distant second.

Some typical comments provided by the public to help understand this preference include:

- "192nd and Capehart provides access to the new Gretna pool and park location, eases congestion ``to Vala's in the fall, provides access to new Gretna housing developments and an entry point for the new Fire Department."
- "192nd seems the best site for a full interchange recognizing that it is a major arterial."
- "It would dramatically improve access and growth for Gretna, Omaha and Springfield. All three communities would benefit, which benefits Nebraska."

Alternative	Criteria Score
204th Street	-1
192nd Street	2
180th Street	-1
168th Street	0
Platteview Road	0
Pflug Road	-1

See Table 5-2 on Page 102 for ratings criteria.

A2 ENCOURAGE ECONOMIC ACTIVITY

A2 RESULTS

Growth in the Study Area will accelerate as the new Sarpy County Wastewater Agency expands new sewer infrastructure across its service areas over time. New urban growth areas may be added as new developments are proposed and funds additional improvements. New access to the Interstate may focus development in the immediate area of an interchange, so any projects coming out of this study should be evaluated for how well they encourage the appropriate growth and encourage vitality in line with the plans by the Wastewater Agency. Furthermore, they should be evaluated for how well they contribute to a sense of place in keeping with the Cities' comprehensive plans. Figure 5-13 | Encourage Economic Activity Public Rankings provide a summary of each of the six alternatives scored for this criteria based on feedback provided by the public.

Figure 5-13 | Encourage Economic Activity Public Rankings

A2 SUMMARY

Based on the public response, the majority believe the 192nd Street alternative best encourages economic vitality and placemaking with the 168th and Platteview Road alternatives trailing behind in a distant second.

Some typical comments provided by the public to help understand this preference include:

- "192nd and Capehart would be good for the agri-tainment area, and for future highway commercial/ business park development in this area, to offset traffic on 180th and NE-370."
- "With the immense growth in and around the Gretna area, an interchange in the vicinity of 192nd seems like a no-brainer and a game changer."
- "Capehart will be a major west entry point for business traffic into Papillion and the industrial area along N-50."

Alternative	Criteria Score
204th Street	-1
192nd Street	2
180th Street	-1.5
168th Street	0
Platteview Road	0
Pflug Road	-1

See Table 5-2 on Page 102 for ratings criteria.

A3 MINIMIZE ENVIRONMENTAL IMPACTS

A3 RESULTS

There are numerous resources in the Study Area that may be impacted by a new access to the interstate, including streams, floodplains, historic resources, prime farmland, residential homes, commercial businesses, utilities, and more. Minimizing impacts to property owners and these resources should be a priority, and projects coming out of this study should be sensitive to them. Figure 5-14 | Minimize Environmental Impacts Public Rankings provide a summary of each of the six alternatives scored for this criteria based on feedback provided by the public. The ratings in the figure below represent the public perception of environmental sustainability and should not be construed as a scientific evaluation of that criteria.

Figure 5-14 | Minimize Environmental Impacts Public Rankings

A3 SUMMARY

Based on the public response, the majority believe the 192nd Street alternative best minimizes environmental impacts with Pflug Road, located near the Platte River, being the least favored.

Alternative	Criteria Score
204th Street	0
192nd Street	1
180th Street	-1
168th Street	0
Platteview Road	0
Pflug Road	-2

See Table 5-2 on Page 102 for ratings criteria.

Some typical comments provided by the public to help understand this preference include:

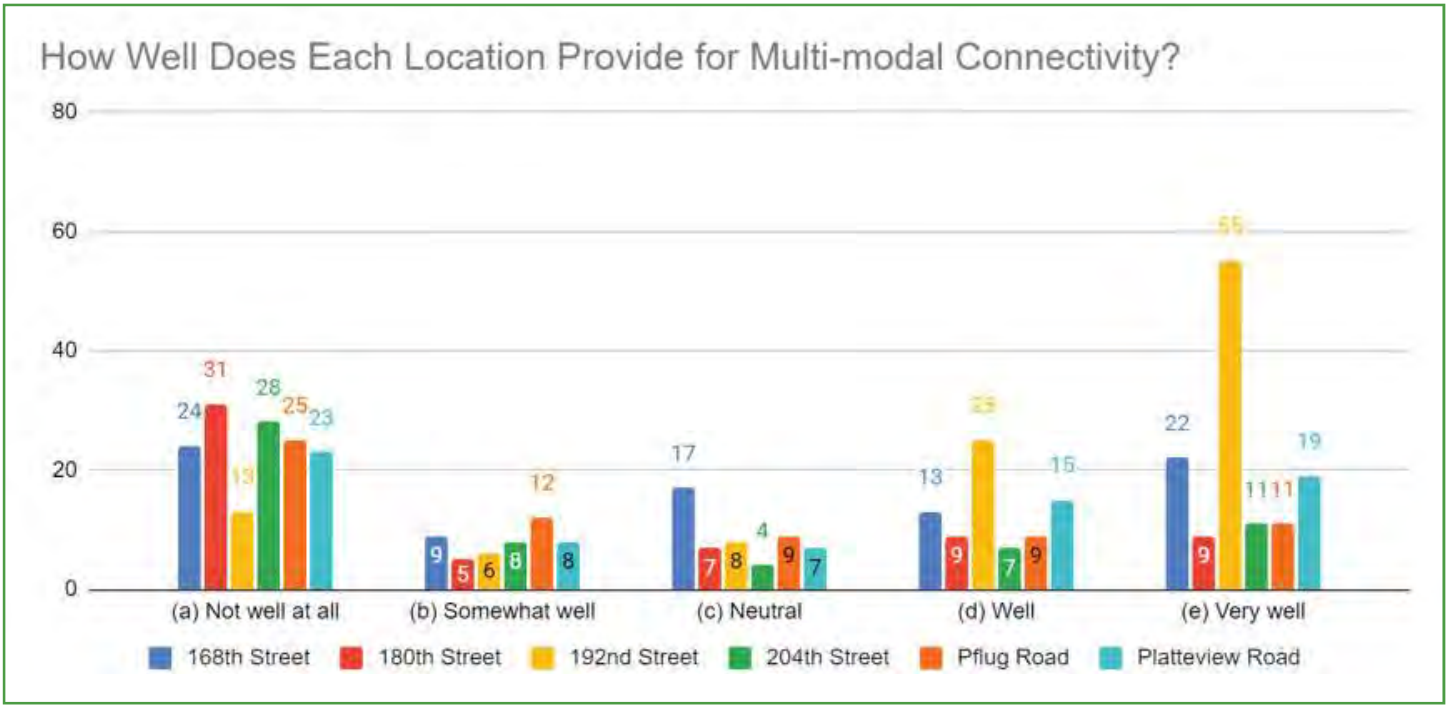
- "Building an interchange at 192nd and Capehart would help protect the nature, wildlife and brittle environment around Pflug Road."
- "There are major power lines and a power station at 180th. Placing the interchange at 180th will destroy Vala's and will not provide any significant improvement in traffic flow for Gretna or Omaha."
- "Land west of Pflug Road is used by migratory waterfowl. There are also no sewers available at the present time."

A4 ACCOMMODATE MULTI-MODAL

A4 RESULTS

With new development already occurring, there is a growing need to plan for future multi-modal connectivity in the Study Area. With plans in place for future transit corridors, any projects coming out of this study should be evaluated for their ability to accommodate these future plans, and provide for connections to trails and recreational features, transit routes, and possibly inter-city routes (i.e. between Omaha and Lincoln, and between Sarpy County and Omaha). Figure 5-15 | Accommodate Multi-Modal Public Rankings provide a summary of each of the six alternatives scored for this criteria based on feedback provided by the public.

Figure 5-15 | Accommodate Multi-Modal Public Rankings



A4 SUMMARY

Based on the public response, the majority believe the 192nd Street alternative best accommodates multi-modal. Some typical comments provided by the public include:

Alternative	Criteria Score
204th Street	-1
192nd Street	2
180th Street	-2
168th Street	0
Platteview Road	0
Pflug Road	-1

See Table 5-2 on Page 102 for ratings criteria.

- "This location is the planned crossing of the MoPac Trail from Hwy 50 into Chalco Hills. The trail project has been on hold while major industrial construction is occurring but is anticipated to be revisited again over the next few years. Ability to connect over I-80 in this location is a critical connection for the regional network of recreation, active transportation, and access to natural resources. If structural changes are made to the intersection, please provide infrastructure to accommodate a dedicated trail crossing."
- "Using 204th as a major interchange will create chaos. It's a very difficult area to get to coming from Gretna and Omaha. You have to drive right through central Gretna, homes, and schools to reach 204th. That location is too close to the current interchange at the outlet mall. A 204th interchange doesn't improve anyone's commute or provide better access to Gretna, Omaha or Papillion....It provides poor access to Papillion, Springfield, and Omaha."

A ACCEPTANCE CRITERIA SUMMARY

The results of the Acceptance Criteria analysis has been summarized in Table 5-2 | Acceptance Criteria Summary. Based on the established Acceptance Criteria, the interchange alternatives for 192nd Street, 168th Street and Platteview Road have higher overall scores when compared with the other alternatives.

Table 5-2 | Acceptance Criteria Summary

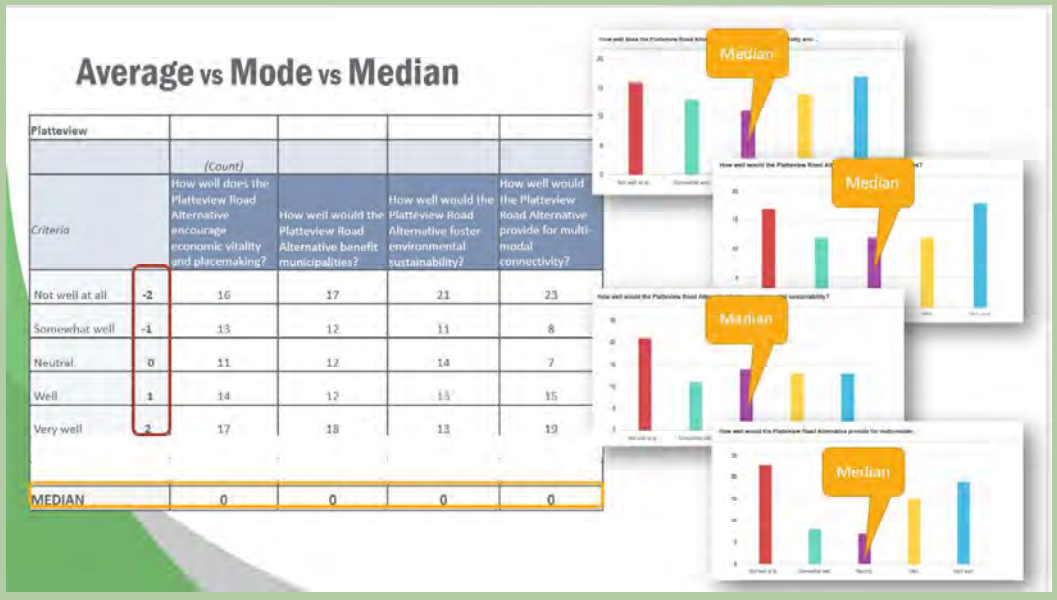
Alternative	A1 Benefit Municipalities	A2 Encourage Economic Activity	A3 Minimize Environmental Impacts	A4 Accommodate Multi-Modal	Total
204th Street	-1	-1	0	-1	-3
192nd Street	2	2	1	2	7
180th Street	-1	-1.5	-1	-2	-5.5
168th Street	0	0	0	0	0
Platteview Road	0	0	0	0	0
Pflug Road	-1	-1	-2	-1	-5

Ratings: Based on median response. Not well at all -2, Somewhat well -1, Neutral 0, Well 1, Very well 2

Source: The rankings in this table are the compilation of the ratings from each of the Acceptance Criteria (A1-A4) above and based on the data presented in Figures 5-12 through 5-15.

UNDERSTANDING THE RATINGS | AVERAGE VS. MODE VS. MEDIAN

The three different statistical criteria (average, mode and median) were evaluated as to which criteria best served to evaluate the various acceptance criteria. It was determined that Median best illustrated the differences between the various responses.



PERFORMANCE AND ACCEPTANCE CRITERIA SUMMARY

Combining the Performance and Acceptance results together helps frame the alternatives compared to each other. Table 5-3 | Performance and Acceptance Criteria Summary combines the final results for each analysis and Figure 5-16 | Quad Chart of Alternatives compares each alternative using a traditional Quad Chart where alternatives that scored well in both performance and acceptance are in the upper right corner and those that scored poorly for both performance and acceptance are in the lower left. Those with mixed results, high performance/low acceptance or low performance/high acceptance are in the upper left and lower right quadrants.

As the chart indicates, the 192nd & Capehart alternative clearly stands above the rest with the 168th & Schram alternative a close second. More specifically, the chart indicates:

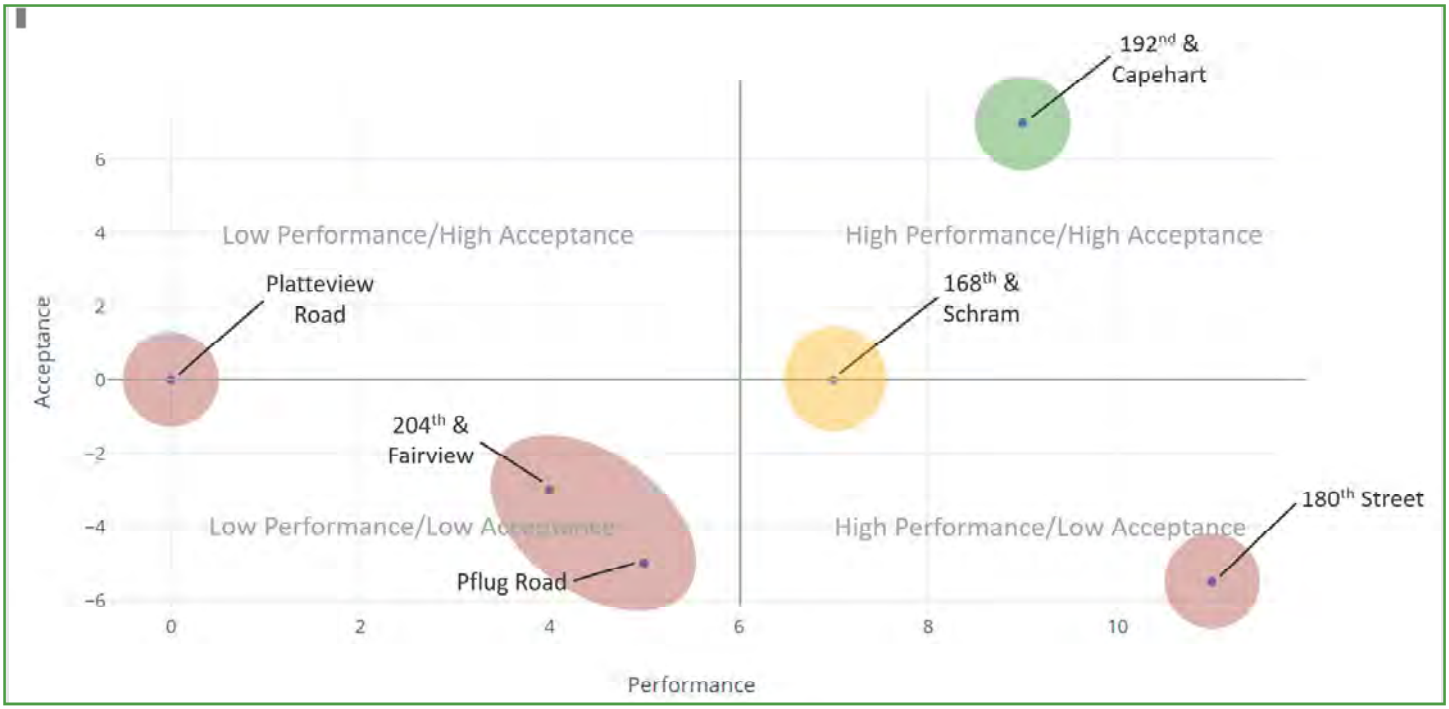
- 192nd & Capehart. This alternatives clearly scores higher than the others and is the only alternative to have high scores in both Acceptance and Performance.
- 168th & Schram. This alternatives scores high in Performance but only average on Acceptance.
- Platteview Road - 180th Street. These two alternatives have mixed results. Platteview Road scores poorly in Performance and only average in Acceptance while 180th Street has high Performance scores but very low Acceptance scores.
- 204th & Fairview - Pflug Road. These two alternatives score poorly in both Acceptance and Performance.

Table 5-3 | Performance and Acceptance Criteria Summary

Alternative	Performance Metrics Summary	Acceptance Metrics Summary
204th Street	4	-3
192nd Street	9	7
180th Street	11	-5.5
168th Street	7	0
Platteview Road	0	0
Pflug Road	5	-5

Source: The rankings in this table are the compilation of the ratings from each of the Performance Criteria (P1-P5) and Acceptance Criteria (A1-A4) above.

Figure 5-16 | Quad Chart of Alternatives



STUDY RECOMMENDATIONS - ARE ANY ALTERNATIVES UNREASONABLE?

Based on the results of the Performance and Acceptance Criteria it becomes apparent that some alternatives perform better and are better accepted than others. The 192nd and Capehart interchange is both a high performer and has high acceptance compared to either 204th and Fairview or Pflug Road which are both low performers with low acceptance. However, performance and acceptance criteria in isolation is not enough, based on the FHWA PEL process, to eliminate any of these alternatives from consideration. Instead, FHWA requires a final step - a determination whether any of the alternatives are considered unreasonable and, if so, then they can be eliminated prior to beginning the NEPA process.

DEFINING UNREASONABLE

According to NEPA regulations and guidance from FHWA and the Council of Environmental Quality (CEQ), there are three primary reasons why an alternative might be determined to be not reasonable and eliminated from further consideration:

1. *The alternative does not satisfy the purpose of and need for the project.*
2. *The alternative is determined to be not practical or feasible from a technical and/or economic standpoint. This can also be understood to mean that an alternative is too costly or has other logistical issues that make it undesirable on its own, such as higher than acceptable environmental impacts or technical challenges in design.*
3. *The alternative substantially duplicates another alternative; in other words, it is otherwise reasonable, but offers little or no advantage for satisfying the project's purpose, and it has impacts and/or costs that are similar to or greater than other similar alternatives.*

The definition of unreasonable, according to the FHWA process is detailed in the description above. From that definition, the study team developed more specific reasonableness criteria to help answer the question whether any of the options are unreasonable and, thereby, could be eliminated. Table 5-4 | Reasonableness Test Criteria describes each of those tests.

Table 5-4 | Reasonableness Test Criteria

Reasonableness Test	Description of Reasonableness Criteria
NDOT Spacing	NDOT spacing comes from NDOT's two-mile desired spacing from existing interchange locations. Those within two miles could be considered unreasonable.
Traffic Volumes	Traffic volume comes from the raw AADT that an interchange would handle. Lower volumes could be considered unreasonable.
Environmental Impacts	Adverse environmental impacts (natural, social or cultural) deemed significant could be considered unreasonable.
Community Impacts	Adverse impacts to the community (land use, education, utilities, etc.) could be considered unreasonable.
Technical Challenges	Unique, costly or complex technical challenges could be considered unreasonable.
Public Opposition	Acceptance comes from the values presented earlier resulting from the Public Outreach (Goals and Objectives). The least accepted ones could be considered unreasonable.
Performance Thresholds	Performance comes from the values presented earlier resulting from the Travel Demand Modeling (Purpose and Need). The lowest performers could be considered unreasonable.
Duplicates	If any of the alternatives were considered a duplicate of another reasonable one, it could be considered unreasonable.

NDOT SPACING RECOMMENDATIONS

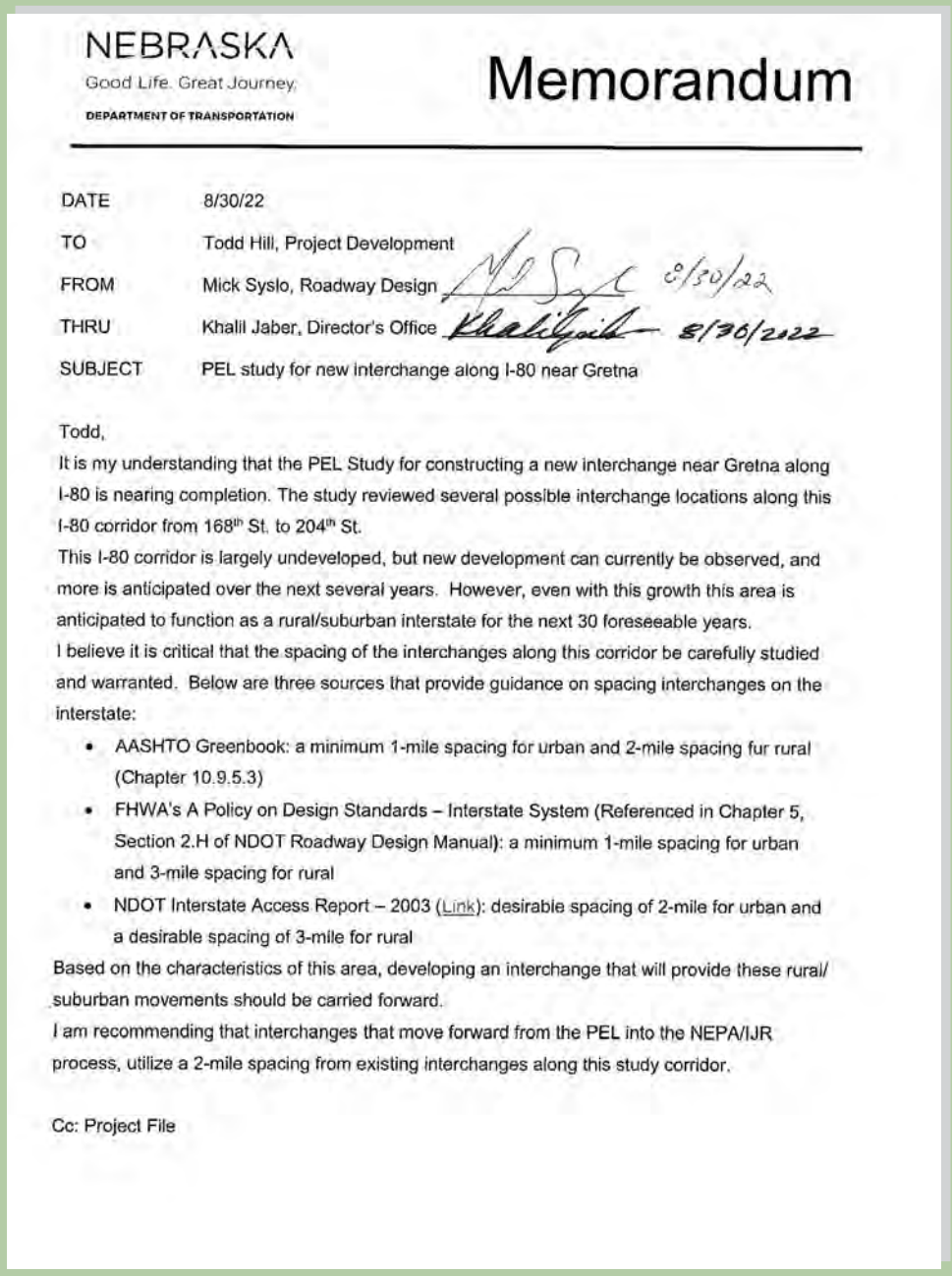
The FHWA has policies related to interchange spacing on the Interstate System and NDOT has additional requirements and/or recommendations related to the spacing between interchanges along I-80. More specifically, the following Interstate spacing requirements are in place and were considered during this reasonableness test.

- **AASHTO Greenbook.** Recommends a minimum 1-mile spacing along urban interstates and 2-mile spacing for rural interstates (Chapter 10.9.5.3)
- **FHWA "A Policy on Design Standards".** Recommends a minimum 1-mile spacing along urban interstates and 3-mile spacing for rural interstates (Referenced in NDOT Roadway Design Manual Chapter 5, Section 2.H)
- **NDOT Interstate Access Report (2003).** Recommends as desirable a 2-mile spacing for urban interstates and a 3-mile spacing rural (Historical precedent)
- **NDOT I-80 PEL Recommendation (August 2022).** For this PEL study, NDOT provided a technical memorandum indicating a preference for a 2-mile spacing between interchanges based no the rural/suburban nature of the corridor. A copy of the memorandum has been provided to the right.

Based on this guidance, three interchange locations fall within the 2-mile limit and could be determined to be unreasonable. The Platteview Road would be approximately 0.4 miles from the N-31 interchange, 204th & Fairview would be 0.75 miles from N-31, and 168th & Schram would be within 1.1 miles of the N-370 interchange.

NDOT INTERSTATE SPACING RECOMMENDATION

The NDOT provided a technical memorandum in August of 2022 favoring a 2-mile spacing requirement for I-80 in Western Sarpy County.



NEBRASKA
Good Life. Great Journey.
DEPARTMENT OF TRANSPORTATION

Memorandum

DATE 8/30/22

TO Todd Hill, Project Development

FROM Mick Syslo, Roadway Design 8/30/22

THRU Khalil Jaber, Director's Office 8/30/2022

SUBJECT PEL study for new interchange along I-80 near Gretna

Todd,

It is my understanding that the PEL Study for constructing a new interchange near Gretna along I-80 is nearing completion. The study reviewed several possible interchange locations along this I-80 corridor from 168th St. to 204th St.

This I-80 corridor is largely undeveloped, but new development can currently be observed, and more is anticipated over the next several years. However, even with this growth this area is anticipated to function as a rural/suburban interstate for the next 30 foreseeable years.

I believe it is critical that the spacing of the interchanges along this corridor be carefully studied and warranted. Below are three sources that provide guidance on spacing interchanges on the interstate:

- AASHTO Greenbook: a minimum 1-mile spacing for urban and 2-mile spacing fur rural (Chapter 10.9.5.3)
- FHWA's A Policy on Design Standards – Interstate System (Referenced in Chapter 5, Section 2.H of NDOT Roadway Design Manual): a minimum 1-mile spacing for urban and 3-mile spacing for rural
- NDOT Interstate Access Report – 2003 (Link): desirable spacing of 2-mile for urban and a desirable spacing of 3-mile for rural

Based on the characteristics of this area, developing an interchange that will provide these rural/suburban movements should be carried forward.

I am recommending that interchanges that move forward from the PEL into the NEPA/IJR process, utilize a 2-mile spacing from existing interchanges along this study corridor.

Cc: Project File

TRAFFIC VOLUMES DRAWN TO A NEW INTERCHANGE

While not a specific Performance criteria, the ability of any new I-80 interchange to draw traffic away from other corridors/interchanges to the new interchange is critically important to justify the expense. Each interchange alternative will attract traffic to the new location. The table to the right shows the estimated 2050 AADT volume that would be expected to utilize the new interchange for that alternative scenario. For example, the Pflug Road interchange alternative would be expected to attract 5,200 AADT compared to 192nd Street which would attract 35,000 AADT.

Alternative	AADT
204th Street	22,500
192nd Street	35,000
180th Street	23,800
168th Street	33,500
Platteview Road	9,600
Pflug Road	5,200

Source: MAPA Travel Demand Model

Both the Platteview Road alternative (9,600 AADT) and the Pflug Road alternative (5,200 AADT) would draw significantly less average daily traffic to the new interchange compared to the other interchange alternatives. The relative inability to draw traffic to the new interchange location could be considered unreasonable.

Environmental/Community Impacts and Technical Challenges

Considerations such as a higher potential to impact environmental resources (wetlands, floodplains, protected species), community resources (homes, businesses, public infrastructure, utilities), or if there are technical or logistical challenges (need to acquire more ROW, lack of an existing bridge or connecting roads) could make an alternative less than desirable, and therefore, unreasonable.

Community Impacts. A variety of criteria were developed to help understand the various community impacts that could be realized with each of the alternatives. Table 5-5 | Potential for Adverse Community/Land Use Impacts presents the community impact analysis for each of the alternatives with a numerical ranking for each. Based on this analysis, the 180th Street (score of 21) and the 204th Street (score of 16) score significantly higher than the other alternatives and could be considered unreasonable.

Table 5-5 | Potential for Adverse Community/Land Use Impacts

Alternative	Rest Area	Freight	Land Use	Transit	Schools	Landfills	Airports	Public Facilities	Power Facilities	Other Community Impacts	Total Rating
204th Street	None	High	Med	Med	Med	None	None	Med	Low	Very High	16
192nd Street	None	Low	Med	Low	Med	None	None	Med	Med	Low	11
180th Street	None	Med	Very High	Med	Med	None	None	High	Very High	Very High	21
168th Street	None	Med	Med	Med	None	None	None	Med	Low	Low	10
Platteview Road	High	High	Low	None	None	None	None	Med	Low	Low	11
Pflug Road	None	Low	Very High	None	None	None	None	High	Low	Very High	13

Ratings: None - 0, Low - 1, Med - 2, High -3, Very High - 4

Environmental Impacts. A variety of criteria were developed to help understand the various environmental impacts that could be realized with each of the alternatives. Table 5-6 | Potential for Adverse Environmental Impacts presents the environmental impact analysis for each of the alternatives with a numerical ranking for each. Based on this analysis, the 204th Street (score of 14) and 192nd Street (score of 13) score significantly better than the other alternatives. The four lower scoring alternatives could be considered unreasonable.

Table 5-6 | Potential for Adverse Environmental Impacts

Alternative	Wetland	Floodplains	Surface Water	Groundwater	Historic/Arch.	Haz. Materials	Parks/Rec	T&E Species	Farmland	Title VI/EJ	Limited English	Noise	Total Rating
204th Street	Med	None	Med	Low	Med	Low	Low	Low	Med	Low	None	Low	14
192nd Street	Low	None	Low	Low	Med	Low	Low	Low	Med	Low	None	Med	13
180th Street	High	None	Very High	Med	Med	Med	Med	Low	Med	Low	None	High	22
168th Street	High	Very High	High	Low	Med	Low	Med	Low	Med	Low	None	Low	21
Platteview Road	Med	None	Very High	Med	Med	High	Low	Low	Med	Low	None	Med	20
Pflug Road	High	High	High	High	High	Low	Low	High	Med	Low	None	Med	25

Ratings: None - 0, Low - 1, Med - 2, High -3, Very High - 4

Technical Challenges. A variety of engineering considerations were evaluated that could potentially present unreasonable technical challenges including available right-of-way, lack of existing infrastructure (overpass bridges, local road, etc.) or difficult local conditions (terrain, impediments, etc.). The 180th Street alternative was scored low because of the lack of an existing overpass and the proximity of existing utility infrastructure (e.g. OPPD substation). The Platteview Road alternative was similarly scored low because of the lack of an existing overpass and engineering challenges associated with this alternative's proximity to N-31 and the Melia Hill Rest Area.

Public Opposition and Performance Thresholds

The public opposition and performance thresholds were evaluated earlier in this chapter based on the Acceptance Criteria, which measures public opposition, and the Performance Criteria, which measures performance thresholds. As a reminder, based on that analysis the Pflug Road and 204th & Fairview had low public acceptance and low performance. Platteview Road had low performance and neutral public acceptance, 180th Street had high performance but low public acceptance, 168th & Schram had good performance and neutral acceptance, and 192nd & Capehart had high public acceptance and high performance.

Duplicative

Based the FHWA guidance, this criteria would include reasonably acceptable alternatives that are the same, or similar enough, to be duplicative. This project does not have any alternative that would fall under this criteria and, therefore, no alternatives would be considered unreasonable based on this criteria.

FINAL RECOMMENDATION

While any of the criteria could potentially be used to determine unreasonableness, the study team has decided to evaluate each alternative based on the accumulation of each criteria. As you can see in Table 5-7 | Summary of Unreasonableness Evaluation, four of the alternatives have four or more unreasonable check marks, 168th & Schram has two check marks and 192nd & Capehart doesn't have any check marks.

Based on this analysis, the following alternatives have been recommended for elimination:

- **Pflug Road.** This alternative has low public acceptance, low performance, has limited traffic volumes, and has the potential for significant environmental impacts associated with its location in the Platte River floodplain. This alternative has been recommended for elimination.
- **Platteview Road.** This alternative has low performance, technical challenges with its proximity to N-31 and lack of an existing crossing, has limited traffic volumes, and does not have the recommended spacing from N-31. This alternative has been recommended for elimination.
- **204th & Fairview Road.** This alternative has low public acceptance, low performance, has significant community impacts based on the residential land use in its vicinity, and does not have the recommended spacing from N-31. This alternative has been recommended for elimination.
- **180th Street.** This alternative has low public acceptance, has technical challenges, and has both significant community and environmental impacts based on its proximity to Vala's and the adjacent residential neighborhoods. This alternative has been recommended for elimination.

The following alternatives have been recommended to be carried forward into the NEPA decision-making process:

- **168th & Schram.** This alternative has high performance, moderate public acceptance, generates significant traffic volumes, and has minimal community impacts. This alternative does have concerns related to its proximity to the N-370 interchange and some environmental concerns but, based on the other positive results, has been recommended to be carried forward.
- **192nd & Capehart.** This alternative has high public acceptance, high performance, generates significant traffic volumes, and has minimal environmental or community impacts. This alternative has zero unreasonable check marks and has been recommended to be carried forward.

Table 5-7 | Summary of Unreasonableness Evaluation

Alternative	NDOT Spacing	Traffic Volumes	Environmental Impacts	Community Impacts	Technical Challenges	Public Opposition	Performance Thresholds	Duplicates	Reasonable?
204th Street	X			X		X	X		No
192nd Street									Yes
180th Street			X	X	X	X			No
168th Street	X		X						Yes
Platteview Road	X	X	X		X		X		No
Pflug Road		X	X			X	X		No

Sarpy County I-80 Interchange PEL Study

Chapter 6 | Public & Resource Agency Coordination

MAPA

Omaha - Council Bluffs
Metropolitan Area
Planning Agency

PUBLIC INVOLVEMENT APPROACH

The Omaha-Council Bluffs Metropolitan Area Planning Agency (MAPA), in coordination with Sarpy County, Nebraska Department of Transportation, and the Cities of Gretna and Papillion, Nebraska, developed the Western Sarpy County Planning and Environmental Linkages (PEL) Study.

Vireo managed the public involvement aspect of the study, in cooperation with a Core Team consisting of representatives from MAPA, Sarpy County, the Cities of Gretna and Papillion, Nebraska Department of Transportation (NDOT) and the consultant team (Benesch, Cambridge Systematics, and Hg Consult). A Technical Advisory Group (TAG) that consisted of designated staff from the Core Team and supplemented with staff from the Federal Highway Administration (FHWA) was also involved.

The public involvement approach was to listen carefully to the many voices in and around the project area before the Team began to identify issues and solutions. It was also a blend of digital with in-person strategies to provide a strategic multi-pronged engagement approach. Due to the COVID 19 pandemic, along with corresponding guidelines from the Center for Disease Control and Prevention (CDC) and Nebraska Department of Health and Human Services that emphasize social distancing, public involvement was shifted from in-person to social connection strategies.

For example, this study included tools, such as telephone and video conferencing for small group meetings. It also combined virtual public meetings with call-in options for Environmental Justice (EJ) populations. Additionally, the process included opportunities for coordinated social media in place of traditional public meetings, workshops, or “pop-up” meetings. The study included supplementing internet-focused tactics with mail out/in methods to combat any unexpected issues with internet speed, access, and/or connectivity. Our overall approach was to ensure community members had equitable engagement opportunities.

PUBLIC ACCESS TO INFORMATION

According to data from broadbandnow.com, 96.8% of Sarpy County has broadband coverage and 96.2% have access to 100+ mbps1. Speeds of 4,000 kbps (plus 128 kpbs for audio) are recommended for Facebook Lives; 1,500 kbps (plus 128 kpbs for audio) for YouTube live streaming2.

STUDY CORE TEAM

The PEL Study was led by the primary study sponsors that made up the study's Core Team. Members included representatives from MAPA, NDOT, Sarpy County and the Cities of Papillion and Gretna. The Core Team met fourteen times during the course of the study, including:

- May 8, 2020 (Study kickoff meeting)
- June 9, 2020
- July 7, 2020
- August 18, 2020
- September 22, 2020
- October 23, 2020
- December 18, 2020
- February 19, 2021
- September 22, 2021
- May 24, 2022
- May 26, 2022
- August 31, 2022
- December 12, 2022

TECHNICAL ADVISORY GROUP

The Technical Advisory Group (TAG) included all the members of the Core Team plus additional representatives from each of the cities, the County, MAPA, NDOT and FHWA with specific expertise in traffic, planning, environmental resources, engineering design, and other disciplines.

The TAG met four times throughout the study process, including:

- May 8, 2020 - Study kickoff meeting
- August 26, 2020 - Presented study update and summary of previous studies.
- December 13, 2021 - Presented Value Planning process and gained input on Alternatives Development.
- September 2, 2022 - Provided opportunity to review results of Alternatives Screening process.

The following pages describe the public involvement process, goals, stakeholder groups, tools and activities, schedule, and documentation.

PUBLIC INVOLVEMENT GOALS

Public involvement goals for the Western Sarpy County PEL Study included:

- Coordinating two rounds of community engagement:
  - **Kick-off:** To set the stage and gather initial feedback related to the development of alternatives.
  - **Alternatives:** To share and gather comments on recommend alternatives and related recommendations.
- Engaging a diverse range of stakeholders (English speakers and those with Limited English Proficiency).
- Bringing specific groups together, as appropriate, to discuss issues, concerns, alternatives, and impacts.
- Gathering timely and useful stakeholder feedback throughout the planning process by providing a customized range of engagement and commenting opportunities during the study.
- Developing and maintaining a common understanding of the study among stakeholder groups.

TOOLS AND ACTIVITIES

A variety of tools and activities were used to involve stakeholders in the study process and to share information with them. The use of each tool and activity was coordinated to ensure that it:

- Informed the study community, its time frame, decisions to be made, and opportunities for engagement.
- Gained community understanding, support, and advocacy for future project funding and implementation.
- Solicited community input on the study's purpose & need, vision for the future, opportunities, alternatives and impacts, recommended alternatives, and other ideas or comments.

Items that were developed and coordinated included:

- Contact list of stakeholders and meeting participants.

COMMUNITY ADVISORY GROUP

The study's Community Advisory Group (CAG) was formed to help provide feedback to the study team throughout the PEL process.

CAG members included representatives from the Core Team and Technical Advisory Group (TAG) plus:

- Sarpy County Economic Development Corporation (Grow Sarpy)
- Cities of Springfield and Bellevue
- Offutt Air Force Base
- Nebraska Department of Economic Development
- Sarpy County Chamber of Commerce
- Gretna Chamber of Commerce
- West Sarpy Project Team
- Omaha Public Power District
- Metropolitan Utilities District
- Blueprint Nebraska
- Papio-Missouri River Natural Resource District
- Nebraska Legislature - District 49 & District 2
- Omaha Public Power District

Each CAG meeting incorporated interactive polling when appropriate. Because of COVID, all CAG meetings were held via video conference.

Meetings were held three times over the course of the study, including:

- July 8, 2020 - Provided a study overview and gained input for the Purpose & Need.
- September 3, 2020 - Discussed future land use planning and community vision, and gained input for Alternatives Development.
- July 19, 2022 - Presented results of the Value Planning process and presented alternatives for public outreach.

- Presentation materials, such as fact sheets, maps, slideshows, and other exhibits to serve a range of meeting types, e.g. CAG meetings, public meetings, presentations, "pop-up" meetings, and online town halls.
- Online commenting via an opinion survey application using Digicate® or Survey Monkey was used as an alternative to virtual town halls. Opinion surveys were also used as an online commenting tool and were developed and deployed in coordination with scheduled public input opportunities. In addition, a PDF version was developed that the Core Team could print and mail to community members (as needed).
- Press releases to communicate information about public input opportunities. Core Team members were asked to distribute the releases to their media contacts.
- E-Blasts via a digital service to the project contact list were distributed during each round of engagement, providing CAG Meeting notice and/or encouraging participation in public input opportunities.
- Sample social media posts for the nearly 100,000 people (aged 18 to 65+) on Facebook who self-identified as located in Sarpy County, Nebraska. Core Team members used the posts as a guide for sharing Sarpy County I-80 PEL Study information on their Facebook and/or Twitter pages. Sample posts were provided during each rounds of engagement. The posts encouraged public participation, included URLs for virtual engagement, and more.
- NEXTDOOR private online social media network that currently serves 10 million users in the United States, presumably some within the MAPA region, as of 2018. The URL for virtual engagement was posted to nextdoor.com via Core Team members' existing accounts.
- Study web page on mapacog.org and/or municipal websites to serve as the community's digital resource for study information.

RESOURCE AGENCY COORDINATION

The PEL Study involved a diverse group of resource agencies to gather information about possible protected environmental resources and to provide an opportunity for each agency to engage in the PEL Study. NDOT's quarterly Inter-Agency meetings were leveraged to present the PEL Study and gain feedback from these agencies. More specifically, we held the following meetings with both FHWA and the resource agencies:

RESOURCE AGENCY MEETINGS

The following resource agencies were included in the three resource agency meetings below, including: US Fish & Wildlife, Nebraska Department of Environment & Energy, History Nebraska, Environmental Protection Agency, US Army Corps of Engineers, Nebraska Game and Parks Commission, and Nebraska Paleontology.

- October 6, 2020 - Discussed Purpose & Need and presented overview of study.
- November 15, 2021 - Presented alternatives under consideration, and provided an opportunity to review Chapters 1-3.
- July 19, 2022 - Invited to CAG meeting – presented results of Value Planning process and alternatives for public outreach.

FHWA UPDATE MEETINGS

FHWA was invited to the Core Team, TAG, CAG and resource agencies meetings. In addition, we met specifically with FHWA on three additional occasions:

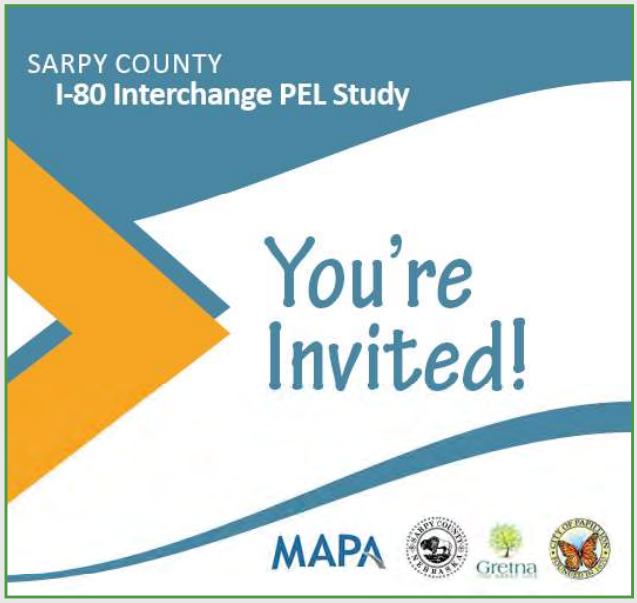
- February 24, 2021 - Discussed Purpose & Need, study progress, FHWA involvement, and outreach.
- July 29, 2021 - Discussed Purpose & Need, study progress, and alternatives development.
- February 9, 2022 - Discussed updates to Chapters 1-4, study progress, and alternatives screening.

PUBLIC INVOLVEMENT ACTIVITIES

Public input opportunities were offered two times. Each public input opportunity was scheduled to occur after each CAG Meeting. Opportunities were formatted as virtual public meetings. The virtual town halls were held as follows:

- **Public Input Opportunity No. 1 (Summer 2020):** Provided feedback related to existing conditions and shared thoughts on the study's purpose, needs, visioning, and opportunities.
- **Public Input Opportunity No. 2 (Summer 2022):** Reviewed and commented on alternatives described via visualization approaches.

The details of each round of public involvement activities are detailed below with additional materials provided in Appendix E | Public Outreach.

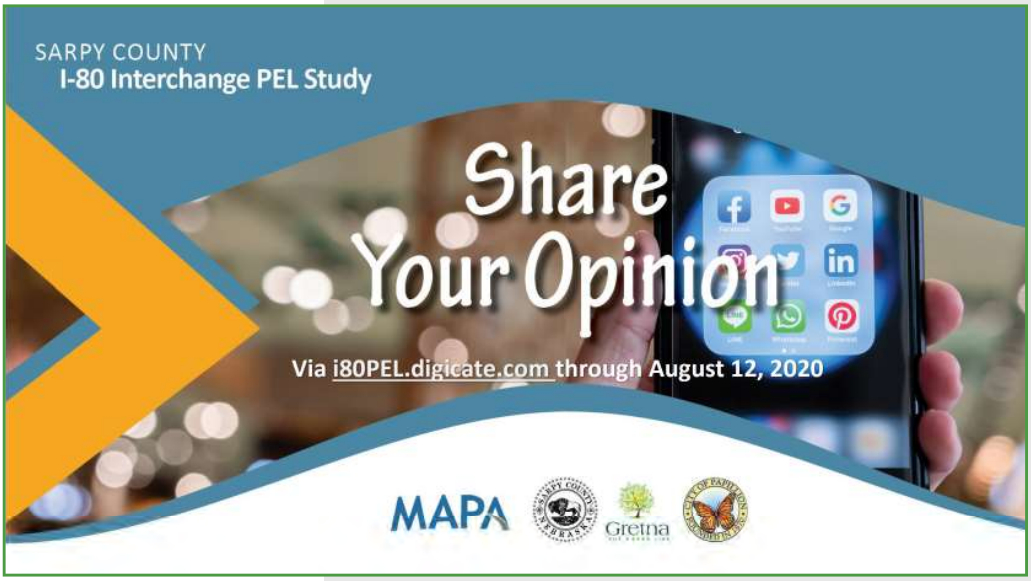


PUBLIC INPUT OPPORTUNITY NO. 1

CAG MEETING #1

The first round of engagement began with an initial CAG meeting. The study team held it on July 8, 2020, via Zoom. During the meeting, the study team presented background information, an overview of the PEL process and its current phase (Purpose and Need), and a summary of upcoming community engagement efforts. In response, CAG members provided a variety of comments. Most related to:

- Areas of West Sarpy County that are not urbanized but rural and recreational in character.
- West Sarpy County's development potential, particularly for industry.
- Population increases seen over the last decade.
- Back-ups at I-80/N-370 and at I-80/N-50 due to heavy traffic coming from Facebook, Google, and other industries.



- Providing more north-south and east-west routes to help address traffic congestion, lengthy commuting times, and freight movement.
- The importance of being able to use I-80 for a variety of trips, including commuting between Lincoln and Omaha, driving within the Omaha region, traveling to schools, shopping, and more.
- Supporting development and creating more efficient transportation.

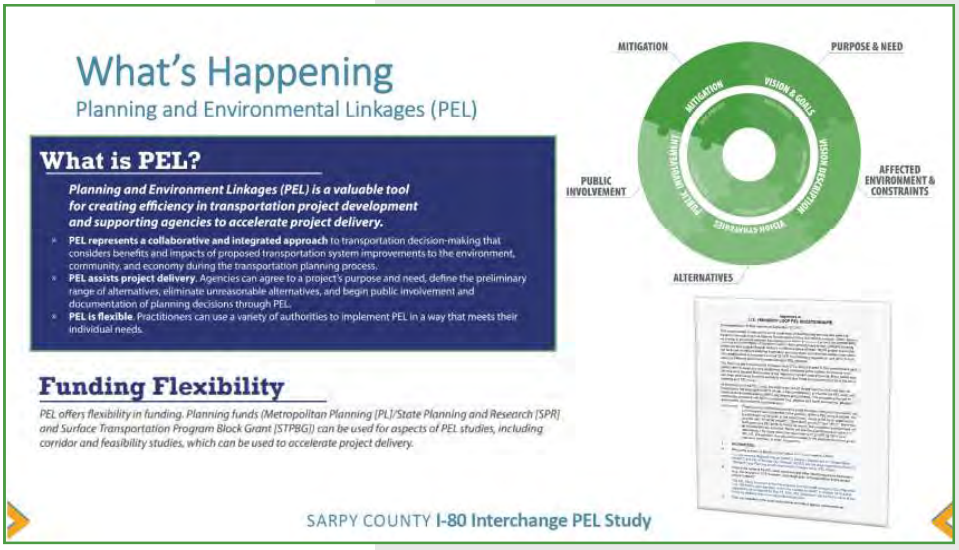
STAKEHOLDER INTERVIEWS

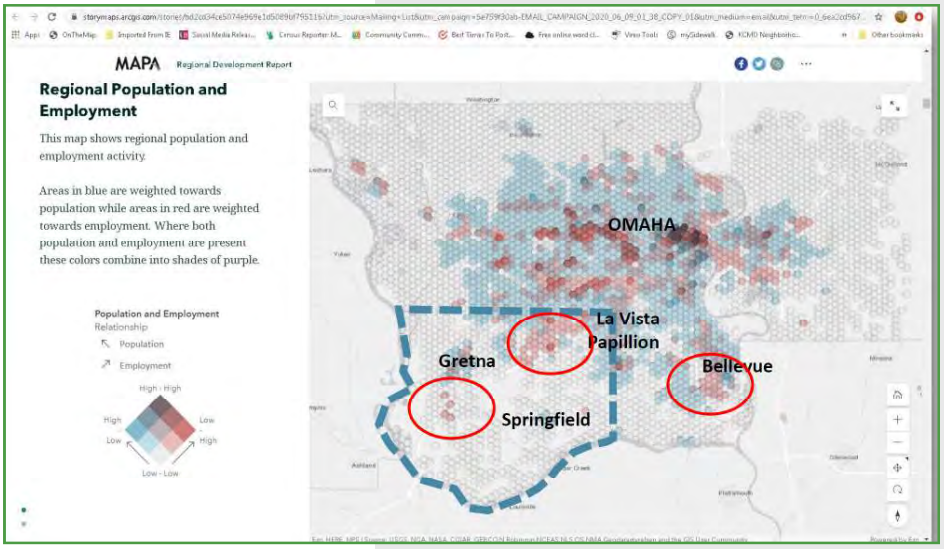
Next the study team held eight virtual stakeholder interviews on July 29 and 30, 2020, again via Zoom. Invitees included:

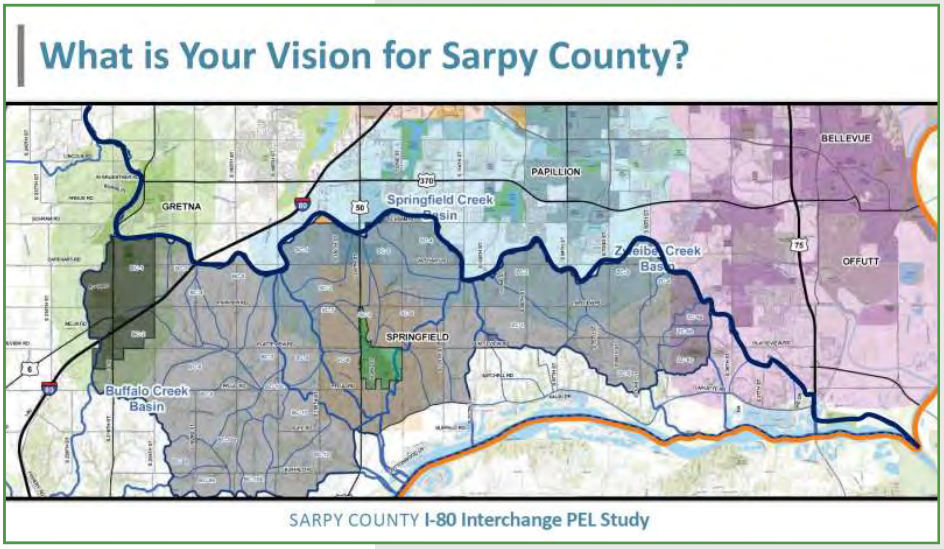
- NDOT
- MAPA
- Sarpy County
- City of Gretna
- City of Papillion
- City of Springfield
- Economic development agencies
- SCCWA
- Utilities/Connections, e.g. Omaha Public Power District (OPPD) and others

During the interviews, the study team and participants used Mural—an online collaboration platform—to view and edit maps of the study area. Their discussions centered on:

- Balancing rural and urban development needs







- The vision for development in relationship to the interstate and areas around it
- Development opportunities tied to infrastructure provision, workforce needs, density decisions, and multimodal transportation options (transit and trails)
- Development challenges related to utilities (e.g. water, sewer, and gas), environmental constraints (e.g. floodplains, wetlands, and farmlands), and maintaining community character
- Potential for growth and expansion in the Platte River Basin and Urban Development Zones, around interchanges, and along key corridors
- Land use types for the future, such as affordable housing, service and retail commercial, business parks, and industry targeted near I-80 and key areas, including Capehart Road and Platteview Road, and Highway 50 near Papillion
- Adopted plans that will lead to increasing density and intensity of future land uses

PUBLIC COMMENTS

The study team collected hundreds of comments from the public either through the stakeholder interviews, CAG/TAG meetings or during the virtual public meetings. Some example comments include:

"Very sad to see county life we once loved disappearing at such a rapid pace."

"Busy and growing. I see traffic backups at Hwy 370, Hwy 50 and Giles Road getting off the interstate in the afternoons."

"Fast growing area with data centers and lots of development opportunities."

"Growing area that is transitioning from rural to suburban."

"Two lane roads cause backups for commuters and all those commuters only have a few options to enter the interstate."

"I only live three or four miles north of the interstate but it can take fifteen minutes on a good day to get there.

STAKEHOLDER INTERVIEWS

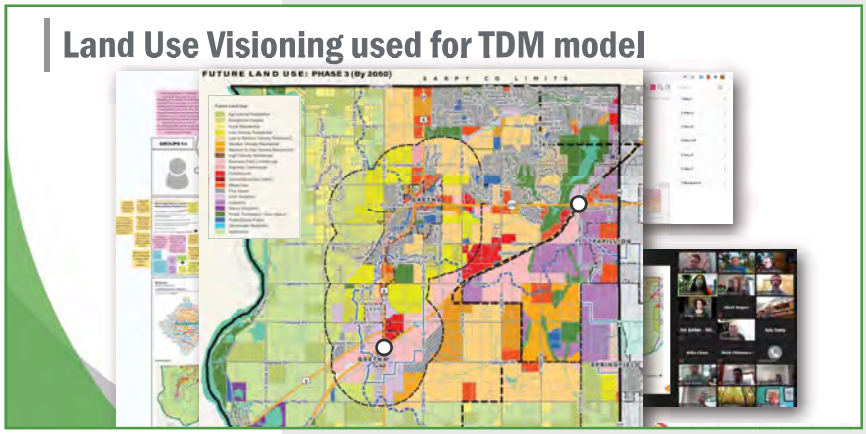
During the first round of public outreach the study team used several tools, including the Digicate and Mural tools illustrated on the right, to help capture the information provided during the stakeholder interviews.

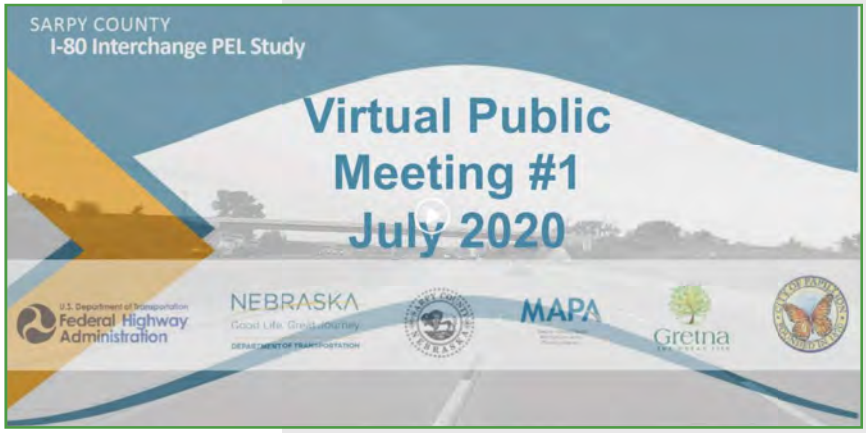
- Ideal achievements connected to efficient and well-coordinated future development and infrastructure, consideration of natural resources, improved quality of life and community identity, and accessible recreation areas
- Potential location(s) for a new interchange such as near 204th Street, 192nd Street, and others

VIRTUAL PUBLIC MEETING #1

During the interview period, the study team also made an on-line public meeting available to the public. It was available on mapacog.org from July 8 to August 20, 2020. Participants who visited the website watched a presentation outlining the Sarpy County I-80 PEL and were asked to respond to key questions.

A couple hundred people watched the presentation. Ninety-three (93) responded to the online opinion survey and described themselves as residents, property owners, workers, governmental officials or staff, employers, and /or other stakeholders. The public provided 181 distinct comments and shared their thoughts about the study area. Specifically, they commented about its effect on their everyday lives, how they use it, problems (congestion, accidents, limited access) with the transportation network overall, and more.





PUBLIC INPUT OPPORTUNITY NO. 2

CAG MEETING #2

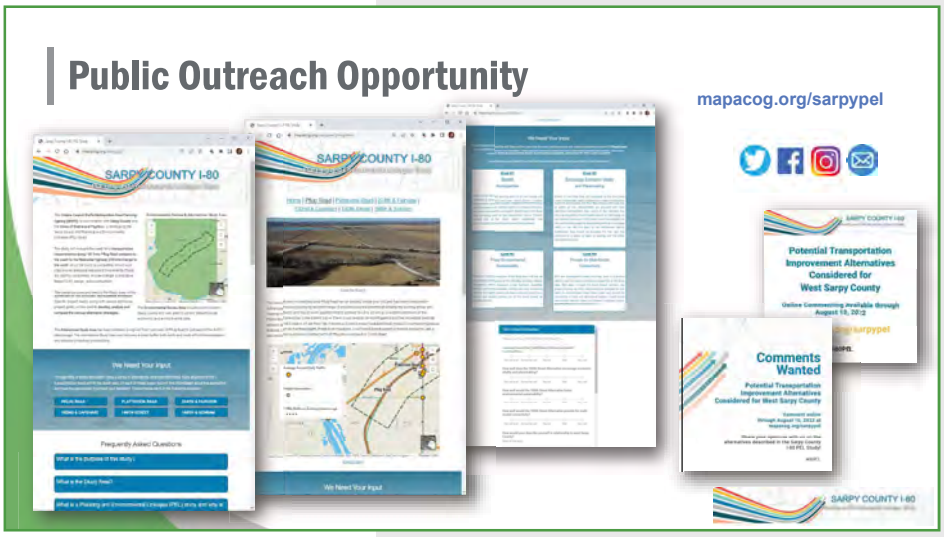
The second round of engagement focused on the reasonable alternatives. The study team presented them to the CAG on July 19, 2022, via Zoom. During the presentation, they shared the following progress report and solicited their feedback:

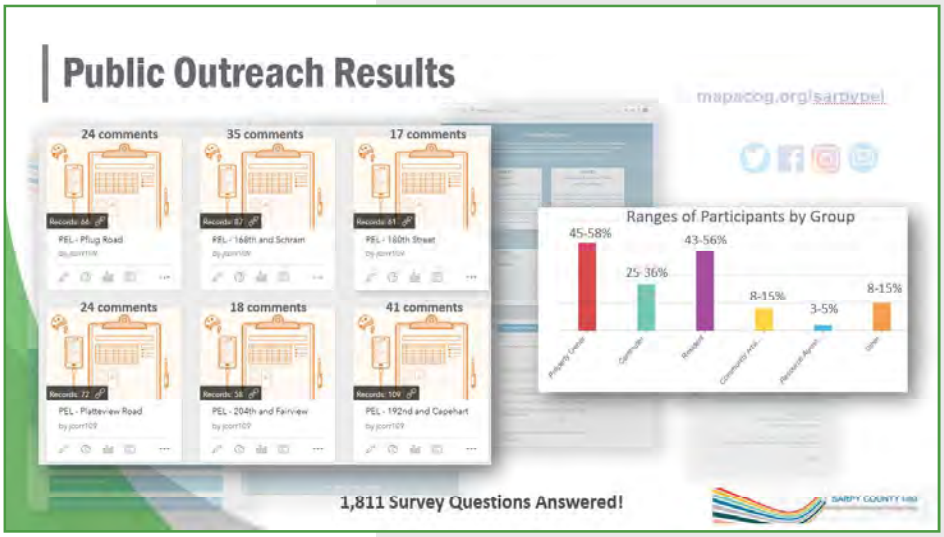
- Reports, data analysis, refinement of study goals
- Land Use Visioning, Stakeholder Input, Agency Review
- Value Planning, Idea Speculation, Alternatives Development, and Screening
- Travel Demand Modeling results

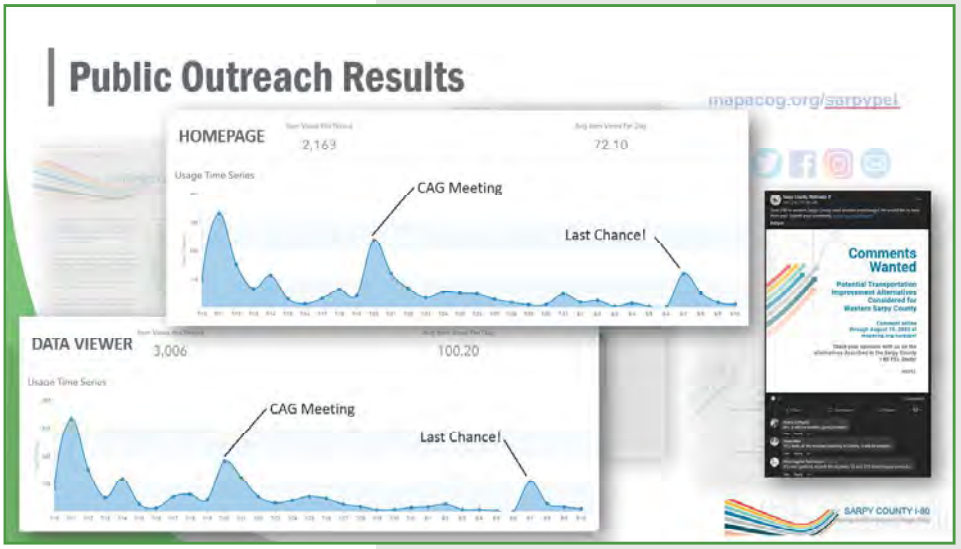
VIRTUAL PUBLIC MEETING #2

Via news articles, social media, and e-blasts, the public was encouraged to visit and provide comments via the study website (mapacog.org/sarpypel) from July 10 through August 10, 2022. The website included opportunities to complete individual opinion surveys for the series of six alternatives:

- Pflug Road
- Platteview Road
- 204th and Fairview
- 192nd and Capehart





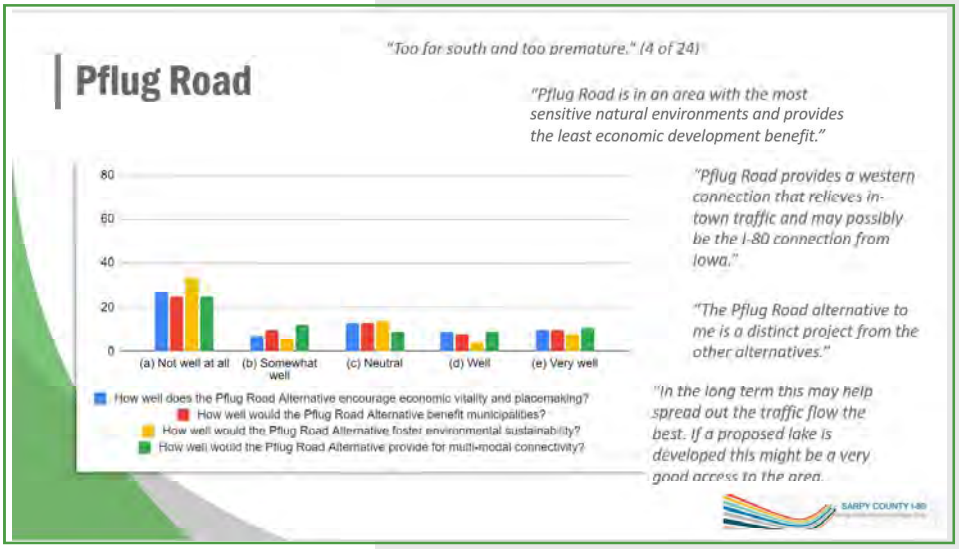


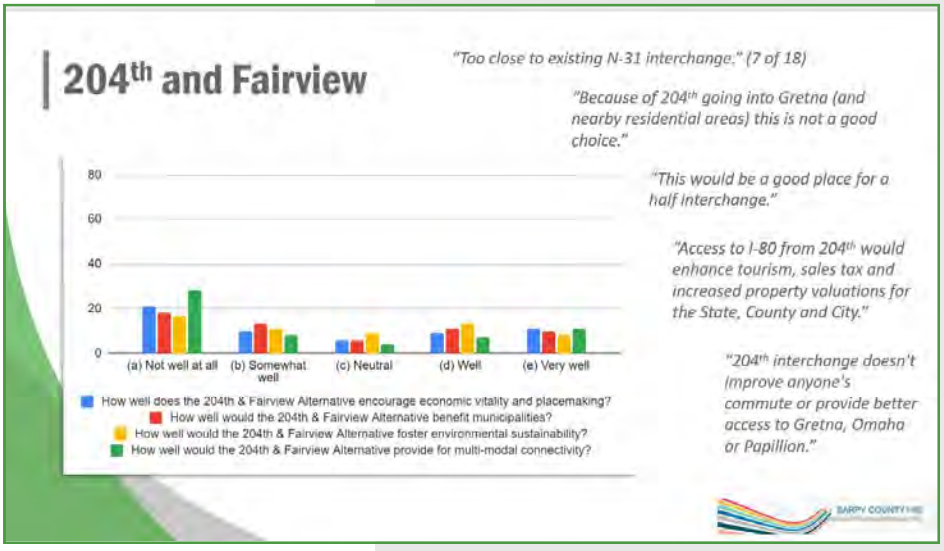
- 180th Street
- 168th and Schram

In addition, the website included an overview of the planning process along with answers to the following Frequently Asked Questions:

- What is the purpose of the study?
- What is the Study Area?
- What is a Planning and Environmental Linkages (PEL) study and why is it necessary?
- Who is participating in the study?
- Will construction begin soon?
- Who do I contact for more information?

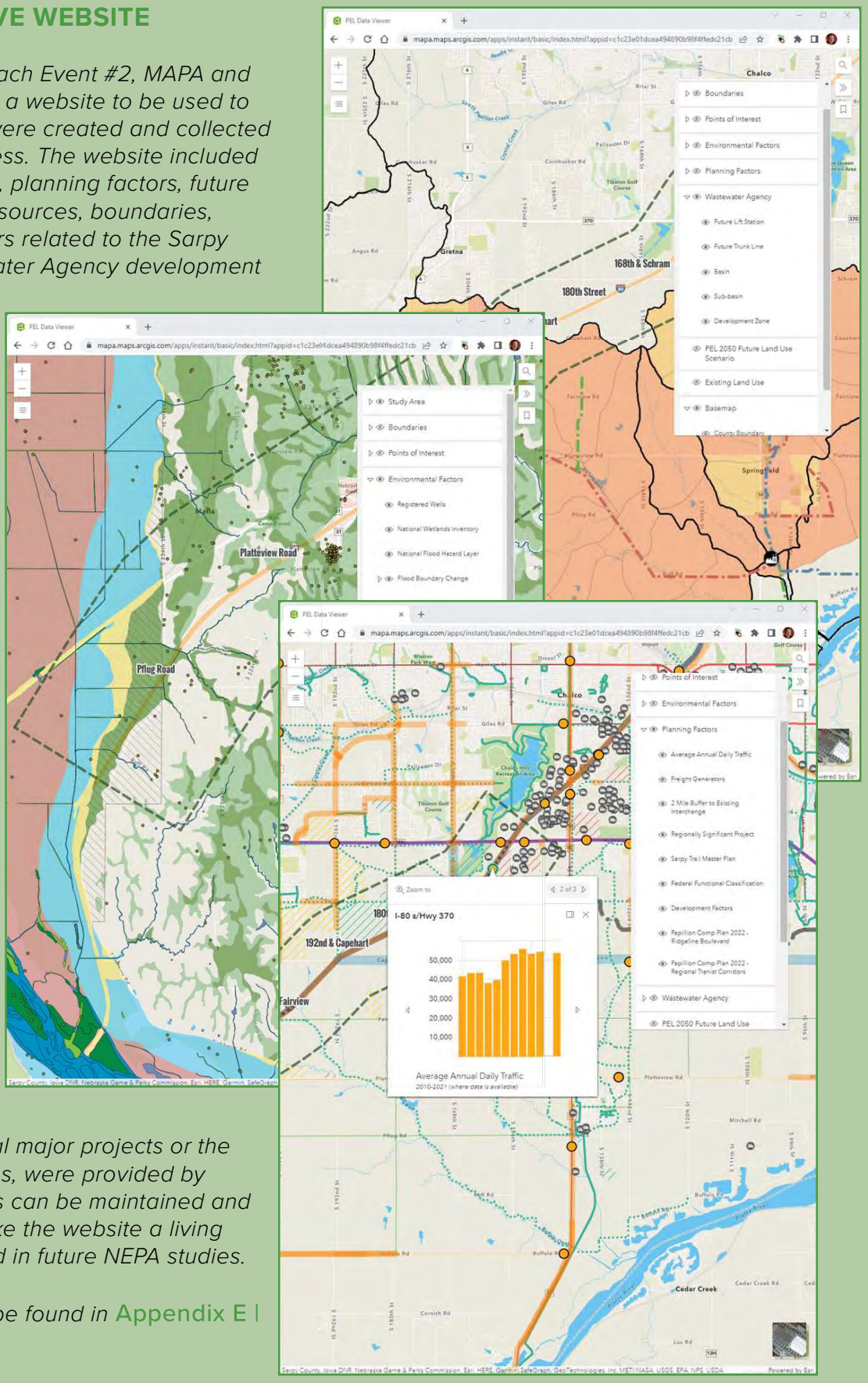
Ultimately, the site received 2,163 views between mid-July and mid-August. A total of 1,811 survey questions were answered along with 159 additional comments. Most commenters described themselves as property owners, residents, and/or commuters. Their feedback centered on how well they might benefit municipalities, foster environmental sustainability, encourage economic vitality and placemaking, and providing multimodal connectivity. The majority of commenters responded that 19w2nd and Capehart was the most reasonable alternative,





INTERACTIVE WEBSITE

As part of the Public Outreach Event #2, MAPA and the Study Team developed a website to be used to illustrate data layers that were created and collected during the PEL Study process. The website included layers for existing land use, planning factors, future land use, environmental resources, boundaries, points of interest, and layers related to the Sarpy County and Cities Wastewater Agency development plans. The website was interactive and had the locations of the six interchange alternatives, so the public could zoom in and turn on or off layers to help them evaluate them. The website also became a way to catalog and archive the data that was gathered during the PEL Study such as traffic counts, the future land use plan that was developed for the Travel Demand Model, freight generator locations, as well as numerous environmental layers such as wetlands, prime farmland, streams, floodplains, and socio-economic factors, such as existing and future trails, schools, utilities, airfields and communication towers. Some of the layers were generated by the study team, while others, such as the regional major projects or the Cities' comprehensive plans, were provided by Sarpy County. These layers can be maintained and updated as needed to make the website a living document that can be used in future NEPA studies.



More detailed results can be found in Appendix E | Public Outreach.

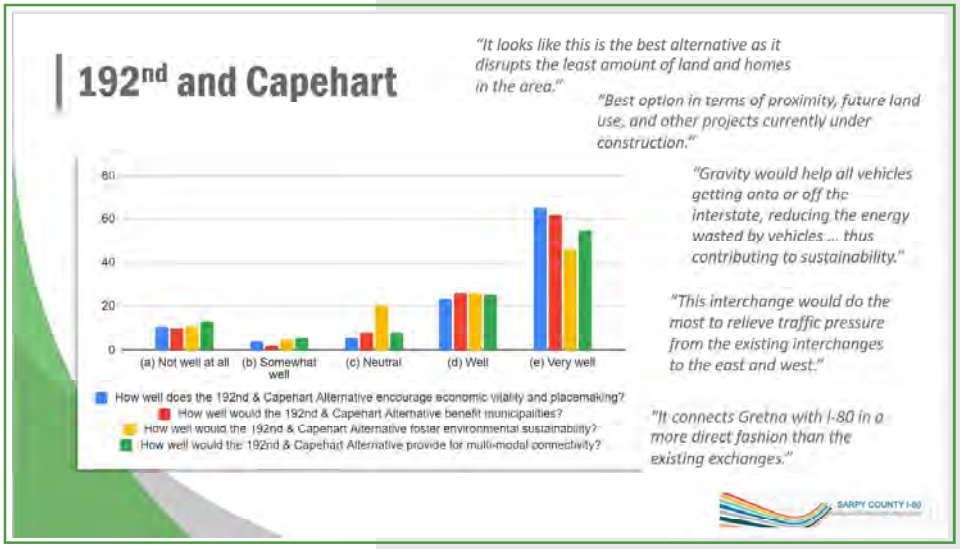
noting it was preferred because of its limited property impacts, consideration of traffic entering and exiting the area, connection with I-80, and more.

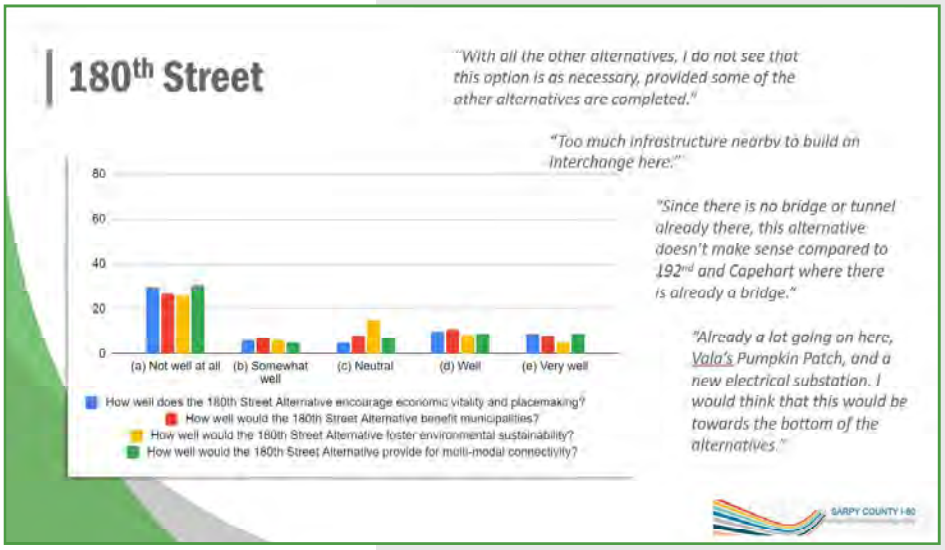
A summary of the feedback received and some of the comments have been provided on the six graphs - three on this page and three on the previous page. More detailed results can be found in Appendix E | Public Outreach.

EXTERNAL PRESENTATIONS & MEETINGS

The study team also made themselves available for additional meetings/presentations with external groups or organizations. Those meetings included:

- Sarpy Chamber – September 21, 2021
- Status updates to City of Papillion - December 2020, February 2021, September 2022
- Status updates to City of Gretna - August 2021, September 2021, March 2022
- Status updates to Sarpy County - October 2020, May 2022





Sarpy County I-80 Interchange PEL Study

Chapter 7 | Next Steps

MAPA

Omaha - Council Bluffs
Metropolitan Area
Planning Agency

This PEL Study is intended to provide the framework for the long-term implementation of transportation improvements, considering needs, funding, and requirements for future NEPA documentation. In addition, the PEL Study provides information to support the NEPA process, including issues that require additional evaluation, and recommends methods to address those issues in future NEPA documentation.

The PEL Study provides the framework for the short-term and long-term implementation of the transportation strategies as funding becomes available, but it does not provide the detailed analysis required to obtain approvals to begin design and construction. In short, there are still several steps that must be accomplished before any of the strategies identified in this document can be implemented. More specifically, further study will be required in a number of areas as described in more detail in the remainder of this chapter.

FISCALLY CONSTRAINED PLAN

Funding for the recommended strategies has not been identified at this time. However, the identification of recommended strategies is consistent with FHWA's objective of analyzing and selecting transportation solutions on a broad enough scale to provide meaningful analysis and avoid segmentation.

Fiscal constraint requirements must be satisfied for FHWA, NDOT and MAPA to move any of the other recommended strategies forward into the NEPA decision-making phase of study. Before FHWA, NDOT and MAPA can sign a final NEPA decision document (Record of Decision, Finding of No Significant Impact, or programmatic or non-programmatic Categorical Exclusion), the proposed project, as defined in the NEPA document, must meet the following specific fiscal-constraint criteria:

- The proposed project or phases of the proposed project within the time horizon of the Regional Transportation Plan (RTP) must be included in the fiscally-constrained RTP, and other phase(s) of the project and associated costs beyond the RTP horizon must be referenced in the fiscally-unconstrained vision component of the RTP.
- The project must be in the fiscally-constrained TIP, which includes:
    - Federal-Aid projects or project phases and state/locally funded, regionally significant projects that require a federal action.
    - Full funding is reasonably available for the completion of all project phases within the time period anticipated for completion of the project.
    - At least one subsequent project phase, or the description of the next project phase must be in the fiscally constrained TIP.
    - For project phases that are beyond the TIP years, the project must be in the fiscally-constrained RTP and the estimated total project cost must be described within the financial element of the RTP and/or applicable TIP.

Sarpy County and NDOT have entered into an agreement dated June 4, 2020 that provides approximately $3.4M in funding toward the construction of a new interchange along I-80. A prior agreement was executed in 2006 to use federal earmark funding at Pflug Road and I-80 but subsequent agreements modified the use and source of that funding to be used "near 180/192nd Street and interstate 80". More specifically, Section 6 of the 2020 agreement states that "The State agrees to dedicate future federal funds in the amount of $3,410,907.34, hereinafter referred to as "Dedicated Federal Funds", for the use of the LPA towards planning, environmental studies, design, and/or construction of an interchange near 180/192nd Street and Interstate 80. The Dedicated Federal Funds, amount, is derived by subtracting the amount paid back to FHWA, $188,692.66, from the original spending authority amount, $3,599,600.00." This funding should be integrated into the overall project development process as appropriate. Additional details of this agreement have been provided in Appendix F | Agreement Between Sarpy County and the State of Nebraska.

INDEPENDENT UTILITY AND LOGICAL TERMINI

In cases where a project is implemented in more than one phase, which this one could be, care must be taken to ensure that the transportation system operates acceptably at the conclusion of each phase. This is referred to as "independent utility" – the ability of each phase to operate independently of each other. Any mitigation measures needed in response to project impacts must be implemented with the phase in which the impacts occur, rather than deferred to a later phase. More specifically, the implementation phases established as part of this project must meet the following criteria:

- Independent Utility - Each phase should have independent utility and logical termini to the extent that the phase provides a functional transportation system even in the absence of other phases.
- Elements of Purpose and Need - Each phase should contribute to meeting the purpose and need for the entire project.
- Environmental Impacts - Individual phases should avoid the introduction of substantial additional environmental impacts that cannot be mitigated.

NEPA ENVIRONMENTAL DECISION-MAKING

Once funding is secured, the NEPA environmental planning process can be initiated. The environmental process will build on the environmental work, public outreach, and agency outreach already completed in this PEL Study. The NEPA processes that would be anticipated could be either an Environmental Impact Statement (EIS), Environmental Assessment (EA) or a Categorical Exclusion (CE).

- Categorical Exclusions - CEs are the most common NEPA documents and are for actions that do not individually or cumulatively have a significant environmental impact, are excluded from the requirement to prepare an EA or EIS, and do not have substantial pubic controversy. CEs are defined in 23 CFR 771.117 and meet the definition from the Council on Environmental Quality in 40 CFR 1508.4 and are based on the past experience with similar actions of FHWA.
- EA/EIS - An EA would be prepared and submitted through the successive review processes of MAPA, NDOT and FHWA. The public would have 30 days to review and comment before FHWA makes its final decision. MAPA and NDOT should consider use of a streamlined EA template for this project to accelerate the timeline for the environmental process, while still allowing for appropriate agency coordination and public involvement. If, at any point in the EA process, FHWA determines that the action would likely have a significant impact on the environment, that EA process would stop and the preparation of an EIS would be required. If FHWA agrees the action would have no significant impacts on the environment, FHWA would prepare a Finding of No Significant Impact to serve as the decision document for the proposed action.

Issues that will need to be considered during the NEPA process, including potential resource impacts and potential mitigation requirements are summarized below:

- Land Use and Planning – Any direct effects to businesses or residences (acquisitions) and associated displacement assistance under the provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 would need to be considered during a NEPA-level study. Any indirect effects stemming from access alteration due to the project with associated land use and development effects (induced development; alteration of land development patterns) would also need consideration, to ensure the project is compatible with the MAPA regional growth. The consistency of the proposed projects with other local city planning would also need to be ensured throughout the NEPA process.
- Socioeconomic Factors – Any impacts to low income and minority populations would need to be assessed in accordance with EO 12898 Federal Actions to Address Environmental Justice (EJ) in Minority Populations and Scoping, Low-Income Populations and mitigation would be provided if warranted. The NEPA study would also include measures to ensure the opportunity for participation and input from EJ populations in the project development process. There are not any of these impacts anticipated at this time.

- Community Resources – Although direct impacts to these resources would not be anticipated, potential impacts stemming from indirect effects of the project such as access alteration would be assessed, if warranted.
- Existing Transportation Infrastructure – Connectivity of a proposed strategy with the existing transportation infrastructure, as well as project effects on local access and mobility must be considered during the NEPA process. Local entities, the Cities of Gretna and Papillion, as well as Sarpy County, should consider programming local roadway projects that would connect to and enable the new interchange to function appropriately and to effectively move traffic away from N-370 and N-31 as envisioned in the future traffic models.
- Water Resources – NEPA-level studies would need to consider impacts to jurisdictional waters and wetlands, including Section 404 permit and potential mitigation requirements. At this time, the 192nd and Capehart Road alternative appears to have fewer impacts to wetlands and streams.
- Floodplains – Design requirements to prevent floodplain impacts would need to be considered, along with appropriate coordination requirements with local FEMA floodplain officials.
- Air Quality – Demonstration of consistency of the proposed strategies with the MAPA Regional Transportation Plan (RTP) and current STIP would be needed. Air quality analyses may need to be prepared in accordance to air quality regulations and guidelines.
- Traffic Noise – Traffic noise impacts would need to be determined in accordance with applicable guidelines. If the project results in noise impacts, noise abatement measures would need to be considered and evaluated for implementation into the project design and would follow NDOT guidelines.
- Hazardous Materials – A Hazardous Materials Review (HMR) would be performed for a preferred strategy during the NEPA process. Any mitigation requirements for hazardous materials sites would be discussed in the NEPA document. A Phase 1 ESA may be required for property acquisition.
- Biological Resources – The proposed alternatives would be evaluated with the NDOT Biological Assessment process (or matrix) for potential impacts to protected species. The conservation conditions from the matrix would be included in the NEPA document and, if needed, agency coordination would be conducted.
- Parks and Recreation Facilities – Any direct impacts (taking) and construction-use impacts to parks and recreation areas would be quantified and/or assessed for a proposed project-level strategy during the NEPA study. Section 4(f) coordination with the FHWA would be undertaken. Avoidance and minimization of impacts would be determined during the coordination effort. The 192nd and Capehart Road alternative, at the time of this study, has less potential to impact Section 4(f) resources than the other alternatives.
- Historic and Cultural Resources – Any effects (direct and indirect) to historic and archaeological resources during project-specific NEPA studies using an area of potential effect (APE) would be summarized in future project-specific research designs, historic resources survey reports or archaeological survey reports and coordination with the SHPO would be undertaken. As warranted, project design would be modified to avoid adverse impacts to historic resources.
- Utilities/Transmissions – Adjustment or relocation of aboveground or underground utilities, and associated costs, would be considered in the NEPA study.
- Prime Farmland – Most of the land in the corridor is considered prime farmland, so coordination would be required with NRCS and Form AD-1006 or CPA-106 would need to be completed. No adverse impacts to prime farmland are anticipated.

Depending on the timing of future NEPA efforts, resources may require reassessment due to new regulations, changes to listed threatened and endangered species, age of data, etc. In summary, the data collected during the PEL Study will serve as a baseline for NEPA analyses, however, it would be supplemented with more project-specific data and field reconnaissance information.

INTERCHANGE JUSTIFICATION REPORT

An Interchange Justification Report (IJR) is required for a project that proposes to provide a new interchange(s) or changes to an existing interchange on an interstate facility. FHWA approval of a new or revised access constitutes a federal action and requires NDOT to comply with all federal policies and regulations, including NEPA, prior to granting final approval. Each request is approved based on need, current NDOT/FHWA policies, and on established evaluation criteria.

The timing of completing the IJR and gaining FHWA approval should be conducted concurrent with the NEPA process and is typically approved at the same time as the NEPA document. FHWA recommends that the IJR be submitted to FHWA at least two years prior to receiving right-of-way authorization. A draft of the IJR can be submitted to FHWA prior to that to receive a "determination of engineering and operational acceptability." These early determinations are valid for eight years. If the project does not progress to construction in this eight year window, the proposal must be updated and resubmitted.

FHWA's decision to approve a request is dependent on an operational analysis that has concluded that the proposed change/addition does not have "a significant adverse impact on the safety and operation of the Interstate facility (which includes mainline lanes, existing, new or modified ramps, and ramp intersections with crossroad) or on the local street network based on both the current and the planned future traffic projections." (FHWA, "Policy on Access to the Interstate System", May 22, 2017). The analysis typically includes the first adjacent existing or proposed interchange on either side of the proposed change in access including the crossroad and local street network which should include the first major intersection on either side.

The IJR document submitted to FHWA is required to be a stand-alone document that addresses the appropriate issues and provides the information necessary to allow FHWA to make an informed decision. More specifically, there are eight policy requirements that must be addressed (FHWA, "Interstate System Access Information Guide", August 2010):

1. The need being addressed by the request cannot be adequately satisfied by existing interchanges to the Interstate, and/or local roads and streets in the corridor can neither provide the desired access, nor can they be reasonably improved (such as access control along surface streets, improving traffic control, modifying ramp terminals and intersections, adding turn bays or lengthening storage) to satisfactorily accommodate the design-year traffic demands (23 CFR 625.2(a)).

2. The need being addressed by the request cannot be adequately satisfied by reasonable transportation system management (such as ramp metering, mass transit, and HOV facilities), geometric design, and alternative improvements to the Interstate without the proposed change(s) in access (23 CFR 625.2(a)).

3. An operational and safety analysis has concluded that the proposed change in access does not have a significant adverse impact on the safety and operation of the Interstate facility (which includes mainline lanes, existing, new, or modified ramps, ramp intersections with crossroad) or on the local street network Interstate System Access Information Guide CHAPTER 2: FHWA POLICY 6 based on both the current and the planned future traffic projections. The analysis shall, particularly in urbanized areas, include at least the first adjacent existing or proposed interchange on either side of the proposed change in access (23 CFR 625.2(a), 655.603(d) and 771.111(f)). The crossroads and the local street network, to at least the first major intersection on either side of the proposed change in access, shall be included in this analysis to the extent necessary to fully evaluate the safety and operational impacts that the proposed change in access and other transportation improvements may have on the local street network (23 CFR 625.2(a) and 655.603(d)). Requests for a proposed change in access must include a description and assessment of the impacts and ability of the proposed changes to safely and efficiently collect, distribute and accommodate traffic on the Interstate facility, ramps, intersection of ramps with crossroad, and local street network (23 CFR 625.2(a) and 655.603(d)). Each request must also include a conceptual plan of the type and location of the signs proposed to support each design alternative (23 U.S.C. 109(d) and 23 CFR 655.603(d)).

4. The proposed access connects to a public road only and will provide for all traffic movements. Less than"full interchanges" may be considered on a case-by-case basis for applications requiring special access for managed lanes (e.g., transit, HOVs, HOT lanes) or park and ride lots. The proposed access will be designed to meet or exceed current standards (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d)).

5. The proposal considers and is consistent with local and regional land use and transportation plans. Prior to receiving final approval, all requests for new or revised access must be included in an adopted Metropolitan Transportation Plan, in the adopted Statewide or Metropolitan Transportation Improvement Program (STIP or TIP), and the Congestion Management Process within transportation management areas, as appropriate, and as specified in 23 CFR part 450, and the transportation conformity requirements of 40 CFR parts 51 and 93.

6. In corridors where the potential exists for future multiple interchange additions, a comprehensive corridor or network study must accompany all requests for new or revised access with recommendations that address all of the proposed and desired access changes within the context of a longer-range system or network plan (23 U.S.C. 109(d), 23 CFR 625.2(a), 655.603(d), and 771.111)

7. When a new or revised access point is due to a new, expanded, or substantial change in current or planned future development or land use, requests must demonstrate appropriate coordination has occurred between the development and any proposed transportation system improvements (23 CFR 625.2(a) and 655.603(d)). The request must describe the commitments agreed upon to assure adequate collection and dispersion of the traffic resulting from the development with the adjoining local street network and Interstate access point (23 CFR 625.2(a) and 655.603(d)).

8. The proposal can be expected to be included as an alternative in the required environmental evaluation, review and processing. The proposal should include supporting information and current status of the environmental processing (23 CFR 771.111).

FHWA upon receiving the documentation will be responsible for ensuring all factors and alternatives have been appropriately considered and would then approve the access changes. Upon approval, NDOT would then be responsible for following the normal project development process (NEPA, design, right-of-way acquisition) before construction may begin.

SCOPING, PRELIMINARY AND FINAL ENGINEERING

After project funding has been identified and the projects are included in the TIP, a planning-level estimate is prepared to determine how much funding is needed for each project and phase (e.g., ROW, utilities, environmental, design and construction). A project-scoping meeting can be held to establish the project objectives; to identify the design standards, funding sources and amounts, the resources necessary to complete the project, and the schedule; and to complete the preliminary survey request.

Assuming the project delivery method is design-bid-build (DBB), after the design level survey is received, the preliminary design phase of the project begins. A field review meeting is held to review the site conditions with 30 percent plans complete. The plans are reviewed with NDOT, the applicable local governments, and representatives from the utility companies to identify tasks needed to complete the project. The preliminary cost estimate is developed and compared to the available budget. Once the design is at the stage that the ROW limits can be identified, plans can be prepared and acquisition initiated. Final Design proceeds until the Plans, Specification and Estimate package is 95 percent complete. A final review meeting is then conducted to complete the review process. The project funding is then obligated and authorized once all clearances are obtained and then the project is advertised for construction.

ACQUISITION OF PROPERTY AND CONSTRUCTION

The limits of the existing ROW for the planned improvements will be determined from record information and field surveys. The preferred or final design strategies will then be overlaid on the ROW base to determine impacts that will require additional ROW fee or easement acquisitions. When acquisitions are necessary, a title report is ordered and used to prepare property descriptions, exhibits, and ROW plans to support the acquisition process. Once these documents clearly define the impact, property appraisal is then ordered to determine the value of the property to be acquired. The acquisition process will commence after all of this information has been compiled. Typically, the time frame between identification and transfer of ownership takes about 18 months to meet all of the requirements of the Uniform Relocation Act. However, it may be possible to obtain possession earlier based on project needs. In some cases, if the property is rendered unusable or if it is a total take, relocation services may be necessary. Once the design is complete, the project would be let to a contractor to build the ultimate improvement.

benesch

Submitted by: Alfred Benesch & Company,
Hg Consult, Vireo and Cambridge Systematics