

FLOOD SALES TAX COMMITTEE
AGENDA FOR APRIL 18, 2022—2:00 PM
Commission Room, Cass County Courthouse

2:00 PM Meeting called to order
Approve minutes from previous meeting—October 18, 2021

1. Flood sales tax fund update
 - a. Cass 15 Bridge

2. Review projects and selection of projects to be funded in 2022
 - a. Normanna Township Bank Stabilization
 - b. Lilleberg Buyout
 - c. Walburg Township Drop Culverts
 - d. Elm River Dam
 - e. Gill Township Slide Repair
 - f. Durbin Township Slide Repair
 - g. Everest Township Slide Repair
 - h. Maple River Township Slide Repair
 - i. Mapleton Flap Gate- Storm Sewer Outfalls
 - j. City of Casselton Slide Repair
 - k. Cass Highway 81 Slide Repair

3. Other business

4. Adjournment

SUBJECT: COUNTY SALES TAX FOR FLOOD RISK REDUCTION AND RECOVERY
PROJECTS

ADOPTED DATE: DECEMBER 6, 2017

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PURPOSE

The purpose of this policy is to provide guidance for the administration and funding of projects with Cass County Flood Control Sales Tax funds.

GENERAL PROVISIONS

As passed during the 2010 election and extended in the 2016 election, the voters approved the following: The Cass County Home Rule Charter be amended to extend the existing floodprotection-related sales, use, and gross receipts tax of one-half of one percent (1/2%) to be used solely for the engineering, land purchase, construction, and maintenance of flood control measures including the Metro Flood Diversion Project including associated special assessments and indebtedness, through December 31, 2084, and shall be rescinded when all of the costs, obligations, and debt for said project have been paid in full and satisfied, whichever event occurs first as provide in Resolution #2016-20.

Cass County Commission Policy 38.23 outlines Ordinance #2010-2 Amended (Flood Control Sales Tax) which serves as the ordinance for the establishment and regulation of the Cass County Flood Control Sales Tax.

This policy governs expenditures of funds from a one half percent County sales tax that started in 2011 and will end in 2084 to fund flood risk reduction projects. The primary purpose of the sales tax measure is to fund local costs associated with a planned Fargo Moorhead Area Flood Diversion project in either Minnesota or North Dakota. The planned diversion project will not address all flood damage risks in Cass County. Additional measures are necessary to reduce risk to areas within and outside of the diversion perimeter. Sales tax proceeds may also be expended for the Diversion and other flood risk reduction or recovery projects subject to funding availability and approval by the County Commission. The County sales tax proceeds should be used to leverage other sources of funding when possible.

County sales tax funds expended within incorporated cities: The County Commission through the Flood Sales Tax Committee may consider requests for flood risk reduction and recovery funding from cities within Cass County. The city will be responsible for planning and engineering costs associated with the project. Plans and specifications should be prepared by a professional engineer registered within the State of North Dakota. Projects won't be considered if they are strictly for new city development, especially cases where a developer would be shifting their cost to the County Flood Sales Tax. The city should also be able to demonstrate that other revenue sources for the project have been actively sought out. The preferred funding split is that City funds match the County sales tax proceeds on a 1:1 basis. Other funding splits may be considered by the Commission on a case by case basis to allow consideration to be given to unique circumstances and the ability of the City to pay 50% of the local cost share.

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County sales tax funds expended outside of incorporated cities: The County Commission, through the Flood Sales Tax Committee, may also consider flood risk reduction and recovery projects recommended by the County Engineer or requested by townships, neighborhood groups, or individuals for areas within and outside of the diversion protected area. Projects won't be considered if they are strictly for new rural development, especially cases where a developer would be shifting their cost to the County Flood Sales Tax. Special assessments may be considered as a local match to County sales tax funds. Funds may be expended for projects that provide benefit to Cass County residents but are physically constructed outside of the County boundaries such as retention projects. Funds may also be spent to assist property owners downstream from the diversion channel in offsetting diversion project impacts.

ADMINISTRATION

The Cass County Commission will organize and appoint members to a Flood Sales Tax Committee. This will be a six-member committee made up of the following members:

1. Two members of the Cass County Commission
2. Cass County Auditor
3. Cass County Administrator
4. Cass County Engineer
5. One member from either the Southeast Cass, Maple River, Rush River, or North Cass Water Resource District.

The Flood Sales Tax Committee will solicit project requests on a bi-annual basis. Meetings to review project requests will generally be held with one meeting in the fall (October-November) and one meeting in the spring (March-April). Requests received from political subdivisions and county staff for cost effective projects will be prioritized and considered for funding by the County Commission as funds available allow.

FUNDING ELIGIBILITY

Entities eligible for funding: Funding should generally be for flood protection for communities or individuals that live outside of the Diversion protected area or those within the Diversion protected area that do not receive a significant benefit from the Diversion. This includes: 1. Cities

2. Townships
3. Water Resource Districts
4. Farmsteads and Homesteads

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Types of projects eligible for funding:

1. Levee construction or recertification for cities or rural subdivisions. Generally levee projects should be constructed to FEMA and/or US Army Corps of Engineer standards and be able to bring the benefited area out of the 1% chance (100 year) floodplain. These levees would also need to be maintained at that standard by either the city or township that is a member of the National Flood Insurance Program. Rural subdivisions seeking this funding would need to complete an agreement with the township and form an assessment district for the long term maintenance of the levee.
2. Flood control projects.
3. Water retention or detention projects.
4. Dam construction or maintenance.
5. Lift Stations for removing storm water from within a levee protected area.
6. Rural Farmstead Ring Levees (in conjunction with the ND State Water Commission 50% cost share) as outlined on the ND State Water Commission website under "Cost Share" at http://www.swc.state.nd.us/project_development/cost_share.html. Generally levee projects should be constructed to FEMA and/or US Army Corps of Engineer standards. However, individual rural farmsteads cannot be "certified" by FEMA or the US Army Corps of Engineers as they not maintained by either a city or township that is a member of the National Flood Insurance Program.
7. Road Projects that provide infrastructure protection to prevent significant future flood damage. These requests may be standalone projects or in conjunction with post-flood damage repair with or without FEMA cost share.
8. Road access (road raises or other infrastructure improvements that will allow access to a city, subdivision, or rural residence/farmstead).
9. Embankment slumping along the Red River, Wild Rice River, Sheyenne River, Maple River, Rush and Lower Rush Rivers, and Legal Drains. River slumping projects may include road and infrastructure repair, home buyouts, and repair to legal drains.
10. Home buyouts for flooding and bank slumping.
11. Flood Recovery projects to include: Levee repair, road repair, bridge repair, and other infrastructure related repair projects. None infrastructure flood recovery such as debris removal and sandbag cleanup will not be eligible.

Cass County Sales Tax Cost Share:

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1. Generally the cost share will be 50% of the "local" share of the non-retention projects, i.e. if a \$100,000 project had a 50% state cost share, the local share would be \$50,000 and the County cost share would be \$25,000.
2. Policy for Retention Projects: Cost share is 75% of the "local" share if they are approved by the Red River Joint Water Resource District.
3. Home buyouts for flooding and bank slumping: Cost share is 90% of the "local" cost with the homeowner paying 10% of the "local" cost.

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PROJECTS

4. If significant funds are available compared to the project requests, the County may authorize a cost share above 50% for non-retention projects and above 75% for Retention Projects.

PROJECT PRIORITIES

Priority of projects will be based on the following:

1. Population benefited by the project
2. Distribution of funds by location
3. Disbursement percentage determined by the number of people benefited
4. Cost effectiveness of the project
5. Permanency of the project
6. Effect of the diversion on the project
7. Does the project have long-term merit (benefits extend beyond 10 years)
8. Other sources of funding from local, state, or federal cost share programs.

Evaluation Criteria: The County Commission and/or Flood Sales Tax Committee may use some or all of the following criteria in determining funding priorities:

1. Benefit cost ratio
2. Land area benefited
3. Population benefited
4. Downstream flood reduction
5. Total acre-feet of retention storage

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HISTORICAL REFERENCE: AUGUST 2, 2010

**FLOOD SALES TAX COMMITTEE
OCTOBER 18, 2021—1:00 AM**

1. MEETING TO ORDER

Commissioner Mary Scherling called a meeting of the Flood Sales Tax Committee to order on Monday, October 18, 2021 at 1:01 PM, with the following present in person: Commissioner Mary Scherling; Commissioner Rick Steen; County Administrator Robert Wilson; and via Microsoft Teams: County Finance Director Brandy Madrigga and Joint Water Resource District Representative Rodger Olson. County Engineer Jason Benson was absent.

Also present in person was Deputy County Engineer Tom Soucy; Commissioner Jim Kapitan; Engineer Kurt Lysne of Moore Engineering; and via Microsoft Teams: County Accountant Sarah Heinle; Engineer Brandon Oye of Moore Engineering; and project applicant Kathy Auka.

2. MINUTES APPROVED

MOTION, passed

Mr. Steen moved and Mr. Wilson seconded that the minutes of the previous meeting be approved as written. Motion carried.

3. FLOOD SALES TAX FUND UPDATE

Ms. Heinle reviewed the Flood Sales Tax Fund, which has a current balance of \$9,258,307.31 and the unincumbered balance is \$5,398,714.94.

Mr. Steen asked for clarification on Cass Highway 15 bridge on Drain 14 project that was approved at the last meeting with the understanding that the funds would be reimbursed by the CARES Act funding the Highway Department will receive. Mr. Soucy said he and Mr. Benson looked at the project and a drop structure is needed that will cost approximately \$270,000 and is not included in the project cost approved by the Committee. He said the Highway Department has many projects to complete as part of the five-year plan and requests the Flood Sales Tax Committee commit funds to the projects without reimbursement. Mr. Wilson said he talked with Mr. Benson and he plans to address this project again at the next Road Advisory Committee meeting. Mr. Steen asked how much CARES Act funding the Highway Department is going to receive. Mr. Soucy said there has been discussions of funding of \$5.5 million; however, no definite number has been determined. Mrs. Scherling said any action now is premature, she said the Committee is expecting a reimbursement until further action is determined.

4. STATUS OF PREVIOUSLY APPROVED PROJECTS

Mr. Lysne, Mr. Soucy, and Mr. Oye gave updates on the status of various projects they were familiar with.

2015 Upper Maple River Detention Study Phase 2

Mr. Lysne said the study is wrapping up and at the beginning of construction and design phases. He said there is one outstanding item for water quality benefits, the National Resources Conservation Service (NRCS) may fund 100% or less of the project, and there may be a request for funds in the future.

2015 Rush River Detention Study Phase 2

Mr. Lysne said this project is wrapping up and resulted in a ring dike project for the City of Amenia. He said there is no request at this time, and there may be in the future.

2017 Sheldon Addition Ring Levee Project

Mr. Lysne said this project is outside of the FM Diversion project, and the most economic option is to get material is through the P3 contractor of the Diversion. He said the levee will be constructed after the Diversion construction has begun.

2018 City of Arthur Storm Sewer

Mr. Lysne said this project is complete and no further requests will be submitted.

MOTION, passed

Mr. Steen moved and Mr. Olson seconded to de-obligate funds from the 2018 City of Arthur Storm Sewer Project. Motion carried.

2019 Upper Maple River Dam Improvements

Mr. Lysne said this project is complete and the Water Resource District should be submitting a final reimbursement request soon.

2019 T-180 Dam Safety Improvements

Mr. Lysne said this project is complete and the Water Resource District should be submitting a reimbursement request soon.

2020 Davenport Levee

Mr. Lysne said this project is in final design stages and funding has been secured. He said he anticipates request will be coming soon.

2016 City of Mapleton Levee Raise

Mr. Oye said this project is working on getting a certification from FEMA, and no additional construction is needed. He said there may be an additional reimbursement request in the future.

2020 Casselton Industrial Park Corrective Work

Mr. Oye said this project was completed over a year ago and there will be no additional requests.

MOTION, passed

Mr. Steen moved and Mr. Wilson seconded to de-obligate funds from the 2020 Casselton Industrial Park Corrective Work. Motion carried.

2020 Hofer Property

Mr. Soucy said this property will close in the beginning of November. He said there have been funds allocated from the Department of Emergency Services, and they are pursuing those funds before requesting funds from the Flood Sales Tax Fund.

2020 Phillips Property

Mr. Soucy said this property has been purchased, and there will be no additional requests.

MOTION, passed

Mr. Steen moved and Mr. Wilson seconded to de-obligate funds from the 2020 Phillips Property. Motion carried.

2021 Gill Township Road

Mr. Soucy said this project is complete and Gill Township will be submitting their reimbursement requests after they receive the final invoices for the project.

2021 Maple River Township Road

Mr. Soucy said no work has been completed on this project as there are right of way issues that need to be worked out.

2019 Auka Ring Levee

When this project was first presented, the project cost was estimated at \$45,000 of which the State Water Commission (SWC) approved \$24,347.83. The Flood Sales Tax Committee then approved 50% of the local cost share in the amount of \$10,313.10. Mr. Soucy said the actual project estimates and contract bid came back at \$111,173.50. He said at the last meeting there was discussion that the Committee would consider additional funding if the SWC approved a larger funding amount.

Ms. Auka said the constriction agreement is in the amount of \$111,173.50, engineer and legal fees of \$1,995.50, and a security deposit of \$1,000 bringing the total cost of the project to \$114,169. She said the SWC agreed to additional funding in the total amount of \$55,000, leaving a remaining balance of \$58,169. She said the project is completed. Ms. Auka asked the Flood Sales Tax Committee to consider additional funding. Mr. Lysne said the SWC project policy is to fund 60% of project costs with a cap of \$55,000, so the Commission approved the maximum amount. Mr. Steen said if the total remaining balance is \$59,169, 50% of that is \$26,589.

MOTION, passed

Mr. Steen moved and Mr. Wilson seconded to approve funding for the 2019 Auka Ring Levy at a 50% local cost share in the amount of \$26,589. On Roll call vote, the motion carried unanimously. Discussion: Ms. Auka said she understands the 50% cost share precedent; however, she discussed the cost to the County for future sandbagging efforts if the levee was not built. She said the costs for sandbagging is approximately \$17,583 per year. Mr. Steen asked how many years the County has provided sandbagging efforts on their property in the past. Ms. Auka said the County has sandbagged on her property two years. Mr. Steen said the County has already provided \$35,000 to protect her property and now are providing an additional \$26,000. Ms. Auka said it is now the responsibility of her and her husband to maintain the levee. Mr. Steen said it is the responsibly of every property owner to maintain their property. Ms. Auka said the Flood Sales Tax Committee has the authority to provide over 50%. Mrs. Scherling said the Flood Sales Tax policy states that the increase in the shared percentage is based on how many properties are being protected by the project. Mr. Steen said there was mention of the Sheldon levee project that was given over 50% funding and provided protection to 17 homes. He calculated that \$27,176 per home was given and the Committee is giving the Auka's \$26,589. He said the funding for both projects are close and equitable.

Ms. Auka thanked the committee and all other parties that helped in getting this project completed and funded.

5. ADJOURNMENT

There being no further business, the meeting was adjourned at 1:47 PM.

Minutes prepared by Taylor Albrecht, Commission Assistant

Current County Projects			
3/21/2022			
Project	Total Approved	Paid	Left to Pay
Closed Projects	\$ 4,617,185.62	\$ 4,617,185.62	\$ -
2015 Upper Maple River Detention Study Phase II	\$ 45,500.00	\$ 37,068.77	\$ 8,431.23
2015 Rush River Detention Study Phase II	\$ 45,500.00	\$ 34,422.58	\$ 11,077.42
2016 City of Mapleton Levee Raise	\$ 99,812.68	\$ 88,057.80	\$ 11,754.88
2017 Sheldon Addition Ring Levee Project	\$ 462,750.00	\$ -	\$ 462,750.00
2018 City of Hunter Dam Projects	\$ 23,582.80	\$ 11,527.09	\$ 12,055.71
2018 Mapleton Levy Recertification	\$ 30,323.00	\$ -	\$ 30,323.00
2019 Upper Maple River Dam Improvements	\$ 21,233.13	\$ -	\$ 21,233.13
2019 T-180 Dam Safety Improvements	\$ 24,765.89	\$ -	\$ 24,765.89
2020 Hofer Property	\$ 512,281.80	\$ 496,455.85	\$ 15,825.95
2020 Davenport Levee	\$ 1,425,000.00	\$ -	\$ 1,425,000.00
2021 Gill Township Road	\$ 14,250.00	\$ -	\$ 14,250.00
2021 Maple River Township Road	\$ 64,970.00	\$ -	\$ 64,970.00
2022 Cass 15 Bridge	\$ 1,143,000.00	\$ -	\$ 1,143,000.00
		\$ -	
Total	\$ 8,530,154.92	\$ 5,284,717.71	\$ 3,245,437.21

Reserve for County Projects 2022 Activity

Balance of Cash Carried forward from 2021	\$ 9,597,789.87
2022 Reserves	<u>330,409.51</u>
Total	9,928,199.38
Paid in 2021	-
Encumbrances	<u>3,245,437.21</u>
Un-encumbered Balance	<u><u>\$ 6,682,762.17</u></u>



MEMORANDUM

**Highway
Department**

Jason Benson, P.E.
County Engineer

Thomas B. Soucy, P.E.
Deputy County Engineer

Blaine Laaveg
Superintendent

TO: Cass County Flood Sales Tax Committee
FROM: Jason Benson, P.E. County Engineer *JMB*
DATE: March 4, 2022
SUBJECT: Flood Sales Tax Request for the Cass 15 Bridge Replacement

At the April 5, 2021 Cass County Flood Sales Tax Committee meeting, the Committee approved funding a cost share of 50% of the estimated total cost of \$2,286,000 for a total cost share of \$1,143,000. This cost share was approved with a stipulation that the cost share would only be funded if no CARES Act funds were made available for this bridge project. At this time Cass County has not allocated any of CARES Act funding for the Highway Department.

This spring Cass County awarded a contract with Industrial Builders, Inc. for \$1,841,969.69 to replace the bridge. Therefore, the updated Flood Sales Tax request for 50% cost share is \$920,984.85. This project will provide flood access on this critical route. It was also designed in coordination with the FM Diversion in a way that will provide additional benefits to both the FM Diversion Project and the Maple River Water Resource District.

SUGGESTED MOTION: Approve the cost share of \$920,984.85 for the Cass County Highway Department to fund the bridge replacement on over drain 14 in sections 8/9 Mapleton Township on Cass County Highway 15

1201 Main Avenue West
West Fargo, North Dakota
58078-1301

701-298-2370
Fax: 701-298-2395

Gill Township slide repair

Mr. Soucy said Gill Township was originally requesting \$6,400; however, last week they received information that they are likely to receive \$5,300 in FEMA funding. He said there is an opportunity for a larger project in the area that will create a long-term fix.

Dallas Hoffman from Gill Township was present and requested 75% of \$19,000 which is \$14,250 to complete the larger solution project.

MOTION, passed

Mr. Montplaisir moved and Mr. Steen seconded to approve the Gill Township Slide Repair Project for \$14,250 with the understanding that Gill Township will pursue the \$5,300 in FEMA funds. Motion carried.

Maple River Township road realignment

Mr. Soucy said Maple River Township is requesting funding for a road that is being eroded by the Maple River Dam on 47th Street Southeast which is causing maintenance and safety issues. Corey Hognlund of Maple River Township was present and said the township is requesting the committee fund \$64,970 which is 75% of the total project cost at \$81,626.67.

MOTION, passed

Mr. Steen moved and Mr. Olson seconded to approve the Maple River Township Flood Risk Reduction project in the amount of \$64,970.

County Highway 15 Bridge on Drain 14

Mr. Soucy said the Cass County Highway Department is requesting the committee fund 75% of \$2,286,000 to repair County Highway 15 to allow better road access for area residents during times of flooding.

MOTION, passed

Mr. Steen moved and Mr. Montplaisir seconded to approve a 50% cost share of \$2,286,000 which is \$1,143,000 with the understanding that the Highway Department reimburse the funds using CARES Act funds.

6. ADJOURNMENT

There being no further business, the meeting was adjourned at 2:14 PM.

Minutes prepared by Taylor Albrecht, Commission Assistant

Flood Sales Tax Project Requests April 2022

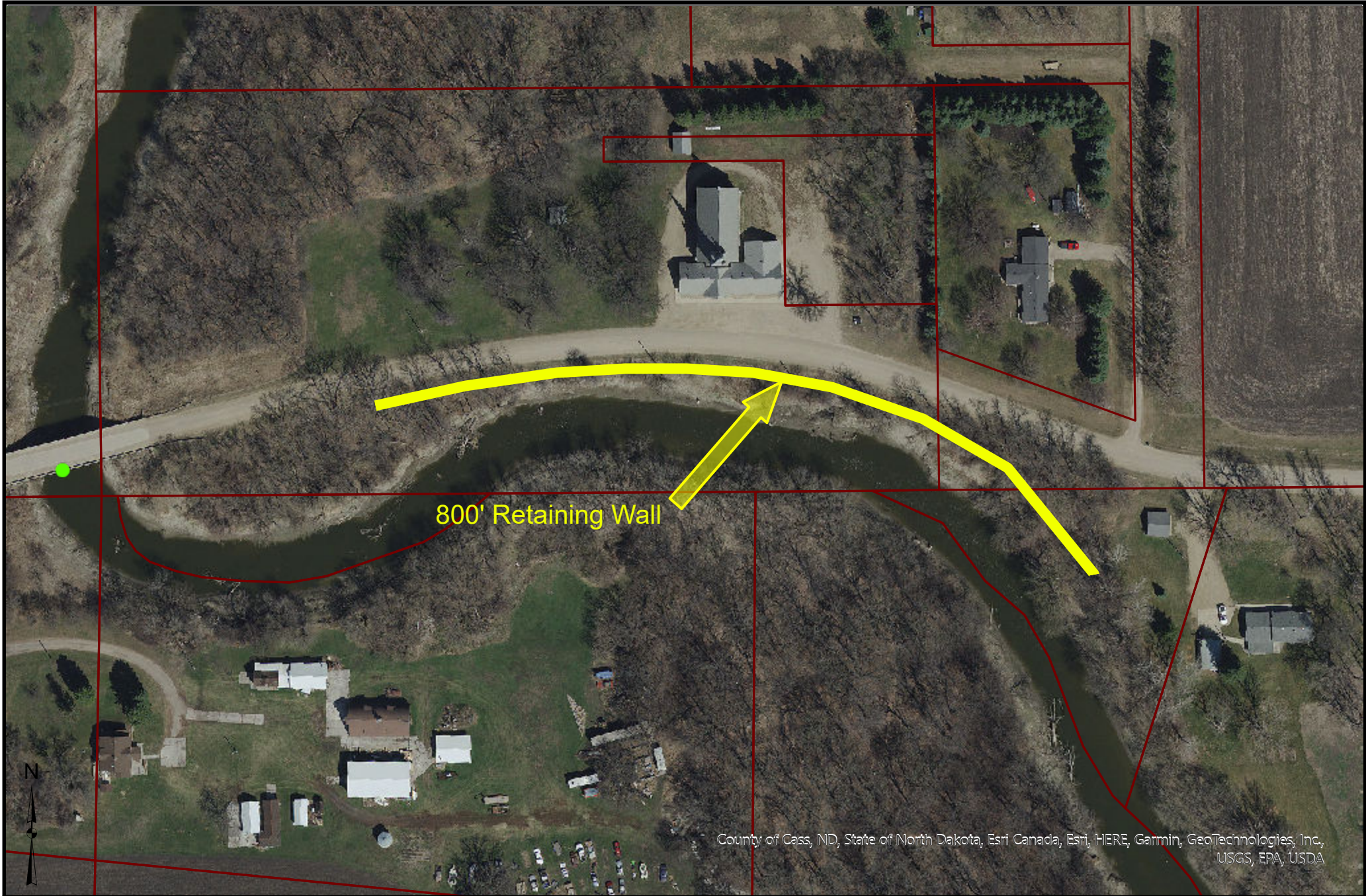
Project Name	Project Amount	% Amount Requested	Amount Requested
Normanna Township Bank Stabilization	\$ 2,112,083.33	90%	\$ 1,900,875.00
Lilleberg Buyout	\$ 126,971.00	90%	\$ 86,633.00
Walburg Township Drop Culverts	\$ 35,456.09	100%	\$ 35,456.09
Elm River Dam	\$ 3,100,000.00	3%	\$ 95,267.00
Gill Township Slide Repair	\$ 36,084.00	75%	\$ 27,063.00
Durbin Township Slide Repair	\$ 50,000.00	75%	\$ 37,500.00
Everest Township Slide Repair	\$ 28,000.00	75%	\$ 21,000.00
Maple River Township Slide Repair	\$ 60,000.00	75%	\$ 45,000.00
Mapleton Flap Gate- Storm Sewer Outfalls	\$ 80,000.00	75%	\$ 60,000.00
City of Casselton Slide Repair	\$ 850,000.00	75%	\$ 637,500.00
Cass Highway 81 Slide Repair	\$ 1,500,000.00	75%	\$ 1,125,000.00
TOTAL			\$ 4,071,294.09

2023 Normanna Township 52nd St Bank Stabilization Project

1. Description: The Sheyenne riverbank is slumping/eroding away on the south side of 52nd St just south of the Norman Church. It had been slowly eroding until the floods of 2009 and 2011 when large portions of the bank have disappeared and now is starting to encroach the roadway. In 2012 a study was done on possible ways to fix this problem. The study had 3 different options ranging from \$339,000 to around \$1.7 million. There was not confidence that the least expensive option of rip rapping the bank would be effective and the more expensive options would be able to be funded. In 2018 a study was done by Metro Cog to see if this stretch of road should be taken over by Cass County because of the importance of the road since it would be a continuance of Cass County 18 that leads from I-29 to Cass County 15 just north of the new Kindred High School. The study did have concern with the area in question and proposed some alternatives. One alternative was to move the road and build a new bridge in a different area so traffic would not have to deal with the riverbank. This option will likely cost \$2.5-3 million and was opposed by several local residents. In 2019 a fall flood event worsened the problem even more since the banks were not frozen and eroded more of the bank away encroaching the road surface. This is a very important road for our township and this problem needs to be addressed sooner than later.
2. Point of contact for more information is Tyler Odegaard, Normanna Township supervisor.
3. Estimated Cost: \$2,059,583
4. A request of 90% of funding from the county and 10% from Normanna Township
5. No other funding sources currently.
6. Normanna Township will own and be responsible for the project
7. Other information: Normanna Township has a budget of around \$100,000 per year and if we budget \$117,000 a year that would max out our 36 mill levy. We would plan to do this for 10 years to pay back our 10%
8. Attached: Current Estimate by Cass County Hwy Dept, 2012 Houston Study, 2018 MetroCog Study

CASS COUNTY HIGHWAY DEPARTMENT
 NORMANNA TWP. - SLIDE REPAIR - 52ND ST. NEAR NORMAN CHURCH
 ESTIMATED 775

ITEM	SPEC NO.	CODE	DESCRIPTION	UNIT	ORIGINAL QUANTITY	UNIT PRICE	TOTAL
1			TRAFFIC CONTROL	LS	1	2,500.00	2,500.00
2			INSTALL PZ27	SF	32,000	32.00	1,024,000.00
3			INSTALL HELICALS	EA	130	2,500.00	325,000.00
4			WALER & SECURE TIEBACKS	LF	775	650.00	503,750.00
5			EARTHWORK	LS	1	20,000.00	20,000.00
6			CLEARING & GRUBBING	LS	1	15,000.00	15,000.00
7			MOBILIZATION	LS	1	50,000.00	50,000.00
8			RIPRAP	CY	1,111	75.00	83,333.33
9			W-BEAM GUARDRAIL	LF	500	50.00	25,000.00
10			END TERMINAL	EA	2	3,000.00	6,000.00
11			SEEDING	LS	1	5,000.00	5,000.00
CONSTRUCTION TOTAL =							2,059,583.33
DESIGN & CONSTRUCTION ENGINEERING =							\$50,000.00
EASEMENTS =							\$2,500.00
GRAND TOTAL =							\$2,112,083.33
50% OF GRAND TOTAL =							\$1,056,041.67
50% LOCAL COST SHARE =							\$1,056,041.67
75% OF GRAND TOTAL =							\$1,584,062.50
25% LOCAL COST SHARE =							\$528,020.83
90% OF GRAND TOTAL =							\$1,900,875.00
10% LOCAL COST SHARE =							\$211,208.33



800' Retaining Wall

County of Cass, ND, State of North Dakota, Esri Canada, Esri, HERE, Garmin, GeoTechnologies, Inc., USGS, EPA, USDA

These data are provided on an "AS-IS" basis, without warranty of any type, expressed or implied, including but not limited to any warranty as to their performance, merchantability, or fitness for any particular purpose.

Normanna Twp - Sheyenne River - Retaining Wall

Date: 2/25/2022

ArcGIS Web AppBuilder



This map is not a substitute for accurate field surveys or for locating actual property lines and any adjacent features.



CASS COUNTY ROADWAY 18 EXTENSION STUDY

From Cass County Roadway 17 to
Cass County Roadway 15

The preparation of this document was funded in part by the United States Department of Transportation with funding administered through the North Dakota Department of Transportation, the Federal Highway Administration, and the Federal Transit Administration. Additional funding was provided through local contributions from Cass County. The United States Government and the States of North Dakota and Minnesota assume no liability for the contents or use thereof.

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The contents of this document reflect the views of the authors, who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the policies of the state and federal Departments of Transportation.

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1 EXECUTIVE SUMMARY

The Cass County Highway Department, in coordination with both the Normanna and Pleasant Township officials, made a request to the Fargo-Moorhead Metro Council of Governments to study the potential extension of Cass County Roadway 18 along 52nd Street SE. The study area for this project includes 52nd Street SE in Cass County from Cass County Roadway 17 west to Cass County Roadway 15 in both the Normanna and Pleasant Townships within Cass County, North Dakota.

The existing conditions analysis of the study area identified existing utilities, land uses, and environmental features. The existing conditions analysis also reviewed the roadway typical sections for 52nd Street SE and County Roadway 18 and the Sheyenne River crossing bridge. The 2018 traffic volumes for 52nd Street SE ranged from 155 to 200 vehicles per day with approximately 20 to 25 percent heavy vehicles. There were six crashes from 2013 to 2017 on 52nd Street SE with one fatal crash.

The future conditions developed forecasted traffic volumes on 52nd Street SE for the years 2025 and 2040 for a no-build, aggregate and paved roadway surface alternatives. The 2025 forecasted traffic forecasts ranged from 175 to 230 vehicles per day for the no-build alternatives, 190 to 245 vehicles per day for the aggregate surface alternative, and 220 to 300 vehicles per day for the paved surface alternative. The 2045 forecasted traffic forecasts ranged from 220 to 280 vehicles per day for the no-build alternatives, 245 to 300 vehicles per day for the aggregate surface alternative, and 280 to 325 vehicles per day for the paved surface alternative. No impacts to the study area are expected due to the proposed Fargo-Moorhead diversion.

The project purpose is to study the feasibility of extending CR 18 from CR 17 to CR 15 and transitioning ownership to a county roadway and the roadway typical section to meet county roadway standards. The goals associated with this project are as follows:

- Study the county roadway network connection for CR 18 between CR 17 and CR 15 to maintain a roadway network that allows users to travel on a standard roadway cross-section to Kindred and between CR 15 and Interstate 29.
- Provide recommendations/alternatives for a roadway that maintains a suitable driving surface throughout the year and accommodates traffic mix consisting of passenger cars, heavy trucks, and agriculture implements.
- Provide recommendations/alternatives that will minimize the potential for crashes along the corridor.
- Support the goals and objectives of the *Cass County Transportation and Comprehensive Plan*

The project needs include the following:

- County roadway system connectivity
- Insufficient roadway surface conditions due to subgrade
- To minimize the potential for crashes along the corridor
- To support the goals and objectives of the *Cass County Transportation and Comprehensive Plan*

Throughout the duration of the project, a Study Review Committee periodically met to discuss the findings of the project and to review and provide comments on the Study's memoranda. A public input meeting was held on December 4th, 2018 at the Kindred High School commons area. Comments were received at the meeting and for two weeks after the public meeting.

The final analysis of the alternatives included three alignments on the existing alignment (no-build, existing alignment with County typical section, and relocation of the church) and three alignments adjusting the location of the Sheyenne River crossing bridge (alignments A, B, C). The Study Review Committee was tasked with only ranking the Sheyenne River crossing alternatives. The criteria used in analyzing the Sheyenne River crossing alternatives was developed and approved by the Study Review Committee and was provided to the committee for their ranking of the Sheyenne River crossing alternatives. The results of the Committee's rankings were alignment B followed by alignment C and finally alignment A.

2 INTRODUCTION

2.1 PROJECT SCOPE AND LIMITS

The Cass County Highway Department, in coordination with both the Normanna and Pleasant Township officials, made a request to the Fargo-Moorhead Metro Council of Governments (Metro COG) to study the potential extension of Cass County Roadway 18 (CR 18) along 52nd Street SE. The study area for this project includes 52nd Street SE in Cass County from Cass County Roadway 17 (CR 17) west to Cass County Roadway 15 (CR 15) in both the Normanna and Pleasant Townships within Cass County, North Dakota. The study area for the project is shown in Figure 1.

Throughout the study, memoranda were completed for the following phases of the study:

- Existing Conditions Analysis
- Future Conditions Analysis
- Purpose and Need of the Study
- Public Input Summary
- Alternatives Analysis

The memoranda were used to develop the final report for the project.

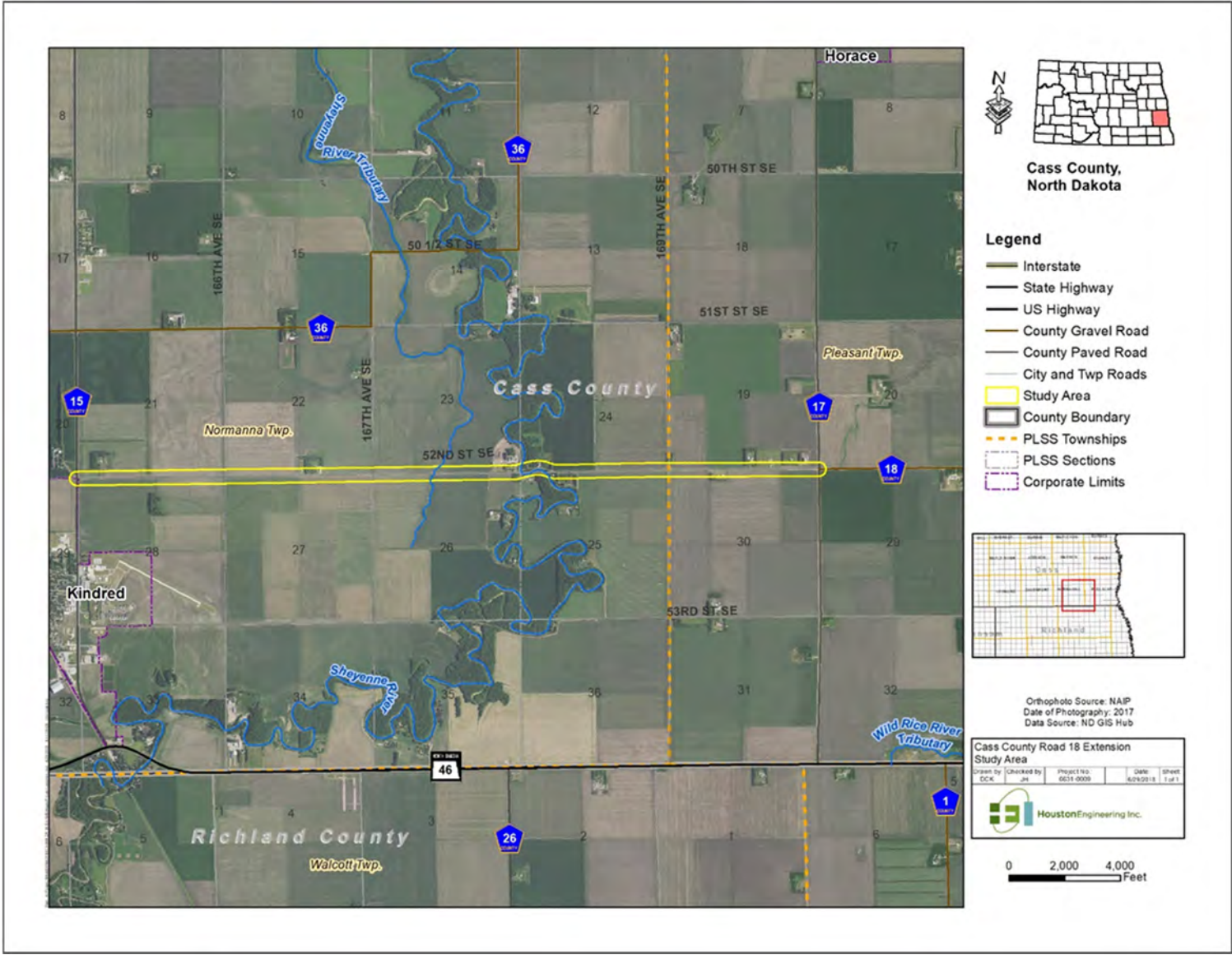


Figure 1. Study Area

3 EXISTING CONDITION ANALYSIS

3.1 ROADWAY TYPICAL SECTION AND ATTRIBUTES

The existing 52nd Street SE and CR 18 roadway typical sections are shown in Figure 1. Three typical sections are shown in Figure 2; one for the existing aggregate surfaced roadway section on 52nd Street SE throughout the study area, CR 18 for the section within 2 miles of CR17, and one for the bridge section across the Sheyenne River. The 52nd Street SE roadway section is currently an aggregate surface with open ditch drainage along both the north and south sides of the roadway. As shown in Figure 2, the roadway, ditch, and right-of-way (ROW) widths vary based on the location within the corridor, but the aggregate surface is typically 28 to 30 feet wide. The CR 18 typical section is similar to the 52nd Street SE typical section with a slightly wider aggregate surface of approximately 30 to 32 feet. The townships both complete annual aggregate surface maintenance on 52nd Street SE. The spread rate of gravel used for each township vary between 150 cubic yards per mile (CY/mile) to 365 CY/mile based on the amount of available funding. Cass County currently maintains CR 18 at a gravel spread rate of 365 CY/mile.

Driveway and field access locations along both 52nd Street SE and CR 18 typically have corrugated metal pipe culverts for drainage. Flood protection measures have been implemented on the east end of the study area. The measures include levees and sluice gates installed on the north side of the roadway. Approximately 0.75 miles west of the Sheyenne River bridge, two transverse corrugated metal pipe culverts cross 52nd Street SE providing conveyance for a tributary of the Sheyenne River. Several drainage improvements have been made at the intersection of 52nd Street SE and CR 17 including multiple culverts and roadway ditch improvements. The 52nd Street corridor speed limit is 55 miles per hour (MPH) with the exception of reduced speed zones of 40 MPH approaching the Sheyenne River bridge and 25 MPH immediately adjacent to the bridge.

The 52nd Street SE intersection with CR 15 has two-way stop-control on the 52nd Street SE approaches and the intersection with CR 17 is controlled by a yield sign on the 52nd Street SE approach and stop sign on the CR 18 approach. Several north-south township roadways intersect with 52nd Street SE throughout the project study area. The north-south township roadways are typically yield controlled with yield signs at the intersections with 52nd Street SE. Additional access locations along 52nd Street SE are typically at driveway approaches or field locations. The spacing and locations of the access points along the corridor are acceptable, but some may need to be slightly relocated or combined if any improvements to the roadway are made.

The roadways in the study area were included in the functional class figure within the *Cass County Comprehensive and Transportation Plan*. The Cass County Functional Class figure lists both CR 15 and CR 17 as Major Collectors with CR 18 and 52nd Street SE as Local/Township classification. North Dakota 46 is classified as a Minor Arterial in the comprehensive plan and as a State Corridor with the North Dakota Department of Transportation (NDDOT) State Highway Performance Classification System. According to the Comprehensive Plan, both CR 15 and CR 17 are classified as Regionally Significant Candidate Corridors. Vehicle load restrictions are typically placed on CR 15 and CR 17 during the spring thaw.

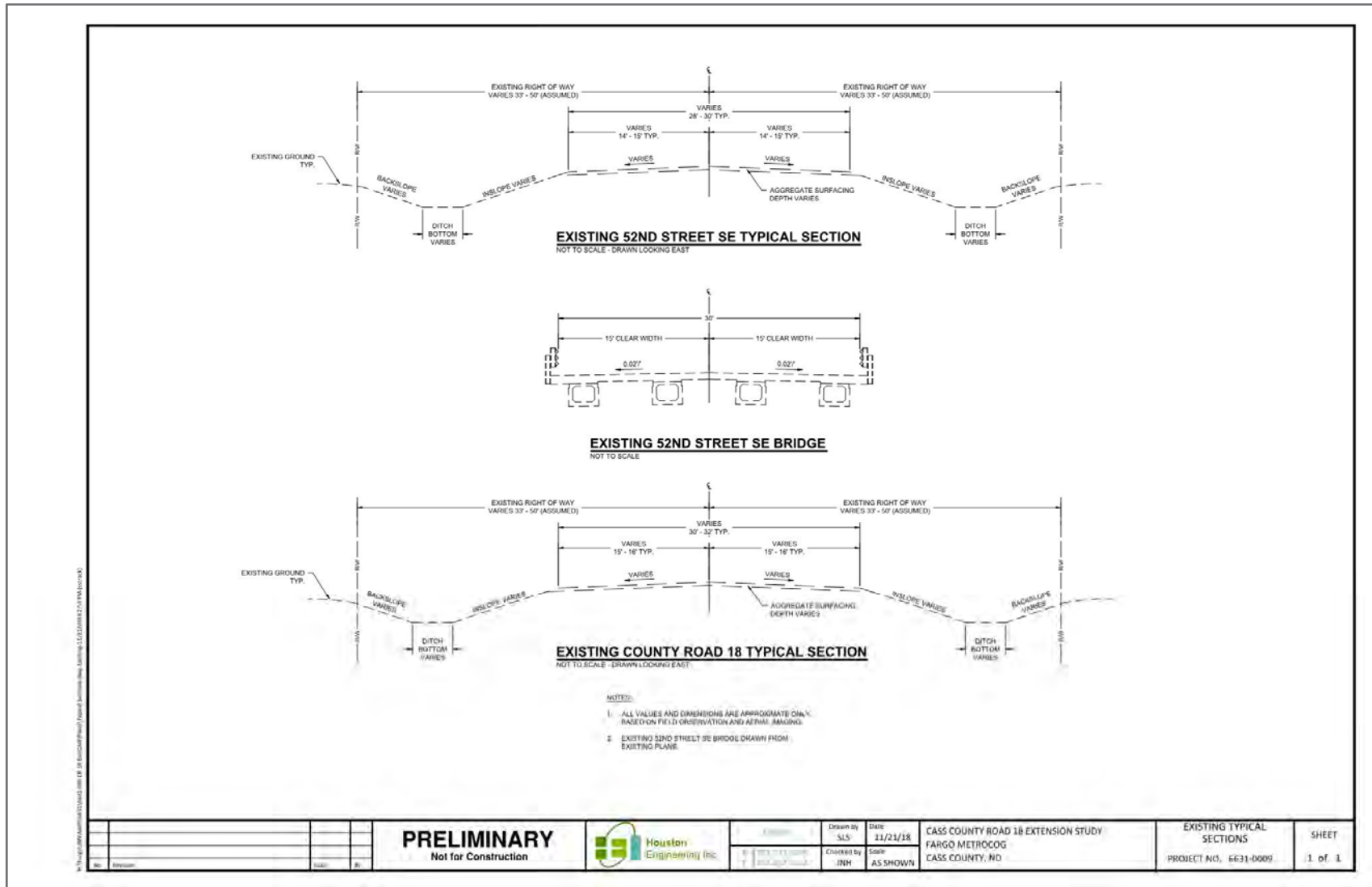


Figure 2. 52nd Street SE Typical Sections

3.2 BRIDGE ACROSS THE SHEYENNE RIVER

The existing bridge on 52nd Street SE that crosses the Sheyenne River was constructed in 1995. The typical section for the roadway is shown in Figure 2. The bridge spans are prestressed concrete and the bridge deck is cast-in-place concrete. According to the most recently available National Bridge Inventory (NBI) report from 2015, the overall condition of the bridge is “Good” with the superstructure and substructure both being categorized “Very Good”. The sufficiency rating of the bridge according to the NBI report is a 99.7. The channel bank is beginning to slump, and the embankment protection devices have widespread minor damage according to the NBI report. The bridge was included in *Cass County Comprehensive and Transportation Plan’s* “Cass County Bridge Condition Average” figure with a bridge condition average range of 7.1 to 8.0 out of 10, and in the “2037 and beyond” construction phase for replacement.

3.3 EXISTING UTILITIES IN STUDY AREA

The study area does contain electrical, fiber optic, telephone, and rural water utilities. A utility locate and survey were not conducted for this study. Any utility information provided in this report and study are for information purposes only and are not intended to be used for design or construction. Based on a review of existing above ground utility structures along the corridor, several of the underground utilities run parallel to 52nd Street SE in the backslope of the north ditch of the roadway. Throughout the corridor, fiber optic and telephone underground lines are located north of the roadway and cross beneath the roadway to service residences on the south side of the roadway. Overhead electric utilities are typically located along the north field edges and run most of the eastern half of the project terminating just west of the bridge. There are also short runs of overhead electrical utilities serving the two western most residential and commercial locations within the study area. The overhead electrical lines do cross 52nd Street SE at three locations within a 0.5 mile stretch from the Sheyenne River bridge to the east. At the location of the Norman Lutheran church, the overhead power lines are located on the south side of the roadway directly across from the church. There are valve locations for Cass County Rural Water located north of 52nd Street SE in the study area. Based on plan documents for the Sheyenne River bridge, the rural water line does cross beneath the roadway at the ag residential locations just west of the bridge.

3.4 EXISTING LAND USES WITHIN THE STUDY AREA

The Cass County existing land use plan contained within the *Cass County Comprehensive and Transportation Plan* provides the existing land uses in the study area that are based on the seven land use categories used in Cass County. Along the 52nd Street SE corridor in the study area, the primary land use “agriculture” with a few areas of “single family residential”, “farm exempt”, and “ag with residential”. The residential land uses are located near the Sheyenne River Bridge and at the east end of the study area. There is also a “commercial/industrial/multi-family residential” land use area for a manufacturing facility located 1.5 miles east of the intersection with CR 15. The Norman Lutheran church, located just east of the Sheyenne River bridge, is classified as a “single-family residential” in the land use plan. The very west 0.75 miles of 52nd Street SE is included in the City of Kindred’s Extraterritorial Area.

3.5 EXISTING ENVIRONMENTAL FEATURES

The wetlands for the study area were reviewed using data from the National Wetlands Inventory available from the United States Fish and Wildlife Service. Two figures are provided with Figure 3 showing the palustrine and riverine wetlands that are located within and near the study area and Figure 4 showing a more detailed view of the palustrine and riverine wetlands within the study area. The project study area has the Sheyenne River and the Sheyenne River tributary for flowing water. There are three primary locations for palustrine wetlands located in sections 23 and 26 of the Normanna Township. As shown in Figure 4, the locations that are within the roadway ditch section that are classified as wetlands are located in the section from the Sheyenne River bridge to the west approximately a 0.5 mile.

3.6 2018 TRAFFIC VOLUMES

Traffic volumes at two segments of 52nd Street SE and one segment of CR 18 were collected Tuesday May 15th to Friday May 18th and Monday October 15 to Friday October 19 of 2018. The traffic volumes were counted for approximately 72 consecutive hours at all locations. The Kindred Public School system was in session when the traffic volumes were collected. The traffic volumes were reviewed for any differences, and an average of the two counting periods was determined. The traffic volumes included in this report are Average Annual Daily Traffic (AADT) volumes that are based on the actual number of vehicles counted during the two count periods and then adjusted to account for daily and seasonal variations. AADTs provide the average volume of traffic using the roadway throughout the year. Actual traffic counts on random days may be either above or below the AADT, but the AADT provides an average for the entire year. Intersection turning movements were not counted as a part of this study.

The AADTs for the three count locations are shown in Figure 5, Figure 6, and Figure 7. The AADTs for the spring and fall ranged from 86 and 136 vehicles per day (VPD) on CR 18 near CR 17 to 115 and 197 VPD on the west end of the study area. The traffic consisted of 20 to 25 percent heavy vehicles (vehicles with more than 2 axles) throughout the study area. The heavy vehicle percentages were slightly lower on the existing CR 18 section. It is important to note that the traffic counts were taken while agricultural producers were starting to plant and harvest the agricultural fields in the area surrounding the study area. The travel direction distribution at the count locations was approximately 55 to 60 percent travelling westbound to approximately 40 to 45 percent travelling eastbound during the spring count period and 50 percent eastbound and westbound during the fall count period. The directional distribution may signal that vehicles are traveling west to Kindred or elsewhere on 52nd Street SE, but returning to their residence or place of origin by another route such as North Dakota 46 and a north-south county or township roadway.

The peak hour, the highest volume of four consecutive 15-minute counting periods, for all locations was consistent between 7:00 am and 8:00 am with minor 15-minute adjustments for the morning period of each day. The afternoon/evening peak hour was not as consistent as the morning peak hour for all three locations. The PM peak hour was typically either 3:30 pm to 4:30 pm or approximately around the 5:00 pm hour. A potential reason for the variation of the evening/afternoon peak hour may be due to rain events on one of the count days and the resulting saturated condition of the gravel roadways. Although, there is not enough evidence to draw a conclusion that the condition of the roadway impacts the traffic volume on the roadway. The peak hours from the fall traffic counts were similar in the hour that had the peaking volumes to the spring data.

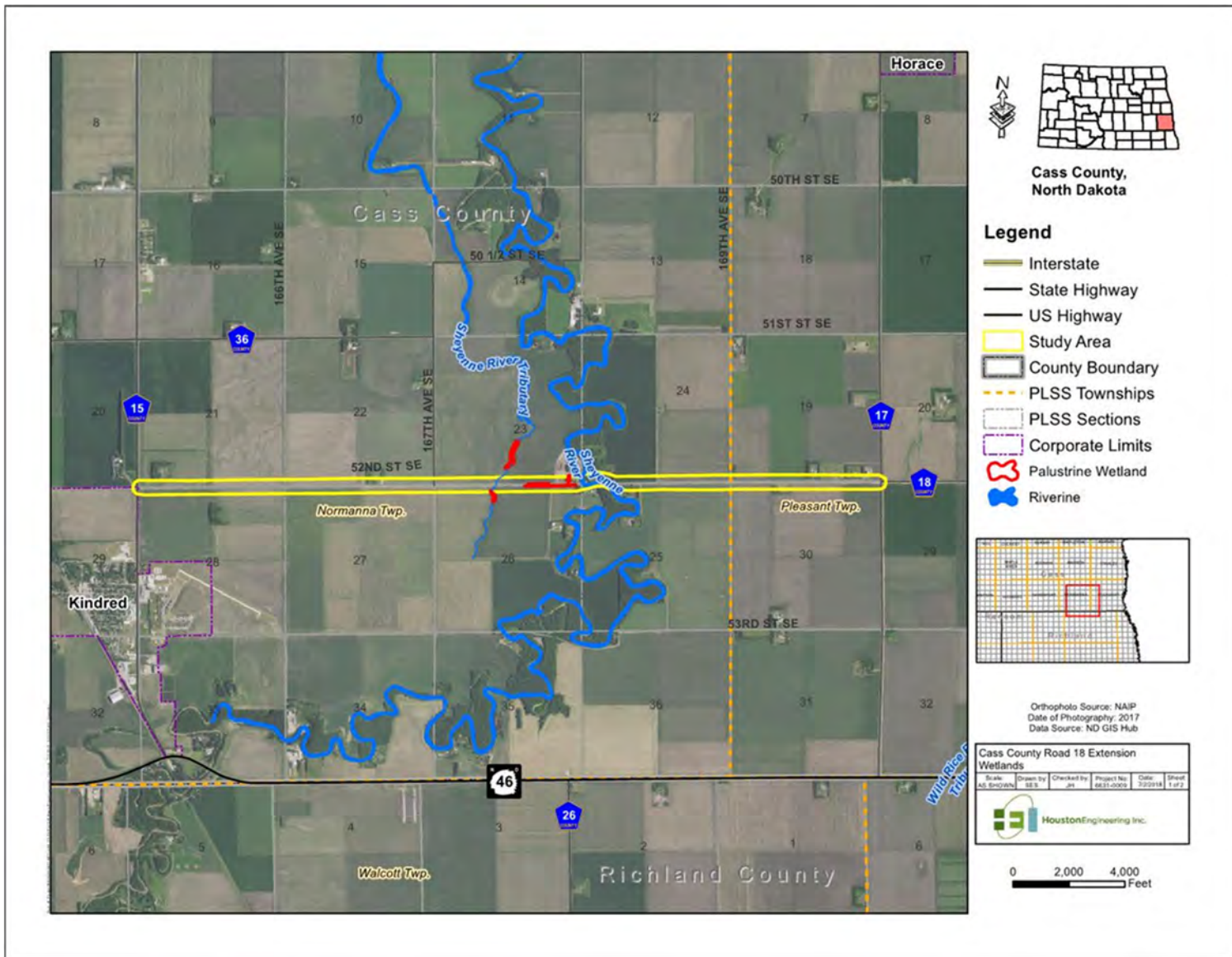


Figure 3. Environmental Map for Study Area

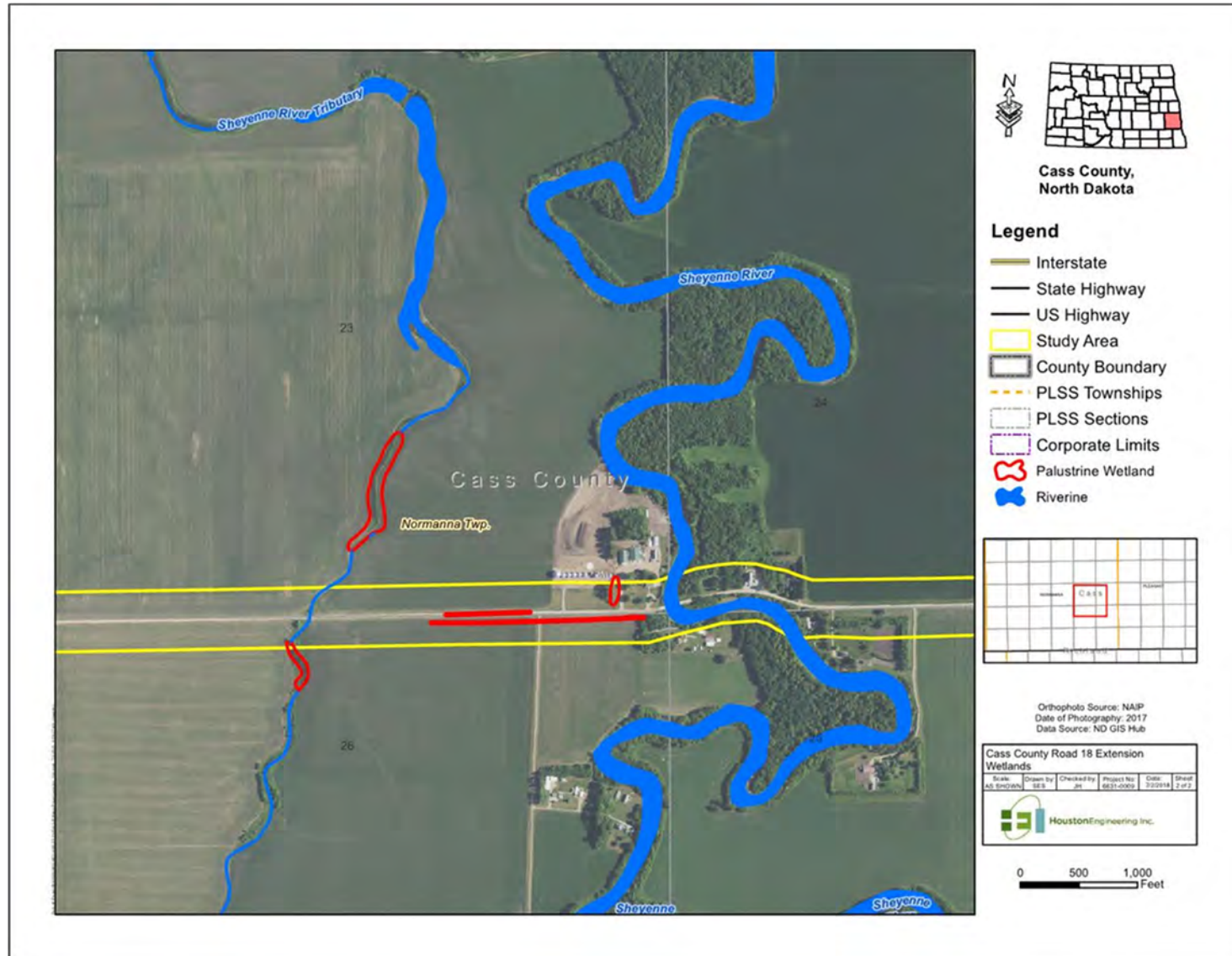


Figure 4. Wetlands within the Study Area

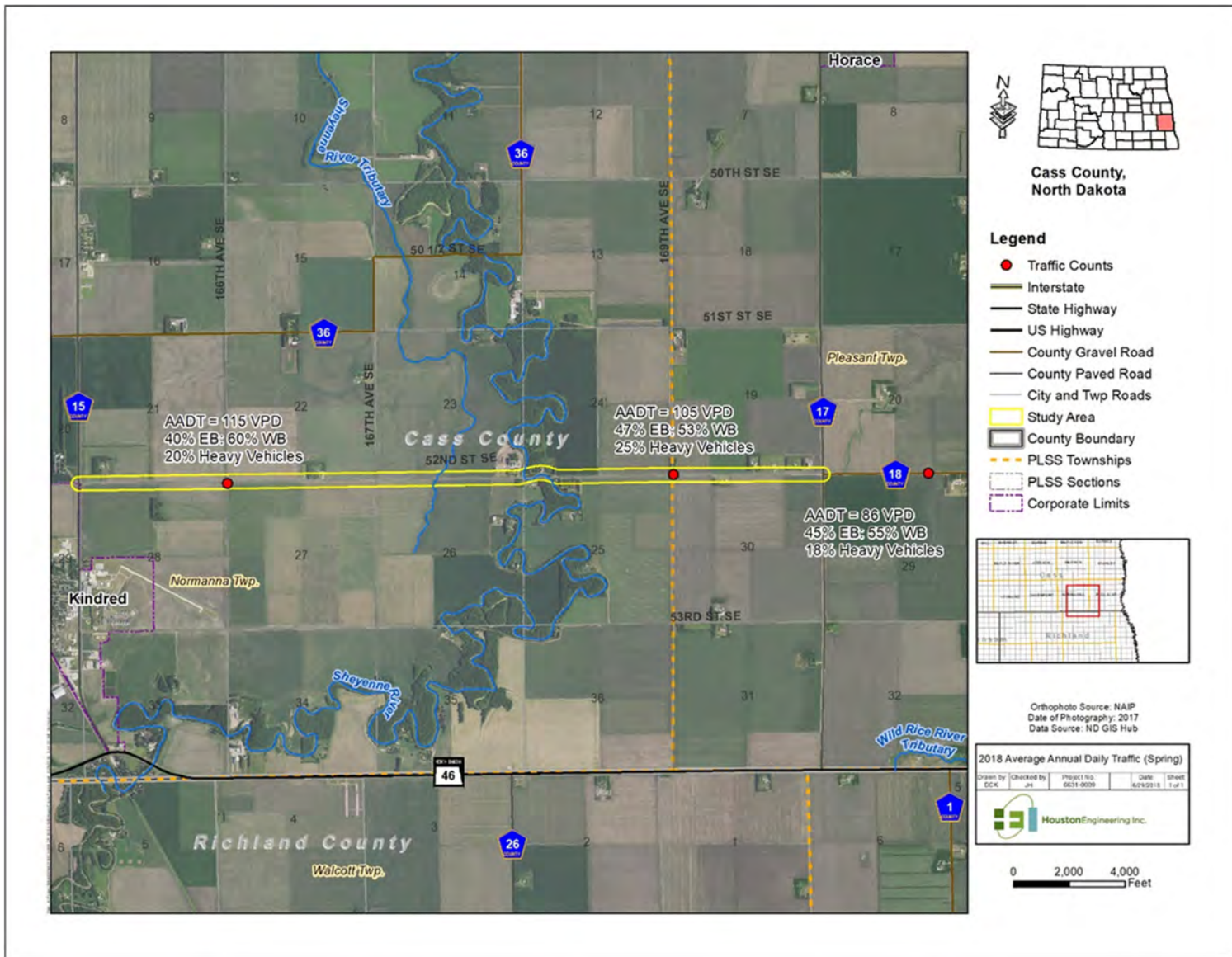


Figure 5. 2018 Average Annual Daily Traffic Volumes (Spring 2018)

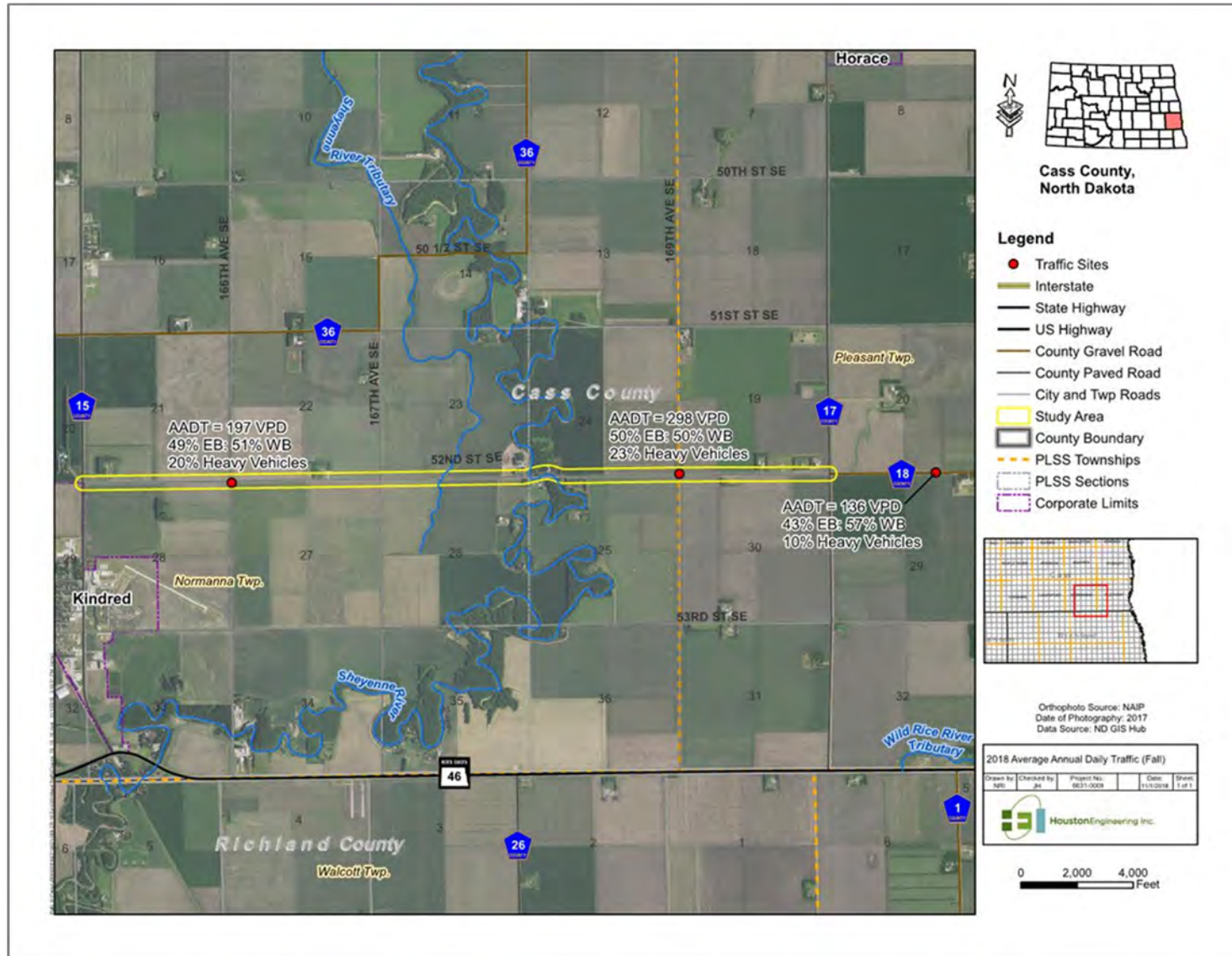


Figure 6. 2018 Average Annual Daily Traffic Volumes (Fall 2018)

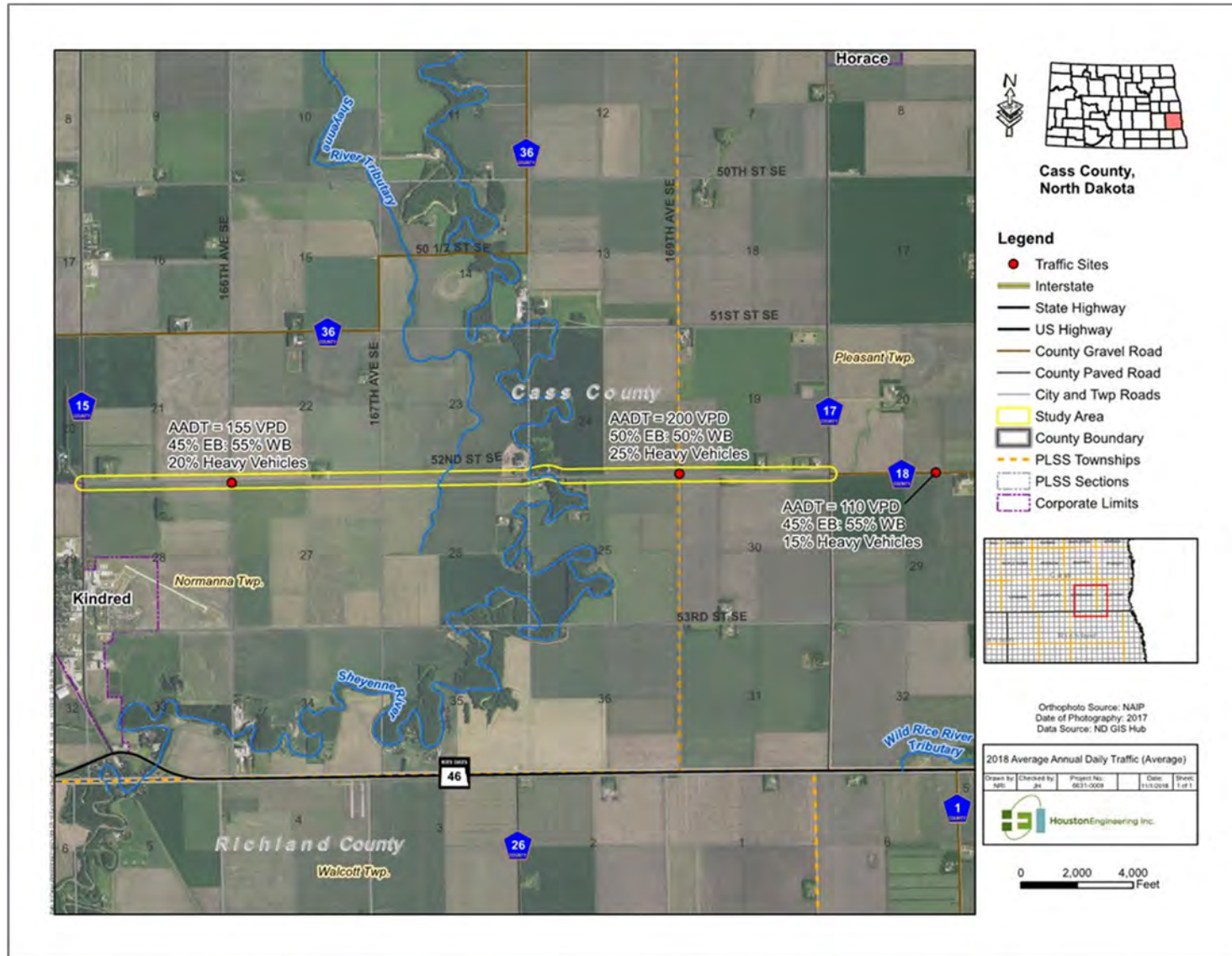


Figure 7. Average Annual Traffic Volumes (Average of Spring and Fall 2018)

3.7 TRAFFIC SAFETY PERFORMANCE FOR 2013 TO 2017

The data and information used in the traffic safety section was provided by the Metro COG from a data set that was received from the NDDOT. The data included all traffic crashes in the Metro COG planning boundary for the years 2013 to 2017. The software program ArcGIS was used to select crashes for the study area based on a selection buffer of 250 feet from 52nd Street SE, as shown in Figure 8. The NDDOT and Department of Public Safety maintain criteria for what constituted a reportable traffic crash, and some very minor non-injury crashes may not be considered a reportable traffic crash.

There was a total of six traffic crashes in the study area from 2013 to 2017. The crash locations and severity are included in Figure 8. Additional information for the crashes are included in the following Table 1 to Table 4. The corridor had one fatal crash, two injury crashes, and three property damage only crashes from 2013 to 2017 as shown in Table 1. The crash severity by year is shown in Table 2 and the only year with more than one crash was 2014. Typically, fatal and injury crashes occur when vehicles collide either head-to-head or at various angles to each other, of which the right-angle crash is typically the angle manner of collision with the highest potential of injury. Included in Table 3 are the crash severities by the manner of collision. The corridor experienced three angle crashes with two being right angle crashes; resulting in one a fatal crash and one property damage only crash. The study corridor is assumed to have a proportion of the traffic volumes that consists of vehicles travelling to or from the Kindred Public School system buildings in Kindred.

Due to the potential of teen-age drivers travelling on the road, the driver ages of vehicles involved in crashes along the corridor were included in Table 4 to provide information on any patterns that emerged involving younger drivers or drivers of a certain age range. Please note that each driver in a crash is listed and more than one driver may be included in a crash. The 0 to 16 and 17 to 24 age ranges were grouped together so that all teen-age drivers along with younger drivers were included in one group for analysis. Based on the data in Table 4, three of the nine drivers involved in crashes were between 0 and 24 years of age which represents 33 percent of the total drivers. The 0 to 24 and 35 to 44 age ranges had three drivers involved in crashes which was the highest of all ranges.

The fatal crash that occurred along the corridor was further examined to determine if any roadway or traffic control attributes may have been a contributing factor. Based on a review of the information available about the crash, a vehicle failed to yield at a yield sign to another vehicle on 52nd St. SE and a right-angle crash occurred between a passenger vehicle and a semi-truck. Based on the information available, it does not appear that any roadway or traffic control attributes contributed to the crash.

Table 1. Crashes by Year ('13 to '17)

2013	1
2014	3
2015	1
2016	1
2017	0

Table 2. Crash Severity by Year ('13 to '17)

	Crash Severity					
YEAR	Fatal	Major Injury	Minor Injury	Possible Injury	Property Damage Only	TOTAL
2013	0	0	0	0	1	1
2014	1	0	0	1	1	3
2015	0	0	0	0	1	1
2016	0	0	1	0	0	1
2017	0	0	0	0	0	0
TOTAL	1	0	1	1	3	6

Table 3. Manner of Collision and Severity ('13 to '17)

	Crash Severity					
Manner of Collision	Fatal	Major Injury	Minor Injury	Possible Injury	Property Damage Only	TOTAL
Angle (Not Specific)	0	0	0	0	1	1
Non-Collision w/ Motor Vehicle	0	0	1	1	1	3
Right Angle	1	0	0	0	1	2
TOTAL	1	0	1	1	3	6

Table 4. Crash Severity by Age ('13 to '17)

	Injury Severity					
AGE	Fatal	Major Injury	Minor Injury	Possible Injury	Property Damage Only	TOTAL
0 to 16	0	0	1	0	0	1
16 to 24	0	0	0	0	2	2
25 to 34	0	0	0	0	1	1
35 to 44	1	0	0	1	1	3
45 to 54	0	0	0	0	0	0
55 to 64	1	0	0	0	1	2
65 to 74	0	0	0	0	0	0
75+	0	0	0	0	0	0
TOTAL	2	0	1	1	5	9

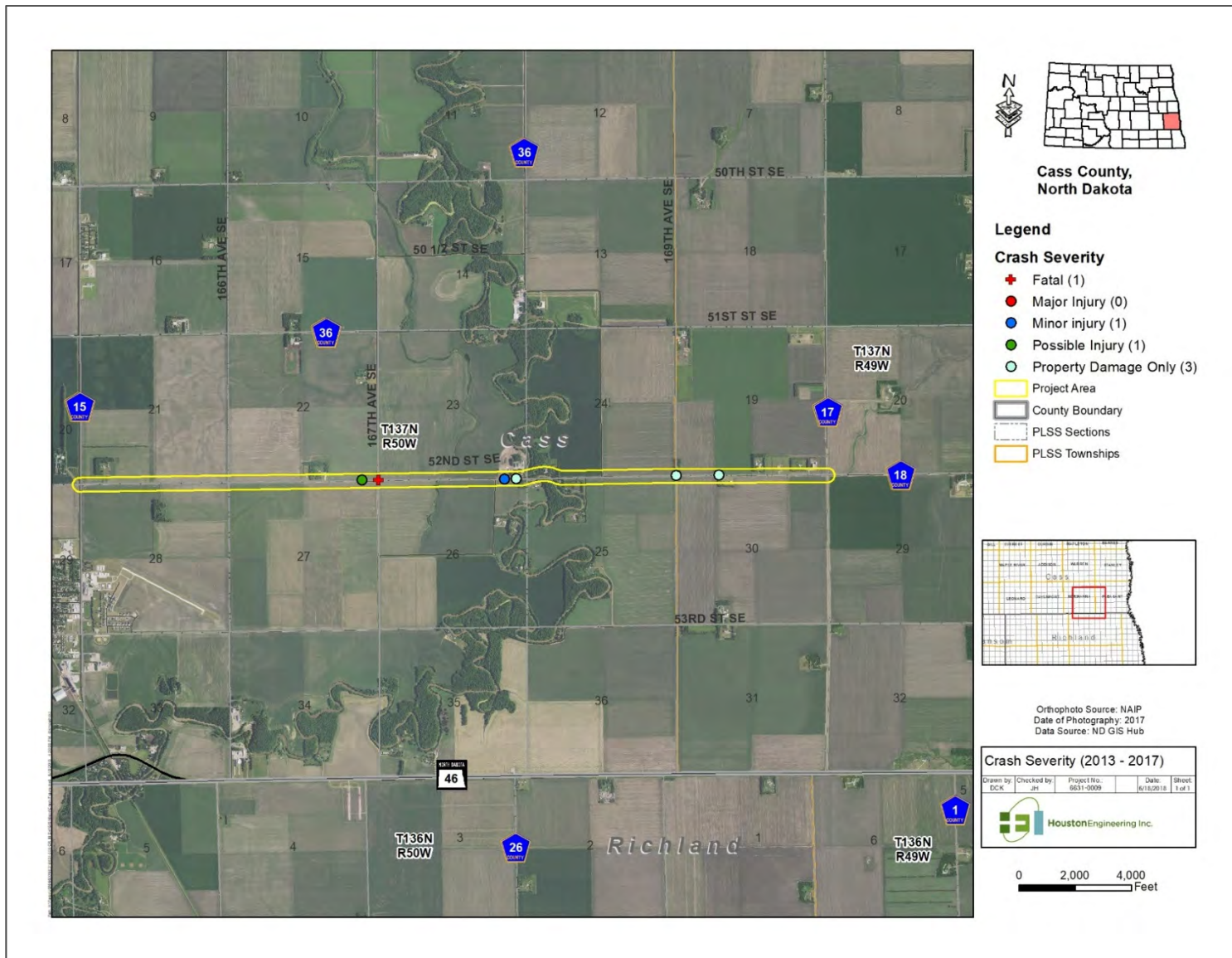


Figure 8. 2013 to 2017 Crash Locations

4 FUTURE CONDITIONS ANALYSIS

4.1 FUTURE LAND USE

4.1.1 CASS COUNTY

The *Cass County Comprehensive and Transportation Plan* (the Comprehensive and Transportation Plan) was recently updated in May of 2018. The Comprehensive and Transportation Plan contained information on Cass County's future population and community growth out to the year 2045. Several important items for this report such as household information, school growth, and the expansion of cities' developed areas were referenced from the Comprehensive and Transportation Plan. The Comprehensive and Transportation Plan will be referenced throughout the document with information included in several of the upcoming sections.

4.1.1.1 FUTURE POPULATION

The Comprehensive and Transportation Plan provided the population forecasts for several jurisdictions in Cass County. Provided in Table 5 are the historical and future populations for Cass County at-large, the City of Horace, and the City of Kindred. As shown in Table 5, both Cass County and Horace are expected to have significant population growth. The growth for the City of Horace is most likely due to the expansion from the urban areas of Fargo and West Fargo in to the jurisdiction of the City of Horace. The City of Kindred is expected to have limited growth in the future years and reach a population of around 800 people in 2025 and remain at that population through the year 2045.

Table 5. Future Population Estimates

Jurisdiction	1990	2000	2010	2015	2020	2025	2030	2035	2040	2045
Cass County	102,874	123,138	149,778	168,930	189,900	206,620	221,350	233,940	244,460	251,940
Horace	662	915	2,430	2,620	5,070	8,190	8,940	9,500	9,820	10,040
Kindred	569	614	692	728	773	798	805	799	802	797

4.1.1.2 HOUSEHOLDS

Included in the Comprehensive and Transportation Plan were historical and future household numbers for Cass County and the Cities of Horace and Kindred. The historic and future household values are shown in Table 6. Similar to the population growth trends in Table 5, Cass County and the City of Horace are expected to see significant growth with the number of households while the City of Kindred will see limited growth through the forecasted period.

Table 6. Future Household Estimates

Jurisdiction	1990	2000	2010	2015	2020	2025	2030	2035	2040	2045
Cass County	42,407	53,790	63,899	70,480	78,160	83,820	89,280	95,520	96,750	99,960
Horace	216	311	810	840	1,730	2,710	2,980	3,190	3,360	3,520
Kindred	246	267	267	270	280	280	280	290	300	300

According to the Comprehensive and Transportation Plan, the average household size for an owner-occupied residence is 2.65 people and 1.89 people for a renter-occupied residence. The information

provided for households also included age ranges for the householders. It is expected that a younger householder in the 25 to 44-year-old range to have a higher likelihood of having school-aged children currently or in the near future. Based on a map provided in the Comprehensive and Transportation Plan that is based on the year 2010 census data, both the Cities of Kindred and Oxbow's median age is in the 25 to 44-year-old category. It is also important to note that one in four households in Cass County have children.

4.1.1.3 LAND ACREAGE DEVELOPMENT AND GROWTH

In order for a city to grow, land and utility services must be available. The Comprehensive and Transportation Plan categorized four different types of communities in Cass County; Metropolitan Cities, Urban Residential Communities, Rural Center, and Rural Residential Clusters. The City of Kindred was classified as a Rural Growth Center and the City of Oxbow was classified as a Rural Residential Cluster. The difference between a Rural Center and a Rural Residential Cluster is that the Center has resources, such as available land, potential utility expansion, and other similar items, that will allow for future growth whereas the Cluster has limited potential for future growth.

4.1.1.3.1 CITY OF KINDRED

The City of Kindred currently has available lots for single family residential in the Newport Ridge development. According to the City, this is the only new development that is formally planned in the City. The Newport Ridge development is located just south of the airport and when completed will have approximately 69 developable lots. The development is currently 25 percent occupied with mostly single-family residential homes of which some feature access to the airport taxiway. Based on anticipated future growth for the City, it is expected that if additional residential lots are needed, they will be developed near the new high school on the north side of the City.

4.1.1.3.2 CITY OF OXBOW

The City of Oxbow is expected to be surrounded in a ring dike due to the impacts of the Fargo-Moorhead Diversion project. The City has prepared zoning plans and locations for single family residential development in anticipation for a ring dike. The zoning plan shows future development being completely within the area protected by the dike. It is expected that the City of Oxbow will not grow beyond the area enclosed by the ring dike and the only future growth will be what is included in the full-build plans of the City. The City currently is at approximately 75 to 85 percent of all single-family lots being developed with approximately 20 to 25 residential lots still available for single-family development.

4.1.1.3.3 KINDRED PUBLIC SCHOOL DISTRICT

The Kindred Public School District completed a demographic study that provides information on the population of cities in the school district and the number of students from those cities and other rural areas throughout the district. The school district has a projected 2018-2019 school population (Kindergarten through 12th Grade) of 758 students. The student population is aggregated into the following three categories for 2018 and 2019 school year:

K through 6 th Grade Total Enrollment	419 students (Average of 60 per class)
7 th and 8 th Grade Total Enrollment	126 students (Average of 63 per class)
9 th through 12 th Grade Total Enrollment	213 students (Average of 54 per class)

The demographic study also provides the number of students from each city that attended during the 2017-2018 school year. The total number of students from the Oxbow-Bakke area was 86 or 11.4 percent of the total school enrollment. The nine-year trend for enrollment from the Oxbow-Bakke area has decreased about 33 percent or about 3 percent per year. Based on information obtained from developers and realtors in the Oxbow area, several of the householders that have recently moved to Oxbow are in the 25- to 44-year old age range that typically will have children currently attend or attend school in the future. This may change the trend of enrollment for the Kindred School District from the Oxbow area. The student location numbers and trends are included in the traffic forecasts for this report.

4.2 FUTURE IMPACTS OF FARGO-MOORHEAD DIVERSION

4.2.1 FLOODING IMPACTS

The study area for this project is not located within the protected area of the Fargo-Moorhead Diversion and is typically referred to as being on the “wet” side of the diversion. The flooding impacts with the diversion for 10-year, 20-year, and 100-year storm events are shown in Figure 9. The roadway elevations shown in Figure 9 are based on the existing roadway elevations and will be considered with proposed roadway profile elevations in the Alternative Analysis phase of this project. As shown in Figure 9, 52nd Street SE holds back water that drains from the south to the north and creates flooding in area fields to the south of 52nd Street. The historic impacts to the roadway due to significant flooding events is shown in Figure 10. The information for Figure 10 was provided by Cass County based on their records and was verified by modeling information that was available from previous Cass County flooding projects. The information included in Figure 9 and Figure 10 will provide a base for any analysis included in the Alternative Analysis phase.

4.2.2 IMPACTS TO AREA ROADWAYS

Reviewing the most recent information available for the Fargo-Moorhead Diversion, 52nd Street SE in the study area will not be impacted by the construction of the diversion. The roadways in the area of this project that will be impacted are all to the north and east of the study area. County Road 18 east of Interstate 29 will be raised to allow access to Oxbow once the ring dike has been constructed.

4.3 FUTURE AREA ROADWAY IMPROVEMENTS

The current Cass County Transportation Plan was reviewed to determine if any area roadway, bridge, and drainage structure improvements are planned in the next five years. According to the Transportation Plan, no roadway, bridge, or drainage structure improvements are planned in the area. As previously mentioned, there will be some roadway improvements due to the construction of the Fargo-Moorhead Diversion. The North Dakota Department of Transportation (NDDOT) Statewide Transportation Improvement Program (STIP) document for 2018 to 2021 was reviewed and no significant construction project will take place on North Dakota 46.

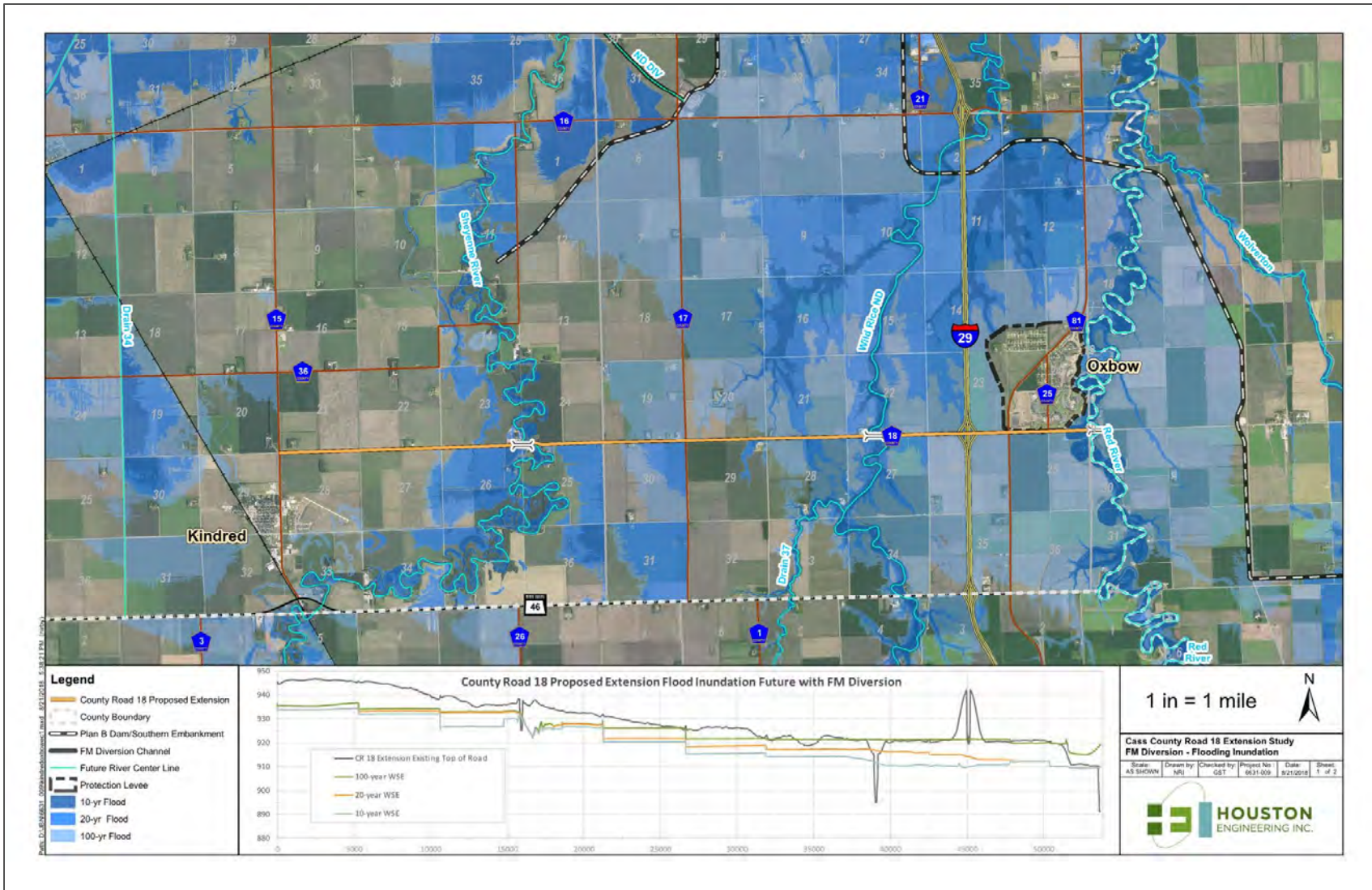


Figure 9. 10-Year, 20-Year, and 100-Year Flood Events

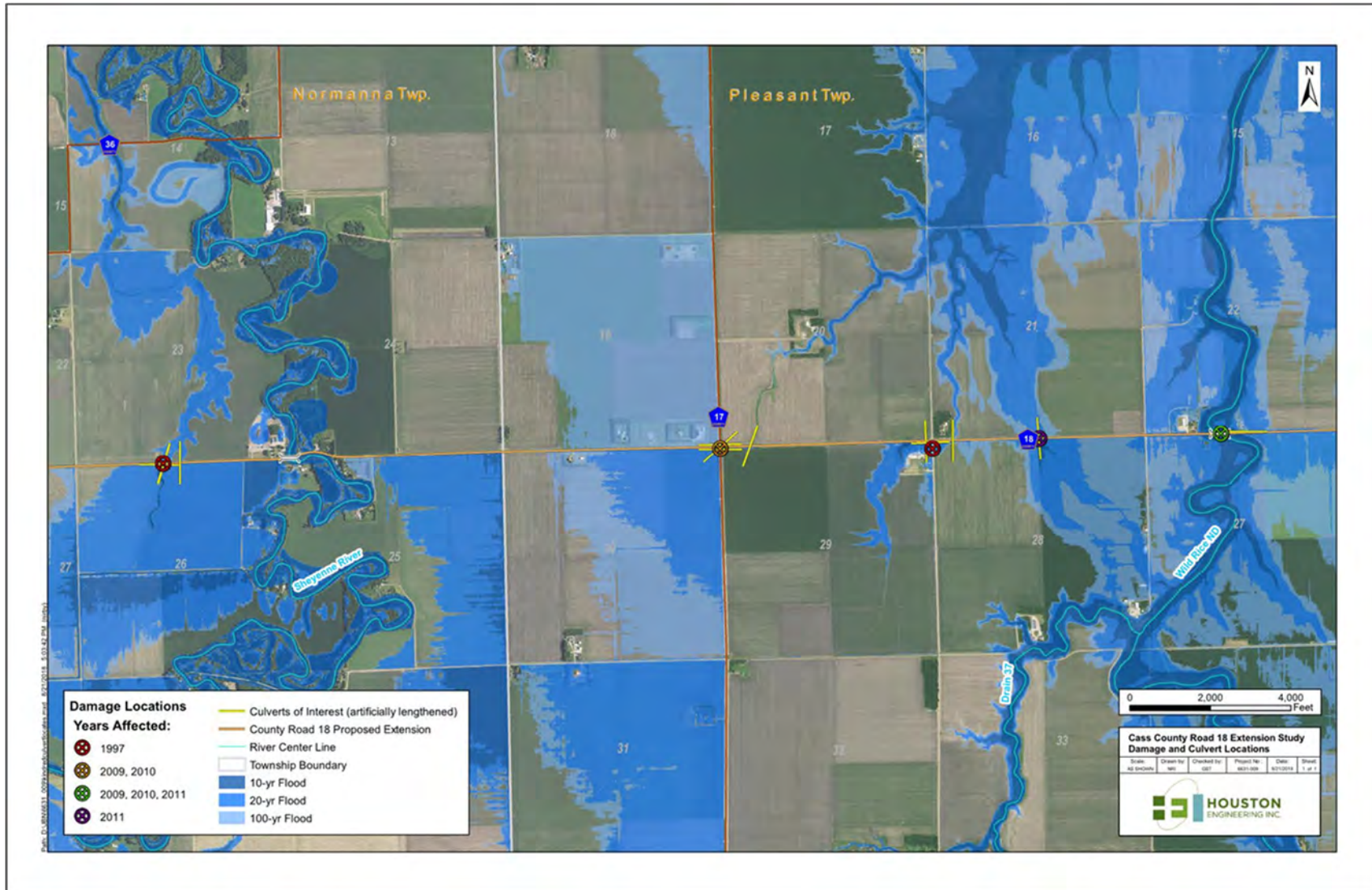


Figure 10. Historic Flood Damage Areas

4.4 FORECASTED TRAFFIC VOLUMES

4.4.1 METHODOLOGY

The location of 52nd Street SE is rural with farms and residents typically located every one to two miles along the roadway. The City of Kindred is within one mile of the far west end of the roadway. No other cities or proposed developments are located near the roadway. Traditional trip generation and traffic forecasting relies on known existing and future development within analysis zones to determine the trips that will be generated by the development. Once the number of trips is known, the trips are assigned to roadways serving the analysis zone. With the rural location of this roadway and very limited development planned for the future, the traditional methodology for forecasting traffic volumes was adjusted to determine the traffic forecasts for this roadway. A step-based methodology is provided below with further explanation following:

- Step 1. Determine existing base traffic volumes along area roadways and at the CR18 and North Dakota 46 (ND46) Interchanges
- Step 2. Determine existing traffic patterns and directional distribution
- Step 3. Determine traffic growth rates based on historic traffic data
- Step 4. Review Cities of Oxbow and Kindred land use information for future traffic volume growth
- Step 5. Determine future traffic roadway assignment based on travel times for each alternative
- Step 6. Review and balance traffic forecasts, as needed.

The 52nd Street SE corridor is located such that the only sizable trip generators in the area, Cities of Kindred and Oxbow, are able to serve as a cordon boundary along with Interstate 29, ND 46, and the north City Limits of Kindred. Several NDDOT traffic count sites are located at the ramps and cross road of the interchanges and along Cass County Road 15 and ND 46. The traffic volumes at the boundary points allow for accurately determining where traffic using 52nd Street SE is originating and ending. Steps 1, 2, and 3 of the methodology were based on North Dakota Department of Transportation (NDDOT) historic traffic data. Some of the area roadway historic annual average traffic growth rates are included in Figure 11 with 2018 traffic volumes. Once this information was determined, the existing base traffic information was complete.

The information needed for step 4 was readily available from the Cities on each of the City websites or from their city engineer. The percentage of developed lots for the current year 2018 were determined for each development in the City and then the expected growth due to a full-build out of the development was determined. Both Cities have limited existing lots available with populations that are expected to grow and stabilize by 2025 so a full-build out was assumed for all forecasting. For step 5, several NDDOT traffic count sites are located on the roadways serving both cities, which allowed for basing the trip assignments off the current travel patterns for each City. The current developed households were used to determine an approximate rate of trips that were used for forecasting future traffic volumes based on the anticipated growth.

Two main factors were used in determining the future traffic assignments for each alternative to be considered; travel time and roadway surface type. It is generally assumed that when travelers would be provided an opportunity to choose 52nd Street SE for travel versus an alternative route, the travel time would have to be shorter for 52nd Street SE or the condition of the roadway would have to be improved from an aggregate surface to a paved surface to attract a significant number of vehicles. The travel time

between CR 18 interchange and the City of Kindred is shown in Table 7. As shown in Table 7, the I-29 and ND 46 route has a shorter travel time and is a paved surface and is expected to attract more traffic than 52nd Street SE. Once future traffic volumes are determined for each alternative, the forecasts were reviewed for balance forecasted traffic volumes.

Table 7. Travel Times Between CR 18 Interchange and City of Kindred

Route via	Distance (miles)	Free Flow Time (minutes)	Intersection Delay (minutes)	Total Travel Time (minutes)
52nd Street/CR 18	9.4	14.0	2.0	16.0
I-29/ND46	12.1	14.0	1.0	15.0

4.4.2 ROADWAY SECTION ALTERNATIVES

For the traffic forecasting, three general alternatives were considered for the improved 52nd Street SE; No-Build (Existing) Section, Aggregate County Typical Section, Paved County Typical Section. The design criteria for the roadway alternatives was not a consideration as the roadway width, ditch foreslopes, etc. would at least meet the County’s minimum criteria and not have a significant impact on travelers choosing a route. The speed limit for 52nd Street SE for each of the three alternatives was kept at 55 miles per hour with 0.5 miles at 25 miles per hour. The paved roadway surface was assumed to be attract more traffic volume due to the consistent surface (i.e. no impacts from wet weather, aggregate washboarding, etc.) for the travelling public.

- No-Build Alternative
- Aggregate Surface Alternative
- Paved Surface Alternative

4.4.3 TRAFFIC FORECASTS

The traffic forecasts for all three roadway alternatives was completed for the future years 2025 and 2045 based on the average of the spring and fall 2018 traffic counts. The traffic forecasts are included in Figure 12 and Figure 13 for 52nd Street SE. It is expected that some of the additional traffic volume on 52nd Street SE would be due to vehicles using an improved roadway section from County Road 15 and 17.

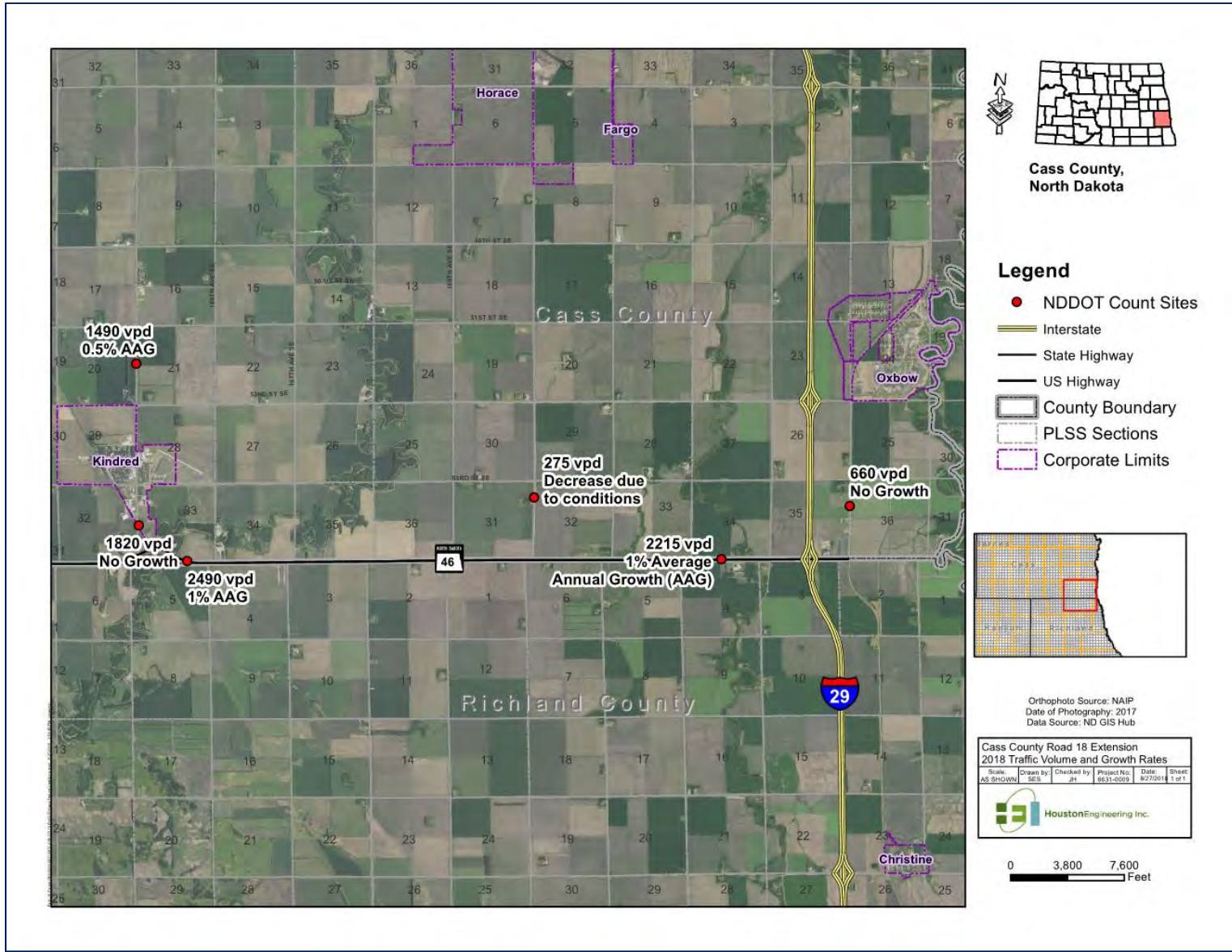


Figure 11. Historic Traffic Growth Rates

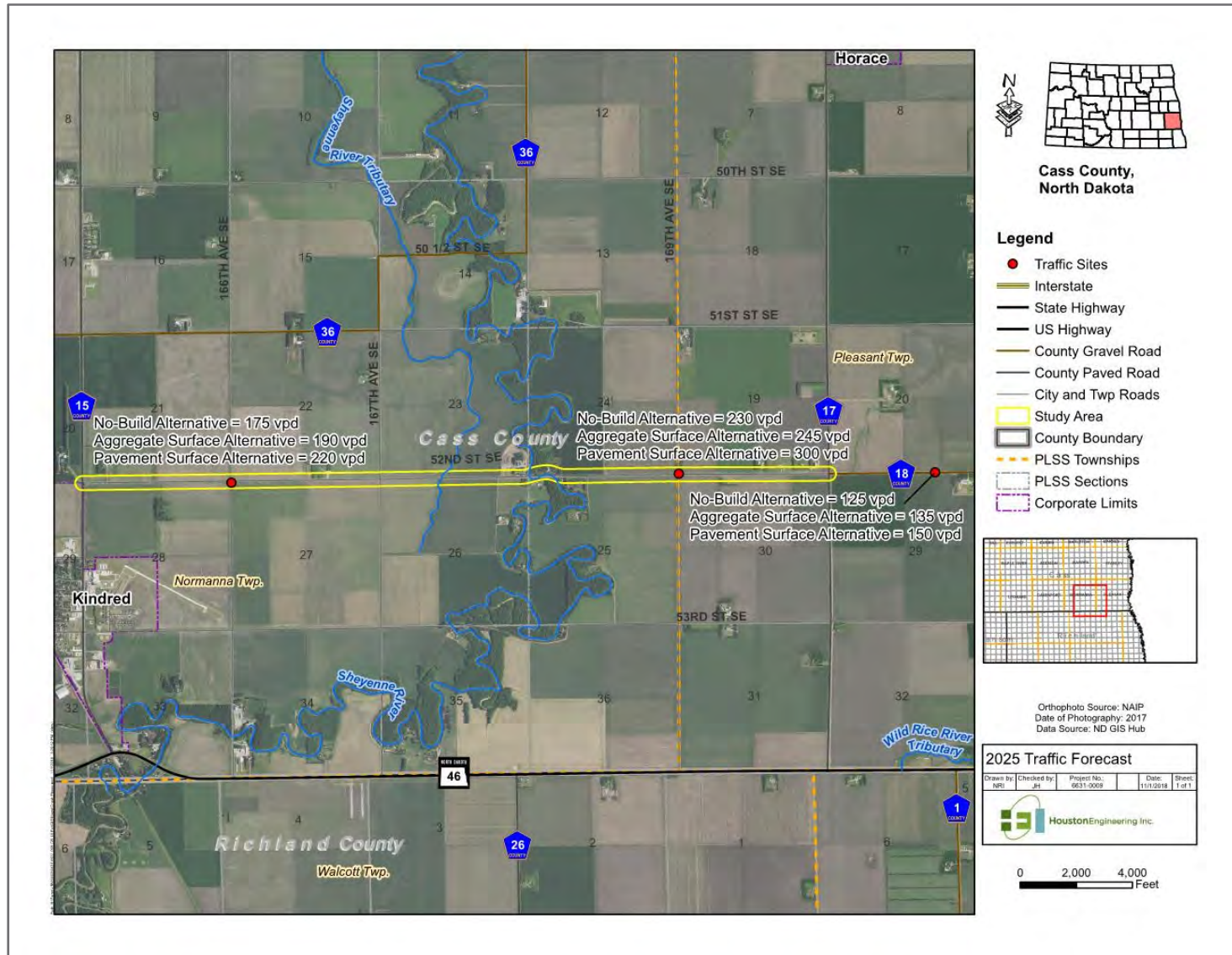


Figure 12. 2025 Traffic Forecasts

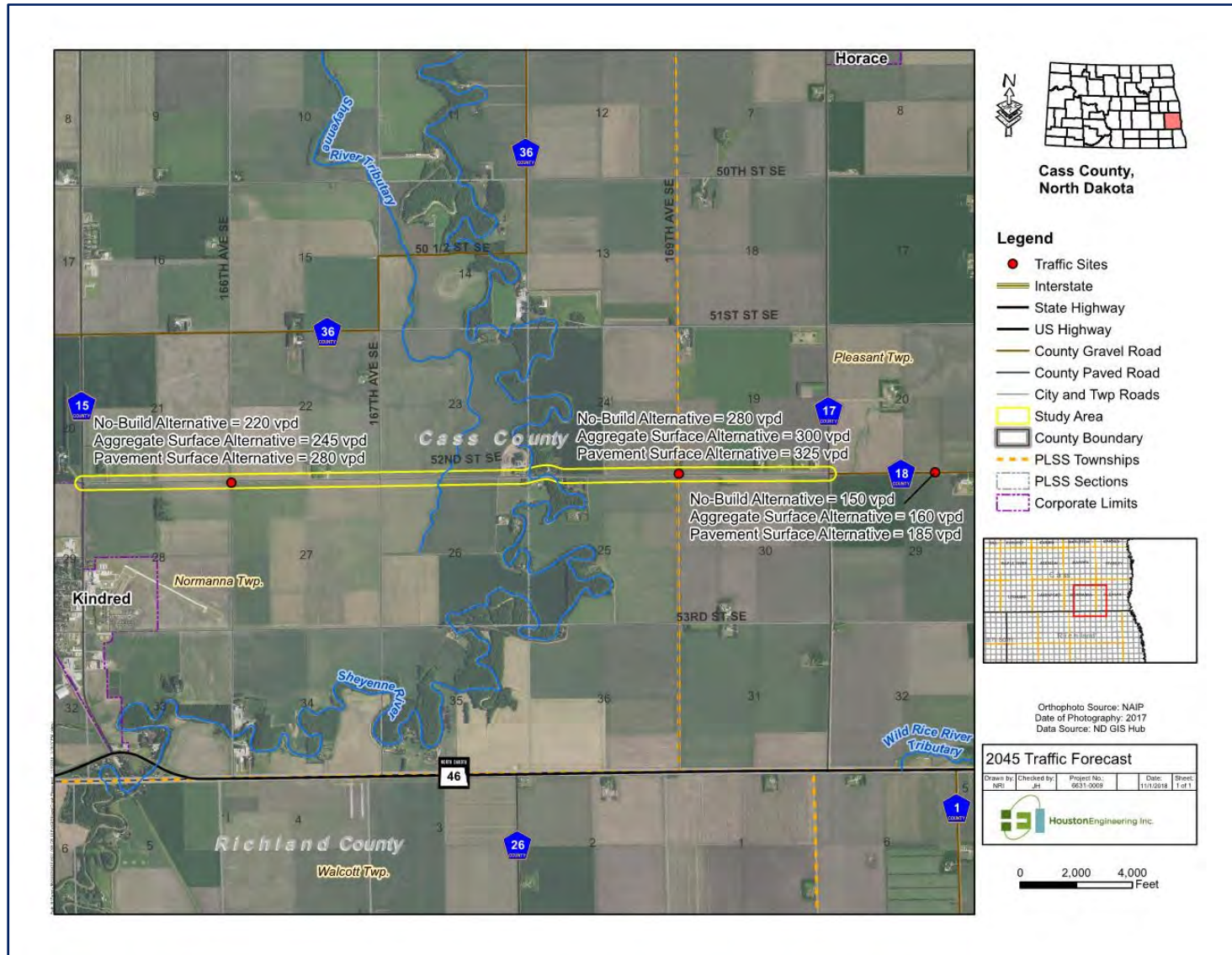


Figure 13. 2045 Traffic Forecasts

5 PURPOSE AND NEED

5.1 PROJECT PURPOSE

The purpose of this project is to study the feasibility of extending CR 18 from CR 17 to CR 15 and transitioning ownership to a county roadway and the roadway typical section to meet county roadway standards. As a part of this project, existing and future needs, as well as, necessary improvements to the study corridor are being analyzed in order to provide recommendations and alternatives to decision makers regarding the future of this corridor. As an outcome of this study, the intent is for CR 18 to become a functionally classified roadway if 52nd Street SE is converted from a township roadway to a county roadway.

The goals associated with this project are as follows:

- Study the county roadway network connection for CR 18 between CR 17 and CR 15 to maintain a roadway network that allows users to travel on a standard roadway cross-section to Kindred and between CR 15 and Interstate 29.
- Provide recommendations/alternatives for a roadway that maintains a suitable driving surface throughout the year and accommodates traffic mix consisting of passenger cars, heavy trucks, and agriculture implements.
- Provide recommendations/alternatives that will minimize the potential for crashes along the corridor.
- Support the goals and objectives of the *Cass County Transportation and Comprehensive Plan*

The sections that follow describe the existing conditions summary along the project corridor and the needs of the project.

5.2 EXISTING CONDITION SUMMARY

5.2.1 ROADWAY TYPICAL SECTION AND ATTRIBUTES

Within the project study area, 52nd Street SE is an aggregate roadway with a width of 28 to 30 feet and open ditch drainage. The Normanna and Pleasant Townships maintain 52nd Street SE with annual aggregate resurfacing at a variable rate between 150 cubic yards per mile (CY/mile) and 365 CY/mile. The typical sections for the existing 52nd Street SE and CR 18 are shown in Figure 2. Driveway and field access locations along both 52nd Street SE and CR 18 typically have corrugated metal pipe culverts for drainage. Flood protection measures have been implemented on the east end of the study area. The measures include levees and sluice gates installed on the north side of the roadway. Approximately 0.75 miles west of the Sheyenne River bridge, two transverse corrugated metal pipe culverts cross 52nd Street SE providing conveyance for a tributary of the Sheyenne River. The 52nd Street corridor speed limit is 55 miles per hour (MPH) except for reduced speed zones of 40 MPH approaching the Sheyenne River bridge and 25 MPH immediately adjacent to the bridge.

The 52nd Street SE intersection with CR 15 has two-way stop-control on the 52nd Street SE approaches and the intersection with CR 17 is controlled by a yield sign on the 52nd Street SE approach and stop sign on the CR 18 approach. Several north-south township roadways intersect with 52nd Street SE throughout the project study area. The north-south township roadways are typically yield controlled with yield signs

at the intersections with 52nd Street SE. Additional access locations along 52nd Street SE are typically at driveway approaches or field locations. The spacing and locations of the access points along the corridor are acceptable, but some may need to be slightly relocated or combined if any improvements to the roadway are made.

5.2.2 BRIDGE ACROSS THE SHEYENNE RIVER

According to the most recently available National Bridge Inventory (NBI) report from 2015, the overall condition of the existing bridge crossing the Sheyenne River is “Good” with the superstructure and substructure both being categorized “Very Good”. The sufficiency rating of the bridge according to the NBI report is a 99.7. The channel bank is beginning to slump, and the embankment protection devices have widespread minor damage according to the NBI report. The bridge was included in *Cass County Comprehensive and Transportation Plan’s* “Cass County Bridge Condition Average” figure with a bridge condition average range of 7.1 to 8.0 out of 10, and in the “2037 and beyond” construction phase for replacement.

5.2.3 EXISTING UTILITIES IN STUDY AREA

The study area does contain electrical, fiber optic, telephone, and rural water utilities. A utility locate and survey were not conducted for this study. Any utility information provided in this report and study are for information purposes only and are not intended to be used for design or construction. Based on a review of existing above ground utility structures along the corridor, several of the underground utilities run parallel to 52nd Street SE in the backslope of the north ditch of the roadway. Throughout the corridor, fiber optic and telephone underground lines are located north of the roadway and cross beneath the roadway to service residences on the south side of the roadway. Overhead electric utilities are typically located along the north field edges and run most of the eastern half of the project terminating just west of the bridge. There are also short runs of overhead electrical utilities serving the two western most residential and commercial locations within the study area. The overhead electrical lines do cross 52nd Street SE at three locations within a 0.5 mile stretch from the Sheyenne River bridge to the east. At the location of the Norman Lutheran church, the overhead power lines are located on the south side of the roadway directly across from the church. There are valve locations for Cass County Rural Water located north of 52nd Street SE in the study area.

5.2.4 EXISTING LAND USES WITHIN THE STUDY AREA

The Cass County existing land use plan contained within the *Cass County Comprehensive and Transportation Plan* provides the existing land uses in the study area that are based on the seven land use categories used in Cass County. Along the 52nd Street SE corridor in the study area, the primary land use is “agriculture” with a few areas of “single family residential”, “farm exempt”, and “ag with residential”. The residential land uses are located near the Sheyenne River Bridge and at the east end of the study area. There is also a “commercial/industrial/multi-family residential” land use area for a manufacturing facility located 1.5 miles east of the intersection with CR 15. The Norman Lutheran church, located just east of the Sheyenne River bridge, is classified as a “single-family residential” in the land use plan. The very west 0.75 miles of 52nd Street SE is included in the City of Kindred’s Extraterritorial Area.

5.2.5 EXISTING ENVIRONMENTAL FEATURES

The project study area has the Sheyenne River and the Sheyenne River tributary for flowing water. There are three primary locations for palustrine wetlands located in sections 23 and 26 of the Normanna Township. The locations that are within the roadway ditch section that are classified as wetlands are located in the section from the Sheyenne River bridge to the west approximately a 0.5 mile.

5.2.6 FLOODING IMPACTS

The study area for this project is not located within the protected area of the Fargo-Moorhead Diversion and is typically referred to as being on the “wet” side of the diversion. The flooding impacts with the diversion for 10-year, 20-year, and 100-year storm events are shown in Figure 9. The roadway elevations shown in Figure 9 are based on the existing roadway elevations and will be considered with proposed roadway profile elevations in the Alternative Analysis phase of this project. As shown in Figure 9, 52nd Street SE holds back water that drains from the south to the north and creates flooding in area fields to the south of 52nd Street. The historic impacts to the roadway due to significant flooding events is shown in Figure 10. The information for Figure 10 was provided by Cass County based on their records and was verified by modeling information that was available from previous Cass County flooding projects.

5.2.7 IMPACTS TO AREA ROADWAYS

Reviewing the most recent information available for the Fargo-Moorhead Diversion, 52nd Street SE in the study area will not be impacted by the construction of the diversion. The roadways in the area of this project that will be impacted are all to the north and east of the study area. County Road 18 east of Interstate 29 will be raised to allow access to Oxbow once the ring dike has been constructed.

5.2.8 TRAFFIC SAFETY PERFORMANCE

There was a total of six traffic crashes in the study area from 2013 to 2017. The corridor had one fatal crash, two injury crashes, and three property damage only crashes from 2013 to 2017. The corridor experienced three angle crashes with two being right angle crashes; resulting in one a fatal crash and one property damage only crash. Based on the data collected for this study, three of the nine drivers involved in crashes were between 0 and 24 years of age which represents 33 percent of the total drivers. The 0 to 24 and 35 to 44 age ranges had three drivers involved in crashes which was the highest of all ranges.

The fatal crash that occurred along the corridor was further examined to determine if any roadway or traffic control attributes may have been a contributing factor. Based on a review of the information available about the crash, a vehicle failed to yield at a yield sign to another vehicle on 52nd St. SE and a right-angle crash occurred between a passenger vehicle and a semi-truck. Based on the information available, it does not appear that any roadway or traffic control attributes contributed to the crash.

5.3 NEEDS FOR THE PROJECT

5.3.1 SYSTEM CONNECTIVITY

The existing Cass County roadway system provides for consistent and connected roadways throughout the County to allow travel between cities and towns. The existing CR 18 is located from the interchange of Interstate 29 west for 4.5 miles to the intersection with CR 17. Existing CR 18 does not continue to the west as a County roadway. The extension of CR 18 between CR 17 and CR 18 would provide an additional system connection and linkage to the City of Kindred and also between CR 15 and CR 17.

A goal of this study is to provide system connectivity for the County roadway system.

5.3.2 INSUFFICIENT ROADWAY SURFACE CONDITIONS DUE TO SUBGRADE

During the spring and fall seasons, the township roadway experiences freeze-thaw temperature fluctuations that lead to rutting and an insufficient roadway surface for travelers along the roadway. As reported by local residents and travelers of 52nd Street SE, the existing roadway cross-section doesn't shed water during rain and snow events and creates muddy and slick roadway surface conditions. The roadway surface drainage issues created by the cross-section are partially due to the subgrade being deficient to maintain the roadway maintainer graded crown of the roadway. The townships have previously reported issues with maintaining a crown after the roadway maintenance crews have graded the roadway with additional aggregate surfacing.

A goal of this project is to provide recommendations/alternatives for a roadway surface that remains consistent in surface condition and cross-section through addressing any issues with the subgrade conditions.

5.3.3 MINIMIZE THE POTENTIAL FOR CRASHES ALONG THE CORRIDOR

The section of roadway included in this study has experienced six crashes during the study period. Of the six crashes, three were angle crashes at intersections throughout the study area. Several local residents and travelers of the roadway have commented on horizontal sight distance issues at the intersections due to standing crops or trees. The proposed roadway ROW is approximately 50 to 84 feet wider than the current ROW on the roadway. It is expected that the wider ROW would provide an improved horizontal sight distance at the intersections. The remaining three crashes along the corridor were non-collisions with motor vehicles running off the roadway. It is unknown if the foreslopes and backslopes of the roadway currently meet *Roadside Design Guide* standards for cross slopes. The proposed roadway typical section will provide sufficient fore- and backslopes to meet the *Roadside Design Guide* standards.

A goal of this project is to provide recommendations/alternatives for a roadway alignment and typical section that meets all design and safety requirements and minimizes the potential for crashes along the corridor.

5.3.4 SUPPORT THE GOALS AND OBJECTIVES OF THE CASS COUNTY TRANSPORTATION AND COMPREHENSIVE PLAN

A summary of the issue, opportunity, and recommendation of a County Road 36/County Road 18 Extension was included in the *Cass County Transportation and Comprehensive Plan*. The Transportation and Comprehensive Plan includes consideration of a County Roadway connecting Kindred to the CR 18 interchange with Interstate 29.

A goal of this project is to support the goals and objectives of the *Cass County Transportation and Comprehensive Plan*.

6 PUBLIC INPUT SUMMARY

6.1 STUDY REVIEW COMMITTEE

The project included a Study Review Committee (SRC) that included committee members from a group of stakeholders and agencies located along the project study area. The SRC members and the stakeholder or agency they represented are listed below. The SRC met four times throughout the project and provided input on the existing and future conditions, alternatives to analyze, public comments, and general project approach.

- Dan Farnsworth – FM Metro COG
- Jason Benson - Cass County
- Tom Soucy – Cass County
- Kyle Litchy – Cass County
- Hali Durand/Barrett Voigt – Cass County
- Tyler Odegaard – Normanna Township
- Dennis Biewer – Pleasant Township
- Mark Hiatt – Pleasant Township
- Michael Johnson – NDDOT
- Richard Duran – FHWA
- Steve Hall – Kindred School District
- Andy Westby – Norman Lutheran Church
- James Nyhof – City of Oxbow

The SRC meeting agendas and notes are in Appendix 8.1 at the end of this report.

6.2 PUBLIC INPUT MEETING

The public input meeting for the project was held on December 4th, 2018 at the Kindred High School from 6:00 pm to 8:00 pm. The Public Notice for the public input meeting was published in the November 26th edition of the *Fargo Forum* newspaper and the November 28th edition of the *Cass County Reporter*. A copy of the affidavit of publication is included in Appendix 8.2 at the end of this report. In addition to the published public notices, public meeting flyers were posted in public gathering places and mailed to all landowners along the project study area. The meeting was also advertised on Metro COG's Facebook site and the CR 18 study website.

The meeting was an open house format with several members of the SRC available for questions and comments. The information available at the meeting included four display boards that provided information on the following items:

- Existing and Proposed Roadway Typical Sections
- Roadway Alignment Alternatives
- Roadway Alignment Alternatives with ROW Impacts
- Roadway Alignment Alternative Hydraulic and Flooding Impacts

The four display boards are included in Appendix 8.3 at the end of this report.

The public was given an opportunity to comment on the study and information provided at the public meeting through comment sheets and post cards provided at the public meeting. Comments were allowed to be left in a comment box at the meeting or mailed to Houston Engineering, Inc. by December 21st, 2018. A copy of the comment sheet and note card provided at the public meeting are shown in

Appendix 8.4 at the end of this report. The public meeting sign-in sheets completed by attendees are in Appendix 8.5 at the end of this report.

For those unable to attend the public meeting in-person, comment opportunities via email and standard mail from the beginning of public input notice to December 21st, 2018

6.3 PUBLIC INPUT MEETING COMMENTS

The comments that were received during or after the public meeting are in Appendix 8.6 at the end of the report. The comments were provided to the SRC and reviewed. The comments were taken into consideration when discussing any of the alignment alternatives or additional items in the study. For any comments that had questions, the question and answer are provided in the following.

Question 1:

If Alt. A – Does County purchase land from owner, Does County take financial responsibility for new/enlarged bridge construction & maintenance? How are land owners reimbursed for encroachment?

Answer: The County will take financial responsibility for the bridge construction and maintenance. Land owners would be compensated for purchased ROW according to the typical procedures of Cass County.

7 ALTERNATIVE ANALYSIS

7.1 ALIGNMENT ALTERNATIVES

The alternatives included in this report were developed with input provided by the SRC members throughout the project and attendees at the public input meeting. The alternatives were developed by taking into consideration the potential impacts of erosion due to the Sheyenne River at areas adjacent to the existing 52nd Street SE roadway and impacts to existing property owners along the roadway. The alternatives included in this report were developed to a planning level and no topographical survey or design level information was used. The alternatives are to be considered preliminary and for information purposes only.

The banks of the Sheyenne River are susceptible to erosion due to water movement. The scope of this study did not allow for geotechnical review or topographical survey of the river and the adjacent land. Near the Sheyenne River crossing in the area of the Norman Lutheran Church, the Sheyenne River bank is eroding and, dependent on future erosion to the river bank, may encroach on the existing 52nd Street SE roadway ROW. The Sheyenne River bank erosion near the 52nd Street SE roadway ROW is a significant consideration in the roadway alignments for the Sheyenne River Crossing and Relocate Church Alternative that are off the existing roadway alignment.

7.1.1 EXISTING ALIGNMENT ALTERNATIVE (THE NO-BUILD ALTERNATIVE)

The Existing Alignment Alternative serves as the no-build alternative for the study. This alternative would include no physical changes to the roadway and continuance of the existing maintenance activities for the roadway. The ownership of the roadway by the Townships or the County does not alter this alignment alternative. The existing 52nd Street SE alignment and typical section are shown in Figure 1 and Figure 2. Also included in Figure 2 is the typical section for existing CR 18 east of the study area.

Three typical sections are shown in Figure 2; one for the existing aggregate surfaced roadway section on 52nd Street SE throughout the study area, CR 18 for the section within 2 miles of CR17, and one for the bridge section across the Sheyenne River. The 52nd Street SE roadway section is currently an aggregate surface with open ditch drainage along both the north and south sides of the roadway. As shown in Figure 2, the roadway, ditch, and ROW widths vary based on the location within the corridor, but the aggregate surface is typically 28 to 30 feet wide. The CR 18 typical section is similar to the 52nd Street SE typical section with a slightly wider aggregate surface of approximately 30 to 32 feet.

7.1.2 EXISTING ALIGNMENT WITH CASS COUNTY TYPICAL ROADWAY SECTION ALTERNATIVE

The Existing Alignment with Cass County Typical Roadway Section Alternative maintains the roadway on the existing alignment, but reconstructs the typical section to the Cass County typical roadway section for either an aggregate or paved roadway. The Cass County aggregate and paved surface typical roadway sections are shown in Figure 14. The roadway alignment for this alternative is shown in Figure 15. The Cass County typical roadway sections' ROW is wider than the existing 52nd Street SE typical roadway section. The driving surface for the county typical aggregate surface roadway section is approximately the same width as the existing aggregate surface of 52nd Street SE and the driving surface for the county typical paved surface roadway is two feet wider than the existing aggregate surface of 52nd Street SE. In

areas that the wider Cass County typical roadway section would impact buildings, landscaping, or other physical property, Cass County will modify the typical roadway section to minimize any impacts to property owners. The typical roadway sections included in Figure 14 are to be considered the County typical roadway section for the Sheyenne River Crossing and Relocate Church alternatives.

Similar to the Existing Alignment Alternative, the Existing Alignment with Cass County Typical Section Alternative may have issues with the Sheyenne River bank eroding near the existing 52nd Street SE roadway ROW.

7.1.3 SHEYENNE RIVER CROSSING ALTERNATIVES

The Sheyenne River Crossing Alternatives were developed in a proactive manner to address any potential erosion issues with the river bank impacting the existing roadway grade and ROW. Cass County stated early in the project that there have been difficulties in finding long-term solutions to river bank erosion issues due to the soil types in Cass County. Many of the prior permanent erosion control solutions implemented by Cass County have not resolved the issue long-term and, in many cases, have resulted in the County reconstructing the roadway alignment in a location with limited potential for erosion issues due to the Sheyenne River.

The previous experiences of the County with erosion issues, in addition to the limited available width for a roadway between the church and the river bank, led the SRC to develop Sheyenne River Crossing Alternatives that realigned a mile of roadway on either side of the crossing to either the north or south. The north and south alternatives are included as Alternative A, Alternative B, and Alternative C. The Sheyenne River Crossing Alternatives would only be constructed if either the Sheyenne River bank erosion issue further expanded to impact 52nd Street SE or at the end of the serviceable life of the Sheyenne River Crossing bridge. Further discussion of the implementation of the Sheyenne River Crossing Alternatives is included in the Implementation Plan Section

Each of the Sheyenne River Crossing Alternatives do include the County typical roadway section on the remaining 52nd Street SE alignment, but it is not shown in each of the figures for the alternatives.

7.1.3.1 SHEYENNE RIVER CROSSING ALTERNATIVE A

The Sheyenne River Crossing Alternative A is shown in Figure 16. Alternative A is the alternative that realigns the roadway the furthest south to cross the Sheyenne River. This alternative would avoid all physical structures and provide access to all land parcels. Additional information of the alternative is available in the following sections of this report.

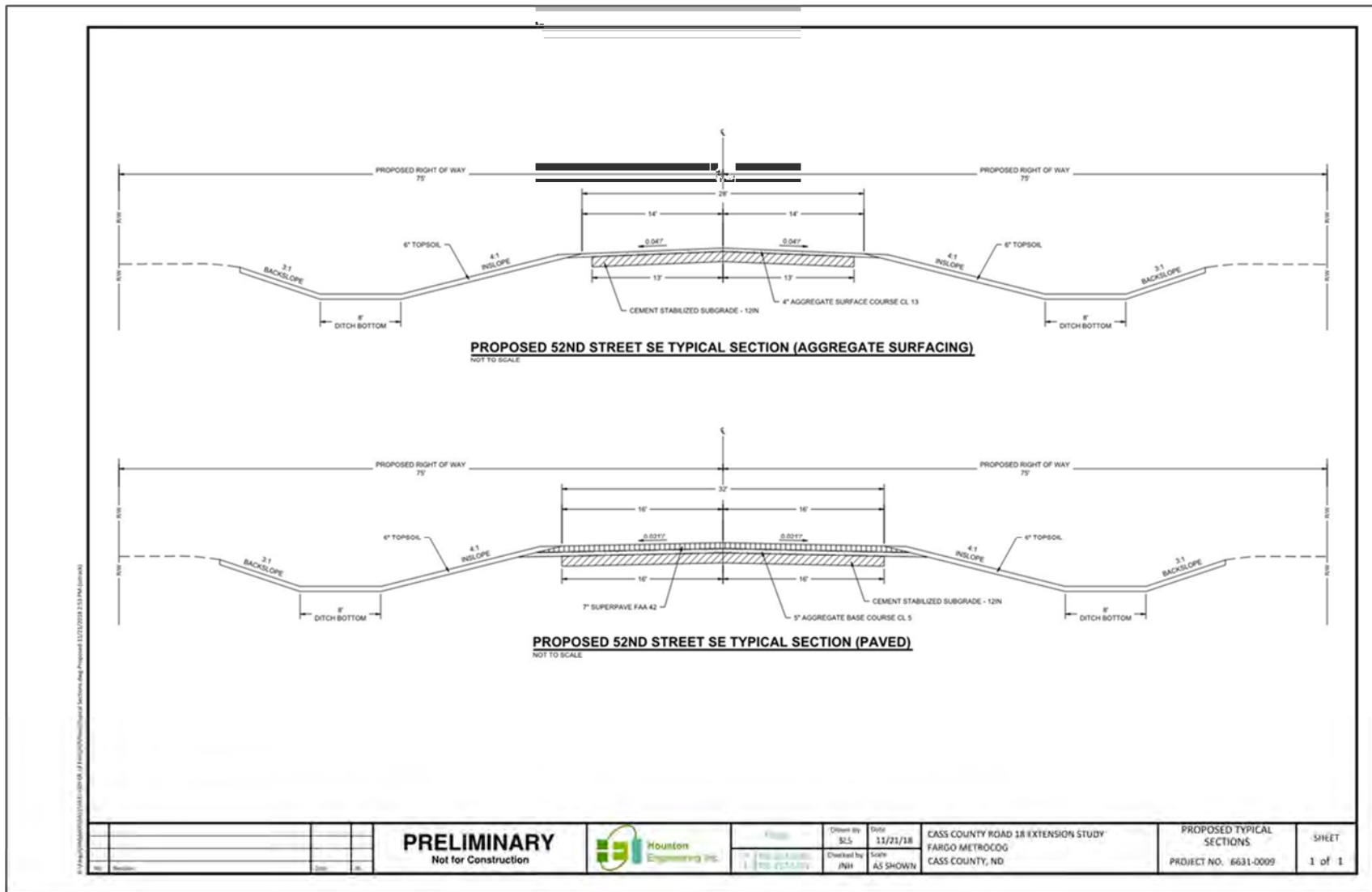


Figure 14. Cass County Typical Roadway Sections

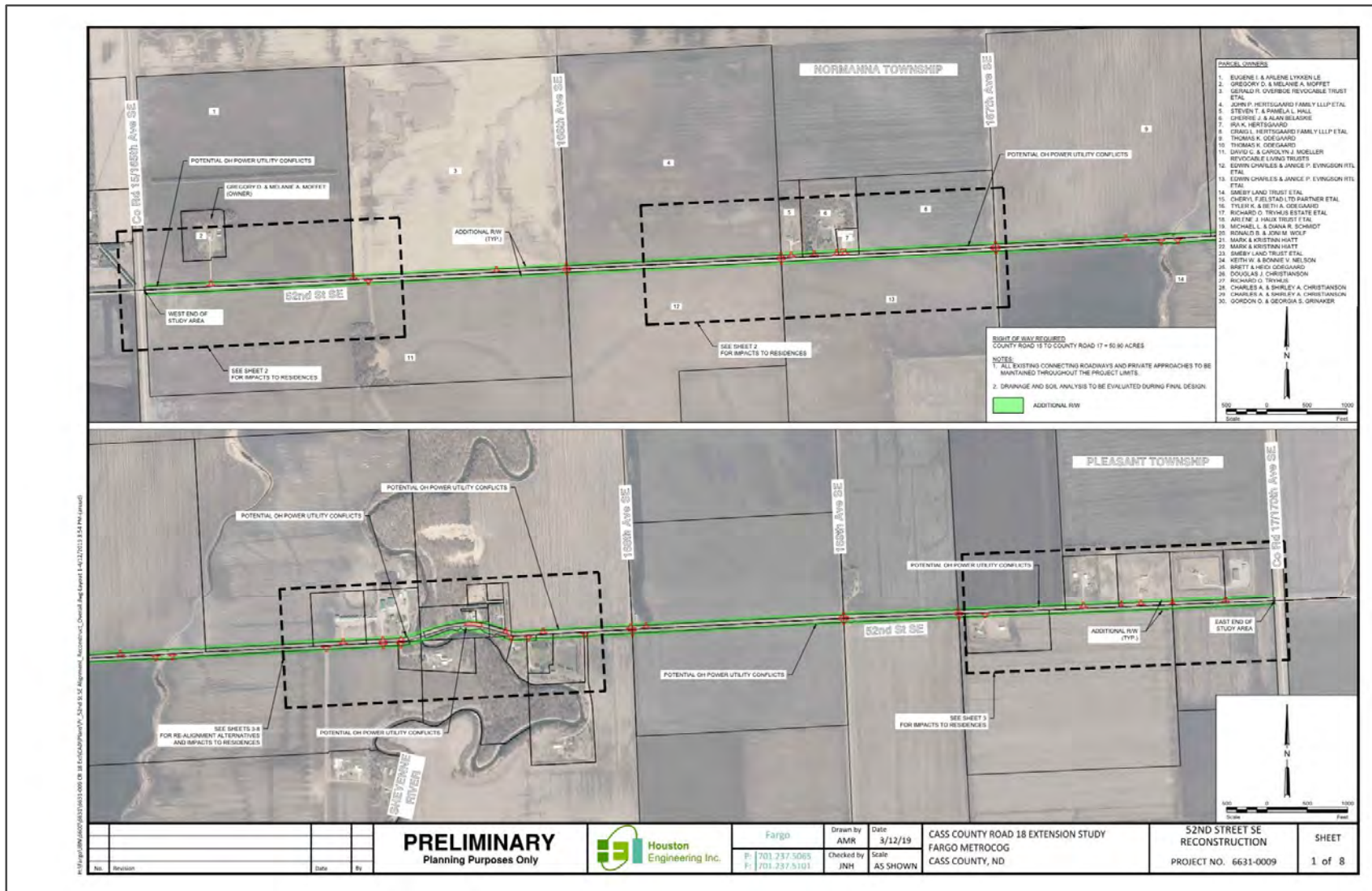


Figure 15. Existing Alignment with Cass County Typical Roadway Section Alternative

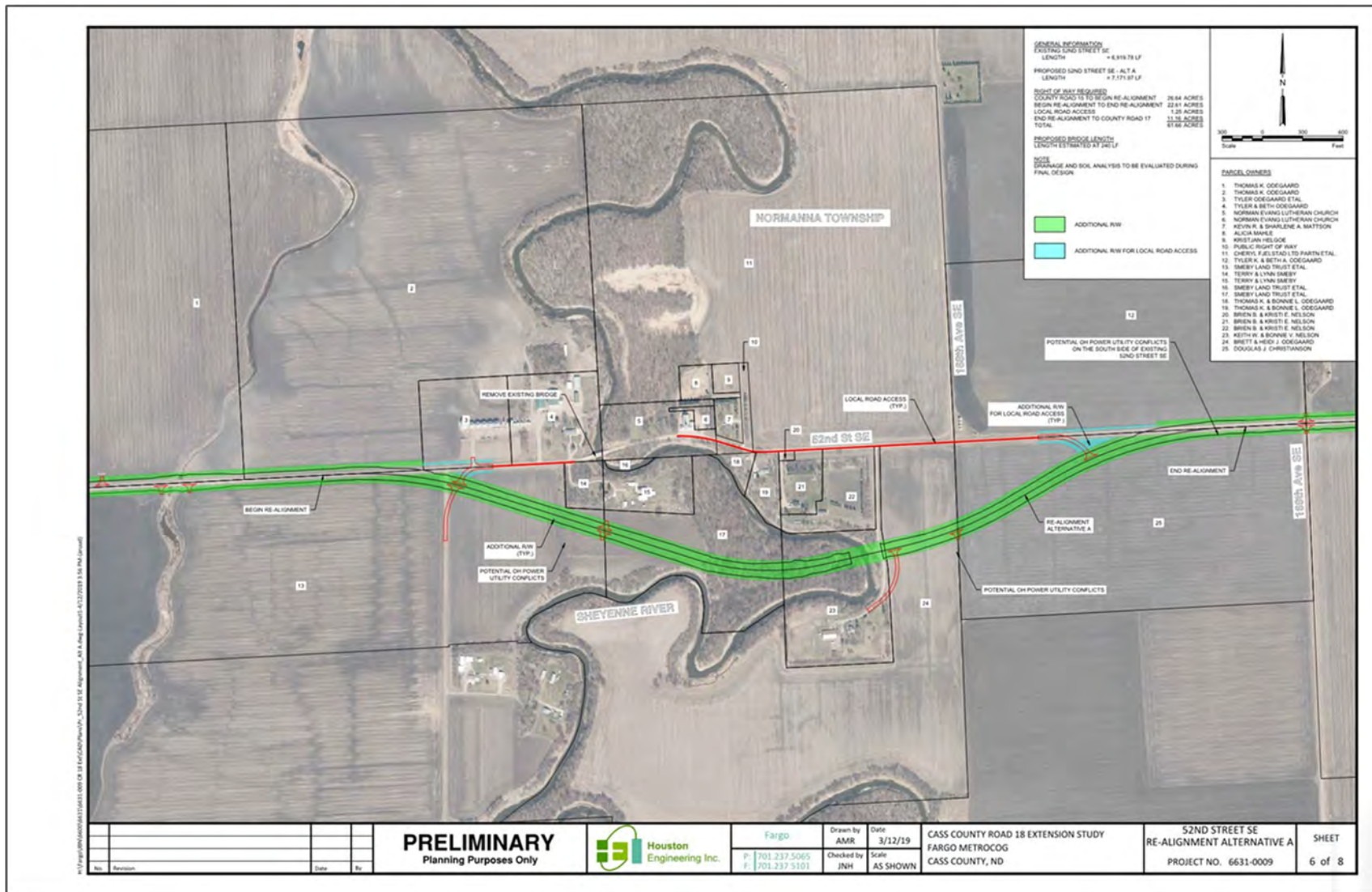


Figure 16. Sheyenne River Crossing Alternative A

7.1.3.2 SHEYENNE RIVER CROSSING ALTERNATIVE B

The Sheyenne River Crossing Alternative B is shown in Figure 17. Alternative B realigns the roadway slightly to the north of the existing alignment east of the Sheyenne River Crossing and to the south of the existing roadway west of the Sheyenne River Crossing. Early in the development process for the alternatives, the SRC decided to include an alternative that minimized the impacts to dividing agricultural land in the area adjacent to the crossing. In order to accomplish the goal of minimizing agricultural impacts, the SRC considered an alignment that may cross existing residential properties and result in property buyouts. The property shown as being purchased for this alternative is shown for informational purposes only and the property owner was contacted and informed of the location of the alignment prior to development of this alternative. If the County assumes ownership of the existing roadway and a Sheyenne Crossing Alternative is needed in the future, the County intends to work with the property owner on an acceptable timeline and agreement for purchase and removal of the property, if this Alternative is selected in future analysis. Additional information on the alternative is available in the following sections of this report.

7.1.3.3 SHEYENNE RIVER CROSSING ALTERNATIVE C

The Sheyenne River Crossing Alternative C is shown in Figure 18. Alternative C is the alternative that realigns the roadway the to the north to cross the Sheyenne River. This alternative would avoid all physical structures and provide access to all land parcels. Additional information of the alternative is available in the following sections of this report.

7.1.4 RELOCATE CHURCH ALTERNATIVE

As previously discussed in this report, the Sheyenne River bank is eroding near the Norman Lutheran Church. Directly across from the Norman Lutheran Church, the top of the Sheyenne River bank is estimated to be approximately 10 feet from the edge of the roadway ROW. The scope of this study did not allow for a topographical survey so the exact location of the top of the river bank in correlation to the roadway is not accurately known. As an additional alternative to be considered, the relocation of the Norman Lutheran Church was included as an alternative. The Relocate Church Alternative is shown in Figure 19.

The Relocate Church Alternative would relocate the church to allow for the proposed roadway alignment centerline to be realigned approximately 90 feet north of the existing alignment centerline. The realignment north would allow for maintaining the existing Sheyenne River Crossing bridge while also providing more offset distance between the Sheyenne River bank and the proposed roadway. Additional information of the alternative is available in the following sections of this report.

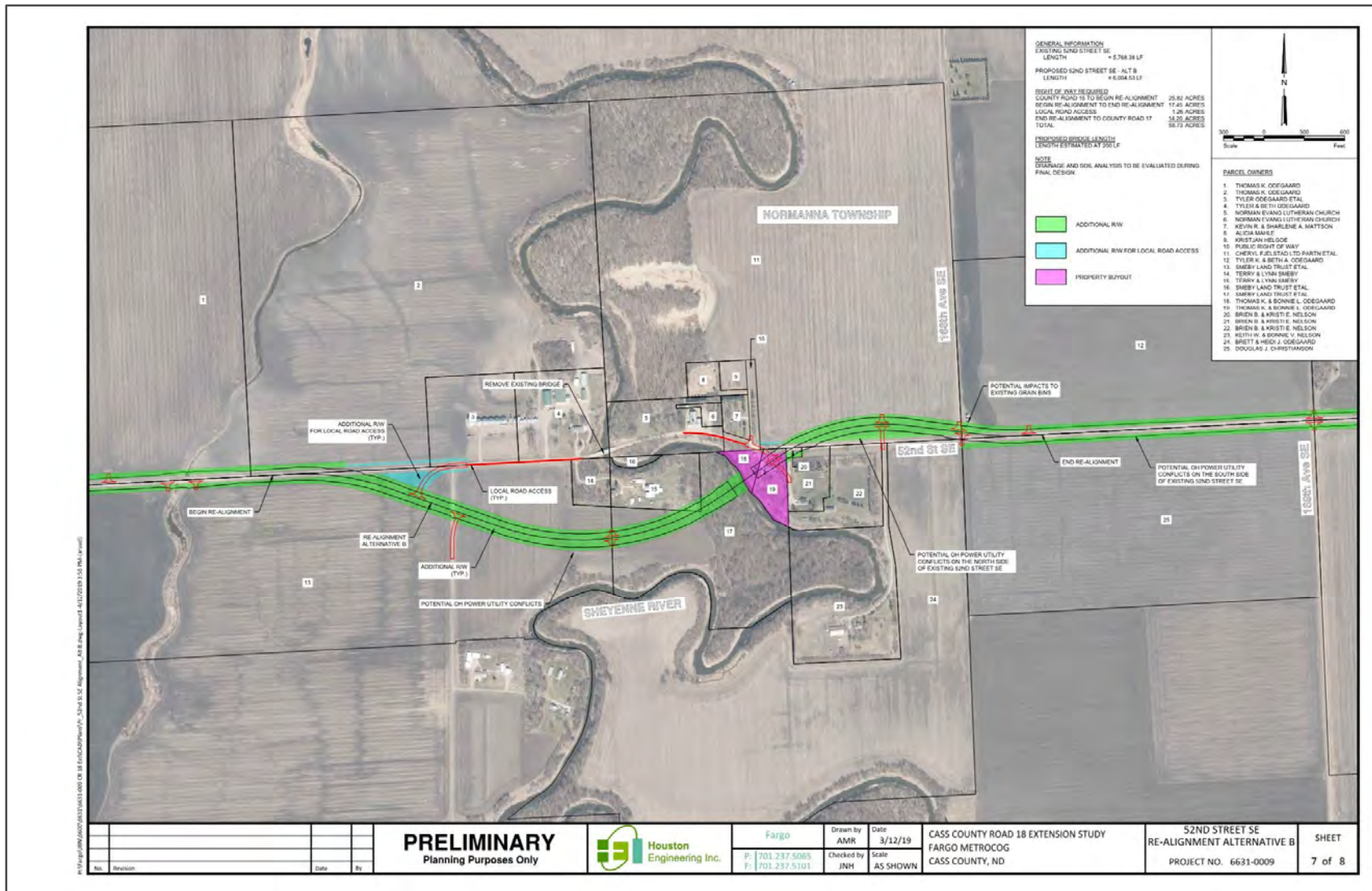


Figure 17. Sheyenne River Crossing Alternative B

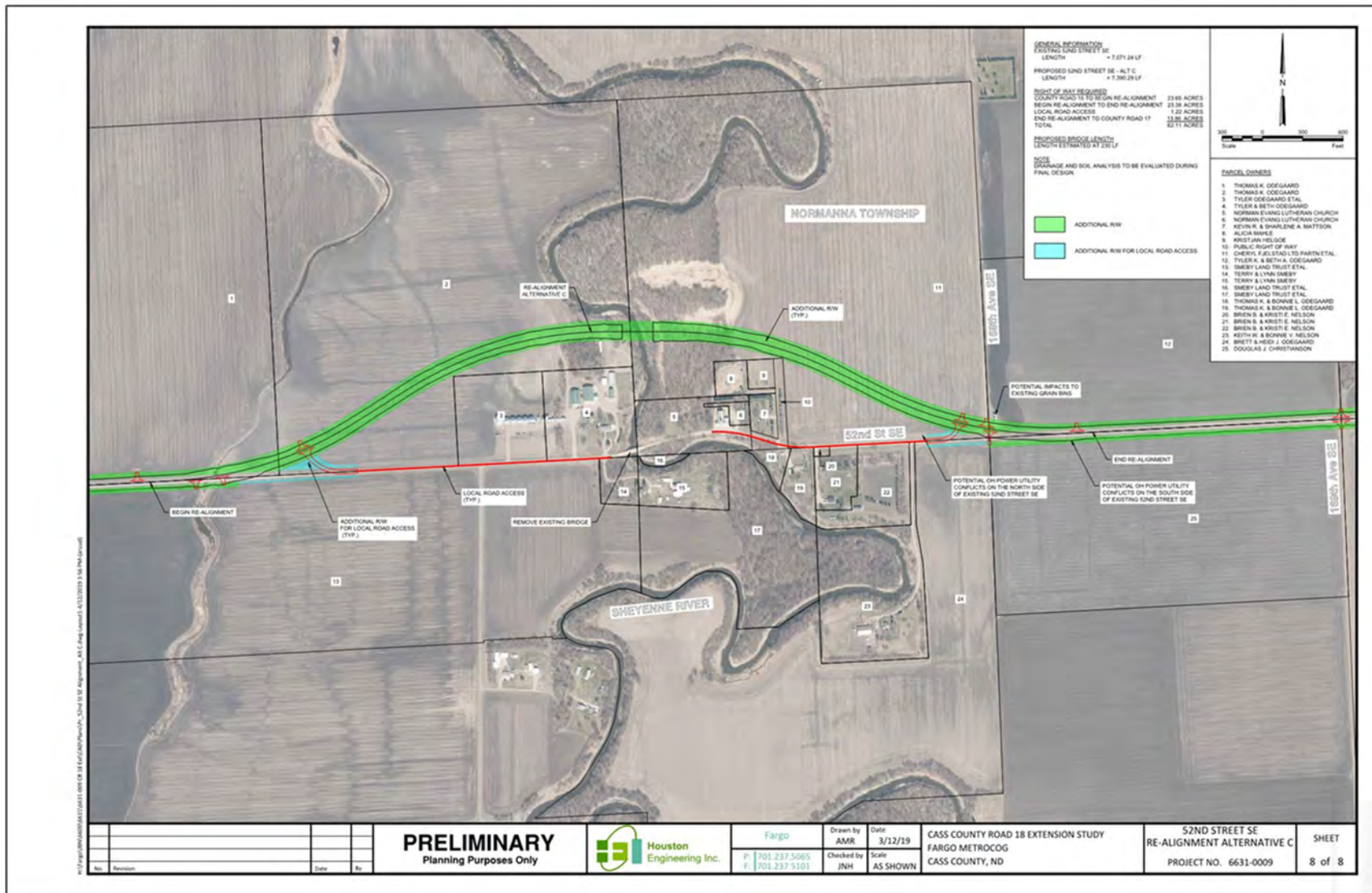


Figure 18. Sheyenne River Crossing Alternative C

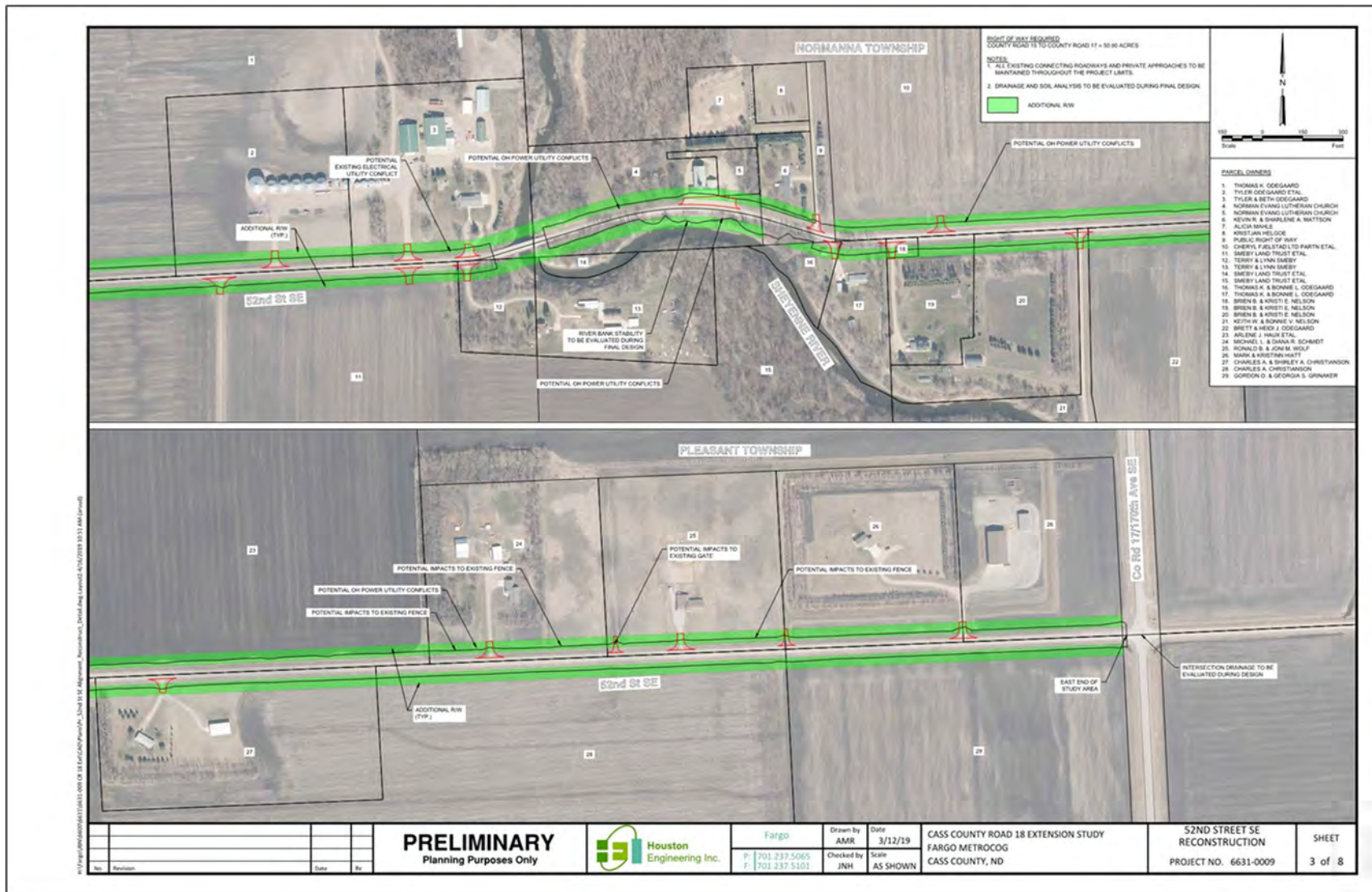


Figure 19. Relocate Church Alternative

7.2 ALIGNMENT ALTERNATIVE OPINIONS OF PROBABLE COST

The total costs of construction for each of the alternatives are included in Table 8. The opinion of probable cost for each alternative included in Table 8 includes reconstruction and ROW acquisition of the entire five miles of roadway in the study area and bridge construction if included in the alternative.

Table 8. Opinion of Probable Cost for Alternatives

Study Alternatives	Aggregate Surface	Paved Surface
Existing Alignment Alternative (No-Build)	\$0	---
Existing Alignment with County Typical Section	\$2,796,800	\$6,628,100
Sheyenne River Crossing Alternative A	\$4,793,300	\$8,685,500
Sheyenne River Crossing Alternative B	\$4,922,250	\$8,794,200
Sheyenne River Crossing Alternative C	\$4,624,900	\$8,535,100
Relocate Church	\$3,121,600	\$6,967,700

7.3 IMPLEMENTATION PLAN FOR ALTERNATIVES

The 52nd Street SE roadway between CR 15 and CR 17 is currently owned by the Townships. As shown in Figure 1, Pleasant Township owns approximately one mile of the roadway and Normanna Township owns approximately four miles of the roadway. Prior to this study, Normanna Township discussed with Cass County to have the County take ownership of the roadway so that Normanna Township would no longer have to maintain the roadway. As discussed in upcoming sections of this report, Cass County will only take ownership of this roadway if both Normanna and Pleasant Townships agree to transfer ownership of the roadway to the County. The County is not pursuing ownership of 52nd Street SE, but will take ownership if both Townships agree.

The implementation of all the alternatives included in this report are dependent on the transfer of ownership of 52nd Street SE to Cass County. All the alternatives may be considered by the Townships, but it is unlikely that any would be feasible due to budgetary limitations. The implementation time horizon for any of the alternatives is not finite or set by any of the agencies associated with this project. The Study Implementation Plan and Time Horizon are shown in Figure 20. The implementation time horizon would be determined in the “near-term” phase by the Townships. If ownership of the roadway is transferred to the County, the “mid-term” phase time horizon would be dependent on County funding and project programming and the “long-term” phase time horizon would be dependent on the status of the Sheyenne River Bank erosion and reconstruction needs of the Sheyenne River Bridge. Time horizon estimates for implementation of the phases is not feasible to estimate at this point in the study as the timing is largely dependent on the transfer of ownership and other items that are not easily estimated based on information available in this study.

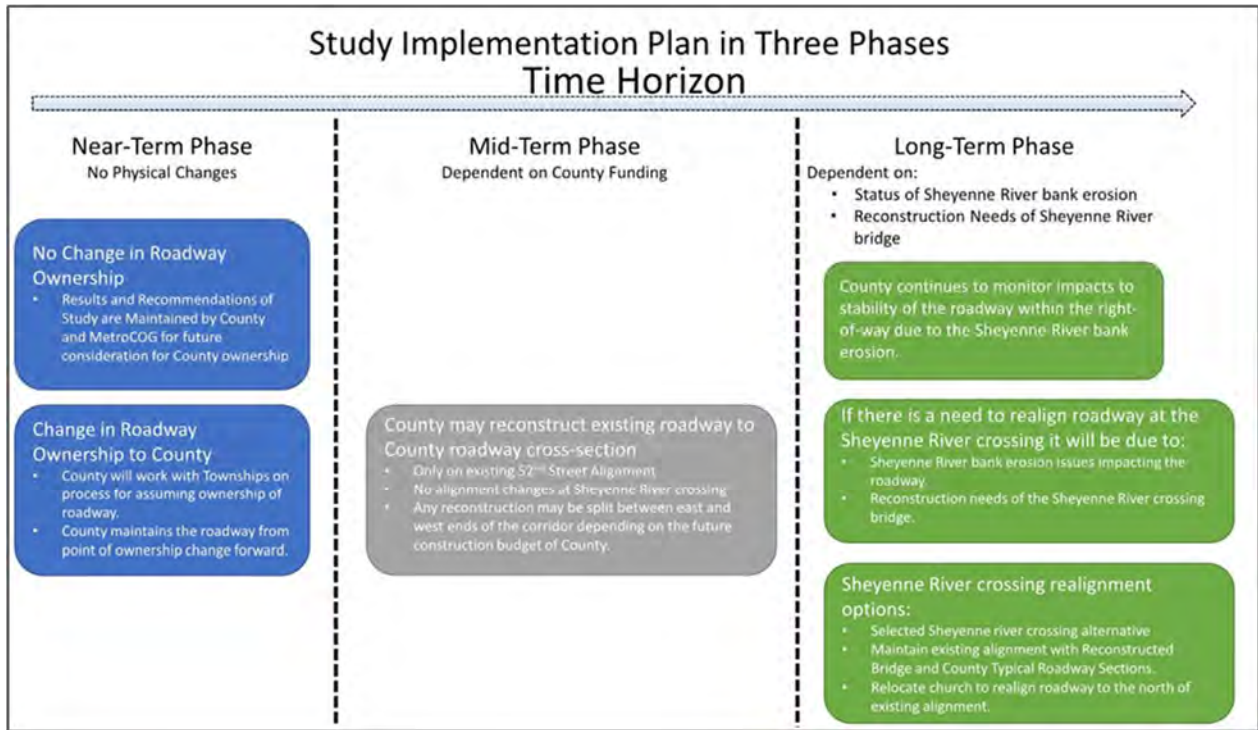


Figure 20. Study Implementation Plan and Time Horizon

The information included in Figure 20 provided further detail on each of the three phases of the implement plan and scenarios within each phase of the implementation plan. As shown in the implementation plan figure, the “near-term” phase would include no physical changes to the roadway and would include similar maintenance of the roadway into the future. The “mid-term” phase would only include typical roadway section or other physical changes on the existing alignment. Any reconstruction during the “mid-term” phase could be split into a number of seasons or phases dependent on funding and landowner coordination. The “long-term” phase of the implementation plan includes the Sheyenne River Crossing Alternatives and the Relocate Church Alternative.

Along with the Implementation Plan for the Alternatives, a Decision Tree was developed to further show the path of decisions that may be made with any future actions. The Decisions Tree for this study is shown in Figure 21. The Decision Tree includes the same time horizon and three phases as the implementation plan, but displays the order and path of decisions to be made on any future project. As shown in the Decision Tree, each of the alternatives included in this report are classified as a “near-term”, “mid-term”, and “long-term” phase decision and action.

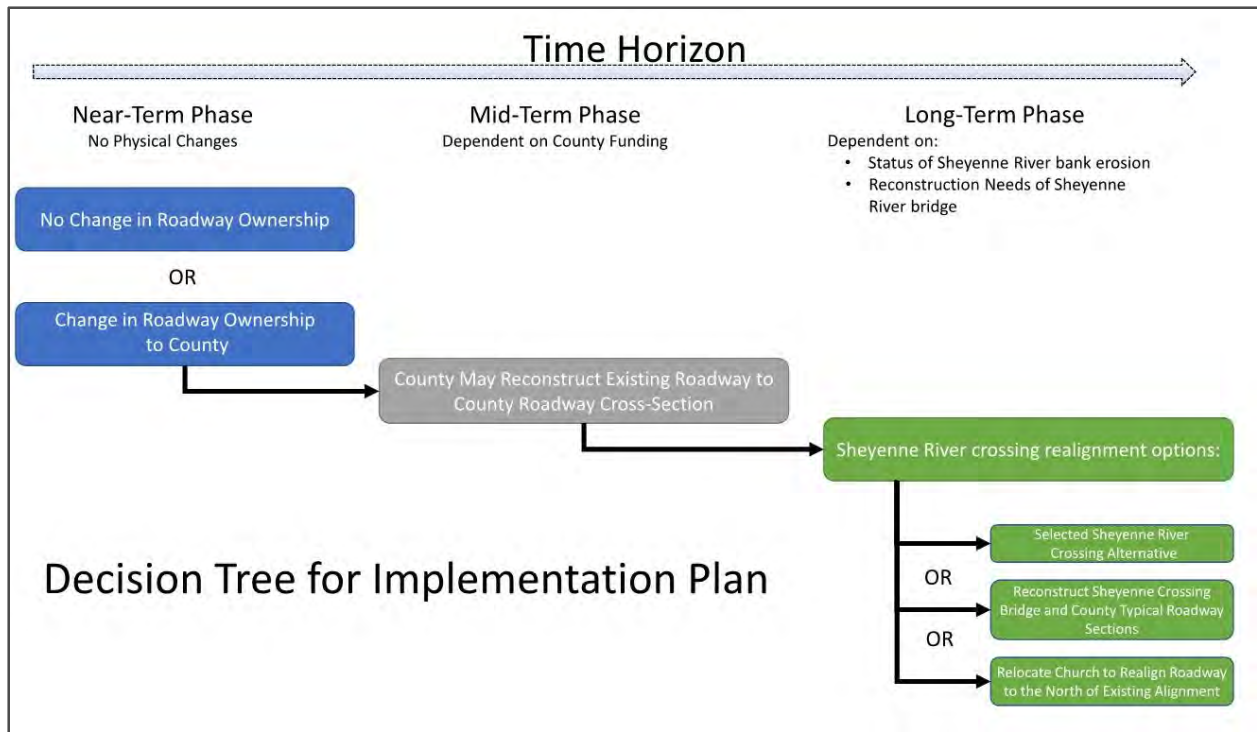


Figure 21. Decision Tree for Future Phases

7.4 ALIGNMENT ALTERNATIVE ATTRIBUTES AND CRITERIA FOR ANALYSIS

Throughout this study and the public input process, several questions were asked about specific alternative attributes and criteria that should be considered for analysis of alternatives. Specific areas of concerns were identified during the public input process; ROW impacts and acquisition, drainage and flooding impacts, and costs of construction. The three items previously mentioned will be further discussed within this section of the report.

7.4.1 RIGHT-OF-WAY IMPACTS AND ACQUISITION

All of the build alternatives included in this report will required different amounts of ROW from adjacent landowners. The County has a defined process that is followed for any ROW acquisition that follows a defined process for appropriately informing and compensating landowners that may have property that is proposed to be acquired. In addition to the established ROW acquisition process the County follows, the County will work with property owners to minimize any disruption to structures, landscaping or other items that the owner would like to maintain.

The amount of ROW necessary to be acquired for each alternative is shown in the figures included for each alternative. Due to the scope of work for this study, the amount of ROW necessary is only an estimate and not to be considered a design level quantity.

7.4.2 DRAINAGE/FLOODING IMPACTS

7.4.2.1 EXISTING CONDITIONS

Local drainage and flooding have always been concerns in the Red River Valley, especially when roadways are intended to be altered, such as in the alternatives presented in this report. Upstream of this study area, throughout Richland and Cass Counties, the flooding generally originates from either the Sheyenne River or the Wild Rice River. As the capacity of these rivers is exceeded, flood waters tend to break out of the channel banks and flow overland, backing up behind roadways prior to overtopping and continuing to flow from section to section in a northeasterly direction.

Using the existing hydraulic models created for the Fargo-Moorhead Area Diversion Project, existing conditions flooding in the study area was reviewed. The model used for this study simulates 100-year riverine flooding from the Sheyenne River and the Wild Rice River. Near the study site, water breaks out of the west banks of the Sheyenne River and it flows overland to 52nd Street SE, west of the Norman Lutheran Church. Water also breaks out of the Sheyenne River to the east as it cascades north and east along 52nd Street SE. Further to the east, along the existing County Road 18, water breaks out of the Wild Rice River and Drain 37 prior to overtopping County Road 18. Water also overtops County Road 18 at the Wild Rice River structure. The existing conditions flooding was presented at the public meeting and several residents concurred with the overall drainage patterns and overtopping representations.

7.4.2.2 PROPOSED CONDITIONS WITH ALTERNATIVES

From a flooding perspective, future design of County Road 18 should include a detailed hydraulic analysis to minimize impacts from the project. For this study, no detailed design or analysis was conducted, however, the previously created FM Diversion model (existing conditions) was used to simulate the effects of the potential alternatives (A, B, and C) in the vicinity of the Norman Lutheran Church. Figure 22, Figure 23, and Figure 24 present the flooding extents and impacts for the various alternatives.

7.4.2.3 IMPACTS OF THE FARGO-MOORHEAD DIVERSION PROJECT

The FM Diversion Project will not affect the proposed extension of County Road 18 or the Sheyenne River crossing near the Norman Lutheran Church. However, additional flooding depths are expected during diversion operations for the current stretch of County Road 18 near the Wild Rice River. The depth of this flooding is dependent on the frequency of event (50-year, 100-year, etc.), and based on historic records the project will not have ever operated during the growing season. Figure 25 presents expected existing conditions flooding for the 10-, 20-, and 100-year flood events, without the diversion project, and Figure 26 presents flooding with the diversion in place and operating.

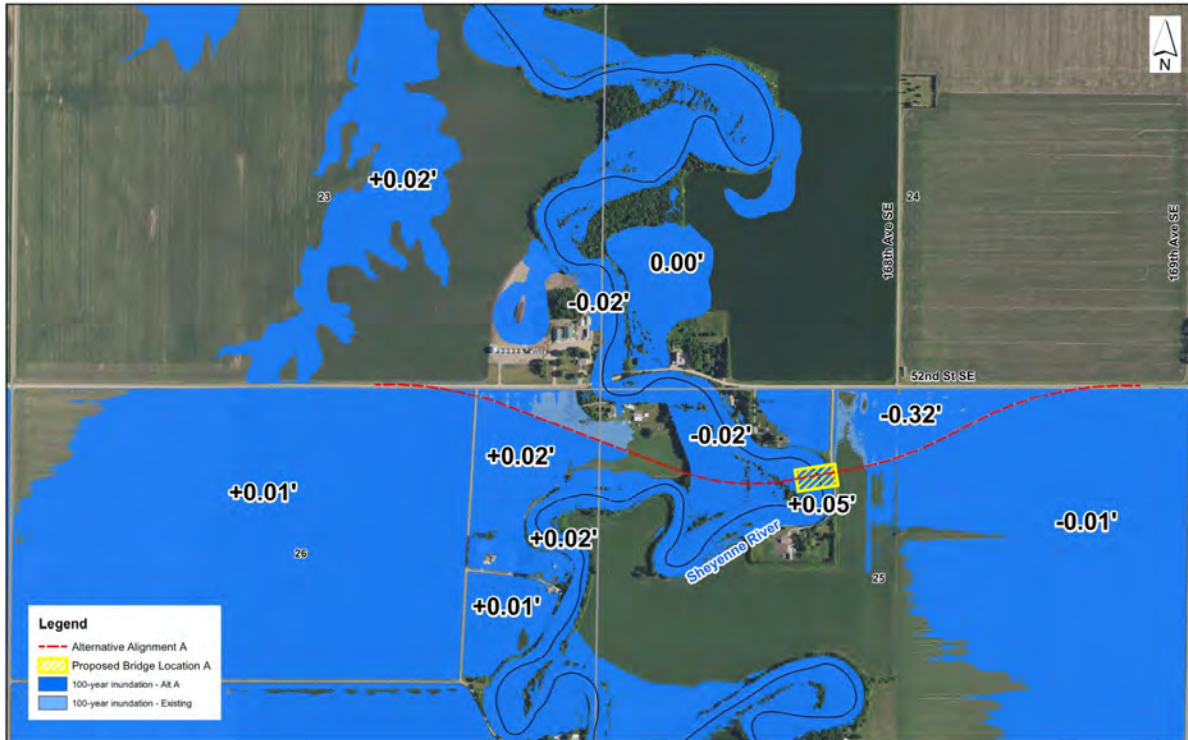


Figure 22. Alternative A Flooding Extent and Impacts

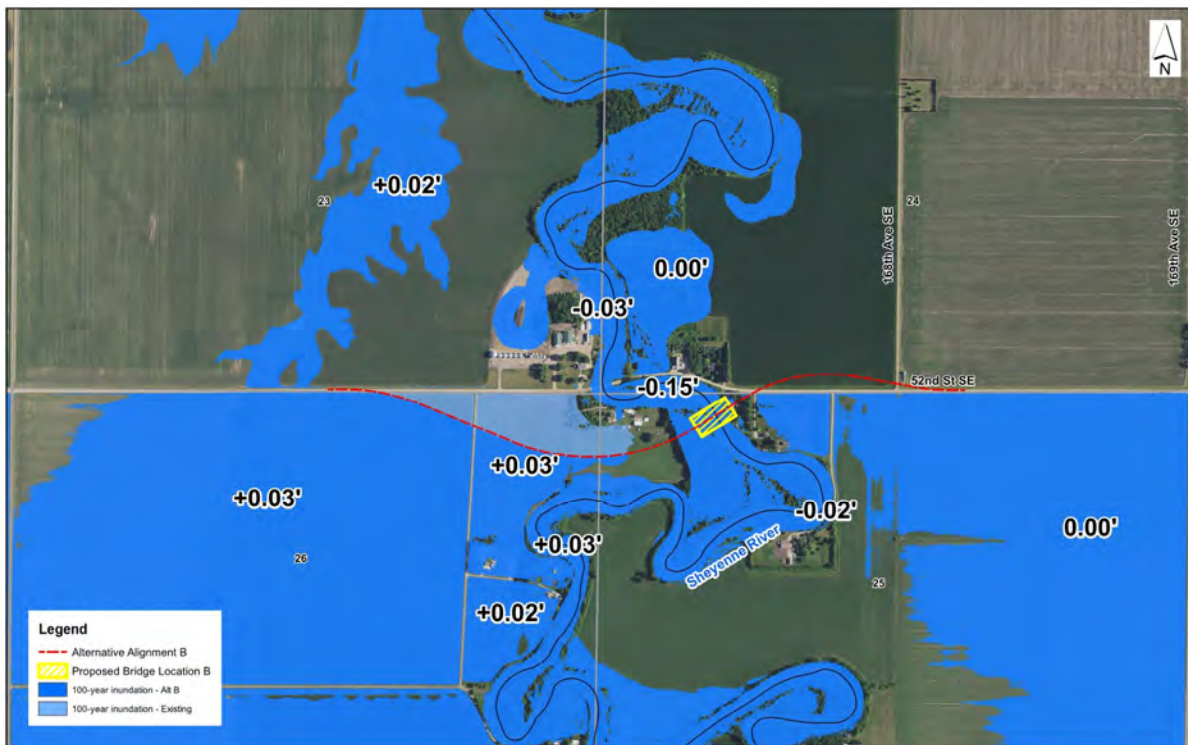


Figure 23. Alternative B Flooding Extent and Impacts

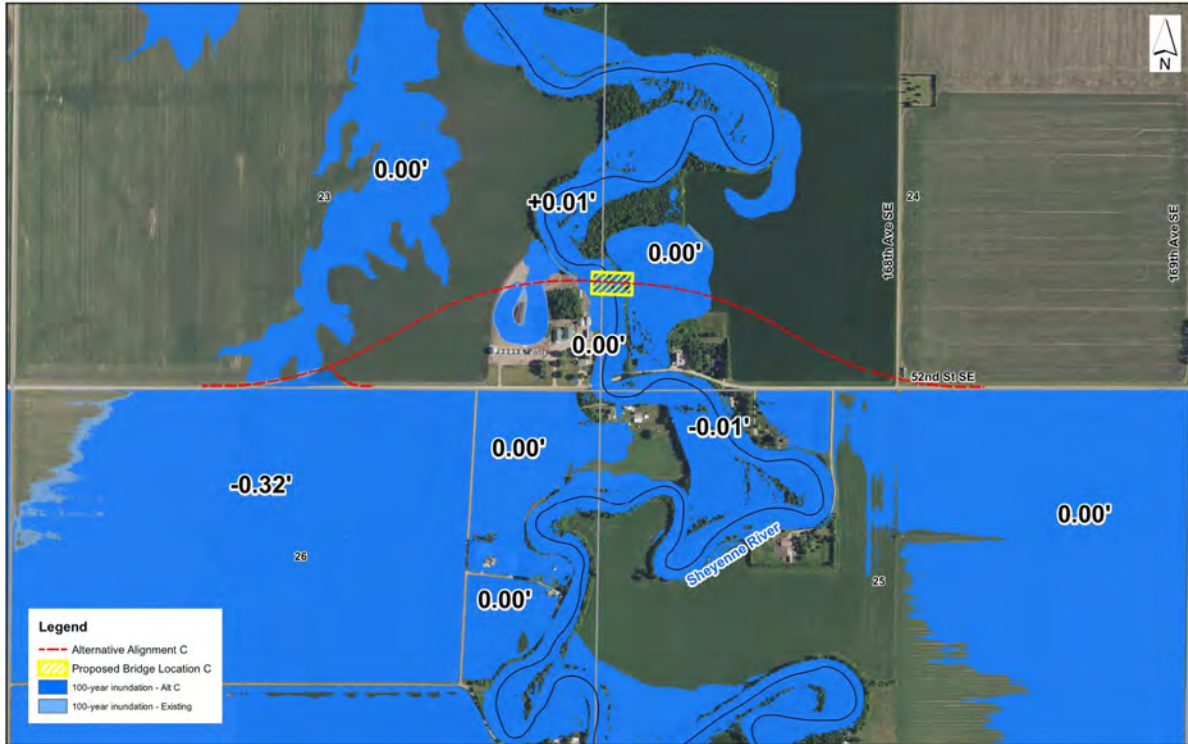


Figure 24. Alternative C Flooding Extent and Impacts

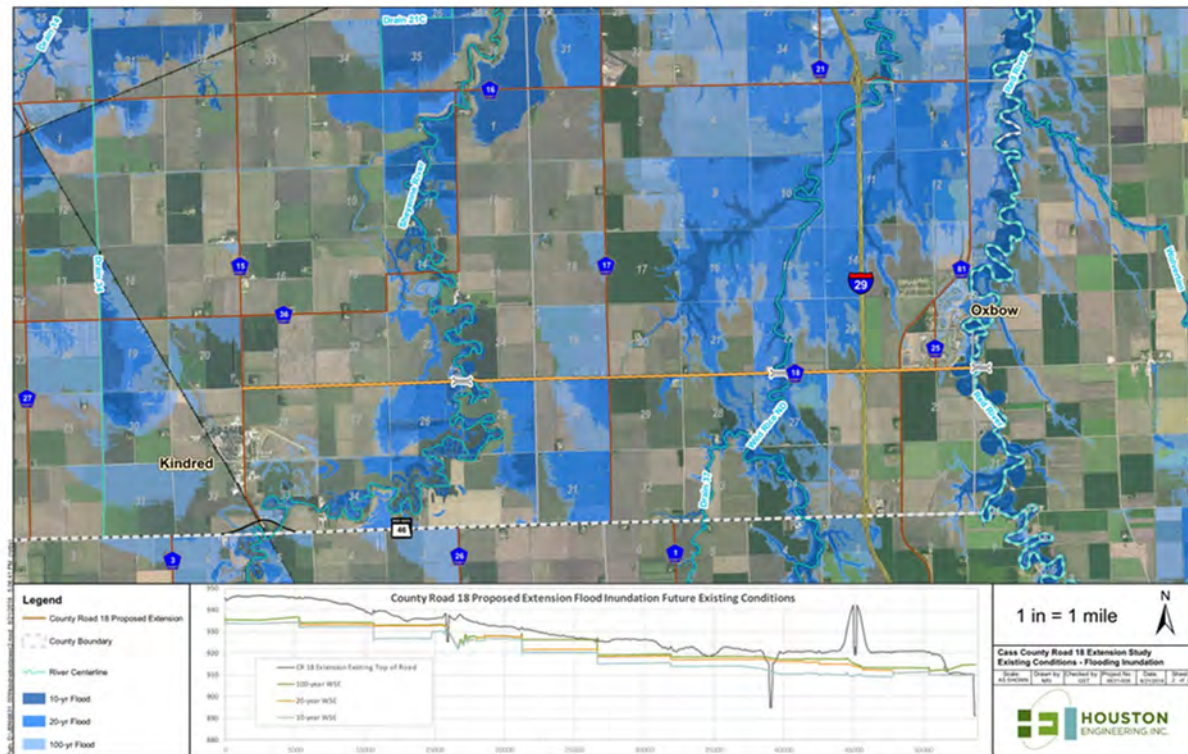


Figure 25. Existing Conditions Flooding without Diversion

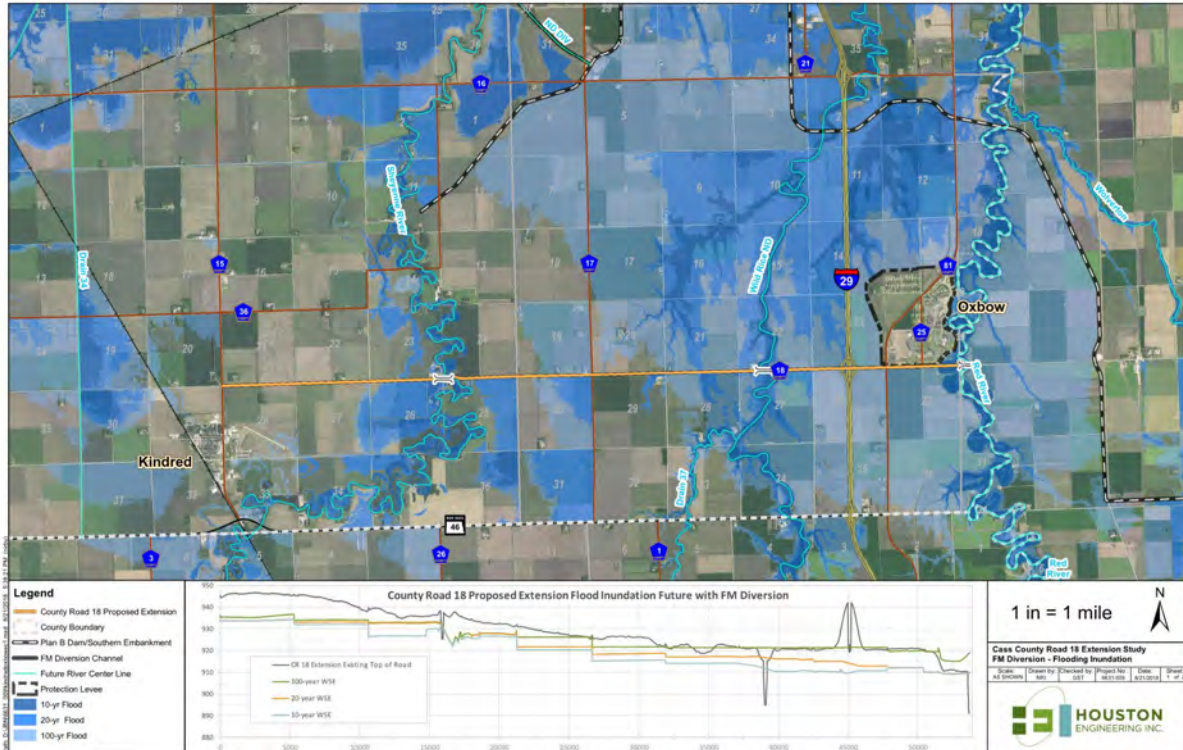


Figure 26. Existing Conditions Flooding with Diversion

7.5 SHEYENNE RIVER CROSSING ALTERNATIVE COMPARISON AND RANKING

Of the alternatives included in this study, only the Sheyenne River Crossing alternative have multiple sub-alternatives that would require selecting one of the alternatives against the other Sheyenne River Crossing alternatives. The SRC decided to determine a ranking of Sheyenne River Crossing alternatives through an online ranking poll. The methodology, comparison, and rankings of the Sheyenne River Crossing alternatives are included in this section.

7.5.1 METHODOLOGY

The selection of a ranking for the Sheyenne River Crossing alternatives was presented to the SRC. The method to determine the ranking that was proposed by the SRC was to complete an online ranking poll for Alternatives A, B, and C. The ranking was only allowed to be completed by SRC members and it was an anonymous poll. The SRC members were allowed two weeks to complete the poll and they could revise their selection up until the two-week deadline

The SRC decided to determine the final ranking of the alternatives by applying three points for a first ranking, two points for a second ranking, and one point for a third ranking. The combined total points for each alternative was used to determine the final overall ranking.

7.5.2 COMPARISON

To assist the SRC members in completing the rankings of the Sheyenne River Crossing alternatives, the information in Table 9 and Figure 27 were provided to each member in a single page document. The SRC members were also provided with the plan view of each alignment alternative for their reference.

Table 9. Sheyenne River Crossing Alternative Comparison

Comparison of Sheyenne River Crossing Alternatives			
Roadway Realignment "Alternatives"			
Comparison Metrics	Alternative A "South Alignment Crosses Sheyenne 900' South"	Alternative B "South Alignment Crosses Sheyenne 300' South"	Alternative C "North Alignment"
Construction Costs	Aggregate: \$4,793,000 Paved: \$8,685,000	Aggregate: \$4,922,000 Paved: \$8,794,000	Aggregate: \$4,625,000 Paved: \$8,535,000
Right-of-Way Impacts - Only for Crossing	31.2 Acres	28.2 Acres	31.8 Acres
Flooding/Drainage Impacts	Similar to Alternative B	Similar to Alternative A	Changes Properties Impacted from Existing
Agricultural Impacts - Divides Tract of Land	Similar to Alternative C	Least Amount of Segmented Land	Similar to Alternative A
Impacts to Residential and Farm Accesses	Bridge close to Residential Driveway (Nelson Farm)	Minimal Impact	Minimal Impact
Utility Impacts	Minimal Impact	Minimal Impacts on East Side	Impacts on the East Side

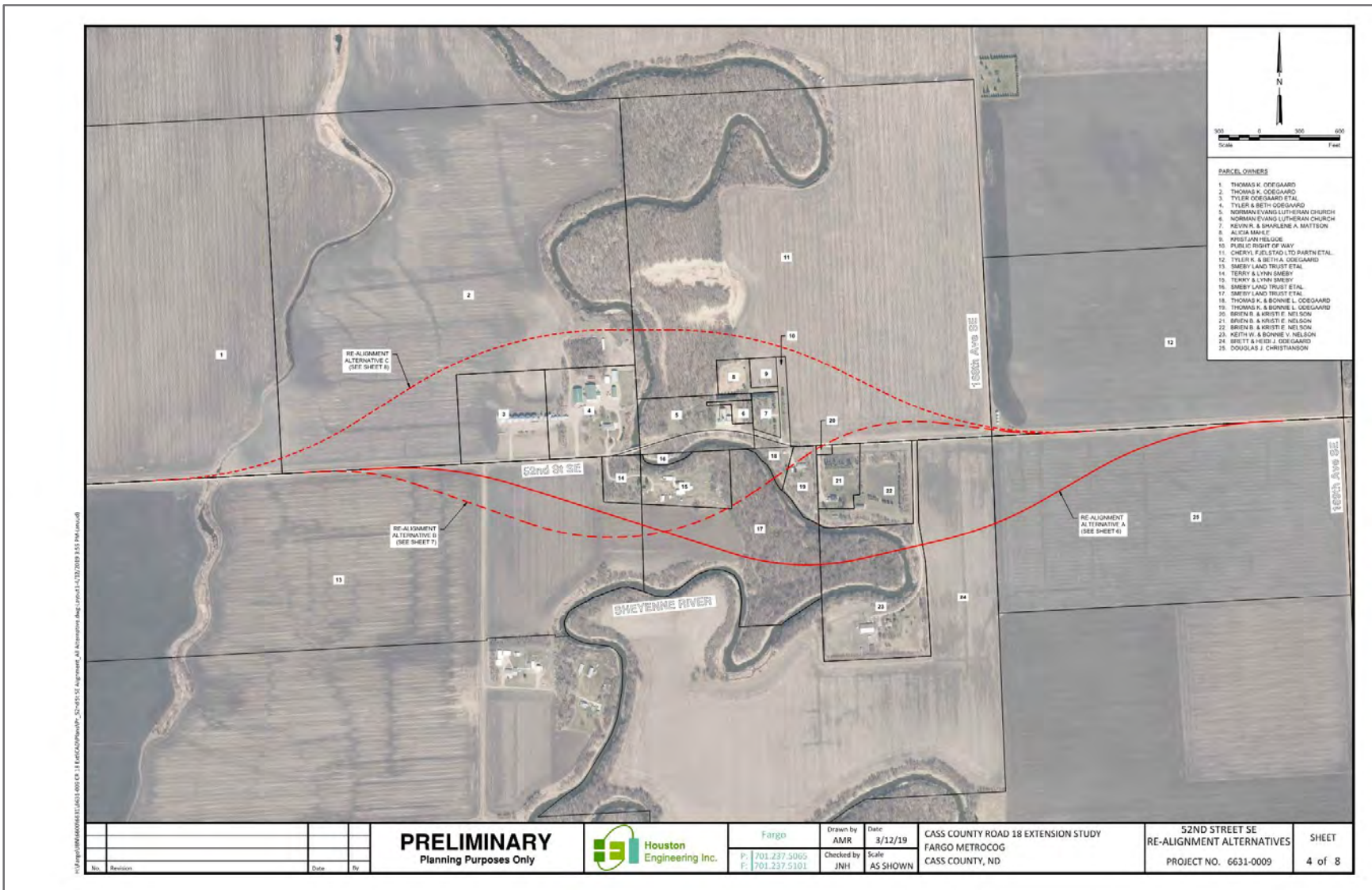


Figure 27. Sheyenne River Crossing Alternatives for Comparison

7.5.3 RANKING OF SHEYENNE RIVER CROSSING ALTERNATIVES

The rankings were completed by eight members of the SRC. A few members chose to abstain from ranking the alternatives for various reasons. A screen grab of the poll website with each participant's ranking is shown in Figure 28. The results of the scoring for the Sheyenne River Crossing alternatives poll is shown in Table 10. Alternative B was ranked first followed by Alternative C ranked second, and alternative A ranked third.



Figure 28. Sheyenne River Crossing Voting by Participant

Table 10. Sheyenne River Crossing Alternative Poll Ranking

Sheyenne River Crossing Alternative	#1 Ranking	#2 Ranking	#3 Ranking	Total	Final Ranking
Alternative A	1 x 3 = 3	2 x 2 = 4	5 x 1 = 5	12	3
Alternative B	4 x 3 = 12	3 x 2 = 6	1 x 1 = 1	19	1
Alternative C	3 x 3 = 9	3 x 2 = 6	2 x 1 = 2	17	2

7.6 ITEMS TO BE COMPLETED FOR THE PROJECT TO MOVE FORWARD

As previously discussed in this report, the 52nd Street SE roadway between CR 15 and CR 17 is currently owned by Normanna and Pleasant Township. As shown in Figure 20 and Figure 21 and discussed in this report, the Townships must initiate any transfer of ownership to Cass County. Cass County did not put a deadline or any time requirements on the Townships to make a decision on transferring ownership to the County, but the Townships would need to initiate the process. In order for the transfer process to be initiated and completed with the County, each Township would need to pass resolutions transferring ownership of each Township's portion of 52nd Street SE to the County. Once the resolutions have been completed by the Townships, the County would complete a resolution to accept ownership of the roadway. Legal and official documents for the transfer of ownership process should be coordinated between the Townships and the County, and not solely based on any information provided in this report. Information provided in this section is for informational purposes only.

1401 21st Avenue North Fargo ND 58102



HoustonEngineering Inc.

April 10, 2012

Hank Trangsrud
1746 Evergreen Way
West Fargo, ND 58078

VIA Email: htrangsrud@aol.com

**Subject: Feasibility of Sheyenne River Bank Stabilization near the Norman Lutheran Church
HE Job 5474-001**

Dear Hank,

At your request we have investigated the feasibility of stabilizing a reach of the Sheyenne River near the Norman Lutheran Church in Cass County ND. The letter report summarizes the results of our Investigation.

Location

The site is located on the Sheyenne River just south of the Norman Lutheran Church about 3 miles northeast of Kindred, ND.

General Conditions

The streambank on the south side of 52nd St. SE near Norman Lutheran Church is eroding due to waters from the Sheyenne River. From site observation, the failure appears to be a surface failure (not a deep rotational failure) undergoing gradual erosion rather than a larger slide along a slip plane. Left unchecked, the problems could continue to grow and cause greater problems. On the site, there are several larger trees ranging between 1'-1.5' in diameter (see Photo 2), as well as a few larger and many smaller trees and brush. The river was approximately 60' wide and the top of ice elevation was 917.87 at the time of survey on February 13, 2012. The river bottom ranges between elevation 908 and 913 in the project area. The FEMA 100-year flood elevation is 933.5 and the recorded high water in nearby locations is approximately 935. The finished floor elevation on the southern portion of the church is 939.05. (All elevations are in reference to the NAVD 88 datum.)

There are concerns about parts of the failure encroaching onto 52nd St. SE and further onto church property. Portions of the eroded bank are now less than 10' from the road and could soon cause

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Hank Trangsrud
April 10, 2012
Page 2

problems with stability under the roadway (see Photo 1). The reach extends approximately 350' west of the church and 350' east of the church. A majority of the eroding portion of the river bank is now sloping at approximately 2h:1v (See Photos).

Alternative Solutions and Cost Estimates

Three options were investigated for feasibility. A small description of each option follows.

Option 1 – 78-foot Sheet Pile: Option 1 consists of driving approximately 78' of sheet pile from Sta 0+00 to Sta 7+75. The option assumes continued scour up to the sheet pile wall and would not protect the banks of the river from further erosion. This option would include minimal clearing of the river banks. This option would also include guardrail along the entire project area to protect the public from the sheet pile and drop off. Option 1 would cost approximately \$1,693,700. The breakdown of these prices can be seen in Attachment 1.

Option 2 – 30-foot Sheet Pile and Riprap: Option 2 consists of approximately 30' of sheet pile from Sta 0+00 to Sta 7+75, as well as some riprap to protect the bank from any further erosion. This option would include some minor reshaping of the channel as well as clearing and grubbing. This option also includes guardrail along the entire project area to protect the public from the drop-off. Option 2 would cost approximately \$846,400. The breakdown of these prices can be seen in Attachment 1.

Option 3 – Riprap: Option 3 consists of clearing and grubbing, reshaping, and placing riprap along the entire project area to protect the bank from further erosion. This option assumes a 2:1 slope on the river bank pending geotechnical review. This option would not require guardrail as the riprap would be placed outside the clear zone of the roadway. This option would require a clear zone at least 12' outside of the driving lane. Option 3 would cost approximately \$339,000. The breakdown of these prices can be seen in Attachment 1.

Study Limitations

This study was done at a feasibility level to minimize initial cost yet provide a reasonable opinion of alternatives and costs. A geotechnical investigation was not done to keep study costs to a minimum, but should be the next step if a project is developed. Sheet pile lengths, bank slopes and riprap thickness were based on experience at similar sites and are subject to change. Costs for engineering, construction administration and permitting were not detailed but are based on similar jobs.

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April 10, 2012
Page 3

Recommendations

Houston Engineering recommends the client consider these alternatives along with other options not included, such as relocation or replacement of the church. Of the alternatives investigated in this report, it is apparent that Option 3 would be the economically-preferred alternative. If this alternative is pursued, we'd recommend a geotechnical investigation be done to validate the stability assumptions. If the results are favorable, the next step would be preparation of final plans and specifications.

We also recommend that consultation with permitting authorities begin immediately should any of the alternatives be chosen. A Section 404 permit from the Corps of Engineers will likely be required for Options 2 and 3 and possibly Option 1. Nationwide permits, which are more streamlined and less time-consuming, do exist for this type of project. To qualify for a Nationwide permit, the project must be limited to no more than 500 feet in length, and less than 1 cubic yard of material per foot of channel may be deposited below the ordinary high water mark. This project will likely require an individual Section 404 permit. A NPDES (National Pollutant Discharge Elimination System) permit for the control of runoff during construction will be needed. This permit is under the authority of the ND Department of Health.

If you have any questions or comments, please notify me.

Sincerely,

HOUSTON ENGINEERING, INC.



Rick R. St. Germain

RRS:sh
Enclosures

Hank Trangsrud
April 10, 2012
Page 4

Photo 1 – Looking downstream showing proximity to road



Photo 2 - Looking downstream near church



ENGINEERS OPINION OF PROBABLE COST

ROAD/BANK SLIDE

Norman Lutheran Church

HEI PROJECT # 5474-001

Option 1

Sheet Piling from 0+00 to 7+75

<u>Spec</u>	<u>Item Description</u>	<u>Unit Cost</u>	<u>Unit</u>	<u>Quantity</u>	<u>Total Cost</u>
622	STEEL SHEET PILING - 78' length	\$24.00	SF	60450	\$1,450,800.00
702	MOBILIZATION	\$20,000.00	L SUM	1	\$20,000.00
704	TYPE III BARRICADE	\$80.00	EA	6	\$480.00
708	FIBER ROLLS 12IN	\$2.50	LF	775	\$1,937.50
708	SEEDING - TYPE B - CLASS V(P)	\$1,500.00	ACRE	0.8	\$1,200.00
708	MULCHING (P)	\$525.00	ACRE	0.8	\$420.00
764	W - BEAM GUARDRAIL	\$30.00	LF	875	\$26,250.00
764	W - BEAM GUARDRAIL END TERMINAL	\$2,300.00	EA	2	\$4,600.00
Total					\$1,505,687.50
	10% CONTINGENCIES				\$150,000.00
	ENGINEERING, CONSTRUCTION ADMIN., AND PERMITTING				\$30,000.00
	GEOTECHNICAL				\$8,000.00
	ESTIMATED TOTAL PROJECT COST				\$1,693,700.00

ENGINEERS OPINION OF PROBABLE COST

ROAD/BANK SLIDE

Norman Lutheran Church

HEI PROJECT # 5474-001

Option 2

Sheet Piling and Slope Riprap from 0+00 to 7+75

<u>Spec</u>	<u>Code</u>	<u>Item Description</u>	<u>Unit Cost</u>	<u>Unit</u>	<u>Quantity</u>	<u>Total Cost</u>
201	0330	CLEARING AND GRUBBING	\$25,000.00	L SUM	1	\$25,000.00
622	6760	STEEL SHEET PILING - 30' length	\$24.00	SF	23250	\$558,000.00
702	0100	MOBILIZATION	\$20,000.00	L SUM	1	\$20,000.00
708	1020	RIPRAP - LOOSE ROCK - (775' X 45' X 1.5')	\$50.00	CY	1940	\$97,000.00
704	1052	TYPE III BARRICADE	\$80.00	EA	6	\$480.00
708	1430	FIBER ROLLS 12IN	\$2.50	LF	775	\$1,937.50
708	2280	SEEDING - TYPE B - CLASS V(P)	\$1,500.00	ACRE	0.8	\$1,200.00
708	5500	MULCHING (P)	\$525.00	ACRE	0.8	\$420.00
764	0131	W - BEAM GUARDRAIL	\$30.00	LF	875	\$26,250.00
764	0145	W - BEAM GUARDRAIL END TERMINAL	\$2,300.00	EA	2	\$4,600.00
Total						\$734,887.50
10% CONTINGENCIES						\$73,500.00
ENGINEERING, CONSTRUCTION ADMIN., AND PERMITTING						\$30,000.00
GEOTECHNICAL						\$8,000.00
ESTIMATED TOTAL PROJECT COST						\$846,400.00

ENGINEERS OPINION OF PROBABLE COST

ROAD/BANK SLIDE

Norman Lutheran Church

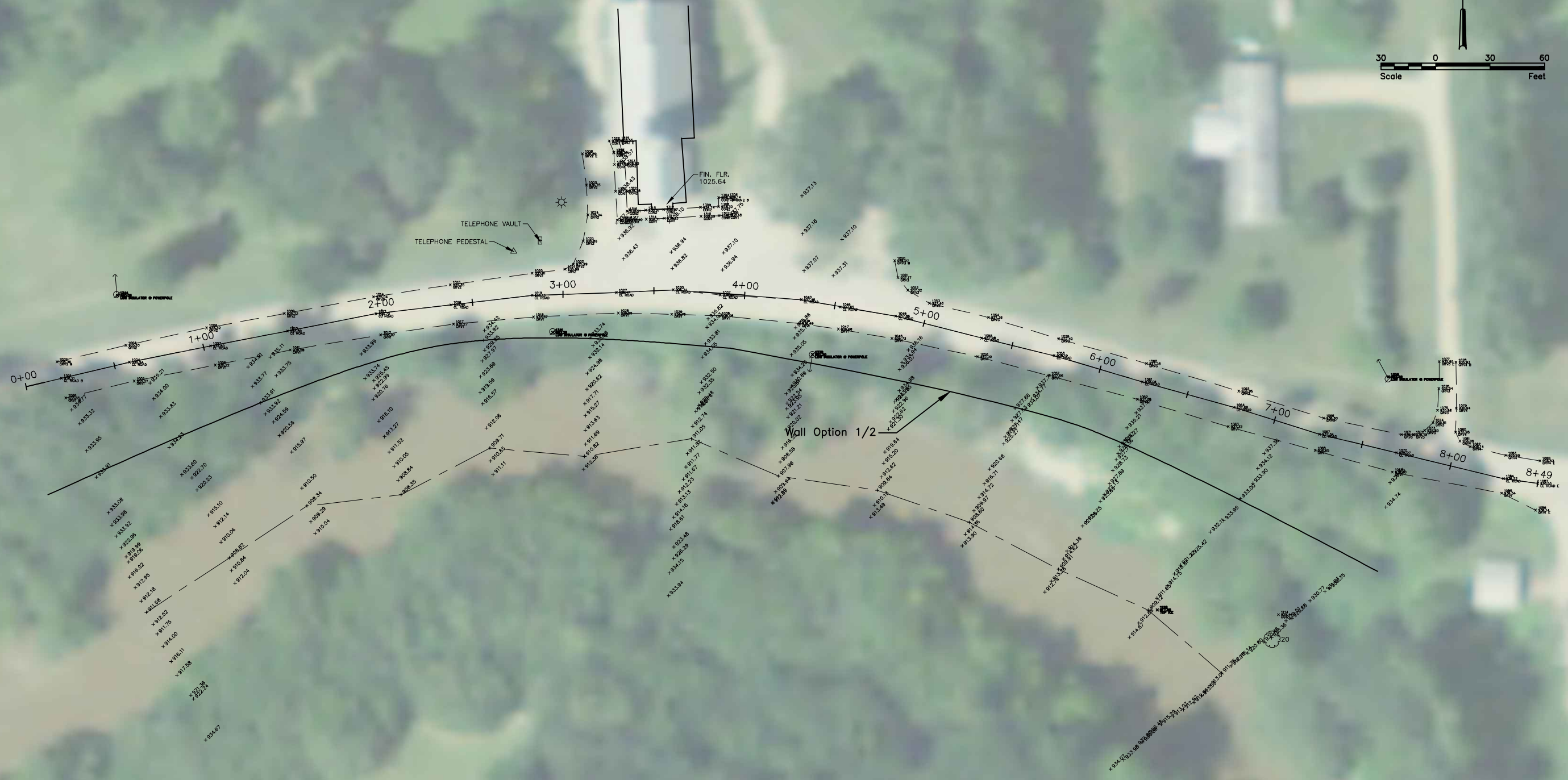
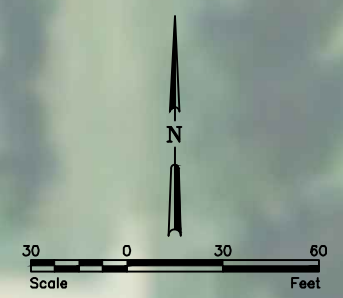
HEI PROJECT # 5474-001

Option 3

Slope Riprap from 0+00 to 7+75

Assumed Rip Rap on 2:1 Slope Pending Geotechnical Review

<u>Spec</u>	<u>Code</u>	<u>Item Description</u>	<u>Unit Cost</u>	<u>Unit</u>	<u>Quantity</u>	<u>Total Cost</u>
201	0330	CLEARING AND GRUBBING	\$25,000.00	L SUM	1	\$25,000.00
702	0100	MOBILIZATION	\$20,000.00	L SUM	1	\$20,000.00
		EARTHWORK	\$50,000.00	L SUM	1	\$50,000.00
708	1020	RIPRAP - LOOSE ROCK - (775' X 45' X 2')	\$50.00	CY	3600	\$180,000.00
704	1052	TYPE III BARRICADE	\$80.00	EA	6	\$480.00
708	1430	FIBER ROLLS 12IN	\$2.50	LF	775	\$1,937.50
708	2280	SEEDING - TYPE B - CLASS V(P)	\$1,500.00	ACRE	0.3	\$450.00
708	5500	MULCHING (P)	\$525.00	ACRE	0.3	\$157.50
Total						\$278,025.00
10% CONTINGENCIES						\$28,000.00
ENGINEERING, CONSTRUCTION ADMIN., AND PERMITTING						\$25,000.00
GEOTECHNICAL						\$8,000.00
ESTIMATED TOTAL PROJECT COST						\$339,000.00



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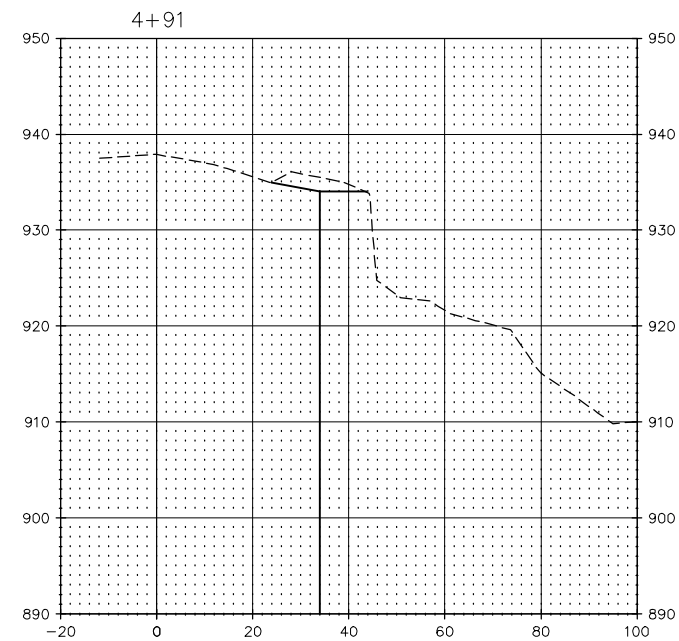
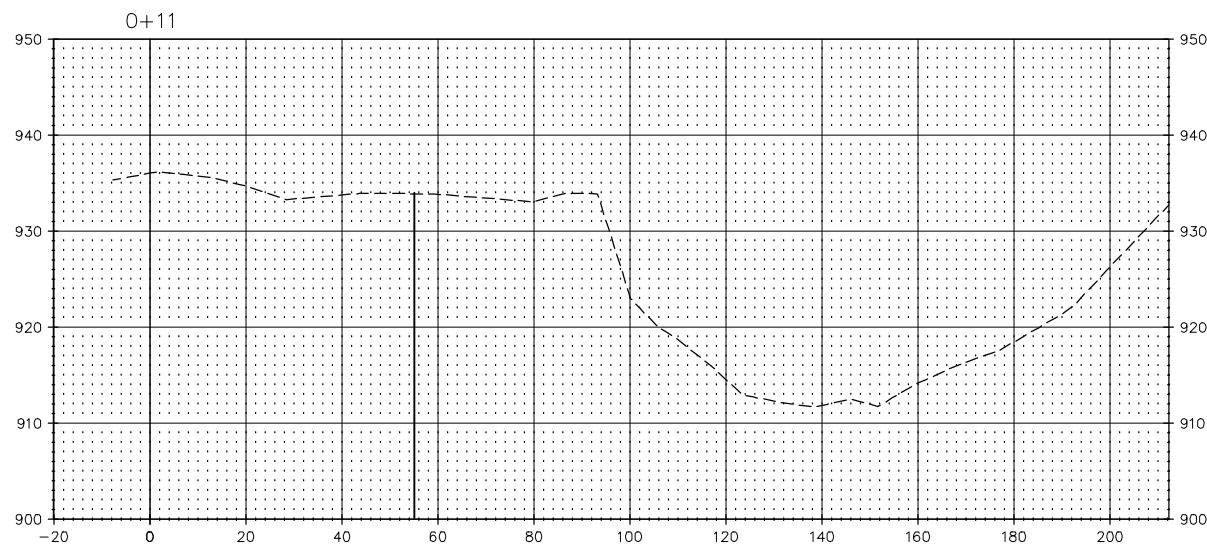
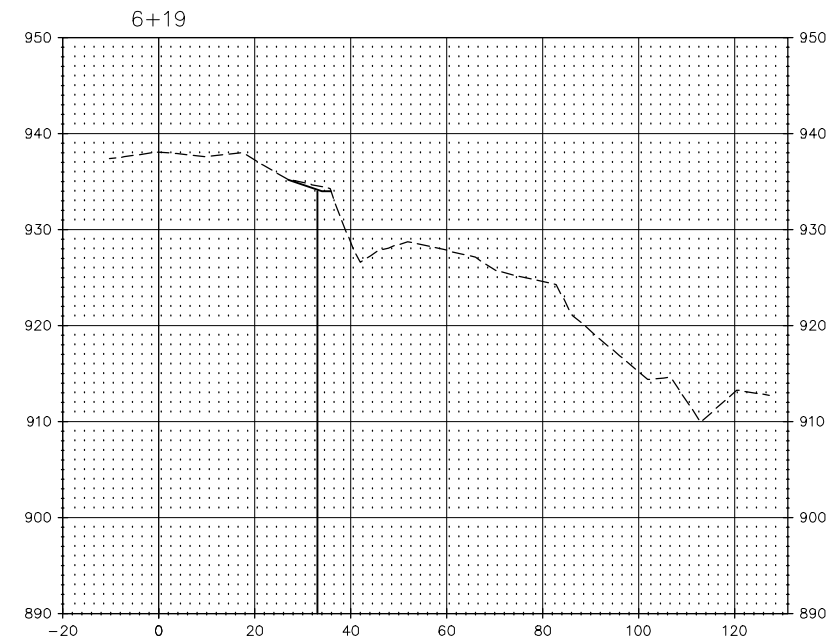
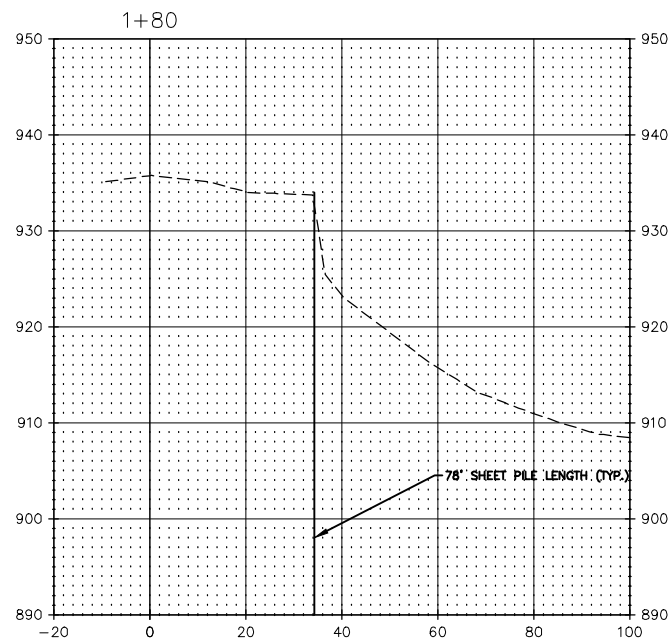
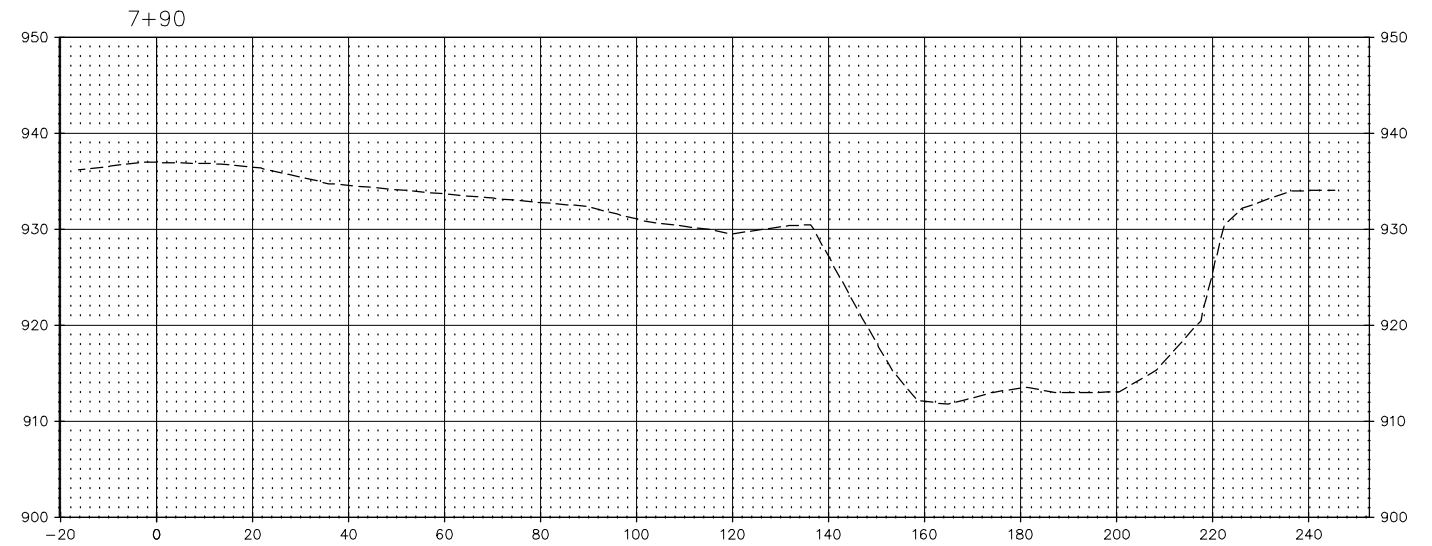
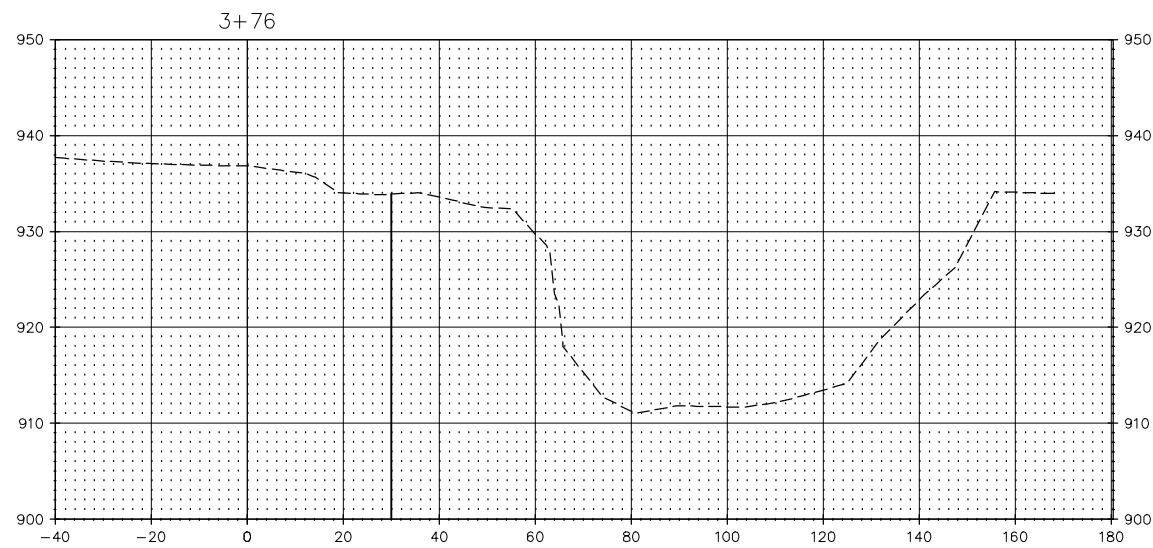


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P: 701.237.5065 F: 701.237.5101	Checked by RRS	Scale AS SHOWN

NORMAN LUTHERN CHURCH
KINDRED, NORTH DAKOTA

TOPOGRAPHIC SURVEY
PROJECT NO. 5474-001

SHEET
1 of 4



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No.	Revision	Date	By

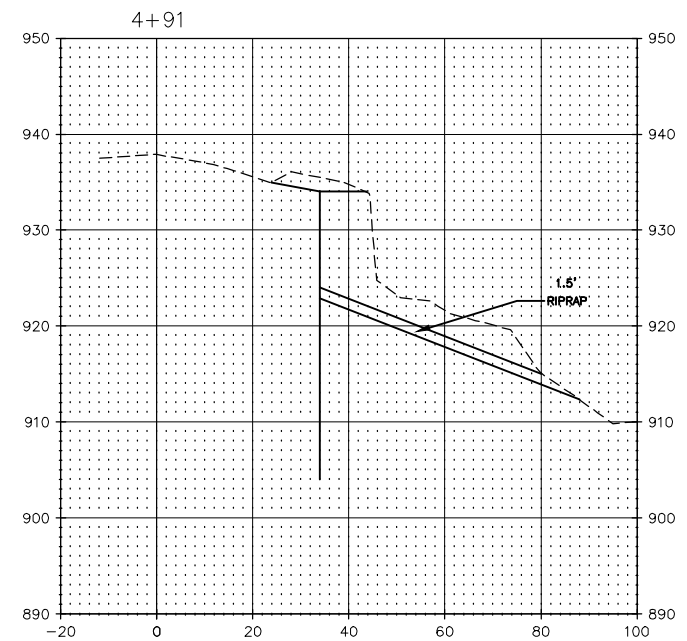
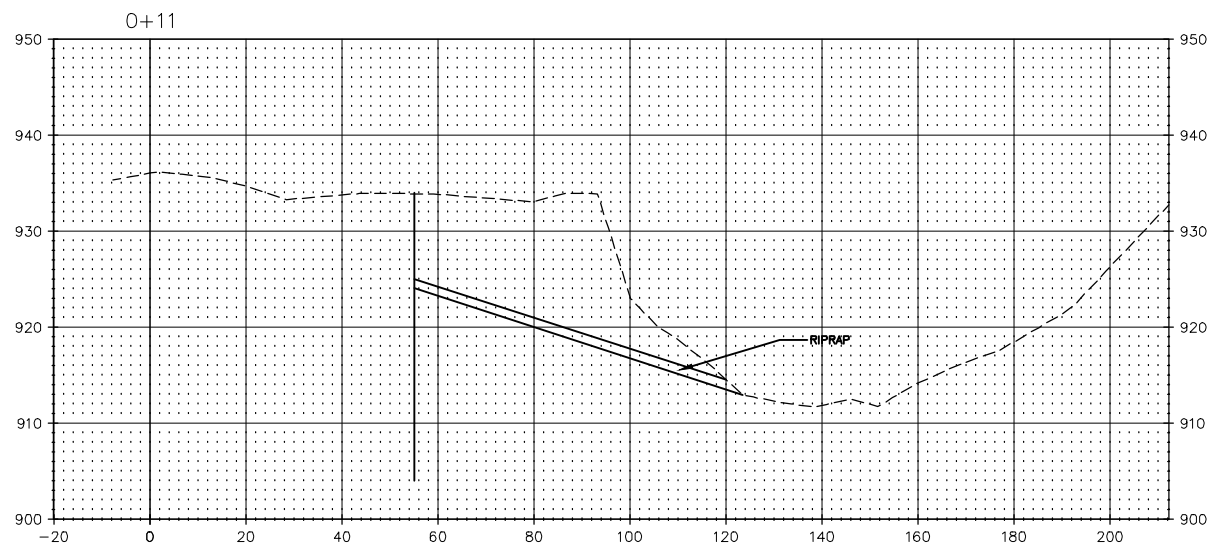
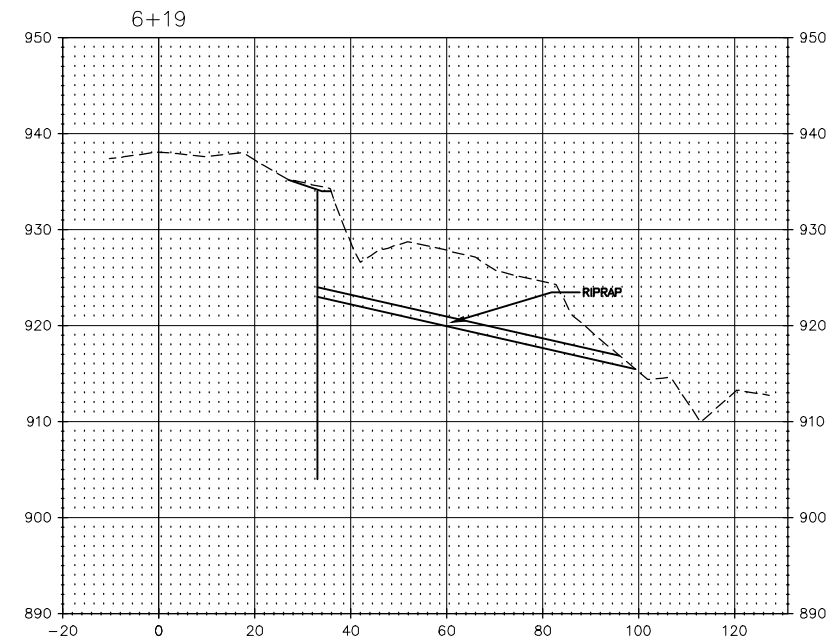
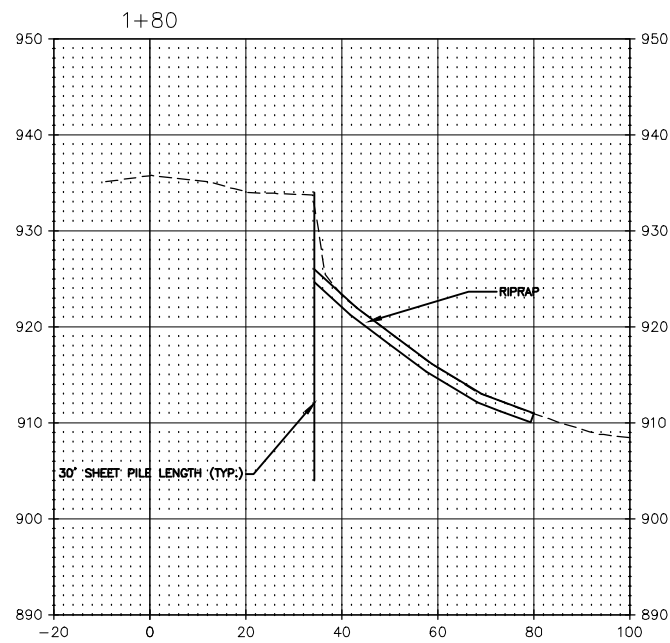
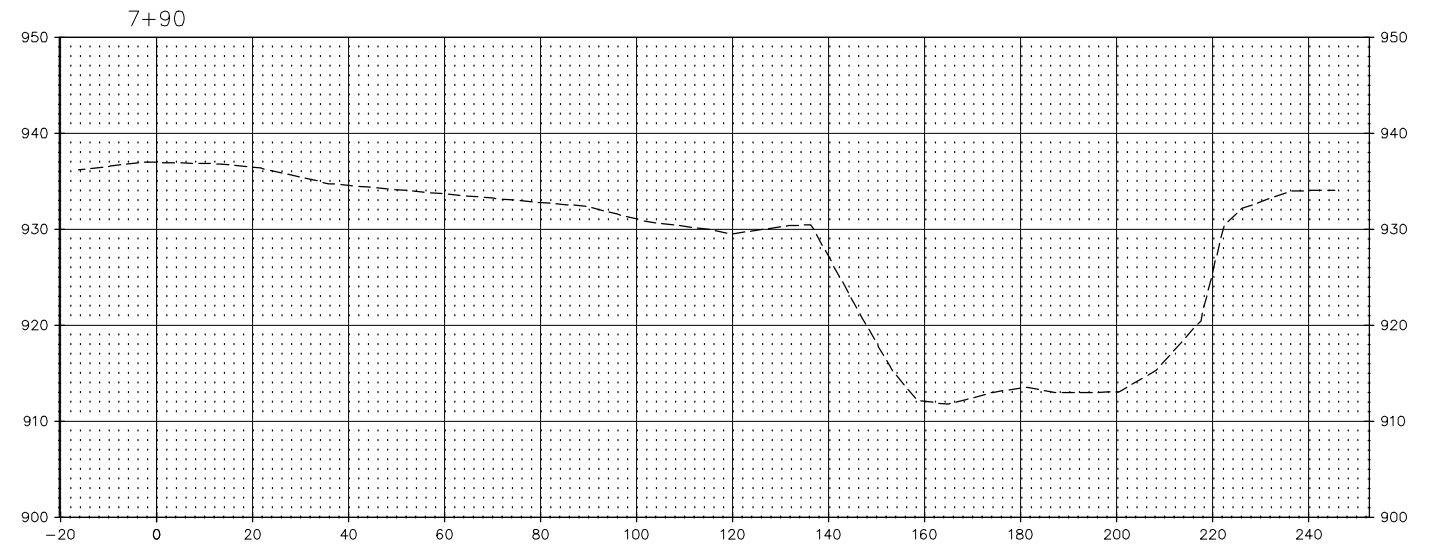
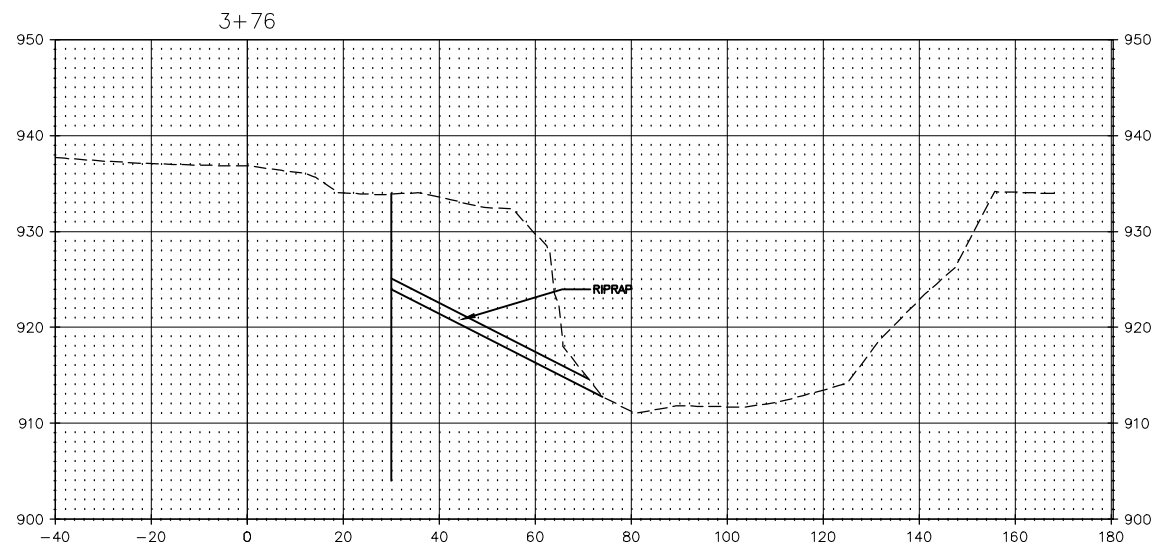


Fargo	Drawn by SMH	Date 4-6-12
P: 701.237.5065 F: 701.237.5101	Checked by RRS	Scale AS SHOWN

NORMAN LUTHERAN CHURCH
OPTION 1 - LONG SHEETING
KINDRED, NORTH DAKOTA

CROSS SECTIONS
PROJECT NO. 5474-001

SHEET
2 of 4



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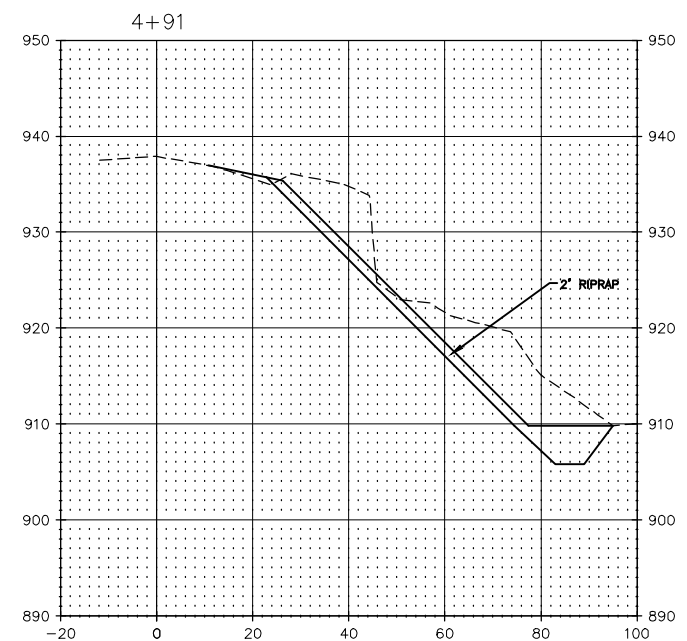
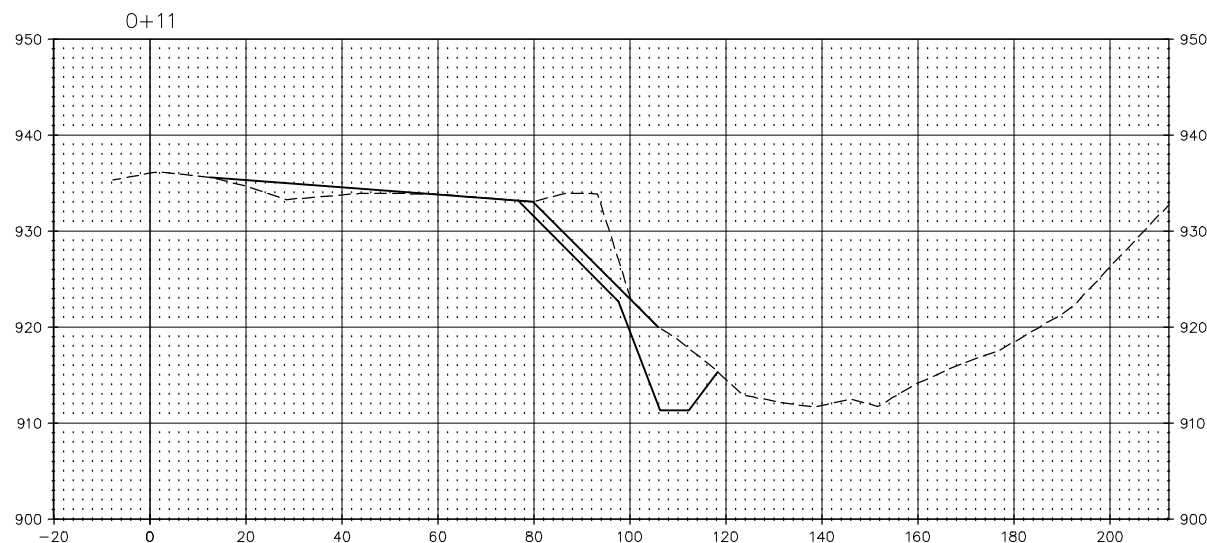
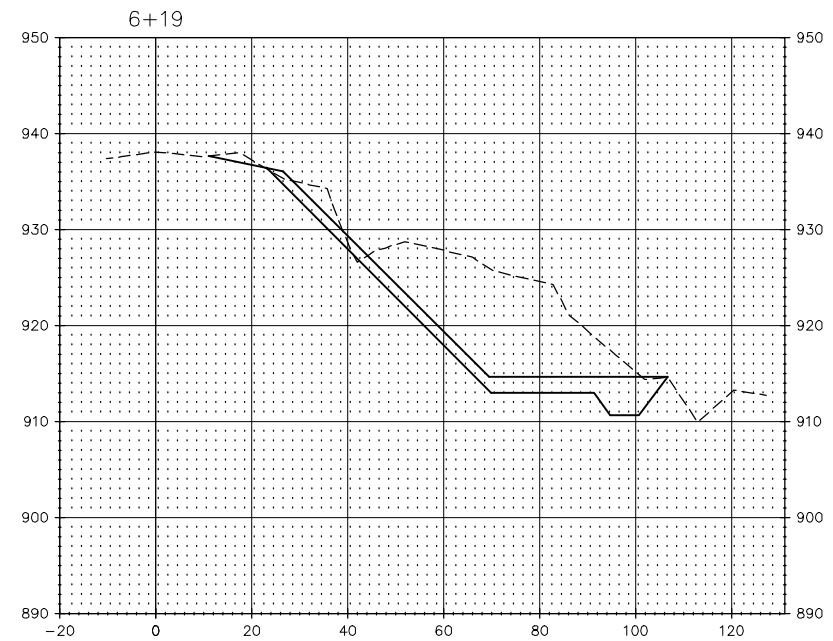
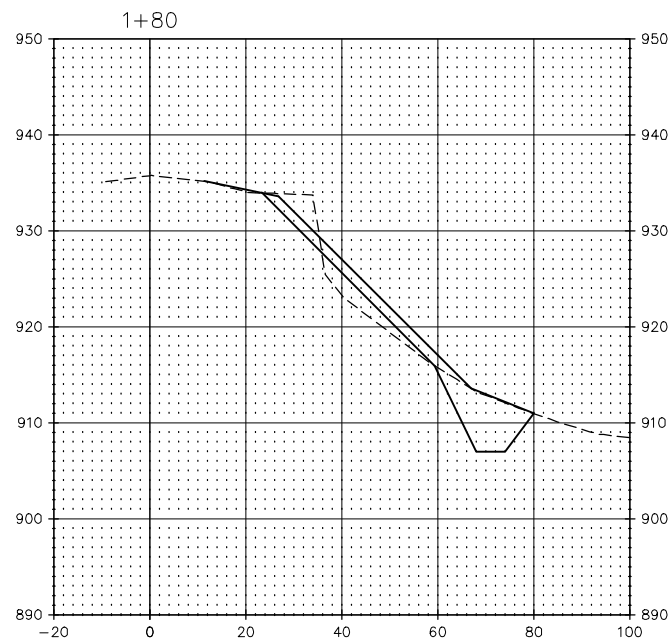
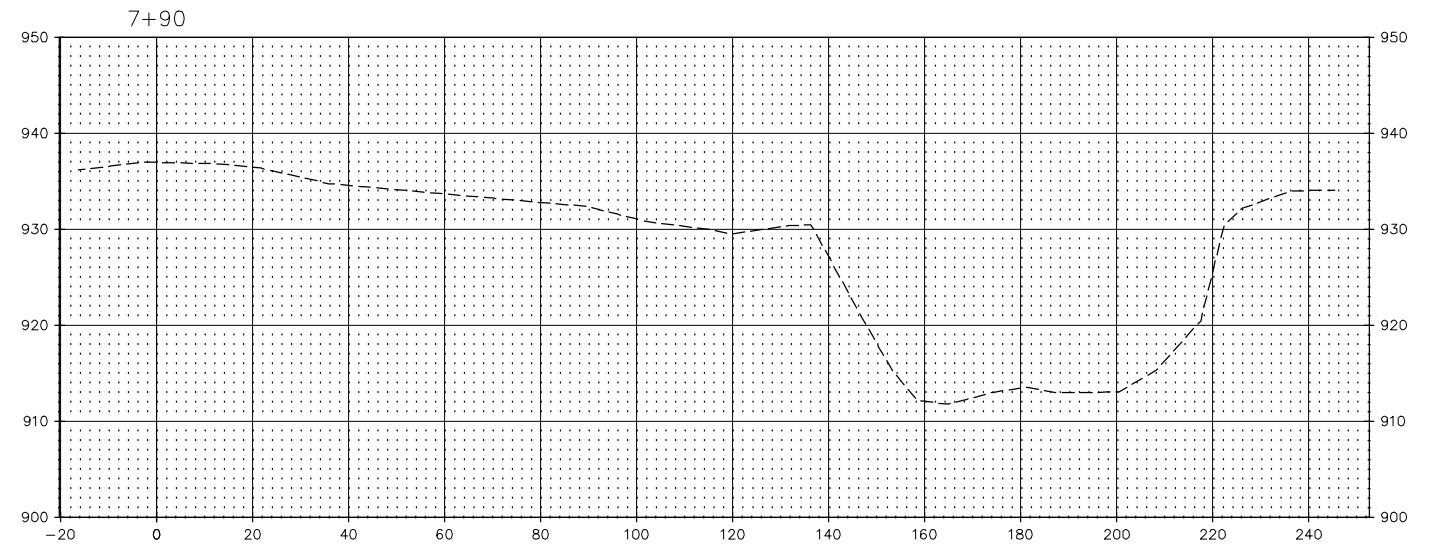
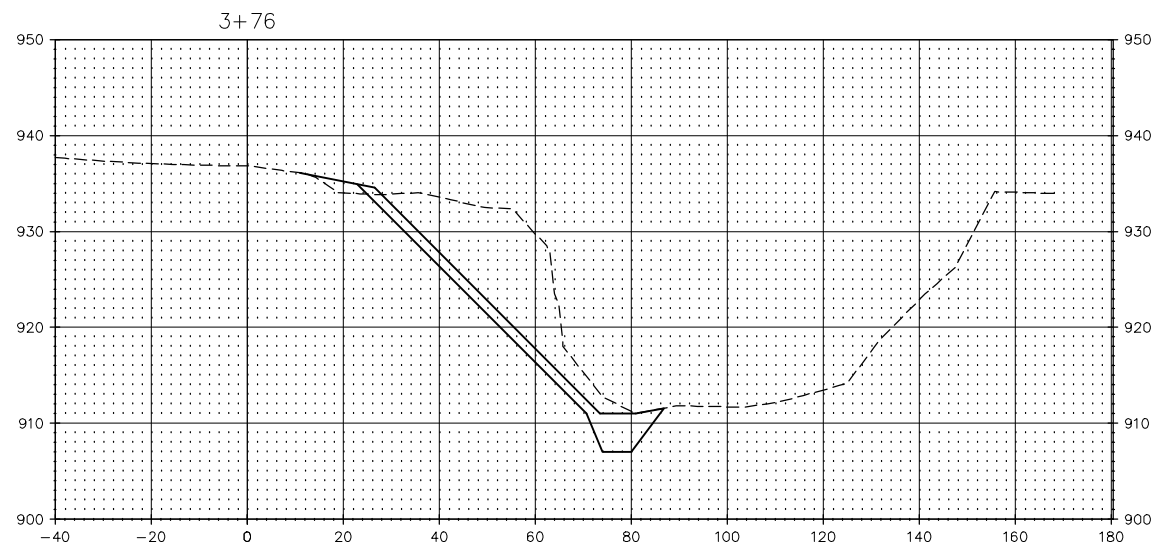


Fargo	Drawn by SMH	Date 4-6-12
P: 701.237.5065 F: 701.237.5101	Checked by RRS	Scale AS SHOWN

NORMAN LUTHERAN CHURCH
OPTION 2 - SHORTER SHEETING AND RIPRAP
KINDRED, NORTH DAKOTA

CROSS SECTIONS
PROJECT NO. 5474-001

SHEET
3 of 4



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No.	Revision	Date	By



Fargo	Drawn by SMH	Date 4-6-12
P: 701.237.5065 F: 701.237.5101	Checked by RRS	Scale AS SHOWN

NORMAN LUTHERAN CHURCH
OPTION 3 - RIPRAP
KINDRED, NORTH DAKOTA

CROSS SECTIONS
PROJECT NO. 5474-001

SHEET
4 of 4

May 17, 2012

Houston Engineering, Inc.
 1401 21st Avenue North
 Fargo, ND 58102-1814

Attn: Rick St. Germain
 P: 701.237.5065
 E: rick@houstoneng.com

**Re: Proposal for Geotechnical Engineering Services
 Norman Lutheran Church Riverbank Repair
 Kindred, North Dakota
 Midwest Testing/Terracon Proposal No. PM1120117**

Dear Mr. St. Germain:

Midwest Testing Laboratory (a Terracon Company) appreciates the opportunity to submit this proposal to provide geotechnical engineering services for the above referenced project. We understand the project will consist of attempting to stabilize a portion of the Sheyenne riverbank along 52nd Street Southeast near Kindred, North Dakota. The purpose of this study will be to evaluate the pertinent geotechnical conditions at the site and to develop geotechnical parameters, which will assist in the design and construction of repair and reinforcement of the existing riverbank. This proposal outlines our understanding of the project, defines the scope of services and provides an estimated fee for our services.

A. PROJECT INFORMATION

Site Location

ITEM	DESCRIPTION
Location	The site is located on the Sheyenne River just south of the Norman Lutheran Church about 3 miles northeast of Kindred. 52 nd Street Southeast is located along the top of the existing Sheyenne River bank.
Current ground cover	Grass and gravel surfaced road
Existing topography	The river bottom elevation varies between 908 and 913 in the project area. The finished floor elevation of the south portion of the church is 939.0. The top of the existing road is approximately 935 to 937.



Project Description

The church and 52nd Street Southeast are located along an outer curve in the Sheyenne River about 3 miles northeast of Kindred. Based on the report you provided dated April 10, 2012, erosion of the riverbank has caused slope failures along the outer edge of the channel and are located presently less than 10 feet from the edge of the road. The proposed project would involve the feasibility of stabilizing a section of the Sheyenne River near the Norman Lutheran Church.

Three options were proposed by Houston Engineering in regards to stabilization of the riverbank. Option 1 involves sheet pile approximately 78 feet long driven adjacent to the existing river channel over a length of approximately 775 feet. This option would involve minimal clearing of the riverbank, since the wall would be located between the edge of the road and the top of the river channel.

Option 2 consists of driving sheet pile approximately 30 feet long over a similar length of 775 lineal feet. This option would include shorter sheet pile, along with some minor reshaping of the channel as well as clearing and grubbing.

Option 3 would consist of clearing and grubbing along the road, combined with reshaping the channel slope and placing riprap along the entire project area to protect the riverbank from further erosion. This option assumes a 2:1 (H:V) slope on the riverbank would be acceptable.

Most of the riverbanks in the Red River Valley would be considered only marginally stable with estimated factors of safety of less than 1¼ within close proximity to the top of channel. For a successful repair alternative, we would recommend a minimum long-term factor of safety of 1.5. Based on our past experience in this area, obtaining a minimum factor of safety of 1.5 for roadways located within 10 feet of the top of the channel may not be economically feasible. Also, in areas with correct slope failures, we have observed increased movement after removal of trees and other vegetation.

Should any of the above information or assumptions be inconsistent with the planned construction, please let us know so that we may make any necessary modifications to this proposal.

B. SCOPE OF SERVICES

The services to be provided by Midwest Testing/Terracon are summarized in the following paragraphs.

Field Program – Based on an overall repair length on the order of 775 feet, we propose three soil test borings along the edge of the existing roadway. Our past experience in the Kindred area

Proposal for Geotechnical Engineering Services

Norman Lutheran Church Riverbank Repair ■ Kindred, North Dakota

May 17, 2012 ■ Terracon Proposal No. PM1120117



indicates the soil conditions would likely consist of silt and soft fat clays extending to a depth on the order of 85 feet. Therefore, the assumed sheet pile length of 78 feet would not likely penetrate the very stiff to hard sandy lean clay expected below the soft gray fat clays. We propose a boring depth of 100 feet for all three borings. The purpose would be to determine the depth of soft lacustrine clays at the site.

Sampling will be in general accordance with industry standard procedures wherein Shelby tube samples or split-barrel samples are obtained. One (1) split-spoon sample will be taken at 2½ foot intervals to a depth of 15 feet, followed by a sampling interval not more than five feet in the remainder of the deep borings. Soil sampling will be performed in accordance with ASTM D1586 and D1587. In addition we will observe and record ground water levels during and after drilling. Once the samples have been collected and classified in the field, they will be placed in appropriate sample containers for transport to our laboratory.

Conditions/Items to be provided by Client: Items to be provided by the client include the right of entry to conduct the exploration and an awareness and/or location of any private subsurface utilities existing in the area. We will contact North Dakota One Call for location of utilities in public easements. Location of private lines on the property is not part of the North Dakota One Call or Midwest Testing/Terracon scope of work. All private lines should be marked by others prior to commencement of drilling.

Midwest Testing/Terracon will take reasonable efforts to reduce damage to the property, such as rutting of the ground surface. However, it should also be understood that in the normal course of our work some such disturbance could occur. We have not budgeted to restore the site beyond backfilling our boreholes. If there are any restrictions or special requirements regarding this site or exploration, these should be known prior to commencing field work.

Our fee is based upon the site being accessible to our truck-mounted drilling equipment and Midwest Testing/Terracon providing layout of the borings; additional costs may result if this is not the case. It does not include services associated with site clearing, wet ground conditions, tree or shrub clearing, damage of existing crops / landscape or location of underground utilities beyond contacting a “one-call” locate service. If such conditions are known to exist on the site, Midwest Testing/Terracon should be notified so that we may adjust our scope of services and fee, if necessary.

For safety purposes, all borings will be backfilled immediately after their completion. Excess auger cuttings would be disposed of on the site. Because backfill material often settles below the surface after a period of time, we recommend the boreholes be checked periodically and backfilled if necessary. We could provide this service at your request or grout the holes, but this would involve additional cost.

Laboratory Testing – The samples will be tested in our laboratory to determine physical engineering characteristics. Testing will be performed under the direction of a geotechnical

Proposal for Geotechnical Engineering Services

Norman Lutheran Church Riverbank Repair ■ Kindred, North Dakota

May 17, 2012 ■ Terracon Proposal No. PM1120117



engineer and will include visual classification, moisture content, dry density, Atterberg limit, and strength tests (unconfined compression), as appropriate.

To assist in our analysis of the long-term factor of safety, we propose two consolidated-undrained triaxial tests with pore pressure readings. Each test would include three points.

Engineering Analysis and Report – The results of our field and laboratory programs will be evaluated by a professional geotechnical engineer licensed in the State of North Dakota. Based on the results of our evaluation, an engineering report will be prepared that details the results of the testing performed, provides logs of the borings, and a diagram of the site/boring layout. The report will include the following:

- Boring logs with soil stratifications based on visual soil classification.
- Summarized laboratory data.
- Groundwater levels observed during and after completion drilling
- Boring location plan.
- Subsurface exploration procedures.
- Encountered soils conditions.
- Construction difficulties.
- Analyzing the factor of safety with respect to long-term stability for each of the three options. Our analysis would include selecting one cross-section representing the worst-case condition, based on the cross-sections provided.
- Other slope configurations could be analyzed, as requested based on results of the first three analyses. Depending upon the number of analyses requested, it is possible the budgeted analysis time may exceed our estimated total cost for the project.

Schedule - We can generally begin the field exploration program within about one to two weeks after receipt of our signed Agreement for Services, if site and weather conditions permit. Completion of the triaxial shear testing will take approximately 3 to 4 weeks after the soil borings are completed. We estimate the analyses and preparation of the report would take another 2 to 4 weeks after all laboratory testing is complete.

C. COMPENSATION

For the scope of geotechnical services outlined in this proposal that includes drilling, laboratory testing, and an engineering report, we estimate the total cost will range from \$18,000.00 to \$20,000.00. We would not exceed a total cost of \$20,000.00 without additional notification to proceed. Our cost estimate includes a budget of 12 hours for analysis time (approximately 4 hours per option). If other cross-section/setback distances are evaluated, there would be an additional charge for analysis time beyond the budgeted 12 hours.

Proposal for Geotechnical Engineering Services

Norman Lutheran Church Riverbank Repair ■ Kindred, North Dakota

May 17, 2012 ■ Terracon Proposal No. PM1120117



Unless instructed otherwise, the invoice will be sent to your attention at the above address. Should it be necessary to expand our services beyond those outlined in this proposal, we will notify you, then send a supplemental proposal stating the additional services and fee. We will not proceed without your authorization, as evidenced by your signature on the Supplement Agreement form.

D. AUTHORIZATION

This proposal may be accepted by executing the attached Agreement for Services and returning one copy along with this proposal to Midwest Testing/Terracon. This proposal is valid only if authorized within sixty days from the listed proposal date.

We appreciate the opportunity to provide this proposal and look forward to the opportunity of working with you.

Sincerely,

Midwest Testing Laboratory, A Terracon Company

A handwritten signature in black ink that reads 'Loel M. Fetting'.

Loel M. Fetting, P.E.
Geotechnical Department Manager

Theodore J. Engelstad, P.E.
Office Manager

Copies to: Via e-mail and constitutes the original. A hard copy will not be mailed.

Attachments: Agreement for Services

From: Chad Lilleberg
To: [Wilson, Robert](#); [Kaushagen, Taylor](#)
Subject: 17373 26th St SE Argusville, ND-Lilleberg Residence
Date: Thursday, March 3, 2022 10:19:45 AM
Attachments: [2011.pdf](#)
[2021.pdf](#)

CAUTION: EXTERNAL EMAIL

Mr. Wilson,

My name is Chad Lilleberg, my wife (Sharon) and I reside at 17373 26th St SE Argusville, ND. The purpose in this correspondence is to inquire about working with Cass County on the buyout of my residence located on the banks of the Red River. We are experiencing riverbank slumping; this has been ongoing for the last several years resulting in removing half of my garage. We have hauled in many yards of dirt but has become a losing battle. I have included several pictures for you to review at your convenience. It is our hope to be added to the agenda and motion made to approve the funding of \$127,000 for the structure acquisition and demo of the home of Chad and Sharon Lilleberg at 17373 26th St SE with a 10% cost share by Chad and Sharon Lilleberg. This acquisition will only be for the residence structure and the land will be retained by Chad and Sharon Lilleberg but must be deed restricted to prevent any future development. Feel free to contact me with any questions you may have.

Regards,

Chad Lilleberg

Cell 763-267-8108

Chad.lilleberg@forterrabp.com

Lilleberg - 17373 26TH ST, Argusville, ND 58005

Item	Cost Estimate
Acquisition Value (Last 3 Yr Avg. Assessed Value \$90,300 X 1.10)	\$99,330
Project Planning	\$500
Abstract Updating	\$500
Legal	\$500
Asbestos Survey	\$1,141
Asbestos/Vermiculite Removal	\$2,500
Lead-Based Paint Survey	\$500
Cass Rural Water Disconnect	\$1,500
Demolition	\$20,000
Management	\$500
Total	\$126,971
10% of Total	\$12,697
Items 1 through 8 Total	\$27,641
Estimated House Value	\$99,330
10%	\$12,697
Amount Received for Property Less the 10% costs.	\$86,633

Assessed	Plus 10%
\$90,300.00	\$99,330.00

	Building	
2021	\$79,900	
2020	\$98,300	
2019	\$92,700	\$90,300 Avg
2018	\$92,700	



2011



Sources: Esri, Airbus DS, USGS, NGA, NASA, CIAAR, N Robinson, NCEAS, PLS, OS, DMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community, Esri Community Maps Contributors, County of Cass, ND, State of North Dakota, © Open StreetMap, Microsoft, Esri Canada, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc., METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

These data are provided on an "AS-IS" basis, without warranty of any type, expressed or implied, including but not limited to any warranty as to their performance, merchantability, or fitness for any particular purpose.

Cass County, ND

Date: 3/2/2022

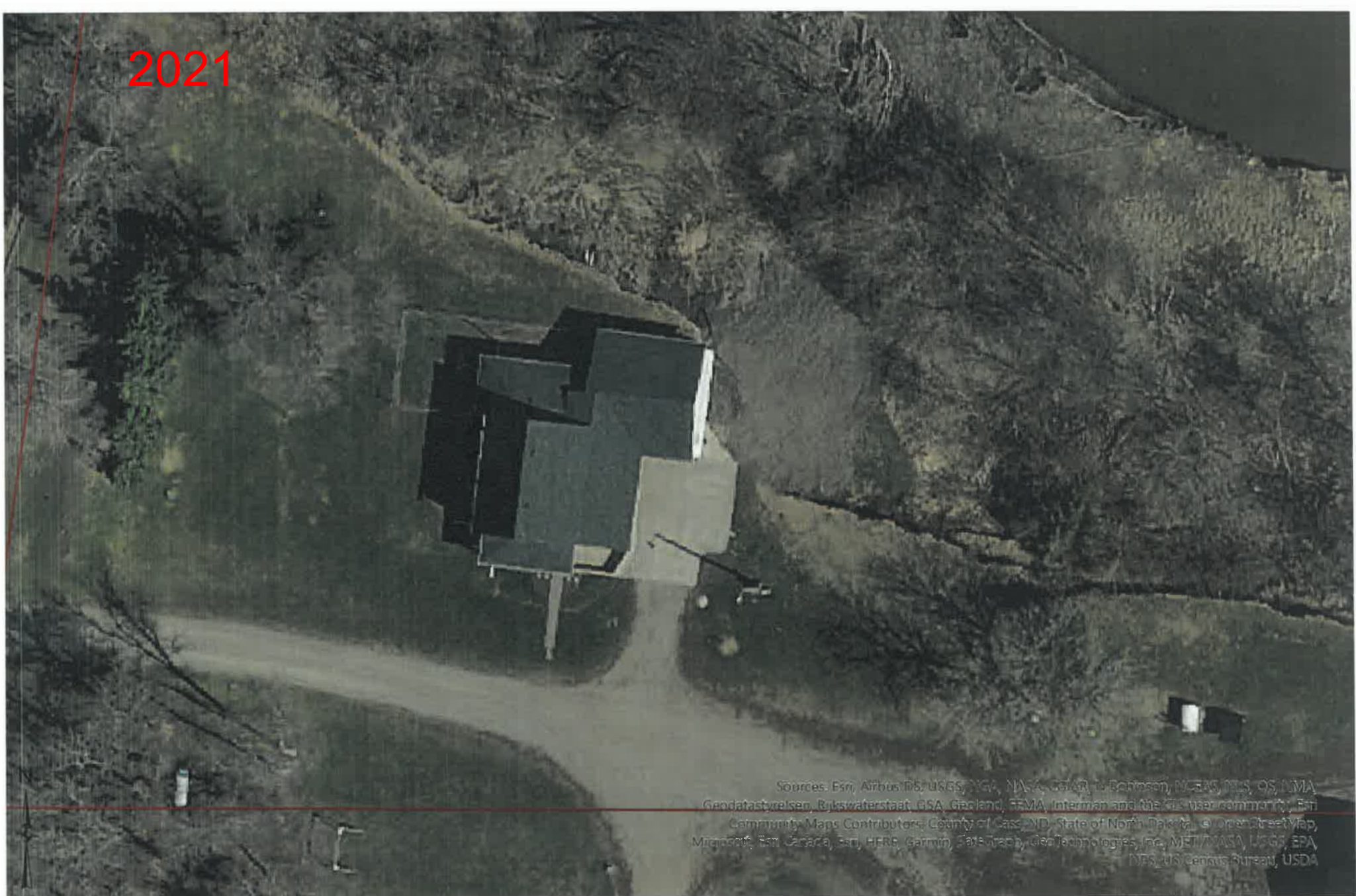
Cass County, ND

CASS COUNTY
GOVERNMENT



This map is not a substitute for accurate field surveys or for locating actual property lines and any adjacent features.

2021



Sources: Esri, Airbus DS, USGS, NGA, NASA, GEBCO, iSBornsen, NCEAS, NPS, OS, LIMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community, Esri Community Maps Contributors, County of Cass, ND, State of North Dakota, © OpenStreetMap, Microsoft, Esri, Canada, Esri, HERE, Garmin, Swatchy, GeoTechnologies, Inc., METI/NASA, USGS, EPA, NBS, US Census Bureau, USDA

These data are provided on an "AS-IS" basis, without warranty of any type, expressed or implied, including but not limited to any warranty as to their performance, merchantability, or fitness for any particular purpose.

Cass County, ND

Date: 3/2/2022

Cass County, ND

CASS COUNTY
GOVERNMENT



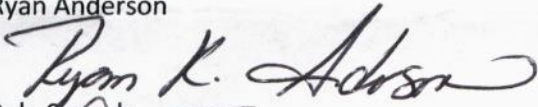
This map is not a substitute for accurate field surveys or for locating actual property lines and any adjacent features.

Walburg township water project

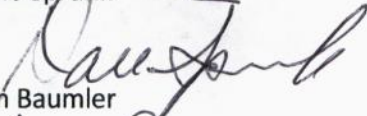
Walburg township water project is located in the existing township ditches north of sections 20 and 21. The project consists of 3 drop structures and will cost more than the township can afford at this time. It was completed many years ago and is starting to show its age, the culverts are rusting out and are showing signs of erosion. The project is in an area with a big elevation change from west to east. If the water isn't controlled by these structures a large amount of erosion will occur leading to damage of the township road and surrounding property.

Walburg township board of supervisors

Ryan Anderson



Dale Sprunk



Jon Baumler





QUESTIONS, UPDATES
OR TO PURCHASE BOOKS AND MAPS
E-MAIL US AT:
info@farmandhomepublishers.com

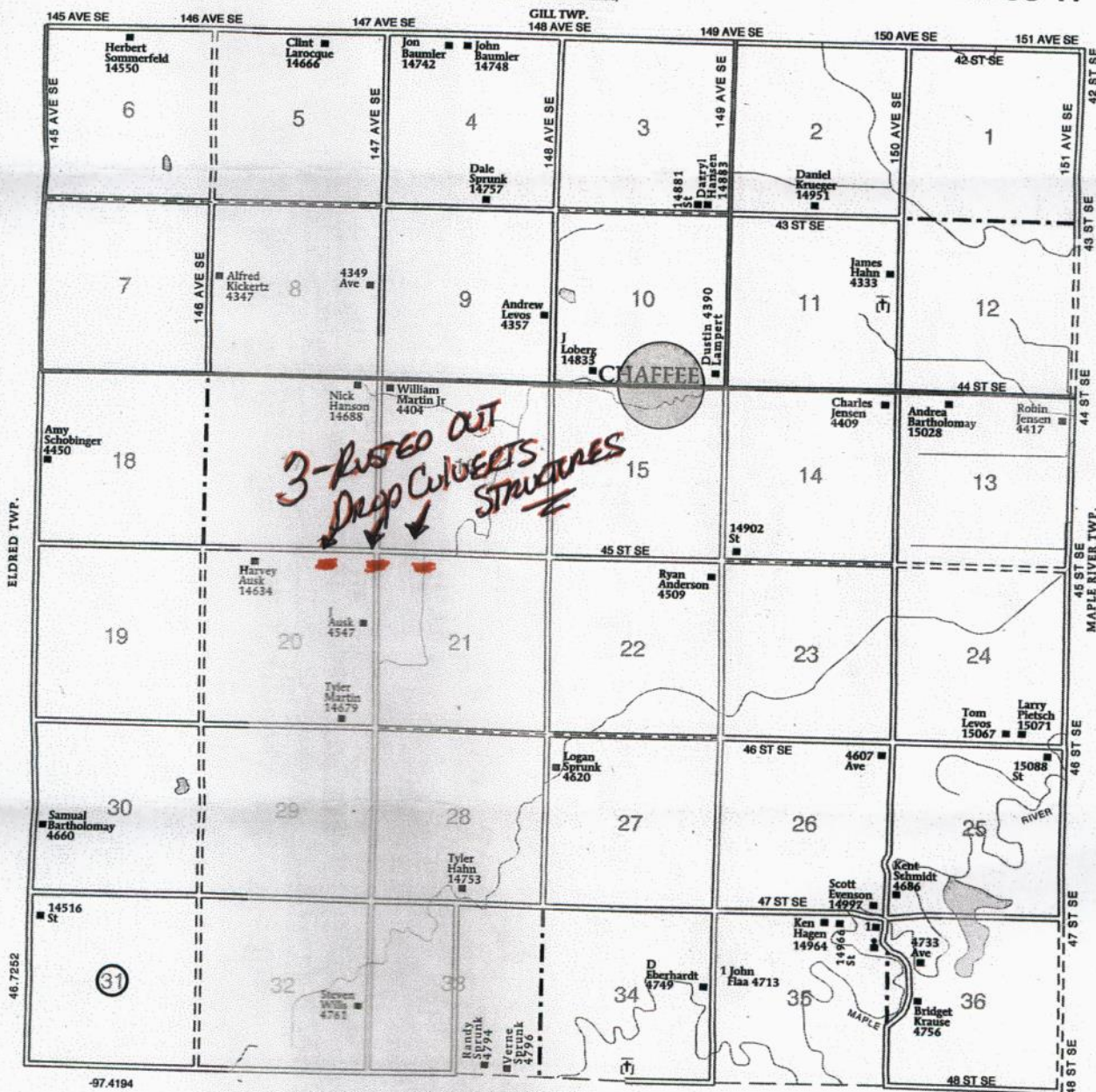


T-138-N

WALBURG DIRECTORY

R-53-W

(Residents - Owners or Renters)



MAP OF CONSTRUCTION AREA.

ANY QUESTIONS - CALL RYAN 238-1064

Kent Jensen Construction Inc.
 4262 148 Ave SE
 Wheatland, ND 58079

Estimate

Date	Estimate #
3/2/2022	22002

Walburg Township.
 4620 148th Ave SE
 Chaffee, ND 58079

Description	Stand Alone Option	Total
Bid for replacing 3 drop structures along 45th St SE to include the following : Strip topsoil, salvage any existing rip rap, excavate expose and remove existing structures, install new structures, pour concrete pad for new invert, place rip rap at outlet, cover & compact with onsite material and spread one load of gravel at intersection of 45th St SE and 147thAve SE.		16,750.00
See attached sheet from TrueNorth Steel 5' X 9' riser with trash rack, 2' x 24" dia stub welded on, 54' of 24" CMP at each location, all poly coated.		18,706.09
Thank you for the opportunity to bid your project. Any questions please call 701-793-4446	Total	\$35,456.09



Quote for CSP and Construction Products

Quote #: C03224016

1522 40th Street NW
 Fargo, ND 58102

Project: Wahlberg Township Project

Date: 3/1/2022

ESTIMATOR:
Todd Greene

SALES CONTACT:
Chad Veitenheimer

Direct: 701-492-4439

Mobile: 701-317-2706

Fax: 701-281-1993

Todd.Greene@TrueNorthSteel.com

Mobile: 701-371-9980

Main Office: 701-282-0910

Fax: 701-281-1993

Chad.Veitenheimer@TrueNorthSteel.com

Item	Qty	Dia. (In.)	Ga.	Description	Unit Price	U/M	Extended Price
	3			60" X 9' Riser W/24" X 2' Stub & Trash Rack W/Anti-Vortex Baffle			
	3			Riser, 60" X 9', Poly Coated, 24" X 2' Stub, Conical Trash Rack, Anti Vortex Plate	\$ 3,652.43	/Ea.	\$ 10,957.29
	156			24" Poly Coated CSP			
	156	24"	16 Ga	Helical Poly Coated Standard Corrugated Steel Pipe 6 @ 26'	\$ 46.05	/Ft.	\$ 7,183.80
	6			Band Poly 24" 16 Ga 1 Pc Std 12" Wide	\$ 52.50	/Ea.	\$ 315.00
	1			Freight Freight	\$ 250.00	/Ea.	\$ 250.00

Total Quote: \$ 18,706.09

This quote is valid for 30 days from the date shown. Seller retains the right to issue a revised quote with revised prices at any time. Prices on this quote are subject to change without notice due to the current volatility of steel prices. Please contact your TrueNorth Steel representative for further information. Authorized signature of buyer acknowledges the receipt of and agreement with TrueNorth Steel terms and conditions. Storage fees may be applicable to any order if the customer takes delivery more than 30 days after the buyer's originally requested delivery date. Prices do not include any applicable sales taxes.

BUYER SIGNATURE: _____
BUYER PRINT NAME: _____
ON-SITE CONTACT NAME: _____
ESTIMATED START DATE: _____

DATE: _____
PHONE: _____
PHONE: _____

For a complete listing of TrueNorth Steel Construction Products, please visit our website.
www.TrueNorthSteel.com

Elm River Joint Water Resource District
PO Box 10
Hillsboro, ND 58045

March 4, 2022

Rick Steen, Chairman
Cass County Commission
P.O. Box 2806
Fargo, ND 58108-2806

Dear Chairman Steen:

Re: Elm River Dam No. 1 and No. 2 Improvements
Cass, Steele & Traill County, ND

The Elm River Joint Water Resource District (the “WRD”) is conducting the Elm River Dams 1 and 2 Improvements (“the Project”). The WRD currently owns and maintains three dams in Cass, Steele and Traill Counties. A description of the dams is provided below:

- Elm River Dam 1 (Steele County) – located along the Elm River in Steele County with a drainage area of approximately 54 square miles. Approximately two-thirds (2/3) of the drainage area comes from Cass County. This dam has been determined to be in disrepair, insufficiently sized for the drainage area flowing to the dam and does not meet current State dam design standards.
- Elm River Dam 2 (Traill County) – located along the Elm River in Traill County with a drainage area of approximately 124 square miles. Approximately two-thirds (2/3) of the drainage area comes from Cass County. This dam has been determined to be in disrepair, insufficiently sized for the drainage area flowing to the dam and does not meet current State dam design standards.
- Elm River Dam 3 (Cass County) – located along a tributary of the Elm River in Cass County with a drainage area of approximately 5 square miles. All the drainage area is in Cass County. This dam currently does not have any deficiencies.

The WRD has selected alternatives from a study to address the deficiencies of Elm River Dam 1 (Steele County) and Elm River Dam 2 (Traill County), which will bring the dams into compliance with the State’s current dam design standards.

The estimated total Project cost is \$3,100,000. The Project does qualify for State Water Commission and Red River Joint WRD cost-share, and the WRD is currently pursuing funding from these entities. Unfortunately, the Project does not qualify for federal cost-share from the NRCS. Here is a summary of the projected cost-share:

- State Water Commission cost-share - \$1,671,000
- Red River Joint WRD cost-share - \$1,286,100
- Local cost-share - \$142,900

The WRD respectfully requests the Cass County Flood Sales Tax Committee approve cost-share in the amount of \$95,267 for the Elm River Dams 1 and 2 Improvements, which is 2/3 of the local share and

matches the drainage area from Cass County. The existing federal project maintenance district for all three dams only provides a maximum of \$41,880 combined each year, which severely limits the amount of maintenance that can be completed at all three dams.

The above projected cost-share amounts are based on the WRD's request for the RRJWRD to approve cost-share that is above their current policy. The RRJWRD will decide at their April meeting on whether to approve this increased cost-share amount. The local cost-share would increase to \$500,150 if the RRJWRD only funds at their policy level. If this occurs, the WRD may request additional cost-share from the Cass County Flood Sales Tax Committee.

Upon completion of the design this year, the WRD will coordinate with the North Dakota Department of Water Resources on obtaining a permit for the Project. Construction is anticipated in 2023. Enclosed with this letter is a project map.

If you have any questions, please feel free to contact me or our Project Engineer, Lyndon Pease, Moore Engineering, Inc., at 701-282-4692.

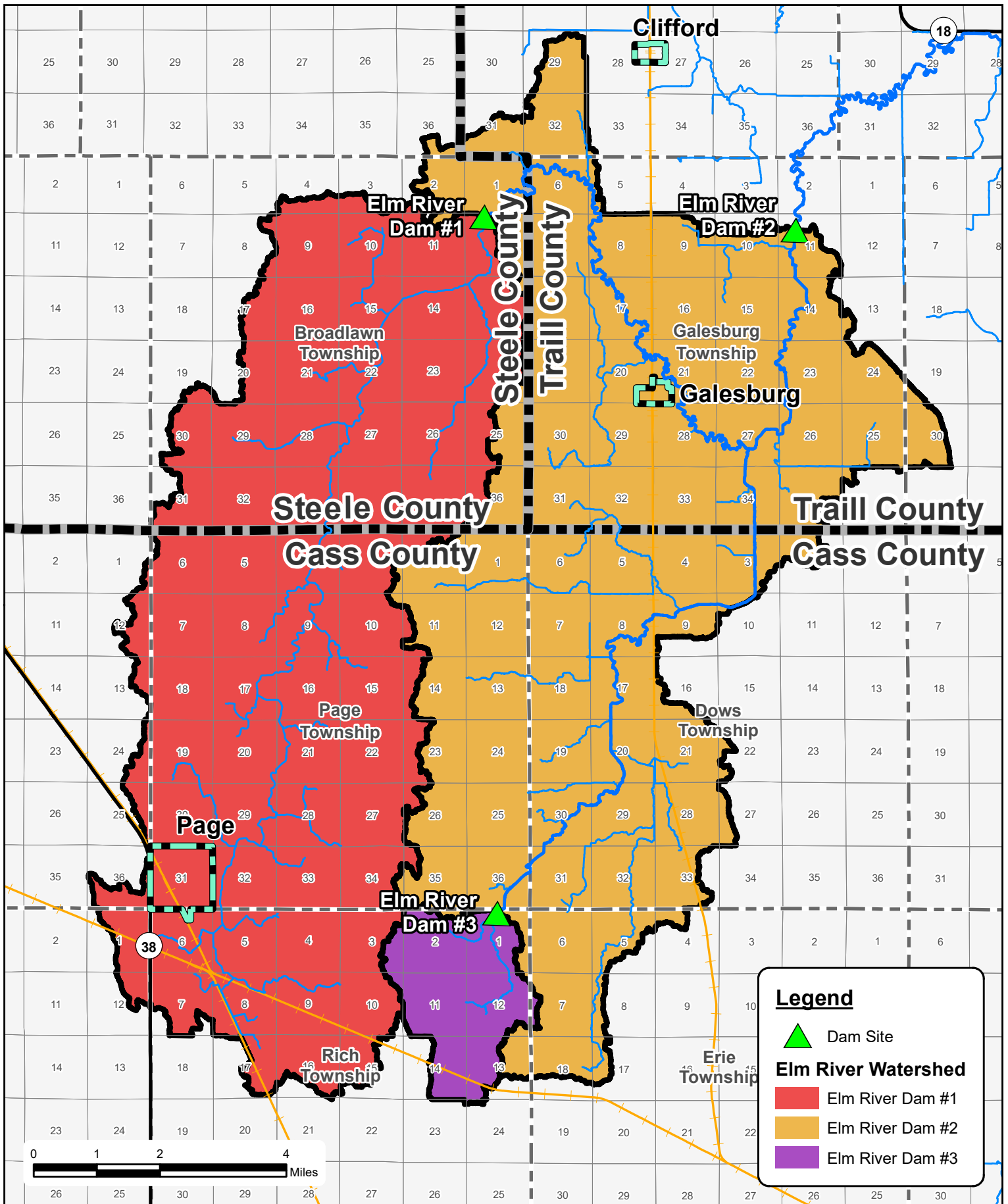
Sincerely,

ELM RIVER JOINT WATER RESOURCE DISTRICT



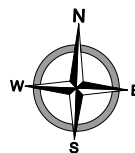
Jessica Spaeth
Treasurer

Enclosures:
Project Map



**ELM RIVER DAMS
CASS, TRAILL & STEELE COUNTIES, NORTH DAKOTA**

Created By: KMV Date Created: 03/04/22 Date Saved: 03/04/22 Date Exported: 03/04/22
 Plotted By: kyle.volk Parcel Date: N/A Aerial Image: 2021 County NAIP SIDS Elevation Data: N/A
 Horizontal Datum: NAD 1983 StatePlane North Dakota South FIPS 3302 Feet Vertical Datum: NAVD1988
 T:\Projects\21200\21239\21239_Elm_River_Cost_Share_Request_Exhibit.mxd



March 31st 2022

Cass County

Subject: Gill Township slide repair 2022

Gill Township would like to submit a project for partial funding using Cass County Sales Tax.

This project involves the repair of a road bed that is eroding into a natural drain that runs adjacent to the road on east side of section 18. This location is north of the road bed repair we performed last year. During periods of high water the slope of the road has eroded away and the proper back slope is no longer in place.

The project will include back sloping the road bed and placing rip rap to ensure that the road bed stays in place during future high water events. The project will also include cutting a larger bottom to the channel to move the main water pressure farther away from the road bed.

Our estimate for this project is \$36,084. \$22,800 of the project is labor. The remaining \$13,284 is for the Rip Rap that is to be placed on the road side of the ditch being repaired.

Gill Township is respectfully requesting \$27,063 to assist in this project.

To the best of our knowledge there currently is no other funding available to assist the township with this project.

Gill Township will be responsible for the upkeep and maintenance of this project once complete.

Respectfully submitted

Gill Township Road Supervisors

Todd Weber (chair) 218-790-3123

Jason Schatzke 701-361-2979

Dallas Hoffmann 701-238-7842

Kent Jensen Construction Inc.
4262 148 Ave SE
Wheatland, ND 58079

Estimate

Date	Estimate #
4/8/2022	22014

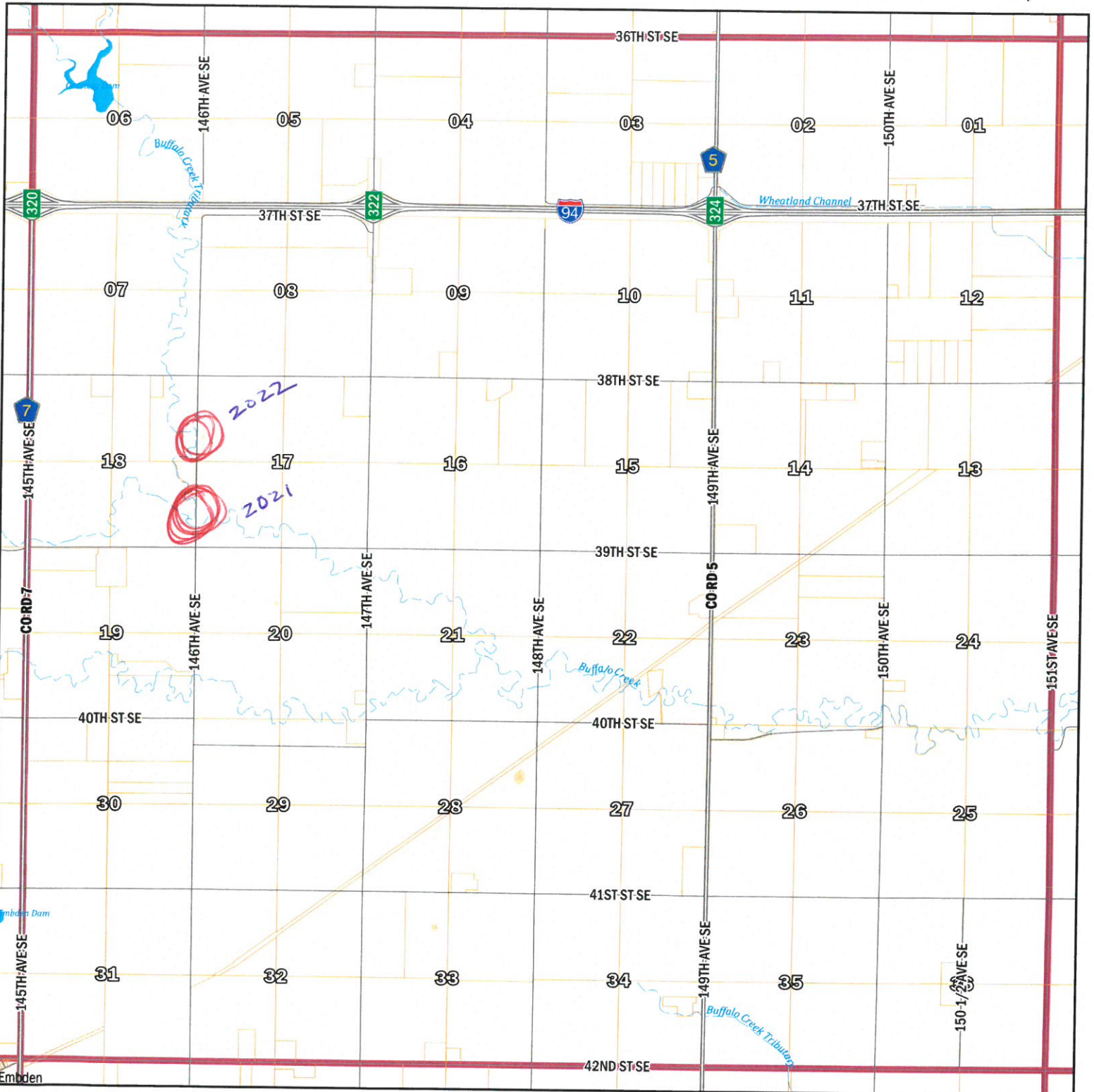
Gill township
4151 150 1/2 Ave SE
Wheatland, ND 58079

Description	Total
Estimate for road repairs 146 Ave SE section 17/18 North of McGinnity's to include the following: Repair west road slope as needed, lay fabric supply and place 12 loads rip rap.	22,800.00
Estimate does not include any seeding, sodding or relocation of utilities.	Total \$22,800.00

GILL TOWNSHIP

TOWNSHIP 139 N, RANGE 53 W

CASS COUNTY, ND



- Parcel
- City Limits
- Extraterritorial City Zoning Jurisdiction
- Extraterritorial City Zoning Jurisdiction (joint with Twp)
- Township





Disclaimer: This map is made available as a public service. Maps and data are to be used for reference purposes only and Cass County, ND, is not responsible for any inaccuracies herein contained. No responsibility is assumed for damages or other liabilities due to the accuracy, availability, use, or misuse of the information herein provided.

Gill Twp - Slide Repair

NE Qtr . Sec. 18 - Buffalo Creek

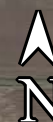
Legend

-  Path Measure
-  Path Measure

Google Earth

146th Ave SE

145th Ave SE



900 ft

Slide Repair Project - Durbin Township

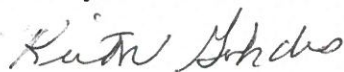
March 30, 2022

On behalf of Durbin Township, I am requesting Cass County Half Percent Sales Tax funding assistance to repair a safety issue resulting from road sliding into the Maple River. The cost of this project is larger than our Township's budget can afford.

1. Project description:
 - a. We are looking to move a road approximately 75' away for approximately 700' from the Maple River. This is the most cost- effective approach to solving the issue of the Maple River eroding the edge of the road. We have been working with the Cass County Highway Department for a solution. The problem area is located on 160 - 1/2th Ave SE, about one quarter mile south of 38th St SE (see attachment). This is the main road to access property to the south.
2. Point of contact:
 - a. Keith Gohdes, Chairman 701-238-6426, kgohdes67@gmail.com
 - b. Darin Gross, Clerk/Treasurer, 701-388-5006
3. Estimate Cost:
 - a. The Cass County Highway Department has estimated the project cost to be approximately \$50,000, is also includes the cost of a right of way easement.
4. Amount of funding assistance requested:
 - a. We respectfully request an amount equal to 75% of the total \$50,000 project. or **\$37,500**.
5. Other funding sources:
 - a. Currently, we are not aware of any additional funds available for this project.
6. Durbin Township would own the road and be responsible for all maintenance following completion.
7. Any other information:
 - a. The attached map depicts the area of concern and the proposed repair.

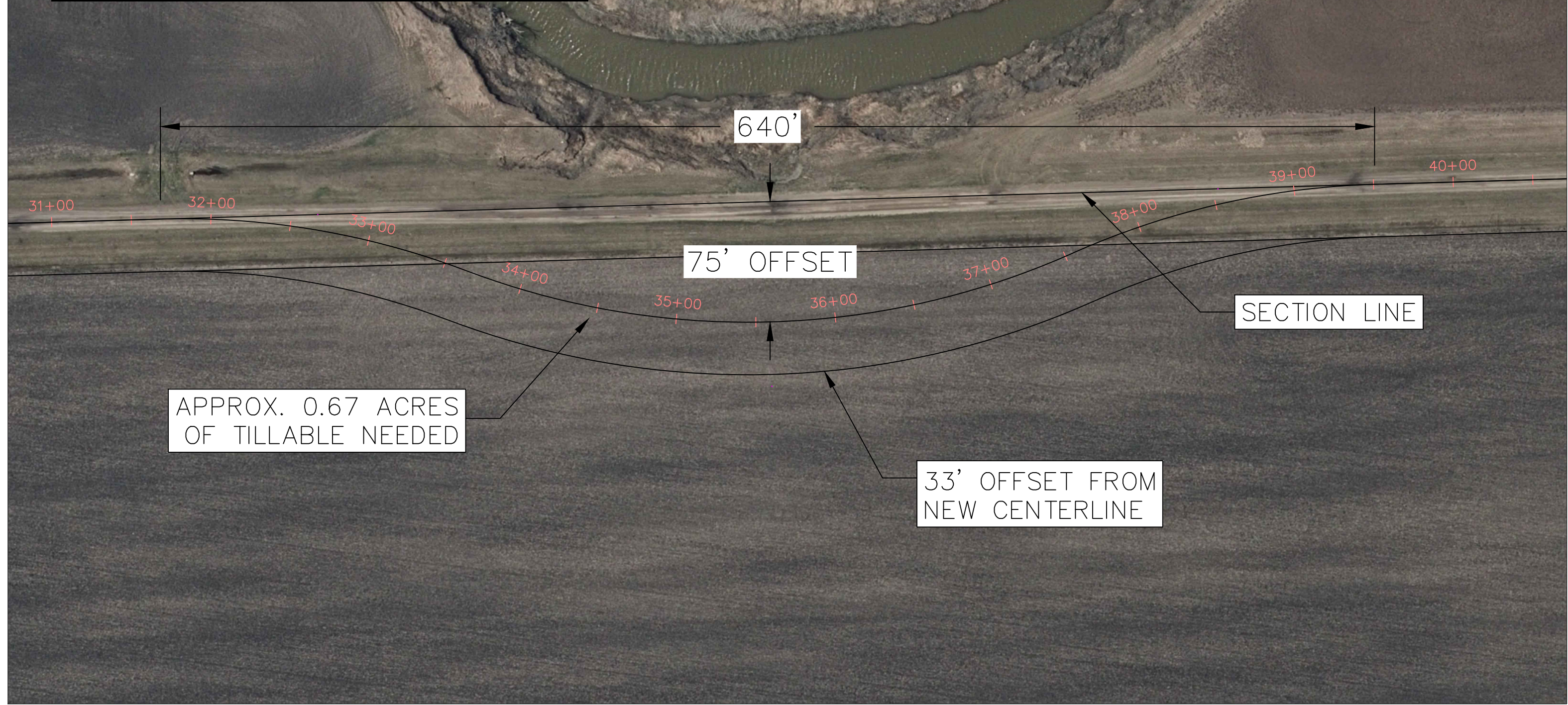
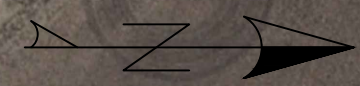
Thank you for your time and your consideration of this project.

Sincerely,



Keith Gohdes, Durbin Township Chairman

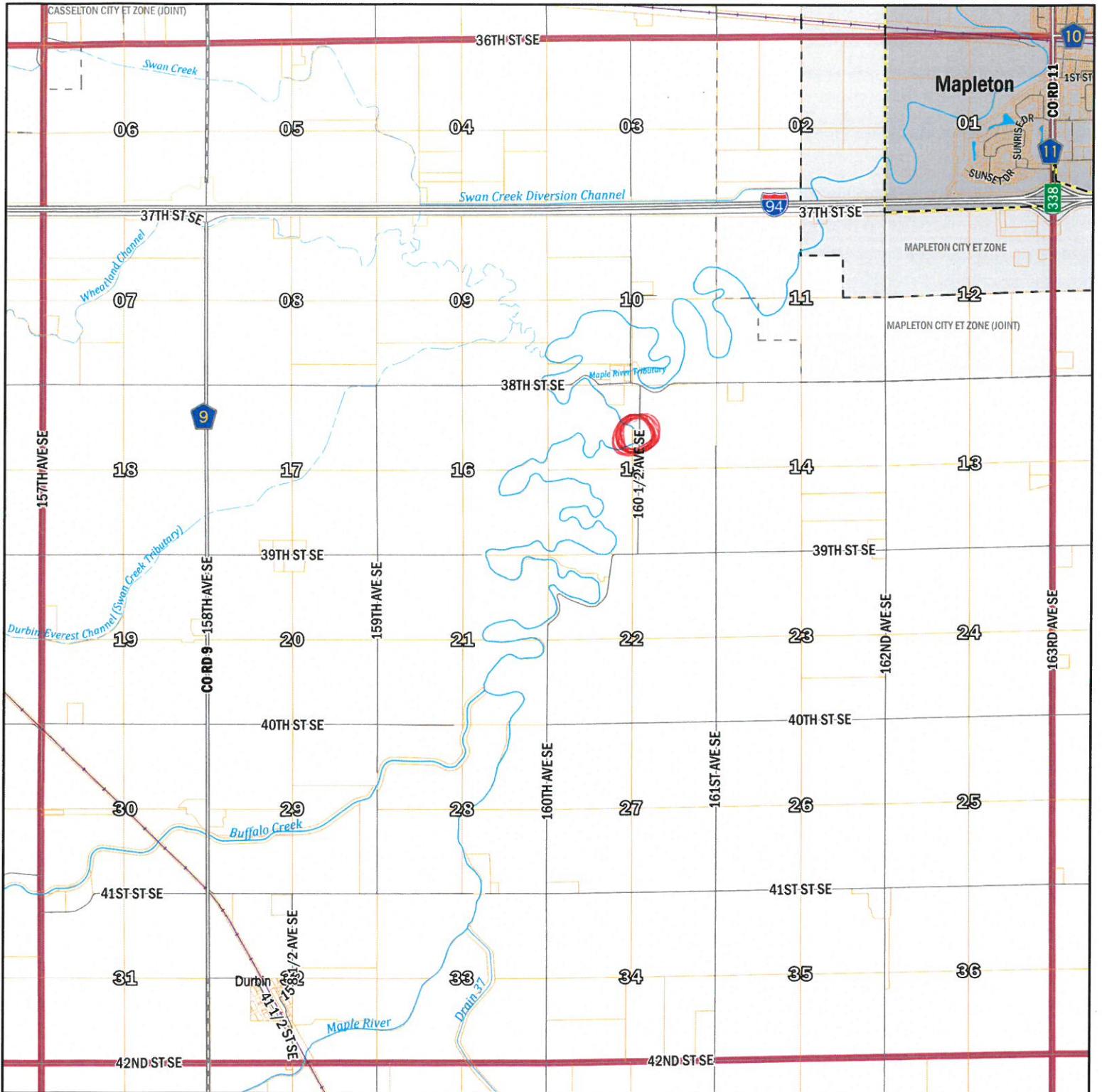
CASS COUNTY HIGHWAY DEPARTMENT					
SEC. 15 Durbin Twp ROAD REALIGNMENT @ 75' OS 160 1/2 Ave SE - 1.5 Miles South of 194 Frontage Road		ESTIMATED QUANTITIES		ENGINEER'S ESTIMATE	
ITEM	DESCRIPTION	UNIT	APPROX. QUANTITY	UNIT COST	TOTAL
	MOBILIZATION	L SUM	1	\$10,000.00	\$10,000.00
1	COMMON EXCAVATION	CY	4,500	\$3.00	\$13,500.00
2	BORROW EXCAVATION	CY	500	\$10.00	\$5,000.00
3	TOPSOIL	CY	1,000	\$5.00	\$5,000.00
4	SEEDING/MULCHING	ACRE	1.50	\$2,000.00	\$3,000.00
5	AGGREGATE BASE COUSE CLASS 13	TON	250	\$20.00	\$5,000.00
6	TRAFFIC CONTROL	L SUM	1	\$1,000.00	\$1,000.00
7	RIPRAP GRADE II	CY	24	\$75.00	\$1,800.00
8	LAND ACQUISITION (APPROX.)	ACRE	0.67	\$8,000.00	\$5,360.00
9	TEMP CONSTRUCTION EASEMENT	LS	1	\$500.00	\$500.00
GRAND TOTAL					\$50,160.00








DURBIN TOWNSHIP

TOWNSHIP 139 N, RANGE 51 W

CASS COUNTY, ND



-  Parcel
-  City Limits
-  Extraterritorial City Zoning Jurisdiction
-  Extraterritorial City Zoning Jurisdiction (joint with Twp)
-  Township



Disclaimer: This map is made available as a public service. Maps and data are to be used for reference purposes only and Cass County, ND, is not responsible for any inaccuracies herein contained. No responsibility is assumed for damages or other liabilities due to the accuracy, availability, use, or misuse of the information herein provided.

Slide Repair Project - Everest Township

April 6, 2022

On behalf of Everest Township, I am requesting Cass County Half Percent Sales Tax funding assistance to repair a safety issue resulting from road sliding/eroding into the Buffalo Creek. The cost of this project is larger than our Township's budget can afford.

1. Project description:
 - a. We are looking to the adjust the road alignment a road approximately 700' along Buffalo Creek. This is the most cost-effective approach to solving the issue of the Buffalo creek eroding the edge of the road resulting in the road sliding. We have been working with the Cass County Highway Department for a solution. The problem area is located on 40th Ave SE, just west of 152nd Ave SE (see attachment).
2. Point of contact:
 - a. Caryn Weber, Chairman 701-373-1533, EverestTownshipCW@outlook.com
 - b. Brian Otteson, Clerk/Treasurer, 701-793-4743, everesttownshipbno@gmail.com
3. Estimate Cost:
 - a. Kent Jensen Construction Inc. has estimated the project cost to be approximately **\$28,000**, which also includes the cost of a right of way easement.
4. Amount of funding assistance requested:
 - a. We respectfully request an amount equal to 75% of the total **\$28,000** project. or **\$21,000.**
5. Other funding sources:
 - a. Currently, we are not aware of any additional funds available for this project.
6. Everest Township would own the road and be responsible for all maintenance following completion.
7. Any other information:
 - a. The attached map depicts the area of concern and the proposed repair.

Thank you for your time and your consideration of this project.

Sincerely,

Caryn Weber, Everest Township Chairman

Kent Jensen Construction Inc.
 4262 148 Ave SE
 Wheatland, ND 58079

Estimate

Date	Estimate #
4/3/2022	22012

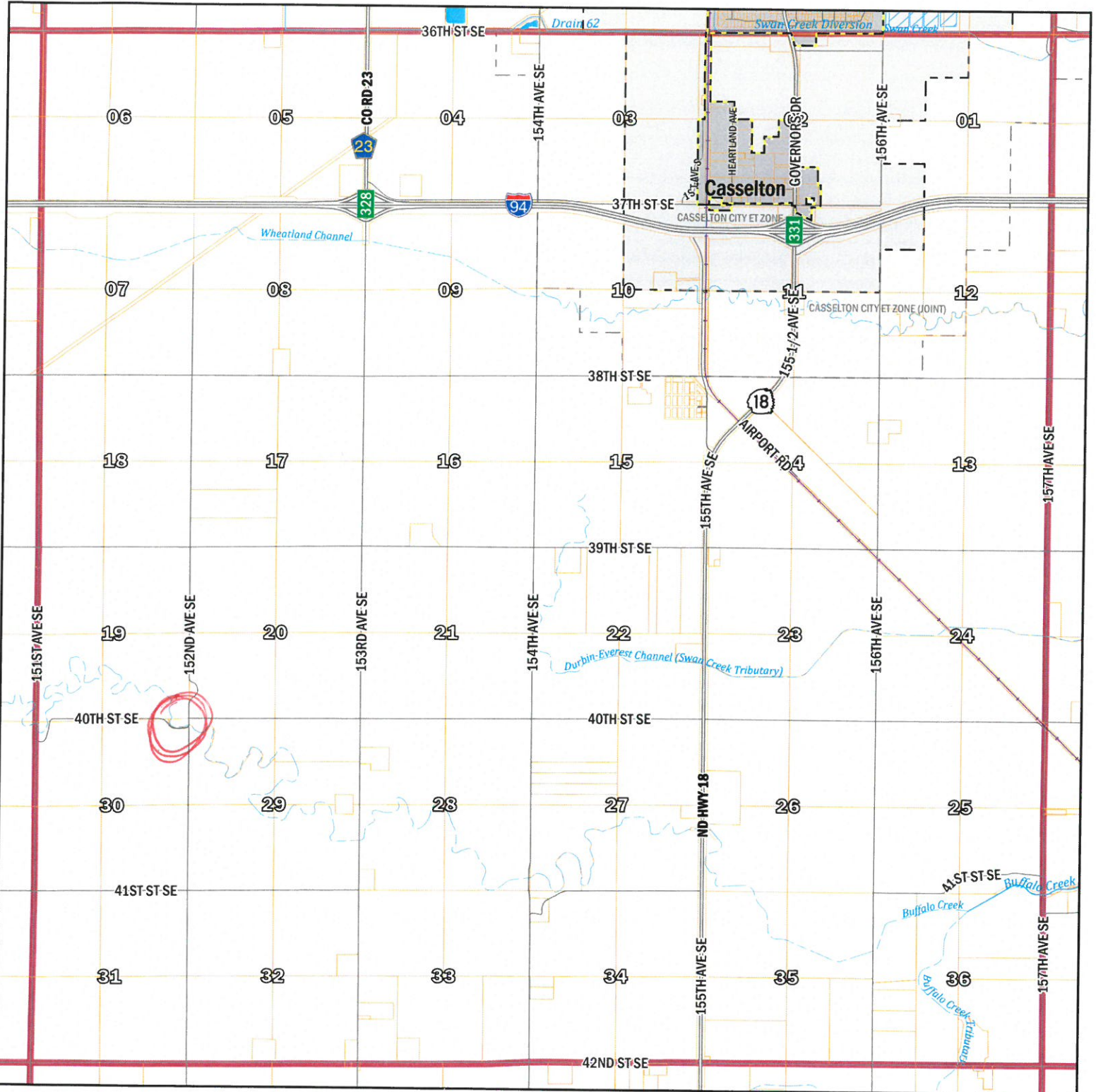
Everest Township
 c/o Brian Otteson
 15449 37 St SE
 Casselton, ND 58012






Description	Stand Alone Option	Total
<p>Estimate for repairing 40 St SE sections 19/20 to include the following: Furnish and place ten loads rip rap, extend one culvert (extension and band not included) road will be closed to traffic while Camas stock piles rip rap.</p>		12,400.00
<p>Option #2 to include the following: Straighten channel to a better alignment with bridge, fill old channel to provide 4:1 sideslope for road, extend one culvert (extension and band not included)</p>		11,000.00
<p>Estimate does not include any seeding, sodding or relocation of utilities.</p>	Total	\$23,400.00

EVEREST TOWNSHIP

TOWNSHIP 139 N, RANGE 52 W

CASS COUNTY, ND



-  Parcel
-  City Limits
-  Extraterritorial City Zoning Jurisdiction
-  Extraterritorial City Zoning Jurisdiction (joint with Twp)
-  Township



Disclaimer: This map is made available as a public service. Maps and data are to be used for reference purposes only and Cass County, ND, is not responsible for any inaccuracies herein contained. No responsibility is assumed for damages or other liabilities due to the accuracy, availability, use, or misuse of the information herein provided.

Flood Risk Reduction Project-Maple River Township

On behalf of Maple River Township, I am requesting funding assistance with a road realignment project.

1. Project description:
 - a. We are looking to move a road 40' away from the Maple River. This is the most cost-effective approach to solving the issue of the Maple River eroding the edge of the road. We have been working closely with the Cass County Highway Department on coming up with this solution. The problem area is located on 46th St SE, about $\frac{3}{4}$ of a mile east of HWY 18 (see attachment). Ever since the Maple River Dam was constructed, we have been seeing an increase in soil erosion on the south embankment of the Maple River where it meets 46th St SE. It has become a serious safety concern and has been brought to our attention by many people in the township, who use this road quite frequently. It has also become a maintenance problem and safety issue for our road grader.
2. Point of contact:
 - a. Scott Saewert, Chairman 701-261-8661, ssaewert@aol.com
 - b. Corey Hoglund, Supervisor, 701-371-4633, corhoglund@gmail.com
3. Estimate Cost:
 - a. The Cass County Highway Department has estimated the cost at \$55,000. We would also add \$5000 to this amount, for any unforeseeable problems, as well as extra work that may be required in the future.
4. Amount of funding assistance requested:
 - a. We would request the 75%, or \$45,000, of the funds to help us complete this project.
5. Other funding sources:
 - a. Currently, we are not aware of any additional funds available for this project.
6. Maple River Township would own the road and be responsible for all maintenance following completion.

Thank you for your time and your consideration of this project.

Sincerely,



Corey Hoglund, Maple River Township Supervisor

Financing for Ag Real Estate, Equipment & Operating Lines



Fargo South 701.235.9906 Fargo Downtown 701.235.4248 Moorhead 218.233.2791

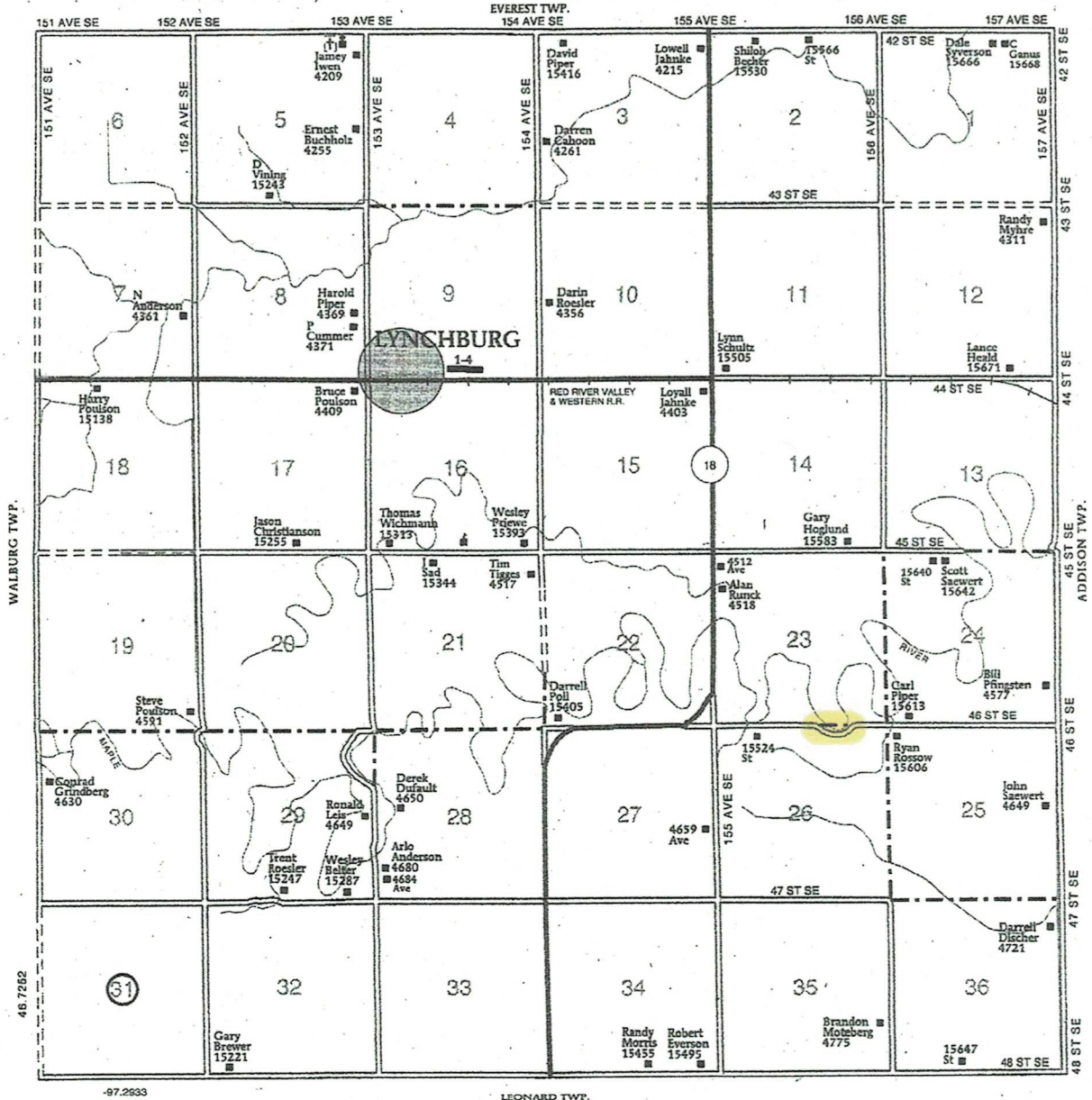


T-138-N

MAPLE RIVER DIRECTORY

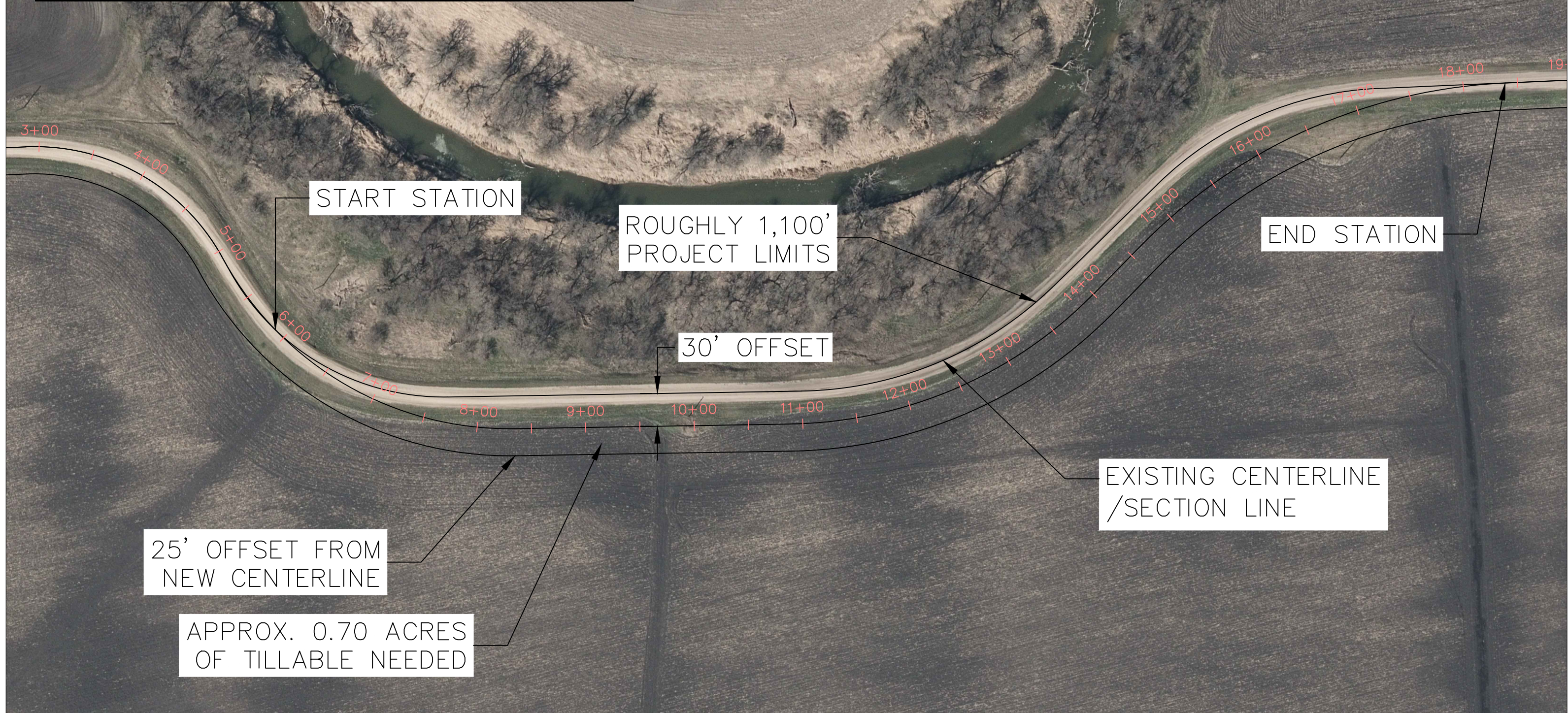
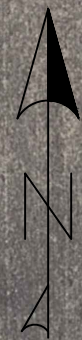
R-52-W

(Residents - Owners or Renters)



- MAPLE RIVER TOWNSHIP SECTION 9**
- 1 Hone, Jerod 15303
 - 2 Rose, Tim 15305
 - 3 Albright, Charles 15309
 - 4 Fleichfresser, Jacob 15311

CASS COUNTY HIGHWAY DEPARTMENT					
SEC. 23/26 Maple River Twp ROAD REALIGNMENT @ 30' OS 46th St SE - 0.75 Miles East of State Hwy 18		ESTIMATED QUANTITIES		ENGINEER'S ESTIMATE	
ITEM	DESCRIPTION	UNIT	APPROX. QUANTITY	UNIT COST	TOTAL
	MOBILIZATION	L SUM	1	\$10,000.00	\$10,000.00
1	COMMON EXCAVATION	CY	4,000	\$3.00	\$12,000.00
2	BORROW EXCAVATION	CY	500	\$10.00	\$5,000.00
3	TOPSOIL	CY	2,000	\$5.00	\$10,000.00
4	SEEDING/MULCHING	ACRE	2.00	\$2,000.00	\$4,000.00
5	AGGREGATE BASE COUSE CLASS 13	TON	382	\$20.00	\$7,640.00
6	TRAFFIC CONTROL	L SUM	1	\$1,000.00	\$1,000.00
8	LAND ACQUISITION (APPROX.)	ACRE	0.70	\$8,000.00	\$5,600.00
9	TEMP CONSTRUCTION EASEMENT	LS	1	\$500.00	\$500.00
GRAND TOTAL					\$55,740.00





925 10th Avenue East
Suite 1
West Fargo, ND 58078
P: 701.282.4692
F: 701.282.4530



April 11, 2022

Robert Wilson
County Administrator
Cass County, ND
PO Box 2806
Fargo, ND 58108-2806

Dear Mr. Wilson:

The City of Mapleton is respectfully requesting funding assistance from the Cass County Flood Risk Reduction funds to offset project costs of a flap gate retrofit on two storm sewer outfalls along the Maple River. The project location map is attached for reference.

The City of Mapleton encountered issues this spring with inoperable sluice gates in one of their stormwater pump stations that discharge into the Maple River. The inoperable sluice gate caused floodwater from the Maple River to back up into the Maplewood residential development. Fortunately, the river crested at a lower and more manageable height this year which resulted in no flood damages, but there are concerns that future floods could have a significant impact on the upstream residential neighborhoods. To prevent future floodwater from backing up into the City storm sewer system, the City is proposing to add flap gates to the existing 30" RCP and 36" RCP outfalls at locations shown on the attached exhibit.

The total estimated project cost is \$80,000. The City of Mapleton is respectfully requesting \$60,000 of funding assistance, which is 75% of the estimated total project cost. However, any assistance received from the Cass County Flood Risk Reduction funding is appreciated and will directly reduce the local share and cost to the city's residents.

Please add this request to your next committee meeting for consideration.

Please contact me at (701) 282-4692 or Brandon.Oye@mooreengineeringinc.com if you have any questions or need additional information about the project.

Sincerely,

Brandon Oye, PE
City Engineer (on behalf of the City of Mapleton)

Attachments

Cc: Michelle Kalvoda-Baumann – City Auditor, City of Mapleton

Project Description: Flap Gate Retrofit – Storm Sewer Outfalls

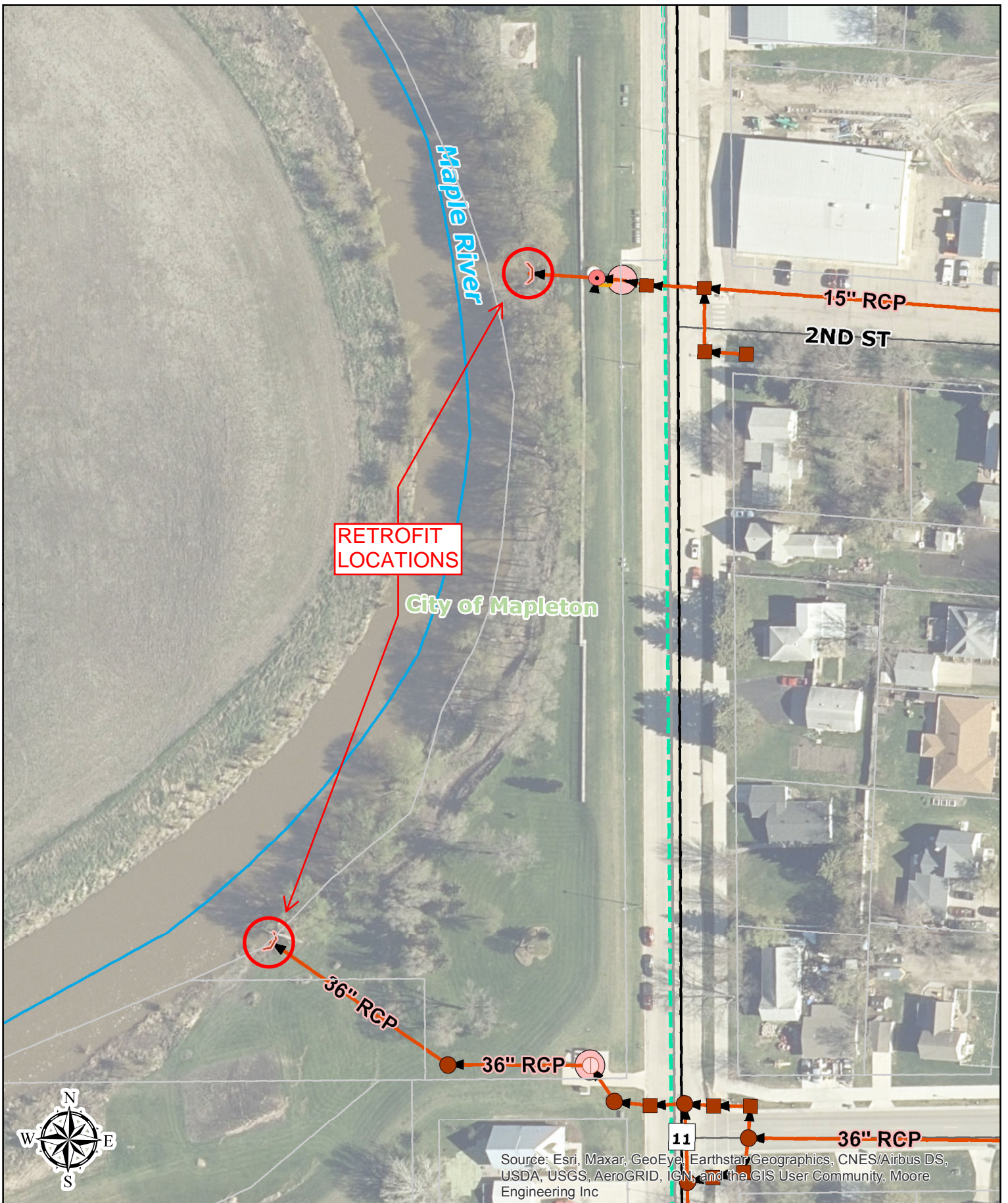
Point of Contact: Brandon Oye (City Engineer), Moore Engineering Inc.

Estimated Cost: \$80,000

County Funding Requested: \$60,000 (75% of total project cost)

Other Funding Sources: Funds on hand

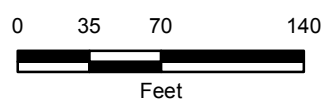
Who will own and maintain: City of Mapleton



Source: Esri, Maxar, GeoEye, Earthstar/Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Moore Engineering Inc

**Flap Gate Retrofits
Storm Sewer Outfalls
Mapleton, North Dakota**

Created By: ... DateCreated: 11-04-2022 Created from WebMap by Moore Engineering





925 10th Avenue East
Suite 1
West Fargo, ND 58078
P: 701.282.4692
F: 701.282.4530



April 11, 2022

Robert Wilson
County Administrator
Cass County, ND
PO Box 2806
Fargo, ND 58108-2806

Dear Mr. Wilson:

The City of Casselton is respectfully requesting funding assistance from the Cass County Flood Risk Reduction funds to offset project costs of a slope slide repair of Swan Creek Diversion at city lagoon cells 1 and 2. The project location map is attached for reference.

Slope sloughing along the north slope of Swan Creek Diversion, south of the wastewater primary cells 1 and 2, was first noticed by city public works spring of 2021. Vertical displacement at the top of the slope is approximately two (2) feet with the west end of the sloughing starting near the dike between lagoon cell 1 and cell 2 and continuing east a distance of approximately 180 lineal feet. The proposed project is to repair the existing slope sloughing, thus reducing the risk of further sloughing and critical failure of the slope. Critical slope failure could lead to the emptying of the primary lagoon cells into Swan Creek, which would cause flash flooding downstream in addition to environmental impacts.



Figure 1. Existing slope sloughing (looking west)



Figure 2. Existing slope sloughing (looking east)

Improving lives by building strong communities.

mooreengineeringinc.com

The total estimated project cost is \$850,000. A significant portion of the project cost is due to the requirement of installing sand fill to replace the soil removed in the area of the slope failure. This was a recommendation from the geotechnical report that was prepared by Braun Intertec. The City of Casselton is respectfully requesting \$637,500 of funding assistance, which is 75% of the estimated total project cost. However, any assistance received from the Cass County Flood Risk Reduction funding is appreciated and will directly reduce the local share and cost to the city's residents. We will be coordinating the project with the Maple River Water Resource District.

Please add this request to your next committee meeting for consideration.

Please contact me at 701-282-4692 or brandon.oye@mooreengineeringinc.com if you have any questions or need additional information about the project.

Sincerely,



Brandon Oye, PE
City Engineer

Attachments

Cc: Sheila Klevgard – City Auditor, City of Casselton

Project Description: Swan Creek Diversion Slope Repair at Lagoon Cells 1 & 2

Point of Contact: Brandon Oye (City Engineer), Moore Engineering Inc.

Estimated Project Cost: \$850,000

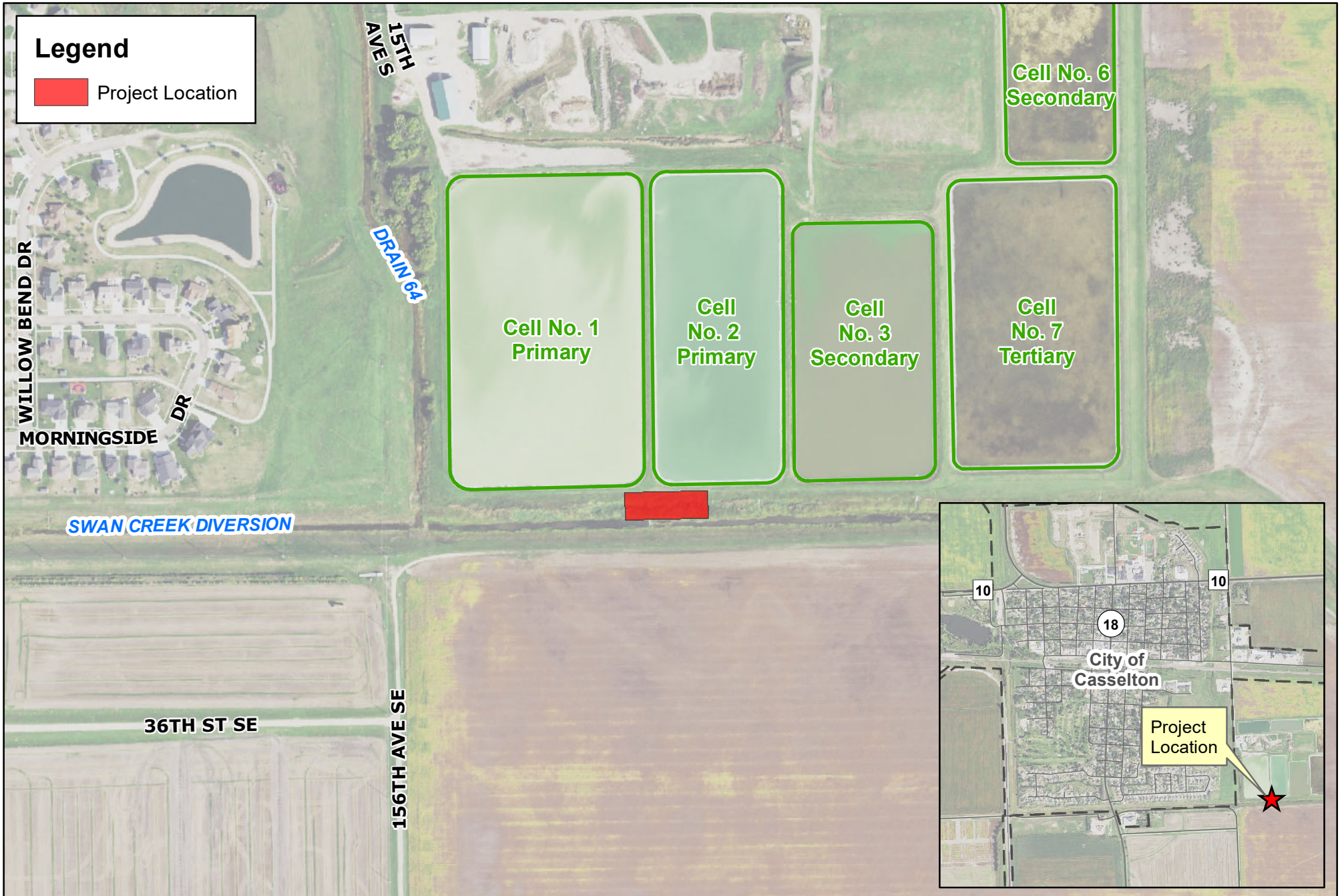
County Funding Requested: \$637,500 (75% of total project cost)

Other Funding Sources: The City is also pursuing State Water Commission cost-share

Who will own and maintain: Joint between the Maple River Water Resource District and the City of Casselton

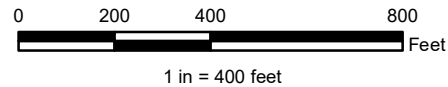
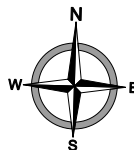
Legend

 Project Location



PROJECT LOCATION MAP SWAN CREEK SLOPE REPAIR AT LAGOON CELLS 1 & 2 CASSELTON, NORTH DAKOTA

Created By: TJS Date Created: 04/08/22 Date Saved: 04/08/22 Date Plotted: NEVER Date Exported: 04/08/22
 Plotted By: Tanner Schmidt Parcel Date: N/A Aerial Image: 2021 County NAIP SIDS Elevation Data: Lidar
 Horizontal Datum: NAD 1983 StatePlane North Dakota South FIPS 3302 Feet Vertical Datum: NAVD1988
 T:\Projects\21900\21921\21921_CasseltonLagoonSlopeRepair_CityWide.mxd





MEMORANDUM

TO: Cass County Flood Sales Tax Committee
FROM: Jason Benson, Cass County Engineer *FOR: [Signature]*
DATE: April 14, 2022
SUBJECT: Agenda Item for April 18, 2022, Flood Sales Tax Committee Meeting: Request for funding for Cass 81 – Slide Repair on Wildrice River.

**Highway
Department**

Jason Benson, P.E.
County Engineer

Thomas B. Soucy, P.E.
Deputy County Engineer

Blaine Laaveg
Superintendent

This slide is located on the west of Cass Hwy 81 approximately 300 feet south of 88th Ave S along the Wildrice River.

Cass County hired Braun Intertec Corporation to complete Geotech Evaluation Report of this slide area a couple of years ago. An inclinometer was installed which measures the movement and depth of the slide. In the past two years movement has been relatively slow. But in recent days it has increased to the point where the inclinometer not functioning moved approximately 10' towards the river.

Utility Issues: Several utilities parallel the west shoulder between Cass Hwy 81 in the slide area. Century Link has two lines; the first is 2' and the second is 7' from the slide. A force main sewer line that connects the City of Oxbow to the City of Fargo is located 12' from the slide. Cass Rural Water is the furthest away at 17' to the failure location. They also recently installed a valve to reroute their water supply in the event of failure. The shoulder of Cass Highway 81 is 39' from the Slide. A Sprint Fiber Optic communication line is located on the east side of Hwy 81.

A site visit meeting was held with the Utilities, Consultants, City of Fargo & Cass County on April 13th of 2022 to discuss the options. Options from flattening the slope to constructing a sheet pile wall and anchor tiebacks to stabilize the area were discussed.

Houston Engineering, Inc. and Braun Intertec Corp. are evaluating and fast tracking the design options for Cass County and the City of Fargo to consider.

An estimate of \$1.5 million for Geotech, Design and Construction is the project scope. The City of Fargo indicated they would be able to cost share with the project. Details for this are still being worked out.

SUGGESTED MOTION: Approve the Cass Highway 81 Slide Repair Project estimated at \$1,500,000 using Flood Sales Tax dollars at 75% or \$1,125,000.

1201 Main Avenue West
West Fargo, North Dakota
58078-1301

701-298-2370
Fax: 701-298-2395

Cass Hwy 81 –Slide Repair – WildRice River



SUGGESTED MOTION: Approve the Cass Highway 81 Slide Repair Project estimated at \$1,500,000 using Flood Sales Tax dollars at 75% or \$1,125,000.



Cass Hwy 81 –Slide Repair – WildRice River



SUGGESTED MOTION: Approve the Cass Highway 81 Slide Repair Project estimated at \$1,500,000 using Flood Sales Tax dollars at 75% or \$1,125,000.

