CASS COUNTY
GOVERNMENT

County
Administrator

Keith Berndt

MEMO

TO: Flood Sales Tax Committee
Ken Pawluk
Rick Steen
Mike Montplaisir
Rodger Olson

FROM: Keith Berndt
Cass County Administrator

DATE: March 30, 2015

SUBJECT: Flood Sales Tax Project Requests for 2015

A meeting of the Flood Sales Tax Committee has been scheduled for Monday, April 6, 2015 at 1:00 PM in the Commission Conference Room. The objective of the meeting will be to review and approve or deny 2015 sales tax project funding requests.

Project solicitation letters were sent out in January to Cities, Townships and Water Resource Districts in the County. At the time the Cass County sales tax was passed, the Commission decided to dedicate 9% of the total for projects other than the FM Diversion.

The current amount available for these projects is $2,288,934.45. We have received $766,335 in new funding requests for this year. I've enclosed financial summaries, minutes from the last meeting, a copy of the sales tax ordinance, and the project requests.

WORDENH\MY DOCUMENTS\KEITH\MEMO-FLOOD SALES TAX COMM MEMO 3-30-15.DOCX

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FLOOD SALES TAX COMMITTEE

AGENDA FOR APRIL 6, 2015

Cass County Commission Room

1:00 PM

1. Call to Order
2. Approve minutes from previous meeting
3. Flood sales tax fund update
4. Status of previously approved projects
5. Review of projects and selection of projects to be funded in 2015
6. Other business
7. Adjournment

cc: Local Media

FLOOD SALES TAX COMMITTEE
MAY 5, 2014—1:00 PM

1. MEETING TO ORDER

Commissioner Ken Pawluk called a meeting of the Flood Sales Tax Committee to order on Monday, May 5, 2014 at 1:00 PM in the Commission conference room, Cass County Courthouse, with the following present: County Commissioner Ken Pawluk; County Administrator Keith Berndt; County Commissioner Darrell Vanyo; and Joint Water Resource District Representative Rodger Olson. Absent was: County Auditor Michael Montplaisir.

Also present were Commissioner Mary Scherling; Commissioner Vern Bennett; Cass County Engineer Jason Benson; Sarah Heinle, Cass County Auditor's Office; Brandon Oye, Mike Opat, and Chad Engels, Moore Engineering; Duane Klatt and Carlita Dietz, City of Mapleton; Mark Brodshaug, Cass County Water Resource District; and Jurgen Suhr, Maple River Water Resource District.

2. MINUTES APPROVED

MOTION, passed

Mr. Berndt moved and Mr. Olson seconded to approve the meeting minutes from August 5, 2013, as presented. Motion carried.

3. FLOOD SALES TAX FUND UPDATE

Mr. Berndt reviewed the Cass County sales tax activity. He said there is about $2.6 million in the fund to be used for county projects.

4. STATUS OF PREVIOUSLY APPROVED PROJECTS

Mr. Oye reviewed the previously approved projects. The Argusville Levee Recertification is 95% complete with an expected completion date in May. They are working with the contractor to get a second pump for the Mapleton lift station. The Mapleton Levee Recertification project is requesting $650,825 which includes a 50% base bid of $445,825 plus alternate 1 50% share for $97,500 which includes closure structures on culverts under the levee and alternate 2 for 50% share of $107,500 which includes storm sewer upsizing for a large section of the city to maintain minimum internal drainage requirement for FEMA's Accreditation. The City of Mapleton plans to use special assessments to fund the local share of the project.

Mr. Opat said the Pontiac Township Improvement District is requesting an additional $52,500.

5. REVIEW AND SELECTION OF PROJECTS TO BE FUNDED IN 2014

The committee was presented with information and discussed the following projects:

- Mapleton Levee Recertification-flood risk reduction project
- Upper Maple River Dam-funding for construction phase of project
- Lake Bertha Flood Water Detention-future installation of outlet
- Detention Project Development-detention projects that benefit Cass

MOTION, passed

Mr. Berndt moved and Mr. Vanyo seconded to approve the following 2014 flood sales tax projects: Mapleton Levee Recertification $445,825 plus alternate 1 for $97,500; Pontiac Township Improvement District $500,000; Upper Maple River Dam for $706,000; Lake Bertha Flood Water Detention for $242,500; and Detention Project Development for $143,325. Discussion: Mr. Vanyo said the sales tax funds are a result of a county wide vote and the portion committed for flood protection is being used for projects across Cass County. Mr. Pawluk said there is a need for flood protection across the county. Mr. Olson said a good message has been sent to residents in all areas of the county because the funds are being used for projects that span the entire county and beyond. Mr. Pawluk said Cass County is continuing to fund projects wherever possible. On roll call vote, the motion carried unanimously.

6. NEXT MEETING

A meeting will be set for a later date.

7. ADJOURNMENT

MOTION, passed

On motion by Mr. Berndt, seconded by Mr. Olson, and all voting in favor, the meeting was adjourned at 1:54 PM.

Minutes prepared by Cindy Stoick, Principal Secretary

Cass County Sales Tax Activity Cash Basis - 2015 Updated 03/30/2015			
Date	Description	Amount	Balance
	Balance Forward		14,027,533.28
2015	Sales Tax	4,449,669.99	18,477,203.27
2015	Interest	7,635.42	18,484,838.69
2015	County Projects	(13,021.92)	18,471,816.77
3/4/2015	County Projects	(178,347.92)	18,293,468.85
			18,293,468.85
			18,293,468.85

Reserved for County Projects - Cash	3,681,033.27	
Reserved for Diversion Project	14,612,435.58	18,293,468.85

Summary

2015 Receipts	
Sales Tax Revenue	4,449,669.99
Interest Revenue	7,635.42
Total Receipts	4,457,305.41
2015 Expenditures	
Diversion Board of Authority	-
City of Fargo - Cash Flow Other Sources	-
County Projects	(191,369.84)
Land Purchase	-
Total Expenditures	(191,369.84)
Receipts over Expenditures	4,265,935.57
Balance from 2014	14,027,533.28
Balance Current 2015	18,293,468.85

Reserve for County Projects 2014 Activity

Balance of Cash Carried forward from 2014	3,292,897.70	
2015 Reserves (9%)	401,157.49	
Total	3,694,055.19	
County Projects - Expenses Paid in 2015		
2012 City of Argusville Diking	-	
2012 Maple-Steele WRD Study	-	
2012 City of Mapleton - Lift Station	13,021.92	
2013 Pontiac Township - Project No 73	-	
2013 City of Argusville - Levee improvement	-	
2013 City of Casselton - Levee Repairs	-	
2013 Maple-Steele - Dam Project	-	
2014 City of Mapleton Levee Recertification 2012-1	-	
2014 Pontiac township Project no 73 additional	-	
2014 Upper Maple River Dam	-	
2014 Lake Bertha Flood Water Detention	-	
2014 Detention project Development	-	
Total County Project Expenditures 2014	13,021.92	(178,347.92)
Cash Balance Reserve for County Projects	3,681,033.27	
Encumbrances:		
2012 City of Argusville Diking	-	PO109161
2012 Maple-Steele WRD Study	-	PO109159
2012 City of Mapleton - Lift Station	-	PO114261
2013 Pontiac Township - Project No 73	-	PO111883
2013 City of Argusville - Levee improvement	-	PO114263
2013 City of Casselton - Levee Repairs	(23,750.00)	PO119566
2013 Maple-Steele - Dam Project	(17,500.00)	PO119567
2014 City of Mapleton Levee Recertification 2012-1	(207,023.82)	PO119568
2014 Pontiac township Project no 73 additional	(52,000.00)	PO119569
2014 Upper Maple River Dam	(706,000.00)	PO119570
2014 Lake Bertha Flood Water Detention	(242,500.00)	PO119571
2014 Detention project Development	(143,325.00)	PO119572
Total Encumbrances	(1,392,098.82)	-
Available Balance for County Projects	2,288,934.45	

Previously Approved County Sales Tax Projects

Project	Total Approved	Paid	Left to Pay
Round Hill Project	$ 350,696.00	$ 350,696.00	$ -
City of Oxbow Diking	$ 105,284.29	$ 105,284.29	$ -
2012 City of Argusville Diking	$ 168,925.00	$ 168,925.00	$ -
2012 Maple-Steele WRD Study	$ 20,562.00	$ 20,562.00	$ -
2012 City of Mapleton - Lift Station	$ 52,500.00	$ 52,500.00	$ -
2013 Pontiac Township - Project No 73	$ 448,000.00	$ 448,000.00	$ -
2013 City of Argusville - Levee improvement	$ 23,874.73	$ 23,874.73	$ -
2013 City of Casselton - Levee Repairs	$ 23,750.00	$ -	$ 23,750.00
2013 Maple-Steele - Dam Project	$ 17,500.00	$ -	$ 17,500.00
2014 City of Mapleton Levee Recertification 2012-1	$ 543,324.58	$ 336,300.76	$ 207,023.82
2014 Pontiac township Project no 73 additional	$ 52,000.00	$ -	$ 52,000.00
2014 Upper Maple River Dam	$ 706,000.00	$ -	$ 706,000.00
2014 Lake Bertha Flood Water Detention	$ 242,500.00	$ -	$ 242,500.00
2014 Detention project Development	$ 143,325.00	$ -	$ 143,325.00
Total	$ 2,898,241.60	$ 1,506,142.78	$ 1,392,098.82

2015 County Sales Tax Project Funding Requests

Project	Total Project Cost	County Funds Requested	
Normanna Township Slide Repair and Road Move	$ 81,000.00	$ 72,900.00	
Upper Maple River Detention Study Phase II	$ 91,000.00	$ 45,500.00	
Rush River Detention Study Phase II	$ 91,000.00	$ 45,500.00	
Swan Creek Detention Study Phase II	$ 91,000.00	$ 45,500.00	
Harwood Levee Improvements and Home Acquistions	$ 1,113,870.00	$ 556,935.00	
Total 2015 Requests	$ 1,467,870.00	$ 766,335.00	

ORDINANCE NO. #2010-2

AN ORDINANCE TO ESTABLISH AND REGULATE A COUNTY SALES TAX UNDER THE HOME RULE CHARTER OF THE COUNTY OF CASS.

BE IT ORDAINED BY THE COUNTY COMMISSION OF THE COUNTY OF CASS, CASS COUNTY, NORTH DAKOTA:

SALES TAX

Definitions.

All terms defined in chapters 11-09.1, 57-39.2, 57-39.4, 57-39.5, 57-39.6, and 57-40.2 of the North Dakota Century Code (N.D.C.C.), are adopted by reference. All references to the N.D.C.C. include amendments adopted by the North Dakota Legislative Assembly.

Collection and Administration.

Where not in conflict with the provisions of this Ordinance, the provisions of N.D.C.C. chapters 11-09.1, 57-39.2, 57-39.4, 57-39.5, 57-39.6, and 57-40.2, and all administrative rules adopted by the Tax Commissioner, pertaining to the collection and administration of the retail sales, use, and gross receipts tax, including provisions for liability, refund, penalty, interest or credit, govern the administration by the North Dakota Office of State Tax Commissioner (hereinafter "Tax Commissioner") of the taxes imposed by this Ordinance.

Sales Tax Imposed.

Subject to the provisions of N.D.C.C. § 11-09.1-05, and except as otherwise provided by this Ordinance, or the sales and use tax laws of the State of North Dakota, a tax of one half of one percent is imposed upon the gross receipts of retailers from all sales at retail, including the leasing or renting of tangible personal property, within the corporate limits of the county of Cass, North Dakota.

Use Tax Imposed.

Subject to the provisions of N.D.C.C. § 11-09.1-05, and except as otherwise provided in this Ordinance, or the sales and use tax laws of the State of North Dakota, an excise tax is imposed upon the storage, use, or consumption within the corporate limits of the county of Cass County, North Dakota of tangible personal property purchased at retail for storage, use, or consumption in this county, at the rate of one half of one percent of the purchase price of the property. An excise tax is imposed on the storage, use, or consumption within the corporate limits of the county of Cass, North Dakota of tangible personal property not

originally purchased for storage, use, or consumption in this county at the rate of one half of one percent of the fair market value of the property at the time it was brought into this county.

In the case of a contract awarded for the construction of highways, roads, streets, bridges, and buildings prior to April 1, 2011, the contractor receiving the award shall not be liable for tax imposed by this ordinance.

Gross Receipts of Alcoholic Beverages.

Subject to the provisions of N.D.C.C. § 11-09.1-05, and except as otherwise provided in this Ordinance, a gross receipts tax of one half of one percent is imposed upon all gross receipts from the sale of alcoholic beverages within the county. A person who receives alcoholic beverages for storage, use, or consumption in this state is subject to tax on storage, use, or consumption of those alcoholic beverages at the rate of one half of one percent.

Gross Receipts of New Farm Machinery and New Farm Irrigation Equipment.

Subject to the provisions of N.D.C.C. § 11-09.1-05, and except as otherwise provided in this Ordinance, a gross receipts tax of one half of one percent is imposed upon all gross receipts from the sale of new farm machinery and new farm irrigation equipment within the county. A person who receives new farm machinery or new farm irrigation equipment for storage, use, or consumption in this state is subject to tax on storage, use, or consumption of that machinery and/or equipment at the rate of one half of one percent.

Exemptions.

This Ordinance does not provide for any additional exemptions from imposition and computation of the county sales tax other than those provided by state law.

Maximum Tax Imposed.

Any patron or user paying a tax imposed by this Ordinance in excess of twelve dollars and fifty cents upon any single transaction of one or more items may obtain a refund of the excess tax payment by filing a request for refund upon the forms provided by the Tax Commissioner.

Contract with Tax Commissioner.

The Cass County Auditor is hereby authorized to contract with the Tax Commissioner for administration and collection of taxes imposed by this Ordinance. The County Auditor has all powers granted to the Tax Commissioner and in the absence of a valid contract with the Tax Commissioner or failure of the Tax Commissioner to perform the delegated duties, shall perform these duties in place of the Tax Commissioner.

Dedication of Tax Proceeds.

1. The proceeds of the sales, use, and gross receipts taxes, which are imposed pursuant to the Cass County Home Rule Charter, shall be solely utilized for the purposes outlined in Resolution No. 2010-26. The proceeds may be used for the engineering, land purchase, construction, and maintenance of a Red River Diversion and other flood control measures or the payment of special assessments or debt incurred for a Red River Diversion and other flood control measures as authorized by the Cass County Commission.

2. Until expenditures are made pursuant to Resolution No. 2010-26, the tax receipts shall be placed and segregated in a separate fund maintained by Cass County Government. The fund balance of the fund shall be invested as part of the pool of county investments and the prorata share of interest credited to the tax fund. The interest earned off the tax shall be used for the same purposes as the tax funds under Resolution No. 2010-26. In the event that expenditures of the tax funds generate income or other gains, the cash proceeds of such income or other gains shall be deposited in the tax fund and shall be used for the purposes outlined in Resolution No. 2010-26.

3. The funds in the Sales Tax Flood Fund in excess of what is needed to match the City of Fargo for the diversion project will be governed by Commission Policy No. 13.72 as passed by the County Commission on August 2, 2010, which includes the following:

   County sales tax funds expended within incorporated cities: The County Commission 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. 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.

County sales tax funds expended outside of incorporated cities: The County Commission 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 perimeter. 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.

Effective Date.

This Ordinance shall take effect after its passage, approval, and publication, but not prior to April 1, 2011.

Termination Date.

This ordinance shall terminate on March 31, 2031.

APPROVED:

ss/Darrell Vanyo
Darrell Vanyo, Chairman
Board of Commissioners of the County of Cass

ATTEST:

ss/Michael Montplaisir
Michael Montplaisir, County Auditor

(SEAL)

First Reading:	November 15, 2010
Second Reading:	December 20, 2010
Final Passage:	December 20, 2010
Publication:	November 22, 2010

HISTORICAL REFERENCE DATE: NOVEMBER 15, 2010

Brandon Kub Normanna Township Supervisor
16441 52nd St SE
Kindred, ND 58051
Phone: 701-238-6382
Email: Bjkub84@msn.com

February 3, 2015

Board of County Commissioners
Keith Berndt
211 Ninth Street South
Fargo, ND 58108

Subject: Requested sales tax mitigation projects

Dear Commissioners:

At this time we are supplying you with more information about a project that is already under consideration. The project is number 40, Move/reconstruct 1300' stretch of 167th Avenue in Normanna Township. The Cass County Highway Department has completed a plan and a cost estimate. The total cost of the project is about $81,000.

This road is part of the river bank. The road has become unsafe, since the river bank is falling into the river, taking the road with it. The river banks of the Sheyenne River are higher than the surrounding land, therefore, as the river erodes the water flows out of the channel at a lower river level than normal. From this location the water normally held within the channel would then flow south to State Highway 46 and then east, impacting several roads and eventually entering into the Wild Rice River.

This is a high priority project for our township and we would like to complete in 2015. To fund the project Normanna Township could fund 10% up to 50% of the project from our maintenance account and are asking the county to participate at 90% or as low as 50%.

Since the township would have the road and easement, the township would be responsible for future maintenance.

We feel this project is a flood risk reduction project. If we do not move the road, it will be impossible to maintain the river bank. The deteriorating bank will allow water that would normally be contained in the channel to become flood water that causes problems in other parts of the county.

If possible, a representative from Normanna Township would like to be present at your next sales tax mitigation meeting to answer any questions you might have.

Brandon Kub would be the township contact.

Sincerely,

Brandon Kub

CASS COUNTY GOVERNMENT

February 11, 2015

RECEIVED

FEB 13 2015

CASS COUNTY COMMISSION

Chad Peterson
Chairman
Cass County Commission
P.O. Box 2806
Fargo, ND 58108-2806

Dear Chairman Peterson:

RE: Upper Maple River Watershed Detention Study – Phase II
Cass County, North Dakota

The Cass County Joint Water Resource District (the "District") is respectfully requesting cost-share for the development of floodwater detention sites located within the Upper Maple River watershed, located in Barnes and Cass Counties, North Dakota. In January of 2014, Moore Engineering, Inc. completed the "Maple River Watershed Comprehensive Detention Plan" study which analyzed multiple potential detention sites throughout the Maple River watershed. The study identified detention sites within the Upper Maple River watershed that could potentially provide flood reduction benefits in the watershed. In addition, the project would provide benefits to Cass County roadways affected by high water.

For the Phase II study, the approach will generally involve the creation of project development teams tasked with identifying the local problems facing each watershed and sorting through the practical alternatives for addressing those problems. Once a solution is identified by the team, preliminary designs, geotechnical investigations and cost estimates will be completed. The team's findings will be presented to the District and local stakeholders for consideration for further advancement of the projects.

The local unfunded costs for Phase II of the Upper Maple River Watershed Detention Study are $91,000. The District would greatly appreciate any consideration the Commission may make towards funding the local cost of this project. Enclosed is a detailed engineering proposal for the study and a vicinity map. If you have any questions on this project or need any additional information, please do not hesitate to contact us.

Sincerely,

CASS COUNTY JOINT WATER RESOURCE DISTRICT

Carol Harbeke Lewis
Secretary-Treasurer

Enclosures

Cass County Joint Water Resource District

Mark Brodshaug
Chairman
Fargo, North Dakota

Rodger Olson
Manager
Leonard, North Dakota

Dan Jacobson
Manager
West Fargo, North Dakota

Ken Lougheed
Manager
Gardner, North Dakota

Raymond Wolfer
Manager
Argusville, North Dakota

Carol Harbeke Lewis
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PROPOSAL
MAPLE RIVER WATERSHED COMPREHENSIVE DETENTION PLAN
PHASE II

DETENTION PROJECT DEVELOPMENT &
PRELIMINARY ENGINEERING DESIGN REPORT
for the
UPPER MAPLE RIVER WATERSHED

Cass County Joint Water Resource District

February 5, 2015

Moore Engineering is pleased to present the Cass County Joint Water Resource District with the following proposal for the next phase (Phase II) of the Maple River Watershed Comprehensive Detention Plan. The first phase of the study identified 40 conceptual detention site options throughout the Maple River watershed and looked at the potential benefits that could be realized in terms of peak flow reductions in the mainstem and the tributaries of the Maple River if detention facilities were constructed in the vicinity of the sites identified. Based on the Phase I study results, the Maple River Water Resource District identified three priority subwatersheds for the purpose of developing flood water detention projects. These were the Swan Creek watershed, Buffalo Creek watershed, and Upper Maple River watershed. These regions were identified as priority areas due to the local benefit that potential detention projects would provide and because storage in these regions could significantly reduce flooding on the Maple River mainstem. Recognizing the benefits that detention facilities in these areas could yield for the local watersheds and Cass County in general, the Cass County Joint Water Resource District chose to undertake the next phase of the study.

Moving detention projects from the conceptual stage into the permitting stage and ultimately into construction can be a difficult and lengthy process. Each watershed and each project will be different depending on the size, location, environmental impacts, landowner support and other factors. As such, we have broken down the proposal for the next phase of the study into separate scopes of work for each watershed. In each watershed, the approach for the next phase of the study will generally involve the creation of project development teams tasked with identifying the local problems facing each watershed and sorting through the practical alternatives for addressing those problems. Once a solution is identified by the team preliminary designs and cost estimates will be completed and presented to the Cass County Joint Board and local stakeholders for consideration for further advancement of the project.

In order to accomplish this effort for the Upper Maple River watershed, Moore Engineering proposes the following:

Task 1.0: PROJECT START-UP

Task 1.1: Public Outreach

Task 1.1 will involve a series of public informational meetings and surveys intended to inform residents and landowners within the watershed on the findings of the first phase of the comprehensive detention study and to gather input on problems in the local watershed as well as potential solutions.

Task 1.2: Purpose & Need Analysis

Task 1.2 will involve the creation of a "Project Development Team" (PDT) consisting of local residents and landowners, local water board managers, engineer(s) and regulatory agency representatives. This team will determine and prioritize the problem areas within the watershed and develop the "Purpose and Need" statement that will determine the focus for identifying and screening potential alternatives as well as satisfying the first step in the environmental assessment (EA) process. It is anticipated that the "Purpose and Need" statement can be completed with two (2) meetings of the PDT.

Task 1.3: Regulatory Agency Kickoff Meeting

Following the completion of the "Purpose and Need" statement, a kickoff meeting will be held with representatives from regulatory agencies having an interest in a potential project within the watershed. The purpose of the meeting would be to inform the agencies of the local problems and issues, update them on the previous studies and discuss potential alternatives that would address the issues. Input from these agencies will help screen alternatives and guide further development of the preferred alternatives. A key discussion point with this group will be the potential consideration of cumulative impacts associated with multiple detention projects within the Red River Valley and how that may impact the environmental assessment and permitting process.

Estimated Task 1 Fee= $55,000

Task 2.0: ALTERNATIVES ANALYSIS

Task 2.1: Identification of Alternatives

The PDT will review previous studies and results of landowner surveys and identify potential alternatives for addressing the "Purpose and Need". Previously studied alternatives will be reviewed and updated to ensure that they address the need and new alternatives will be developed to the appropriate level of detail to determine the feasibility and practicality of moving them forward as viable options.

Task 2.2: Alternative Benefit Analysis

After potential alternatives are identified, the benefits of each one will be determined through the use of existing HEC-HMS hydrologic models to quantify the peak flow and duration reduction benefits downstream. Further hydraulic analysis may be conducted utilizing HEC-RAS models to determine the flood stage reductions in the targeted problem areas. These models will also help identify the floodplain areas that will see benefits from the potential projects which will in

turn provide an idea for the areas that will be included in the assessment districts needed to cover the local costs of the projects.

Task 2.3: Preliminary Environmental Impact Assessment

As part of the alternative screening process, each potential alternative will be analyzed for potential adverse environmental impacts from a cursory standpoint. Desktop level analyses of national wetland databases, soils maps, aerial photography, and other publicly available environmental information will be reviewed to identify potential issues the alternatives may cause.

Task 2.4: Alternative Screening

Task 2.4 will involve a preliminary analysis of the impacts and benefits associated with each alternative, including:

- Existing land use analysis
  - Cropland/non-cropland
- Acreage impacted
  - Construction footprint
  - Inundation area @ spillway
  - Inundation area @ top of dam
  - Identification of right of way needs (fee title and/or easements)
- Structures
- Transportation Infrastructure (township, county & state)
- Utilities

Task 2.5: Landowner Involvement

Recognizing the sensitive nature in proposing to develop detention projects on private property, meetings will be held with landowners that would be impacted by any alternatives under consideration. These meetings will be conducted on an individual basis or in small groups and allow for questions and concerns to be discussed outside of a large public forum.

Task 2.6: Public Outreach

Following the meetings discussed above with the landowners, another public meeting will be held in the local watershed to update landowners and stakeholders on the status of the study and the alternatives being considered.

Task 2.7: Regulatory Agency Follow-Up

After screening potential alternatives and presenting them to landowners and stakeholders, a follow-up meeting will be held with the regulatory agencies to gain feedback on potential concerns over any of the options and to obtain concurrence regarding which alternatives will meet the "Purpose and Need" and "Alternatives Analysis" requirements of the EA process.

Task 2.8: Selection of Preferred Alternative

The PDT will take into account the results of the screening analysis and the input from the regulatory agencies and recommend to the Cass County Joint Board a preferred alternative that

will address the local flooding problem(s) in the watershed. The Cass County Joint Board will consider the PDT's recommendation and decide whether to move it forward or not.

Task 2.9: Meeting with Impacted Landowners

Upon selection of a preferred alternative, the PDT and the Cass County Joint Board will meet with the landowners directly impacted by the project and discuss the plan for moving forward.

Estimated Task 2 Fee= $175,000

Task 3.0: PRELIMINARY SITE DESIGN

Task 3.1: Detention Site Optimization

Task 3.1 will involve further optimization of the preferred alternative. Further optimization of the site will help define the scope and location of the subsequent soil borings and geotechnical investigations. This effort will include considerations for the following parameters:

- Embankment height
- Embankment alignment & location
- Storage optimization & efficiency
- Impacts to existing structures (broad scope)
- Impacts to existing transportation infrastructure & utilities (broad scope)

Each of these parameters will be reviewed for potential issues with constructability, environmental assessment and permitting, and for any changes to the impacted area since the alternative was initially identified (i.e. new structures, utilities, etc).

Task 3.2: Preliminary Geotechnical Investigation

Moore Engineering will collaborate with a geotechnical engineering subconsultant to obtain a basic understanding of the underlying soils and geology at the preferred site through a geotechnical investigation and laboratory testing of soils and/or rock. A geotechnical assessment consisting of descriptions of soils and groundwater including statements of basic soil characteristics based on observations and laboratory testing will be provided. Soil strength tests and geotechnical designs will not be completed with this effort. This task will determine whether or not the alternative location is suitable for the construction of an embankment dam and warrants further geotechnical investigation and engineering analysis. These efforts will be broken down into the following tasks:

Task 3.2.1: Site Investigation

- Moore Engineering will provide conceptual layout of dam embankment and spillway alignments and coordinate with subconsultants on locations for borings.
- Moore Engineering will provide surveying services to stake out the proposed boring locations and obtain elevations and locations for the actual boring locations following completion of the work.
- Moore Engineering will coordinate access permissions from landowners

    - Should court proceedings be required to obtain access, additional engineering and legal expenses may be incurred.
- Geotechnical subconsultants will conduct exploratory borings, including standard penetration tests (SPT) samples and Shelby tubes. It is anticipated that these borings will be advanced to a maximum depth of 50 feet and that soil and/or rock samples will be collected during the site investigation and will be tested in a laboratory. A minimum of eight borings will be conducted at each site and the total number of borings will be dependent up on the overall length of the embankment alignment and the anticipated and observed variations in soil stratigraphy at each location.
- Two vibrating wire piezometers will be installed at selected borings at each retention site location. These vibrating wire piezometers will provide information regarding the groundwater table at each site.

Task 3.2.2: Geotechnical Analysis

- Upon completion of the geotechnical investigation, the subconsultants will select samples for laboratory testing.
- Geotechnical subconsultants will prepare a preliminary geotechnical assessment of the spillway areas which will include a cursory analysis of the bearing capacity to determine if there are concerns with the ability of the soil to support the proposed structural spillways. This information will allow Moore Engineering to determine appropriate spillway designs and remedies, if required.

Task 3.2.3: Geotechnical Assessment Report

- Geotechnical subconsultants will prepare a geotechnical assessment report detailing the items from Tasks 3.2.1 and 3.2.2.
- The report will discuss all soils encountered during the investigation and include discussion on potential negative impacts existing soils may have on the proposed dam alignment based on data from the investigation and laboratory tests.
- Characteristic soil properties such as, but not limited to, density, moisture content, and Atterberg Limits will presented.
- The report will include boring logs from the investigation and all laboratory rest results.
- The report will not include any geotechnical parameters for design of the proposed dams.

The estimated cost for Task 3.2 includes the geotechnical investigation and analysis for one site. If additional sites need to be investigated, additional costs of $35,000-$50,000/site will be incurred, depending upon the number of borings required and the need for mobilization and surveying. Additional costs may be incurred if excessive snowfall needs to be cleared to allow for adequate access.

Task 3.3: Preliminary Embankment Design

Once Task 3.2 has been completed and the site is deemed suitable for construction of the proposed embankments, more detailed subsurface soils investigations would be required to obtain the data necessary to develop the preliminary designs for the dam embankments. A full-fledged

effort is likely to cost $100,000-$125,000/site, depending on the length of the embankment and other factors. Recognizing that this is an extremely large sum and there being no guarantee that the necessary permits will be obtained to allow the projects to move forward, Moore Engineering is proposing a less involved and less expensive approach intended to produce enough information to satisfy the permit application and review process. This would involve fewer borings drilled to shallower depths and fewer laboratory tests. Due to the potential for subsurface conditions to vary across a site as large as these types of projects this more limited approach can come with added risk due to the potential for critical subsurface characteristics not being identified; however, regardless of the effort and expense applied to this effort all of the risk can never be truly mitigated. While this approach is expected to be sufficient, it should be noted that a more detailed geotechnical analysis may be required before any permits will be issued. In addition to the considerations for future permitting efforts, consideration should also be given to the effect the limited geotechnical data may have on the cost estimates produced for each site. It is anticipated that reasonable estimates can developed by referencing similar projects and including conservative quantities and contingencies, but it is possible that substantial changes, both increases and decreases, could be seen in the cost estimates once more detailed information is obtained during the design phase (after permits are secured), which would be included in a future scope of work.

Moore Engineering will team with geotechnical subconsultants to utilize the geotechnical data collected in Task 3.2 to develop conservative estimates for the embankment design. The intent of this effort will be to determine a conservative footprint area for the project that can be utilized to determine impacts of the project during the permitting phase. This may result in increased expenses relating to environmental and archeology testing and mitigation, but these are expected to be offset by the savings realized through the reduced geotechnical analysis.

Task 3.4: Preliminary Detention Site Design & Cost Estimate

Once the preliminary geotechnical evaluation is completed in Tasks 3.2 and 3.3, Moore Engineering will proceed with the preliminary design, including preliminary construction plans and preliminary cost estimates for the preferred site. As discussed in Task 3.3 above, these preliminary plans and cost estimates will be prepared without design-level geotechnical analysis and embankment designs. The plans and estimates developed in Task 3.4 will allow stakeholders to make decisions on the feasibility of the site and carry the site through the permitting phase if it is chosen for further development. These efforts will be broken down as follows:

Task 3.4.1: Preliminary Design

This task will correlate with the conceptual embankment design developed in Task 3.3 and will involve the preliminary hydraulic design for the retention facility, including:

- Further site optimization
  - Foot print considerations
  - Embankment height
  - Impacts to structures and roads
- North Dakota Dam Design Handbook compliance
  - Including the development of the required design storm event hydrology

- Spillway design and sizing
- Gate design
- Earthwork quantities
- Preliminary construction plans

Task 3.4.2: Cost Estimating

This task will involve the development of a preliminary cost estimate, including:

- Quantity takeoffs
- Unit prices
- Considerations for construction staging & timing (environmental restrictions, etc.)
- Right-of-Way
- Potential mitigation costs
- Environmental assessments & permitting
- Utility relocations
- Engineering
- Legal
- Administration
- Potential funding partners & cost-sharing
- Fiscal
- Other miscellaneous significant project costs

Subconsultant= $70,000
Moore Engineering= $70,000

Estimated Task 3 Fee= $140,000

Task 4.0: Engineer's Report & Presentation

Task 4.1: Engineer's Report

Moore Engineering will compile all of the information developed into an "Engineer's Report" document. Copies of the report will be published and distributed to the Cass County Joint Board, the Maple River Water Resource District and the Red River Joint WRD.

Task 4.2: Public Outreach

Upon completion of the Engineer's Report, another public meeting will be held in the local watershed to update landowners and stakeholders on the preferred alternative and the plan and process for moving forward.

Estimated Task 4 Fee= $30,000

Additional detail on each task is provided in the attached "Basis of Proposal", including the deliverables and assumptions made when determining the scope for each task. An anticipated schedule is also attached. The schedule will be subject to change depending on the rate at which information can be gathered and decisions can be made. If the District requires additional services that are beyond the scope of this proposal, those services can be added through an amendment to this proposal or through a new task order. At any point the District may stop the work on this study and the work products and deliverables completed up to that point will be incorporated into a report so it is available for future reference. Assuming the full scope of this phase of the study is completed the final deliverable will be the "Engineer's Report" covered in Task 4.1.

****

Total Labor & Expenses= $330,000
Subconsultant= $70,000

Estimated Total Project Cost= $400,000

Anticipated Funding Breakdown:
State Water Commission (35%)= $140,000
RRJWRD (65% of local)= $169,000
Cass County Sales Tax (50% of remaining local)= $45,500
CCJWRD Share = $45,500

Attachment A

BASIS OF PROPOSAL
for
DETENTION PROJECT DEVELOPMENT &
PRELIMINARY ENGINEERING DESIGN REPORT
for the
UPPER MAPLE RIVER WATERSHED
Cass County Joint Water Resource District

February 5, 2015

Task 1.1: Public Outreach

- Moore Engineering will facilitate two public meetings at a location in close proximity to the watershed area. Including:
  - Preparation of meeting presentations, meeting handouts, mailing documents (maps, etc.) and mailing labels. Postage and advertising expenses will be covered by the District.
  - Preparation of input survey documents to be distributed to landowners within the watershed
  - Review of survey results and cursory analysis of problems and potential solutions offered by landowners. This will not include any preliminary design or modeling efforts, but will involve a desktop review of the identified areas for feasibility and for correlation to previously identified alternatives.
- This task will include attendance at four water resource district meetings to discuss the preparations for the meetings and to follow up on the meetings with both the District and the local water boards.

Task 1.2: Purpose & Need Analysis

- Moore Engineering will facilitate two meetings of the Project Development Team (PDT).
  - Team members will be selected by the District.
  - Moore will provide the team with copies of available reports and documentation.
  - The District will provide staff to take meeting minutes and document team activities and decisions.

Task 1.3: Regulatory Agency Kickoff Meeting

- Moore Engineering will facilitate one meeting with regulatory agencies having an interest in a potential project within the watershed area. It is assumed that the meeting will be held in Bismarck, ND. Moore Engineering will prepare the meeting presentation and handout materials. Any costs for securing a meeting location or reimbursing meeting attendees will be covered directly by the District.

Task 2.1: Identification of Alternatives

- The scope for this task is dependent upon the number of alternatives studied and the amount of previously existing data available, which won't be known until problems are identified during Task 1. However, for the purposes of scoping this effort Moore Engineering has assumed that five alternatives will be studied.
- Moore Engineering will facilitate three meetings of the Project Development Team (PDT).
    - Moore will assist the PDT in the consideration of five alternatives, including:
        - One "no-build" alternative
        - Two refinements to previously identified and studied alternatives.
        - Two new alternatives developed to specifically address the identified problem(s). These alternatives will be developed to a feasibility level consistent with previously studied alternatives. It is anticipated and assumed that this effort will require hydrologic (HEC-HMS) and hydraulic (HEC-RAS) modeling and this extent of this effort will depend upon the availability of existing models within the target area. Moore has assumed that the HEC-HMS models will be available but the HEC-RAS models will need to be developed from scratch.

Task 2.2: Alternative Benefit Analysis

- This effort will involve the five alternatives identified in Task 2.1 and it is assumed that the necessary HEC-HMS hydrologic models and the HEC-RAS hydraulic models required to complete the analysis are readily available, or created as part of Task 2.1.

Task 2.3: Preliminary Environmental Impact Assessment

- This task will include a desktop level analysis of national wetland databases, soils maps, aerial photography, and other publicly available environmental information. The IWI's online mapping tools will also be utilized to the extent practical. If field reconnaissance and surveys are required in order to complete this task, those costs will be in addition to this scope of work.

Task 2.4: Alternative Screening

- Moore Engineering will provide the data necessary for the screening process as described in the Proposal. This will include updates to the data provided in the previous comprehensive detention report and development of comparable data for new alternatives. Investigations into current property ownership and title encumbrances (i.e. easements, etc.) will be considered out of scope.

Task 2.5: Landowner Involvement

- For each alternative studied (5), Moore Engineering will facilitate one meeting including all landowners impacted by that alternative (i.e. project area only; not benefitted landowners downstream). The District shall cover costs related to securing meeting location(s).

Task 2.6: Public Outreach

- Moore Engineering will facilitate one public meeting at a location in close proximity to the watershed area. Including:
    - Preparation of meeting presentations, meeting handouts, mailing documents (maps, etc.) and mailing labels. Postage and advertising expenses will be covered by the District.

Task 2.7: Regulatory Agency Follow-up

- Moore Engineering will facilitate one meeting for all regulatory agencies having an interest in a potential project within the watershed area. It is assumed that the meeting will be held in Bismarck, ND. Moore Engineering will prepare the meeting presentation and handout materials. Any costs for securing a meeting location or reimbursing meeting attendees will be covered directly by the District.

Task 2.8: Selection of Preferred Alternative

- Moore Engineering will facilitate one meeting of the PDT and attend one meeting of the CCJWRD to discuss the recommendation of the PDT.

Task 2.9: Meeting with Impacted Landowners

- Moore Engineering will facilitate one meeting for all landowners impacted by the preferred alternative. The District shall cover costs related to securing meeting location(s).

Task 3.1: Detention Site Optimization

- As described in Proposal.

Task 3.2: Preliminary Geotechnical Investigation

- The costs for the geotechnical investigation are dependent upon the size and location of the alternative being studied. The Proposal assumes a subconsultant cost of $60,000 for work included in this task. Moore Engineering will hire the subconsultant(s) and invoice the District for those costs. Moore will select the subconsultant with cost and timeframe considerations in mind.
- The District will be responsible for covering any compensation and/or damages associated with the collection of the soil borings required for this task.

Task 3.3: Preliminary Embankment Design

- The costs for the preliminary embankment design are dependent upon the size and complexity of the alternative being studied. The Proposal assumes a subconsultant cost of $10,000 for work included in this task. Moore Engineering will hire the subconsultant(s) and invoice the District for those costs. Moore will select the subconsultant with cost and timeframe considerations in mind.

Task 3.4: Preliminary Detention Site Design & Cost Estimate

- As described in the Proposal.

Task 4.1: Engineer's Report

- Moore Engineering will prepare provide the District with a digital version of the signed report and provide 20 printed and bound copies. Additional copies will be printed and bound on a time and materials basis.

Task 4.2: Public Outreach

- Moore Engineering will facilitate one public meeting at a location in close proximity to the watershed area. Including:
    - Preparation of meeting presentations, meeting handouts, mailing documents (maps, etc.) and mailing labels. Postage and advertising expenses will be covered by the District.

Attachment B

SCHEDULE
for
DETENTION PROJECT DEVELOPMENT &
PRELIMINARY ENGINEERING DESIGN REPORT
for the
UPPER MAPLE RIVER WATERSHED
Cass County Joint Water Resource District

February 5, 2015

Task	Description	Anticipated Completion
1.1	Public Outreach	January
1.2	Purpose & Need Analysis	March
1.3	Regulatory Agency Kickoff Meeting	April
2.1	Identification of Alternatives	July
2.2	Alternative Benefit Analysis	August
2.3	Preliminary Environmental Impact Assessment	August
2.4	Alternative Screening	September
2.5	Landowner Involvement	September
2.6	Public Outreach	September
2.7	Regulatory Agency Follow-Up	October
2.8	Selection of Preferred Alternative	October
2.9	Meeting with Impacted Landowners	October
3.1	Detention Site Optimization	November
3.2	Geotechnical Site Investigation (for selected site)	January
3.3	Preliminary Embankment Design	February 2016
3.4	Preliminary Detention Site Design & Cost Estimate	March 2016
4.1	Final Stamped Engineer's Report	April 2016
4.2	Public Meeting to Present Report	April 2016

Future Steps:

1	Cost Share Requests for Environmental Report	April 2016
2	Environmental Report (EA) & 404 Permitting	2016/2017
3	Update Project Design & Cost Estimate	2017
4	Assessment District	2017
5	State Permit	2017
6	Cost Share Requests for Final Design & Construction	2017
7	Final Design	2017/2018
8	Construction	2018

UPPER MAPLE RIVER WATERSHED DETENTION STUDY
BARNES & CASS CO.

Created By: GZ Date Created: 2/3/2015 Date Saved: 02/04/15 Date Plotted: 02/03/15 Date Exported: 02/04/15
Plotted By: matthew.hildreth Parcel Date: NA Aerial Image: NA Elevation Data: NA
Horizontal Datum: NAD 1983 StatePlane North Dakota South FIPS 3302 Feet Vertical Datum: NAVD1988
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moore engineering, inc.

CASS COUNTY GOVERNMENT

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FEB 13 2015

CASS COUNTY COMMISSION

February 11, 2015

Cass County Joint Water Resource District

Mark Brodshaug
Chairman
Fargo, North Dakota

Rodger Olson
Manager
Leonard, North Dakota

Dan Jacobson
Manager
West Fargo, North Dakota

Ken Lougheed
Manager
Gardner, North Dakota

Raymond Wolfer
Manager
Argusville, North Dakota

Chad Peterson
Chairman
Cass County Commission
P.O. Box 2806
Fargo, ND 58108-2806

Dear Chairman Peterson:

RE: Rush River Watershed Detention Study – Phase II
Cass County, North Dakota

The Cass County Joint Water Resource District (the "District") is respectfully requesting cost-share for the development of floodwater detention sites located within the Rush River watershed, located in Cass County, North Dakota. In January of 2014, Moore Engineering, Inc. completed the "Rush River Watershed Comprehensive Detention Plan" study which analyzed multiple potential detention sites throughout the Rush River watershed. The study identified detention sites within the Rush River watershed that could potentially provide flood reduction benefits in the watershed. In addition, the project would provide benefits to Cass County roadways affected by high water.

For the Phase II study, the approach will generally involve the creation of project development teams tasked with identifying the local problems facing each watershed and sorting through the practical alternatives for addressing those problems. Once a solution is identified by the team, preliminary designs, geotechnical investigations and cost estimates will be completed. The team's findings will be presented to the District and local stakeholders for consideration for further advancement of the projects.

The local unfunded costs for Phase II of the Rush River Watershed Detention Study are $91,000. The District would greatly appreciate any consideration the Commission may make towards funding the local cost of this project. Enclosed is a detailed engineering proposal for the study and a vicinity map. If you have any questions on this project or need any additional information, please do not hesitate to contact us.

Sincerely,

CASS COUNTY JOINT WATER RESOURCE DISTRICT

Carol Harbeke Lewis
Secretary-Treasurer

Enclosures

Carol Harbeke Lewis
Secretary-Treasurer

1201 Main Avenue West
West Fargo, ND 58078-1301

701-298-2381
FAX 701-298-2397
wrd@co.cass.nd.us
casscountygov.com

PROPOSAL
RUSH RIVER WATERSHED COMPREHENSIVE DETENTION PLAN
PHASE II

DETENTION PROJECT DEVELOPMENT &
PRELIMINARY ENGINEERING DESIGN REPORT
for the
RUSH RIVER WATERSHED

Cass County Joint Water Resource District

February 5, 2015

Moore Engineering is pleased to present the Cass County Joint Water Resource District with the following proposal for the next phase (Phase II) of the Rush River Watershed Comprehensive Detention Plan. The first phase of the study identified conceptual detention site options throughout the Rush River watershed and looked at the potential benefits that could be realized in terms of peak flow reductions in the mainstem and the tributaries of the Rush River if detention facilities were constructed in the vicinity of the sites identified. Based on the Phase I study results, the Rush River Water Resource District identified three priority areas for the purpose of developing flood water detention projects. These regions were identified as priority areas due to the local benefit that potential detention projects would provide and because storage in these regions could significantly reduce flooding on the Rush River mainstem. Recognizing the benefits that detention facilities in these areas could yield for the local watersheds and Cass County in general, the Cass County Joint Water Resource District chose to undertake the next phase of the study.

Moving detention projects from the conceptual stage into the permitting stage and ultimately into construction can be a difficult and lengthy process. Each watershed and each project will be different depending on the size, location, environmental impacts, landowner support and other factors. The approach for the next phase of the study will generally involve the creation of project development teams tasked with identifying the local problems facing the watershed and sorting through the practical alternatives for addressing those problems. Once a solution is identified by the team preliminary designs and cost estimates will be completed and presented to the Cass County Joint Board and local stakeholders for consideration for further advancement of the project.

In order to accomplish this effort for the Rush River watershed, Moore Engineering proposes the following:

Task 1.0: PROJECT START-UP

Task 1.1: Public Outreach

Task 1.1 will involve a series of public informational meetings and surveys intended to inform residents and landowners within the watershed on the findings of the first phase of the comprehensive detention study and to gather input on problems in the local watershed as well as potential solutions.

Task 1.2: Purpose & Need Analysis

Task 1.2 will involve the creation of a "Project Development Team" (PDT) consisting of local residents and landowners, local water board managers, engineer(s) and regulatory agency representatives. This team will determine and prioritize the problem areas within the watershed and develop the "Purpose and Need" statement that will determine the focus for identifying and screening potential alternatives as well as satisfying the first step in the environmental assessment (EA) process. It is anticipated that the "Purpose and Need" statement can be completed with two (2) meetings of the PDT.

Task 1.3: Regulatory Agency Kickoff Meeting

Following the completion of the "Purpose and Need" statement, a kickoff meeting will be held with representatives from regulatory agencies having an interest in a potential project within the watershed. The purpose of the meeting would be to inform the agencies of the local problems and issues, update them on the previous studies and discuss potential alternatives that would address the issues. Input from these agencies will help screen alternatives and guide further development of the preferred alternatives. A key discussion point with this group will be the potential consideration of cumulative impacts associated with multiple detention projects within the Red River Valley and how that may impact the environmental assessment and permitting process.

Estimated Task 1 Fee= $55,000

Task 2.0: ALTERNATIVES ANALYSIS

Task 2.1: Identification of Alternatives

The PDT will review previous studies and results of landowner surveys and identify potential alternatives for addressing the "Purpose and Need". Previously studied alternatives will be reviewed and updated to ensure that they address the need and new alternatives will be developed to the appropriate level of detail to determine the feasibility and practicality of moving them forward as viable options.

Task 2.2: Alternative Benefit Analysis

After potential alternatives are identified, the benefits of each one will be determined through the use of existing HEC-HMS hydrologic models to quantify the peak flow and duration reduction benefits downstream. Further hydraulic analysis may be conducted utilizing HEC-RAS models to determine the flood stage reductions in the targeted problem areas. These models will also help identify the floodplain areas that will see benefits from the potential projects which will in

turn provide an idea for the areas that will be included in the assessment districts needed to cover the local costs of the projects.

Task 2.3: Preliminary Environmental Impact Assessment

As part of the alternative screening process, each potential alternative will be analyzed for potential adverse environmental impacts from a cursory standpoint. Desktop level analyses of national wetland databases, soils maps, aerial photography, and other publicly available environmental information will be reviewed to identify potential issues the alternatives may cause.

Task 2.4: Alternative Screening

Task 2.4 will involve a preliminary analysis of the impacts and benefits associated with each alternative, including:

- Existing land use analysis
  - Cropland/non-cropland
- Acreage impacted
  - Construction footprint
  - Inundation area @ spillway
  - Inundation area @ top of dam
  - Identification of right of way needs (fee title and/or easements)
- Structures
- Transportation Infrastructure (township, county & state)
- Utilities

Task 2.5: Landowner Involvement

Recognizing the sensitive nature in proposing to develop detention projects on private property, meetings will be held with landowners that would be impacted by any alternatives under consideration. These meetings will be conducted on an individual basis or in small groups and allow for questions and concerns to be discussed outside of a large public forum.

Task 2.6: Public Outreach

Following the meetings discussed above with the landowners, another public meeting will be held in the local watershed to update landowners and stakeholders on the status of the study and the alternatives being considered.

Task 2.7: Regulatory Agency Follow-Up

After screening potential alternatives and presenting them to landowners and stakeholders, a follow-up meeting will be held with the regulatory agencies to gain feedback on potential concerns over any of the options and to obtain concurrence regarding which alternatives will meet the "Purpose and Need" and "Alternatives Analysis" requirements of the EA process.

Task 2.8: Selection of Preferred Alternative

The PDT will take into account the results of the screening analysis and the input from the regulatory agencies and recommend to the Cass County Joint Board a preferred alternative that

will address the local flooding problem(s) in the watershed. The Cass County Joint Board will consider the PDT's recommendation and decide whether to move it forward or not.

Task 2.9: Meeting with Impacted Landowners

Upon selection of a preferred alternative, the PDT and the Cass County Joint Board will meet with the landowners directly impacted by the project and discuss the plan for moving forward.

Estimated Task 2 Fee= $175,000

Task 3.0: PRELIMINARY SITE DESIGN

Task 3.1: Detention Site Optimization

Task 3.1 will involve further optimization of the preferred alternative. Further optimization of the site will help define the scope and location of the subsequent soil borings and geotechnical investigations. This effort will include considerations for the following parameters:

- Embankment height
- Embankment alignment & location
- Storage optimization & efficiency
- Impacts to existing structures (broad scope)
- Impacts to existing transportation infrastructure & utilities (broad scope)

Each of these parameters will be reviewed for potential issues with constructability, environmental assessment and permitting, and for any changes to the impacted area since the alternative was initially identified (i.e. new structures, utilities, etc).

Task 3.2: Preliminary Geotechnical Investigation

Moore Engineering will collaborate with a geotechnical engineering subconsultant to obtain a basic understanding of the underlying soils and geology at the preferred site through a geotechnical investigation and laboratory testing of soils and/or rock. A geotechnical assessment consisting of descriptions of soils and groundwater including statements of basic soil characteristics based on observations and laboratory testing will be provided. Soil strength tests and geotechnical designs will not be completed with this effort. This task will determine whether or not the alternative location is suitable for the construction of an embankment dam and warrants further geotechnical investigation and engineering analysis. These efforts will be broken down into the following tasks:

Task 3.2.1: Site Investigation

- Moore Engineering will provide conceptual layout of dam embankment and spillway alignments and coordinate with subconsultants on locations for borings.
- Moore Engineering will provide surveying services to stake out the proposed boring locations and obtain elevations and locations for the actual boring locations following completion of the work.
- Moore Engineering will coordinate access permissions from landowners

    - Should court proceedings be required to obtain access, additional engineering and legal expenses may be incurred.
- Geotechnical subconsultants will conduct exploratory borings, including standard penetration tests (SPT) samples and Shelby tubes. It is anticipated that these borings will be advanced to a maximum depth of 50 feet and that soil and/or rock samples will be collected during the site investigation and will be tested in a laboratory. A minimum of eight borings will be conducted at each site and the total number of borings will be dependent up on the overall length of the embankment alignment and the anticipated and observed variations in soil stratigraphy at each location.
- Two vibrating wire piezometers will be installed at selected borings at each retention site location. These vibrating wire piezometers will provide information regarding the groundwater table at each site.

Task 3.2.2: Geotechnical Analysis

- Upon completion of the geotechnical investigation, the subconsultants will select samples for laboratory testing.
- Geotechnical subconsultants will prepare a preliminary geotechnical assessment of the spillway areas which will include a cursory analysis of the bearing capacity to determine if there are concerns with the ability of the soil to support the proposed structural spillways. This information will allow Moore Engineering to determine appropriate spillway designs and remedies, if required.

Task 3.2.3: Geotechnical Assessment Report

- Geotechnical subconsultants will prepare a geotechnical assessment report detailing the items from Tasks 3.2.1 and 3.2.2.
- The report will discuss all soils encountered during the investigation and include discussion on potential negative impacts existing soils may have on the proposed dam alignment based on data from the investigation and laboratory tests.
- Characteristic soil properties such as, but not limited to, density, moisture content, and Atterberg Limits will presented.
- The report will include boring logs from the investigation and all laboratory rest results.
- The report will not include any geotechnical parameters for design of the proposed dams.

The estimated cost for Task 3.2 includes the geotechnical investigation and analysis for one site. If additional sites need to be investigated, additional costs of $35,000-$50,000/site will be incurred, depending upon the number of borings required and the need for mobilization and surveying. Additional costs may be incurred if excessive snowfall needs to be cleared to allow for adequate access.

Task 3.3: Preliminary Embankment Design

Once Task 3.2 has been completed and the site is deemed suitable for construction of the proposed embankments, more detailed subsurface soils investigations would be required to obtain the data necessary to develop the preliminary designs for the dam embankments. A full-fledged

effort is likely to cost $100,000-$125,000/site, depending on the length of the embankment and other factors. Recognizing that this is an extremely large sum and there being no guarantee that the necessary permits will be obtained to allow the projects to move forward, Moore Engineering is proposing a less involved and less expensive approach intended to produce enough information to satisfy the permit application and review process. This would involve fewer borings drilled to shallower depths and fewer laboratory tests. Due to the potential for subsurface conditions to vary across a site as large as these types of projects this more limited approach can come with added risk due to the potential for critical subsurface characteristics not being identified; however, regardless of the effort and expense applied to this effort all of the risk can never be truly mitigated. While this approach is expected to be sufficient, it should be noted that a more detailed geotechnical analysis may be required before any permits will be issued. In addition to the considerations for future permitting efforts, consideration should also be given to the effect the limited geotechnical data may have on the cost estimates produced for each site. It is anticipated that reasonable estimates can developed by referencing similar projects and including conservative quantities and contingencies, but it is possible that substantial changes, both increases and decreases, could be seen in the cost estimates once more detailed information is obtained during the design phase (after permits are secured), which would be included in a future scope of work.

Moore Engineering will team with geotechnical subconsultants to utilize the geotechnical data collected in Task 3.2 to develop conservative estimates for the embankment design. The intent of this effort will be to determine a conservative footprint area for the project that can be utilized to determine impacts of the project during the permitting phase. This may result in increased expenses relating to environmental and archeology testing and mitigation, but these are expected to be offset by the savings realized through the reduced geotechnical analysis.

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This task will correlate with the conceptual embankment design developed in Task 3.3 and will involve the preliminary hydraulic design for the retention facility, including:

- Further site optimization
  - Foot print considerations
  - Embankment height
  - Impacts to structures and roads
- North Dakota Dam Design Handbook compliance
  - Including the development of the required design storm event hydrology

- Spillway design and sizing
- Gate design
- Earthwork quantities
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This task will involve the development of a preliminary cost estimate, including:

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- Engineering
- Legal
- Administration
- Potential funding partners & cost-sharing
- Fiscal
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Moore Engineering= $70,000

Estimated Task 3 Fee= $140,000

Task 4.0: Engineer's Report & Presentation

Task 4.1: Engineer's Report

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Task 4.2: Public Outreach

Upon completion of the Engineer's Report, another public meeting will be held in the local watershed to update landowners and stakeholders on the preferred alternative and the plan and process for moving forward.

Estimated Task 4 Fee= $30,000

Additional detail on each task is provided in the attached "Basis of Proposal", including the deliverables and assumptions made when determining the scope for each task. An anticipated schedule is also attached. The schedule will be subject to change depending on the rate at which information can be gathered and decisions can be made. If the District requires additional services that are beyond the scope of this proposal, those services can be added through an amendment to this proposal or through a new task order. At any point the District may stop the work on this study and the work products and deliverables completed up to that point will be incorporated into a report so it is available for future reference. Assuming the full scope of this phase of the study is completed the final deliverable will be the "Engineer's Report" covered in Task 4.1.

****

Total Labor & Expenses= $330,000
Subconsultant= $70,000

Estimated Total Project Cost= $400,000

Anticipated Funding Breakdown:
State Water Commission (35%)= $140,000
RRJWRD (65% of local)= $169,000
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BASIS OF PROPOSAL
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PRELIMINARY ENGINEERING DESIGN REPORT
for the
RUSH RIVER WATERSHED
Cass County Joint Water Resource District

February 5, 2015

Task 1.1: Public Outreach

- Moore Engineering will facilitate two public meetings at a location in close proximity to the watershed area. Including:
  - Preparation of meeting presentations, meeting handouts, mailing documents (maps, etc.) and mailing labels. Postage and advertising expenses will be covered by the District.
  - Preparation of input survey documents to be distributed to landowners within the watershed
  - Review of survey results and cursory analysis of problems and potential solutions offered by landowners. This will not include any preliminary design or modeling efforts, but will involve a desktop review of the identified areas for feasibility and for correlation to previously identified alternatives.
- This task will include attendance at four water resource district meetings to discuss the preparations for the meetings and to follow up on the meetings with both the District and the local water boards.

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- Moore Engineering will facilitate two meetings of the Project Development Team (PDT).
  - Team members will be selected by the District.
  - Moore will provide the team with copies of available reports and documentation.
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- Moore Engineering will facilitate one meeting with regulatory agencies having an interest in a potential project within the watershed area. It is assumed that the meeting will be held in Bismarck, ND. Moore Engineering will prepare the meeting presentation and handout materials. Any costs for securing a meeting location or reimbursing meeting attendees will be covered directly by the District.

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- The scope for this task is dependent upon the number of alternatives studied and the amount of previously existing data available, which won't be known until problems are identified during Task 1. However, for the purposes of scoping this effort Moore Engineering has assumed that five alternatives will be studied.
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    - Moore will assist the PDT in the consideration of five alternatives, including:
        - One "no-build" alternative
        - Two refinements to previously identified and studied alternatives.
        - Two new alternatives developed to specifically address the identified problem(s). These alternatives will be developed to a feasibility level consistent with previously studied alternatives. It is anticipated and assumed that this effort will require hydrologic (HEC-HMS) and hydraulic (HEC-RAS) modeling and this extent of this effort will depend upon the availability of existing models within the target area. Moore has assumed that the HEC-HMS models will be available but the HEC-RAS models will need to be developed from scratch.

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- This effort will involve the five alternatives identified in Task 2.1 and it is assumed that the necessary HEC-HMS hydrologic models and the HEC-RAS hydraulic models required to complete the analysis are readily available, or created as part of Task 2.1.

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- As described in Proposal.

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Task 3.4: Preliminary Detention Site Design & Cost Estimate

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Attachment B

SCHEDULE
for
DETENTION PROJECT DEVELOPMENT &
PRELIMINARY ENGINEERING DESIGN REPORT
for the
RUSH RIVER WATERSHED
Cass County Joint Water Resource District

February 5, 2015

Task	Description	Anticipated Completion
1.1	Public Outreach	January
1.2	Purpose & Need Analysis	March
1.3	Regulatory Agency Kickoff Meeting	April
2.1	Identification of Alternatives	July
2.2	Alternative Benefit Analysis	August
2.3	Preliminary Environmental Impact Assessment	August
2.4	Alternative Screening	September
2.5	Landowner Involvement	September
2.6	Public Outreach	September
2.7	Regulatory Agency Follow-Up	October
2.8	Selection of Preferred Alternative	October
2.9	Meeting with Impacted Landowners	October
3.1	Detention Site Optimization	November
3.2	Geotechnical Site Investigation (for selected site)	January
3.3	Preliminary Embankment Design	February 2016
3.4	Preliminary Detention Site Design & Cost Estimate	March 2016
4.1	Final Stamped Engineer's Report	April 2016
4.2	Public Meeting to Present Report	April 2016

Future Steps:

1	Cost Share Requests for Environmental Report	April 2016
2	Environmental Report (EA) & 404 Permitting	2016/2017
3	Update Project Design & Cost Estimate	2017
4	Assessment District	2017
5	State Permit	2017
6	Cost Share Requests for Final Design & Construction	2017
7	Final Design	2017/2018
8	Construction	2018

RUSH RIVER WATERSHED DETENTION STUDY
CASS CO.

Created By: GIS Date Created: XX/XX/14 Date Saved: 02/04/15 Date Plotted: 02/03/15 Date Exported: 02/04/15
Plotted By: matthew.hildreth Parcel Date: XX/XX/14 Aerial Image: 2012 County NAIP SIDS Elevation Data: IWI Lidar
Horizontal Datum: NAD 1983 StatePlane North Dakota South FIPS 3302 Feet Vertical Datum: NAVD1988
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N W E S

moore engineering, inc.

CASS COUNTY GOVERNMENT

February 11, 2015

RECEIVED

FEB 13 2015

CASS COUNTY COMMISSION

Cass County Joint Water Resource District

Mark Brodshaug
Chairman
Fargo, North Dakota

Rodger Olson
Manager
Leonard, North Dakota

Dan Jacobson
Manager
West Fargo, North Dakota

Ken Lougheed
Manager
Gardner, North Dakota

Raymond Wolfer
Manager
Argusville, North Dakota

Chad Peterson
Chairman
Cass County Commission
P.O. Box 2806
Fargo, ND 58108-2806

Dear Chairman Peterson:

RE: Swan Creek Watershed Detention Study – Phase II
Cass County, North Dakota

The Cass County Joint Water Resource District (the "District") is respectfully requesting cost-share for the development of floodwater detention sites located within the Swan Creek watershed, a tributary of the Maple River, located in Cass County, North Dakota. In January of 2014, Moore Engineering, Inc. completed the "Maple River Watershed Comprehensive Detention Plan" study which analyzed multiple potential detention sites throughout the Maple River watershed. The study identified detention sites within the Swan Creek watershed that could potentially provide flood reduction benefits in the watershed. In addition, the project would provide benefits to Cass County roadways affected by high water.

For the Phase II study, the approach will generally involve the creation of project development teams tasked with identifying the local problems facing each watershed and sorting through the practical alternatives for addressing those problems. Once a solution is identified by the team, preliminary designs, geotechnical investigations and cost estimates will be completed. The team's findings will be presented to the District and local stakeholders for consideration for further advancement of the projects.

The unfunded local costs for Phase II of the Swan Creek Watershed Detention Study are $91,000. The District would greatly appreciate any consideration the Commission may make towards funding the local cost of this project. Enclosed is a detailed engineering proposal for the study and a vicinity map. If you have any questions on this project or need any additional information, please do not hesitate to contact us.

Sincerely,

CASS COUNTY JOINT WATER RESOURCE DISTRICT

Carol Harbeke Lewis
Secretary-Treasurer

Enclosures

Carol Harbeke Lewis
Secretary-Treasurer

1201 Main Avenue West
West Fargo, ND 58078-1301

701-298-2381
FAX 701-298-2397
wrd@co.cass.nd.us
casscountygov.com

PROPOSAL
MAPLE RIVER WATERSHED COMPREHENSIVE DETENTION PLAN
PHASE II

DETENTION PROJECT DEVELOPMENT &
PRELIMINARY ENGINEERING DESIGN REPORT
for the
SWAN CREEK WATERSHED

Cass County Joint Water Resource District

February 5, 2015

Moore Engineering is pleased to present the Cass County Joint Water Resource District with the following proposal for the next phase (Phase II) of the Maple River Watershed Comprehensive Detention Plan. The first phase of the study identified 40 conceptual detention site options throughout the Maple River watershed and looked at the potential benefits that could be realized in terms of peak flow reductions in the mainstem and the tributaries of the Maple River if detention facilities were constructed in the vicinity of the sites identified. Based on the Phase I study results, the Maple River Water Resource District identified three priority subwatersheds for the purpose of developing flood water detention projects. These were the Swan Creek watershed, Buffalo Creek watershed, and Upper Maple River watershed. These regions were identified as priority areas due to the local benefit that potential detention projects would provide and because storage in these regions could significantly reduce flooding on the Maple River mainstem. Recognizing the benefits that detention facilities in these areas could yield for the local watersheds and Cass County in general, the Cass County Joint Water Resource District chose to undertake the next phase of the study.

Moving detention projects from the conceptual stage into the permitting stage and ultimately into construction can be a difficult and lengthy process. Each watershed and each project will be different depending on the size, location, environmental impacts, landowner support and other factors. As such, we have broken down the proposal for the next phase of the study into separate scopes of work for each watershed. In each watershed, the approach for the next phase of the study will generally involve the creation of project development teams tasked with identifying the local problems facing each watershed and sorting through the practical alternatives for addressing those problems. Once a solution is identified by the team preliminary designs and cost estimates will be completed and presented to the Cass County Joint Board and local stakeholders for consideration for further advancement of the project.

In order to accomplish this effort for the Swan Creek watershed, Moore Engineering proposes the following:

Task 1.0: PROJECT START-UP

Task 1.1: Public Outreach

Task 1.1 will involve a series of public informational meetings and surveys intended to inform residents and landowners within the watershed on the findings of the first phase of the comprehensive detention study and to gather input on problems in the local watershed as well as potential solutions.

Task 1.2: Purpose & Need Analysis

Task 1.2 will involve the creation of a "Project Development Team" (PDT) consisting of local residents and landowners, local water board managers, engineer(s) and regulatory agency representatives. This team will determine and prioritize the problem areas within the watershed and develop the "Purpose and Need" statement that will determine the focus for identifying and screening potential alternatives as well as satisfying the first step in the environmental assessment (EA) process. It is anticipated that the "Purpose and Need" statement can be completed with two (2) meetings of the PDT.

Task 1.3: Regulatory Agency Kickoff Meeting

Following the completion of the "Purpose and Need" statement, a kickoff meeting will be held with representatives from regulatory agencies having an interest in a potential project within the watershed. The purpose of the meeting would be to inform the agencies of the local problems and issues, update them on the previous studies and discuss potential alternatives that would address the issues. Input from these agencies will help screen alternatives and guide further development of the preferred alternatives. A key discussion point with this group will be the potential consideration of cumulative impacts associated with multiple detention projects within the Red River Valley and how that may impact the environmental assessment and permitting process.

Estimated Task 1 Fee= $55,000

Task 2.0: ALTERNATIVES ANALYSIS

Task 2.1: Identification of Alternatives

The PDT will review previous studies and results of landowner surveys and identify potential alternatives for addressing the "Purpose and Need". Previously studied alternatives will be reviewed and updated to ensure that they address the need and new alternatives will be developed to the appropriate level of detail to determine the feasibility and practicality of moving them forward as viable options.

Task 2.2: Alternative Benefit Analysis

After potential alternatives are identified, the benefits of each one will be determined through the use of existing HEC-HMS hydrologic models to quantify the peak flow and duration reduction benefits downstream. Further hydraulic analysis may be conducted utilizing HEC-RAS models to determine the flood stage reductions in the targeted problem areas. These models will also help identify the floodplain areas that will see benefits from the potential projects which will in

turn provide an idea for the areas that will be included in the assessment districts needed to cover the local costs of the projects.

Task 2.3: Preliminary Environmental Impact Assessment

As part of the alternative screening process, each potential alternative will be analyzed for potential adverse environmental impacts from a cursory standpoint. Desktop level analyses of national wetland databases, soils maps, aerial photography, and other publicly available environmental information will be reviewed to identify potential issues the alternatives may cause.

Task 2.4: Alternative Screening

Task 2.4 will involve a preliminary analysis of the impacts and benefits associated with each alternative, including:

- Existing land use analysis
  - Cropland/non-cropland
- Acreage impacted
  - Construction footprint
  - Inundation area @ spillway
  - Inundation area @ top of dam
  - Identification of right of way needs (fee title and/or easements)
- Structures
- Transportation Infrastructure (township, county & state)
- Utilities

Task 2.5: Landowner Involvement

Recognizing the sensitive nature in proposing to develop detention projects on private property, meetings will be held with landowners that would be impacted by any alternatives under consideration. These meetings will be conducted on an individual basis or in small groups and allow for questions and concerns to be discussed outside of a large public forum.

Task 2.6: Public Outreach

Following the meetings discussed above with the landowners, another public meeting will be held in the local watershed to update landowners and stakeholders on the status of the study and the alternatives being considered.

Task 2.7: Regulatory Agency Follow-Up

After screening potential alternatives and presenting them to landowners and stakeholders, a follow-up meeting will be held with the regulatory agencies to gain feedback on potential concerns over any of the options and to obtain concurrence regarding which alternatives will meet the "Purpose and Need" and "Alternatives Analysis" requirements of the EA process.

Task 2.8: Selection of Preferred Alternative

The PDT will take into account the results of the screening analysis and the input from the regulatory agencies and recommend to the Cass County Joint Board a preferred alternative that

will address the local flooding problem(s) in the watershed. The Cass County Joint Board will consider the PDT's recommendation and decide whether to move it forward or not.

Task 2.9: Meeting with Impacted Landowners

Upon selection of a preferred alternative, the PDT and the Cass County Joint Board will meet with the landowners directly impacted by the project and discuss the plan for moving forward.

Estimated Task 2 Fee= $175,000

Task 3.0: PRELIMINARY SITE DESIGN

Task 3.1: Detention Site Optimization

Task 3.1 will involve further optimization of the preferred alternative. Further optimization of the site will help define the scope and location of the subsequent soil borings and geotechnical investigations. This effort will include considerations for the following parameters:

- Embankment height
- Embankment alignment & location
- Storage optimization & efficiency
- Impacts to existing structures (broad scope)
- Impacts to existing transportation infrastructure & utilities (broad scope)

Each of these parameters will be reviewed for potential issues with constructability, environmental assessment and permitting, and for any changes to the impacted area since the alternative was initially identified (i.e. new structures, utilities, etc).

Task 3.2: Preliminary Geotechnical Investigation

Moore Engineering will collaborate with a geotechnical engineering subconsultant to obtain a basic understanding of the underlying soils and geology at the preferred site through a geotechnical investigation and laboratory testing of soils and/or rock. A geotechnical assessment consisting of descriptions of soils and groundwater including statements of basic soil characteristics based on observations and laboratory testing will be provided. Soil strength tests and geotechnical designs will not be completed with this effort. This task will determine whether or not the alternative location is suitable for the construction of an embankment dam and warrants further geotechnical investigation and engineering analysis. These efforts will be broken down into the following tasks:

Task 3.2.1: Site Investigation

- Moore Engineering will provide conceptual layout of dam embankment and spillway alignments and coordinate with subconsultants on locations for borings.
- Moore Engineering will provide surveying services to stake out the proposed boring locations and obtain elevations and locations for the actual boring locations following completion of the work.
- Moore Engineering will coordinate access permissions from landowners

- Should court proceedings be required to obtain access, additional engineering and legal expenses may be incurred.

- Geotechnical subconsultants will conduct exploratory borings, including standard penetration tests (SPT) samples and Shelby tubes. It is anticipated that these borings will be advanced to a maximum depth of 50 feet and that soil and/or rock samples will be collected during the site investigation and will be tested in a laboratory. A minimum of eight borings will be conducted at each site and the total number of borings will be dependent up on the overall length of the embankment alignment and the anticipated and observed variations in soil stratigraphy at each location.
- Two vibrating wire piezometers will be installed at selected borings at each retention site location. These vibrating wire piezometers will provide information regarding the groundwater table at each site.

Task 3.2.2: Geotechnical Analysis

- Upon completion of the geotechnical investigation, the subconsultants will select samples for laboratory testing.
- Geotechnical subconsultants will prepare a preliminary geotechnical assessment of the spillway areas which will include a cursory analysis of the bearing capacity to determine if there are concerns with the ability of the soil to support the proposed structural spillways. This information will allow Moore Engineering to determine appropriate spillway designs and remedies, if required.

Task 3.2.3: Geotechnical Assessment Report

- Geotechnical subconsultants will prepare a geotechnical assessment report detailing the items from Tasks 3.2.1 and 3.2.2.
- The report will discuss all soils encountered during the investigation and include discussion on potential negative impacts existing soils may have on the proposed dam alignment based on data from the investigation and laboratory tests.
- Characteristic soil properties such as, but not limited to, density, moisture content, and Atterberg Limits will presented.
- The report will include boring logs from the investigation and all laboratory rest results.
- The report will not include any geotechnical parameters for design of the proposed dams.

The estimated cost for Task 3.2 includes the geotechnical investigation and analysis for one site. If additional sites need to be investigated, additional costs of $35,000-$50,000/site will be incurred, depending upon the number of borings required and the need for mobilization and surveying. Additional costs may be incurred if excessive snowfall needs to be cleared to allow for adequate access.

Task 3.3: Preliminary Embankment Design

Once Task 3.2 has been completed and the site is deemed suitable for construction of the proposed embankments, more detailed subsurface soils investigations would be required to obtain the data necessary to develop the preliminary designs for the dam embankments. A full-fledged

effort is likely to cost $100,000-$125,000/site, depending on the length of the embankment and other factors. Recognizing that this is an extremely large sum and there being no guarantee that the necessary permits will be obtained to allow the projects to move forward, Moore Engineering is proposing a less involved and less expensive approach intended to produce enough information to satisfy the permit application and review process. This would involve fewer borings drilled to shallower depths and fewer laboratory tests. Due to the potential for subsurface conditions to vary across a site as large as these types of projects this more limited approach can come with added risk due to the potential for critical subsurface characteristics not being identified; however, regardless of the effort and expense applied to this effort all of the risk can never be truly mitigated. While this approach is expected to be sufficient, it should be noted that a more detailed geotechnical analysis may be required before any permits will be issued. In addition to the considerations for future permitting efforts, consideration should also be given to the effect the limited geotechnical data may have on the cost estimates produced for each site. It is anticipated that reasonable estimates can developed by referencing similar projects and including conservative quantities and contingencies, but it is possible that substantial changes, both increases and decreases, could be seen in the cost estimates once more detailed information is obtained during the design phase (after permits are secured), which would be included in a future scope of work.

Moore Engineering will team with geotechnical subconsultants to utilize the geotechnical data collected in Task 3.2 to develop conservative estimates for the embankment design. The intent of this effort will be to determine a conservative footprint area for the project that can be utilized to determine impacts of the project during the permitting phase. This may result in increased expenses relating to environmental and archeology testing and mitigation, but these are expected to be offset by the savings realized through the reduced geotechnical analysis.

Task 3.4: Preliminary Detention Site Design & Cost Estimate

Once the preliminary geotechnical evaluation is completed in Tasks 3.2 and 3.3, Moore Engineering will proceed with the preliminary design, including preliminary construction plans and preliminary cost estimates for the preferred site. As discussed in Task 3.3 above, these preliminary plans and cost estimates will be prepared without design-level geotechnical analysis and embankment designs. The plans and estimates developed in Task 3.4 will allow stakeholders to make decisions on the feasibility of the site and carry the site through the permitting phase if it is chosen for further development. These efforts will be broken down as follows:

Task 3.4.1: Preliminary Design

This task will correlate with the conceptual embankment design developed in Task 3.3 and will involve the preliminary hydraulic design for the retention facility, including:

- Further site optimization
  - Foot print considerations
  - Embankment height
  - Impacts to structures and roads
- North Dakota Dam Design Handbook compliance
  - Including the development of the required design storm event hydrology

- Spillway design and sizing
- Gate design
- Earthwork quantities
- Preliminary construction plans

Task 3.4.2: Cost Estimating

This task will involve the development of a preliminary cost estimate, including:

- Quantity takeoffs
- Unit prices
- Considerations for construction staging & timing (environmental restrictions, etc.)
- Right-of-Way
- Potential mitigation costs
- Environmental assessments & permitting
- Utility relocations
- Engineering
- Legal
- Administration
- Potential funding partners & cost-sharing
- Fiscal
- Other miscellaneous significant project costs

Subconsultant= $70,000
Moore Engineering= $70,000

Estimated Task 3 Fee= $140,000

Task 4.0: Engineer's Report & Presentation

Task 4.1: Engineer's Report

Moore Engineering will compile all of the information developed into an "Engineer's Report" document. Copies of the report will be published and distributed to the Cass County Joint Board, the Maple River Water Resource District and the Red River Joint WRD.

Task 4.2: Public Outreach

Upon completion of the Engineer's Report, another public meeting will be held in the local watershed to update landowners and stakeholders on the preferred alternative and the plan and process for moving forward.

Estimated Task 4 Fee= $30,000

Additional detail on each task is provided in the attached "Basis of Proposal", including the deliverables and assumptions made when determining the scope for each task. An anticipated schedule is also attached. The schedule will be subject to change depending on the rate at which information can be gathered and decisions can be made. If the District requires additional services that are beyond the scope of this proposal, those services can be added through an amendment to this proposal or through a new task order. At any point the District may stop the work on this study and the work products and deliverables completed up to that point will be incorporated into a report so it is available for future reference. Assuming the full scope of this phase of the study is completed the final deliverable will be the "Engineer's Report" covered in Task 4.1.

****

Total Labor & Expenses= $330,000
Subconsultant= $70,000

Estimated Total Project Cost= $400,000

Anticipated Funding Breakdown:
State Water Commission (35%)= $140,000
RRJWRD (65% of local)= $169,000
Cass County Sales Tax (50% of remaining local)= $45,500
CCJWRD Share = $45,500

Attachment A

BASIS OF PROPOSAL
for
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PRELIMINARY ENGINEERING DESIGN REPORT
for the
SWAN CREEK WATERSHED
Cass County Joint Water Resource District

February 5, 2015

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- Moore Engineering will prepare provide the District with a digital version of the signed report and provide 20 printed and bound copies. Additional copies will be printed and bound on a time and materials basis.

Task 4.2: Public Outreach

- Moore Engineering will facilitate one public meeting at a location in close proximity to the watershed area. Including:
    - Preparation of meeting presentations, meeting handouts, mailing documents (maps, etc.) and mailing labels. Postage and advertising expenses will be covered by the District.

Attachment B

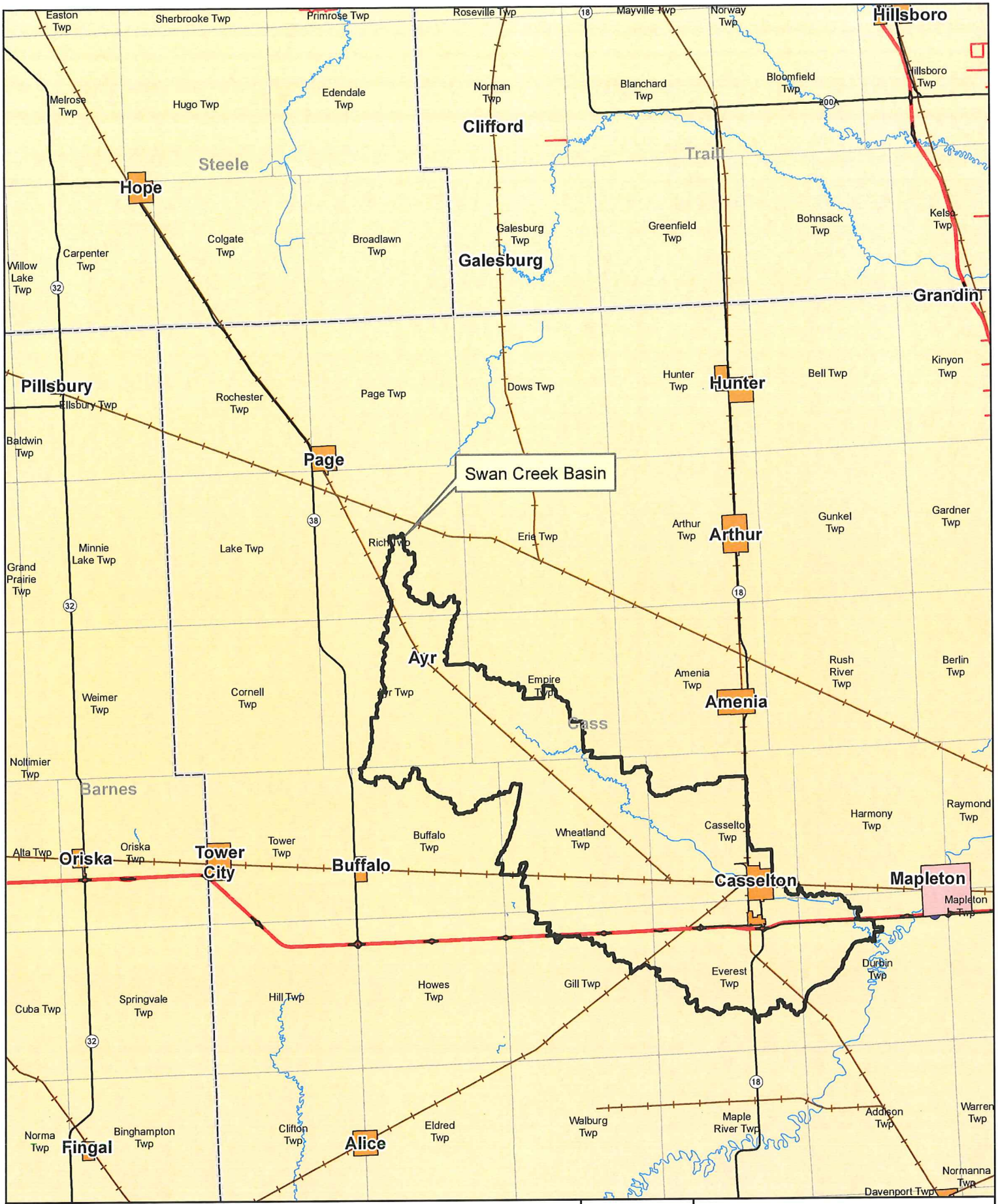
SCHEDULE
for
DETENTION PROJECT DEVELOPMENT &
PRELIMINARY ENGINEERING DESIGN REPORT
for the
SWAN CREEK WATERSHED
Cass County Joint Water Resource District

February 5, 2015

Task	Description	Anticipated Completion
1.1	Public Outreach	January
1.2	Purpose & Need Analysis	March
1.3	Regulatory Agency Kickoff Meeting	April
2.1	Identification of Alternatives	July
2.2	Alternative Benefit Analysis	August
2.3	Preliminary Environmental Impact Assessment	August
2.4	Alternative Screening	September
2.5	Landowner Involvement	September
2.6	Public Outreach	September
2.7	Regulatory Agency Follow-Up	October
2.8	Selection of Preferred Alternative	October
2.9	Meeting with Impacted Landowners	October
3.1	Detention Site Optimization	November
3.2	Geotechnical Site Investigation (for selected site)	January
3.3	Preliminary Embankment Design	February 2016
3.4	Preliminary Detention Site Design & Cost Estimate	March 2016
4.1	Final Stamped Engineer's Report	April 2016
4.2	Public Meeting to Present Report	April 2016

Future Steps:

1	Cost Share Requests for Environmental Report	April 2016
2	Environmental Report (EA) & 404 Permitting	2016/2017
3	Update Project Design & Cost Estimate	2017
4	Assessment District	2017
5	State Permit	2017
6	Cost Share Requests for Final Design & Construction	2017
7	Final Design	2017/2018
8	Construction	2018



SWAN CREEK WATERSHED DETENTION STUDY
CASS CO.

moore engineering, inc.

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Plotted By: matthew.hildreth Parcel Date: NA Aerial Image: NA Elevation Data: NA
Horizontal Datum: NAD 1983 StatePlane North Dakota South FIPS 3302 Feet Vertical Datum: NAVD1988
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HoustonEngineering Inc. Fargo Office 701.237.5065 701.237.5101
1401 21st Avenue North Fargo ND 58102

February 20, 2015

Cass County
Keith Berndt
PO Box 2806
Fargo, ND 58105

Subject: Flood Risk Funding Assistance
2015 Flood Control Improvements
Harwood, North Dakota
H.E. Project No. 3104_159

We are pleased to enclose herein a request for funding assistance from the Cass County sales tax for improved flood controls measures.

The City of Harwood has identified potential flood risk reduction projects through the City's Capital Improvement Plan. The City is seeking funding assistance to help offset City cost for land purchase, and construction of the flood control measures.

If you should have any questions please feel free to give me a call at 701.237.5065.

Thank you.

Sincerely,

HOUSTON ENGINEERING, INC.

Stan Hanson, P.E.
sh:sh

cc: Mayor Bill Rohrich, City of Harwood, PO Box 65, Harwood, ND 58042
\\houston\hei\Fargo\JBN\3400\3401\15_3401_159\Deliverables\Letters\Mayor and City Council letter 2-2-2015.docx

Worden, Heather

From: Berndt, Keith
Sent: Friday, February 20, 2015 2:27 PM
To: Worden, Heather
Subject: FW: City of Harwood, Flood Risk Reduction Projects
Attachments: Keith Berndt package 2-20-15.pdf

FYI

From: Stan Hanson [mailto:sthanson@houstoneng.com]
Sent: Friday, February 20, 2015 12:58 PM
To: Berndt, Keith
Cc: Jeff LeDoux
Subject: City of Harwood, Flood Risk Reduction Projects

Please find attached the request submittal for the City of Harwood's flood reduction projects.

Hard copies are going out in today's mail.

Any questions give me a call.

Stan Hanson, PE
Project Manager
Houston Engineering, Inc.
O 701.237.5065 | **D** 701.499.9447 | **F** 701.237.5101

1401 21st Ave N. • Fargo, ND • 58102

www.houstoneng.com

City of Harwood

2015 Flood Control Improvements

Harwood, North Dakota

1. Project Description

The City of Hardwood's Capital Improvement Plan has identified specific projects throughout the City to improve flood control measures. The improvements identified will provide valuable flood protection for the City. The City is requesting funding assistance for the flood control measures using the Cass County sales tax. A map showing the City's Capital Improvement areas is attached as Figure 1. A description of each improvement follows:

Area 1 Berm Improvements:

Due to slope stability issues along the existing line of flood protection, approximately 400 feet of levee west of Oak Circle will be removed along the bank of the Sheyenne River and replaced. Two properties adjacent to the river will be purchased and its buildings will be demolished and cleared from the site. Existing utilities (sanitary sewer and water services) in those 2 properties will be disconnected and removed and a new levee will be constructed away from the river bank and along the cul de sac to connect to the existing flood protection. See Plan Sheet 1 of 3 for a layout of the improvements.

Area 2 Berm Improvements:

A berm is being proposed to provide flood protection for the Harwood Water Treatment facility. Property between the river and existing facility will be purchased and the buildings on site will be demolished and cleared from the site. Existing utilities in that property will be removed as a part of the demolition, and the existing ring dike to protect the house will be removed. A new levee will be constructed and offset from the Sheyenne River. The levee will connect to the existing flood protection and will tie in to the high point in the shoulder of Maple Lane. See Plan Sheet 2 of 3 for a layout of the improvements.

Area 3 Berm Improvements:

An existing sanitary manhole becomes inundated to rising flood waters along Highway 81 with intersection of Chapin Drive. In order to raise an existing sanitary manhole to an elevation at or above Highway 81, the existing highway ditch will be realigned and the sanitary manhole will be raised. Stormwater that flows under Chapin Dr. will continue through the proposed ditch to the southeast, and the existing ditch will be filled in to raise the grade of the area around the manhole. Property will be required to reroute the ditch. See Plan Sheet 3 of 3 for a layout of the improvements.

2. Estimated Total Project Cost

A specific breakdown of the opinion of probable cost is found in Appendix A. Total Estimated cost for the project (includes construction, utility relocation, and property acquisition/project easements):

Total Cost	$ 1,113,870.00
Cost Share for Cass County (50%):	$ 556,935.00
City of Harwood (Special Assessments 50%)	$ 556,935.00

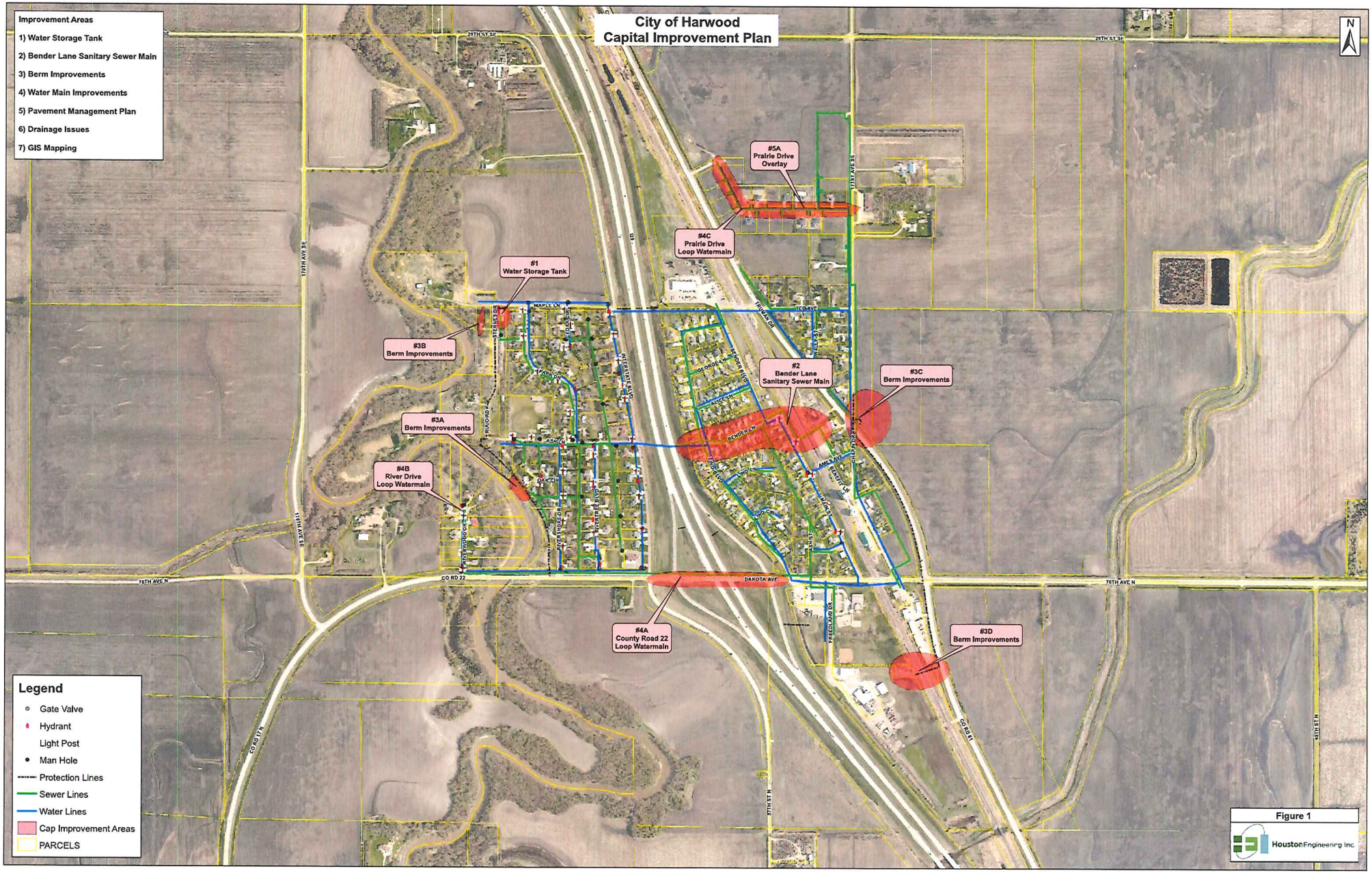
3. Point of Contact:

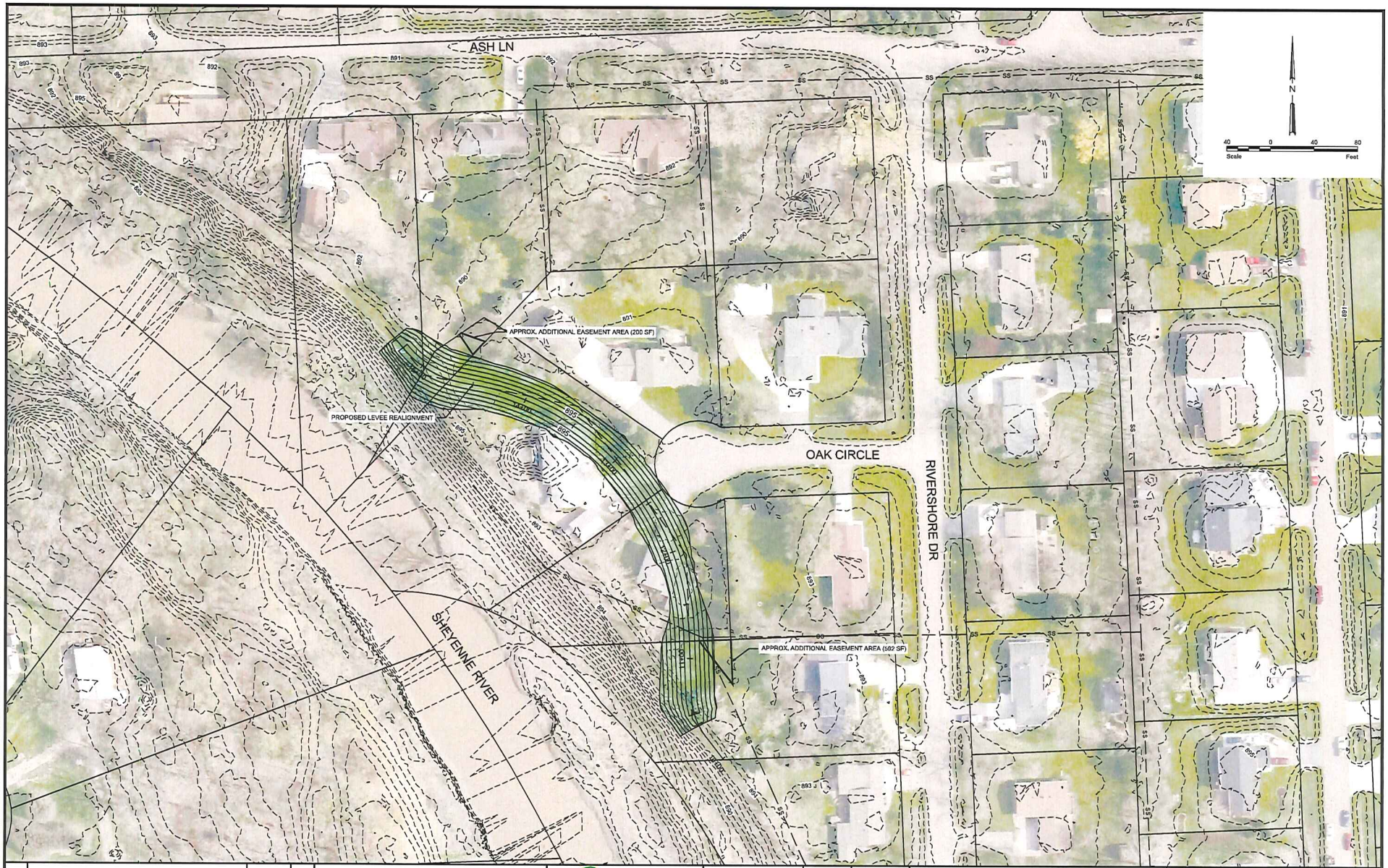
Stan Hanson
Houston Engineering Inc.
1401 21st Avenue North
Fargo, ND 58102
Phone 701.237.5065
sthanson@houstoneng.com

Mayor Bill Rohrich
City of Harwood
PO Box 65
Harwood, ND 58042
Phone 701.281.0314
cityauditor@cityofharwood.com

4. Ownership and Maintenance:

The City of Harwood will acquire the property for the improvements and will be responsible for maintenance.


City of Harwood
Capital Improvement Plan
Improvement Areas
1) Water Storage Tank
2) Bender Lane Sanitary Sewer Main
3) Berm Improvements
4) Water Main Improvements
5) Pavement Management Plan
6) Drainage Issues
7) GIS Mapping
#1
Water Storage Tank
#2
Bender Lane
Sanitary Sewer Main
#3A
Berm Improvements
#3B
Berm Improvements
#3C
Berm Improvements
#3D
Berm Improvements
#4A
County Road 22
Loop Watermain
#4B
River Drive
Loop Watermain
#4C
Prairie Drive
Loop Watermain
#5A
Prairie Drive
Overlay
Legend
Gate Valve
Hydrant
Light Post
Man Hole
Protection Lines
Sewer Lines
Water Lines
Cap Improvement Areas
PARCELS
Figure 1
Houston Engineering Inc.



No.	Revision	Date	By

Houston Engineering Inc.

Fargo
P: 701.237.5065
F: 701.237.5101

Drawn by BJA | Date 2-18-15
Checked by MPL | Scale AS SHOWN

CITY OF HARWOOD CAPITAL IMPROVEMENTS
CITY OF HARWOOD
HARWOOD, NORTH DAKOTA

BERM IMPROVEMENTS
AREA 1
PROJECT NO. 3401-158

SHEET
1 of 3

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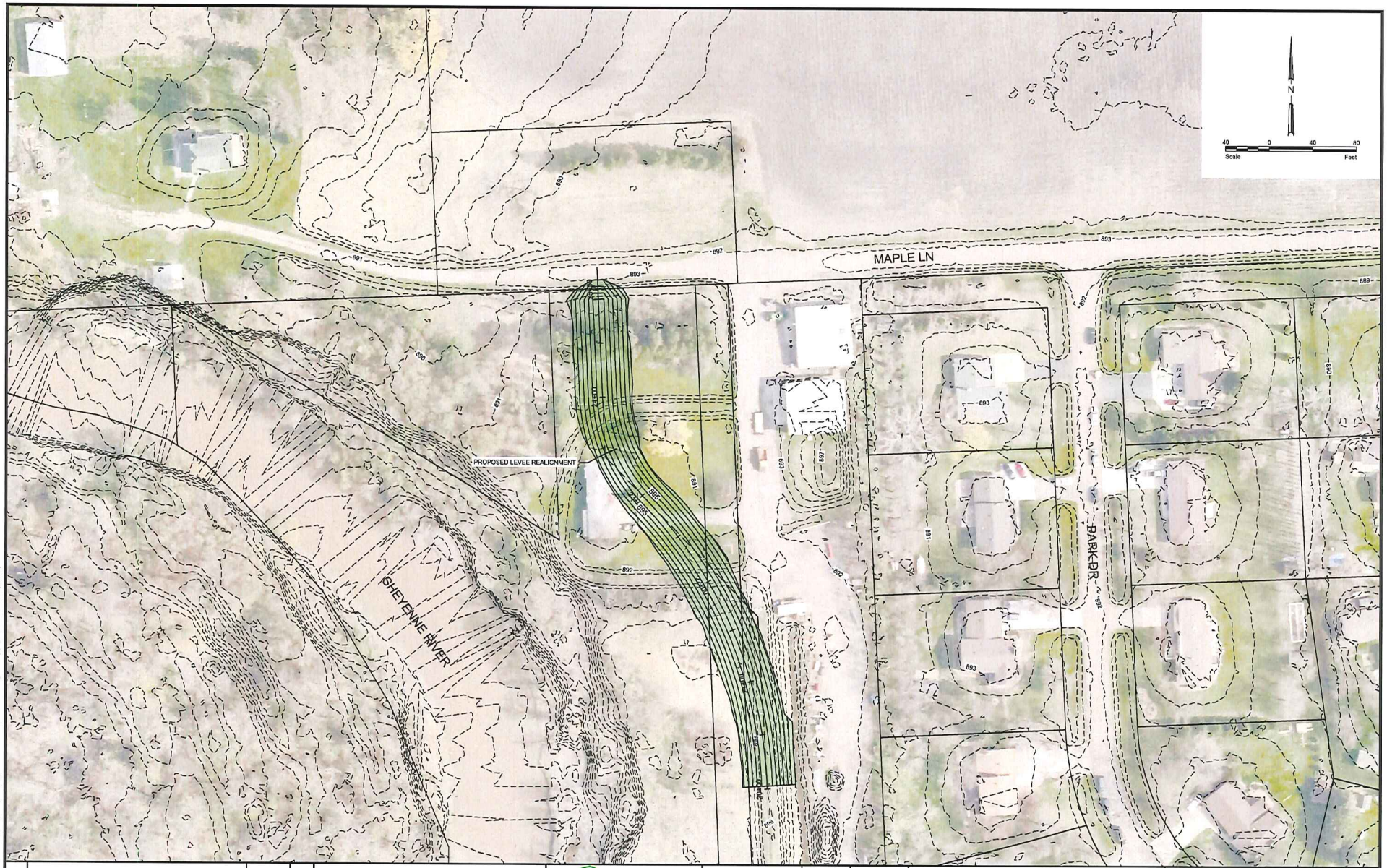

No.	Revision	Date	By

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Fargo
P: 701.237.5065
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BJA	2-18-15
Checked by	Scale
MPL	AS SHOWN

CITY OF HARWOOD CAPITAL IMPROVEMENTS
CITY OF HARWOOD
HARWOOD, NORTH DAKOTA

BERM IMPROVEMENTS
AREA 2
PROJECT NO. 3401-158

SHEET
2 of 3

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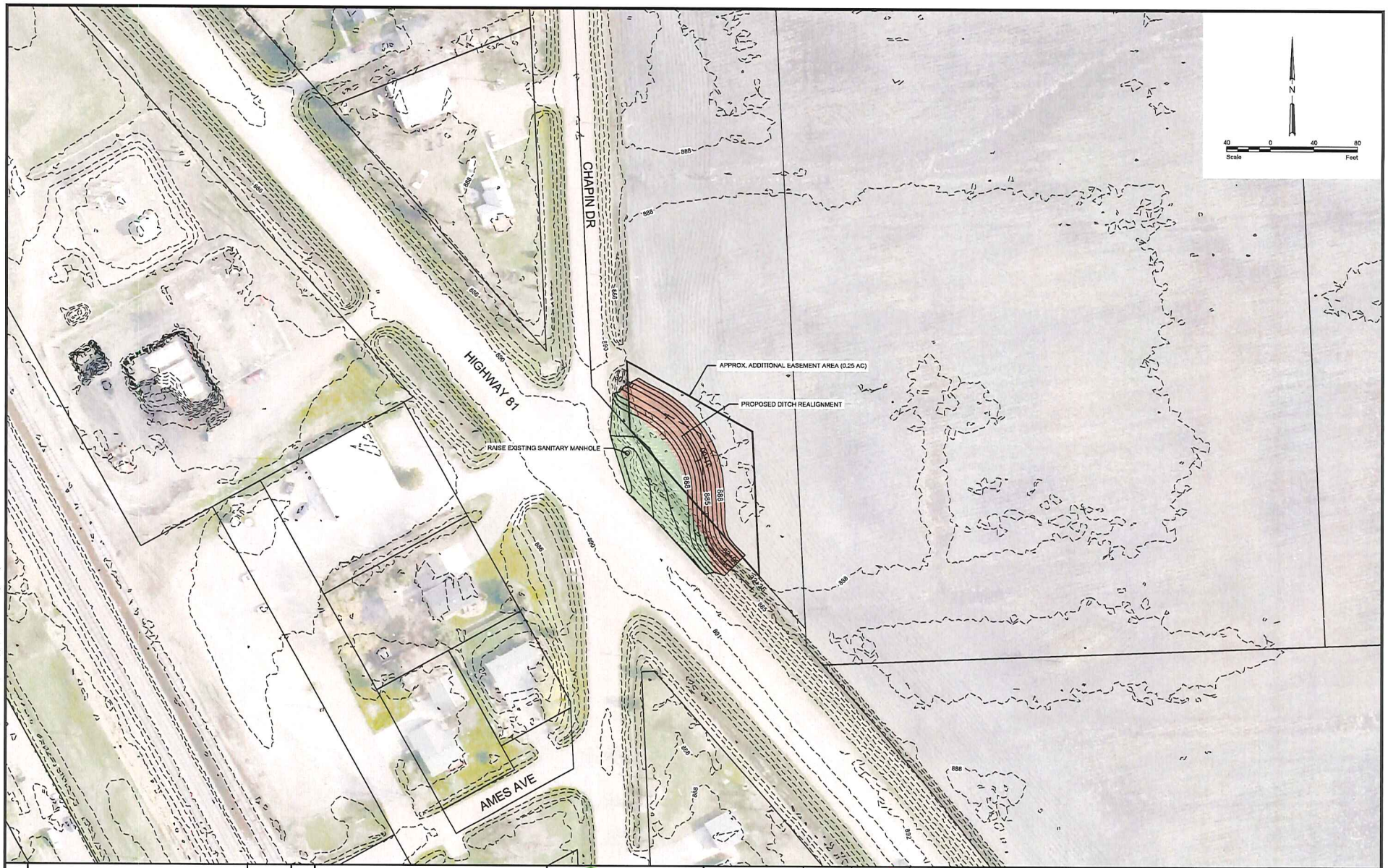

No.	Revision	Date	By

Houston Engineering Inc.

Fargo
P: 701.237.5065
F: 701.237.5101

Drawn by: BJA | Date: 2-18-15
Checked by: MPL | Scale: AS SHOWN

CITY OF HARWOOD CAPITAL IMPROVEMENTS
CITY OF HARWOOD
HARWOOD, NORTH DAKOTA

BERM IMPROVEMENTS
AREA 3
PROJECT NO. 3401-158

SHEET
3 of 3

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Appendix A

City of Harwood

2015 Flood Control Improvements

Opinion of Probable Cost

Area 1 Berm Improvements					
No.	*Item*	*Unit*	*Quantity*	*Unit Price*	*Total Price*
1	Mobilization	LS	1	$ 10,000.00	$ 10,000.00
2	Building, Foundation & Site Demolition	EA	2	$ 35,000.00	$ 70,000.00
3	Clearing & Grubbing	AC	0.4	$ 15,000.00	$ 6,000.00
4	Common Excavation (EV)	CY	1,600	$ 12.00	$ 19,200.00
5	Common Borrow (CV)	CY	3,900	$ 18.00	$ 70,200.00
6	Salvage Topsoil	CY	750	$ 9.00	$ 6,750.00
7	Inspection Trench	CY	2,200	$ 12.00	$ 26,400.00
8	Sanitary Sewer Removal	LF	320	$ 10.00	$ 3,200.00
9	Seeding & Mulching	AC	1.5	$ 2,500.00	$ 3,750.00
10	Erosion Control	LS	1	$ 2,500.00	$ 2,500.00
				Construction Subtotal	$ 218,000.00
				Contingencies (25%)	$ 54,500.00
				Project Easements	$ 2,000.00
				Property Acquisition	$ 450,000.00
				Total Estimated Cost	**$ 724,500.00**

Area 2 Berm Improvements					
No.	*Item*	*Unit*	*Quantity*	*Unit Price*	*Total Price*
1	Mobilization	LS	1	$ 7,500.00	$ 7,500.00
2	Building, Foundation & Site Demolition	EA	1	$ 35,000.00	$ 35,000.00
3	Clearing & Grubbing	AC	0.3	$ 15,000.00	$ 4,500.00
4	Common Excavation (EV)	CY	1,500	$ 12.00	$ 18,000.00
5	Common Borrow (CV)	CY	3,900	$ 18.00	$ 70,200.00
6	Salvage Topsoil	CY	800	$ 9.00	$ 7,200.00
7	Inspection Trench	CY	2,200	$ 12.00	$ 26,400.00
8	Seeding & Mulching	AC	1.5	$ 2,500.00	$ 3,750.00
9	Erosion Control	LS	1	$ 2,500.00	$ 2,500.00
				Construction Subtotal	$ 175,050.00
				Contingencies (25%)	$ 43,700.00
				Utility Relocation	$ 10,000.00
				Property Acquistion	$ 125,000.00
				Total Estimated Cost	**$ 353,750.00**

Area 3 Berm Improvements					
No.	*Item*	*Unit*	*Quantity*	*Unit Price*	*Total Price*
1	Mobilization	LS	1	$ 3,500.00	$ 3,500.00
2	Raise Sanitary Manhole	LS	1	$ 1,500.00	$ 1,500.00
3	Common Excavation (Ditch) (EV)	CY	500	$ 10.00	$ 5,000.00
4	Common Borrow (Ditch) (CV)	CY	350	$ 8.00	$ 2,800.00
5	Salvage Topsoil	CY	230	$ 9.00	$ 2,070.00
6	Stormwater Sluice Gate	EA	2	$ 2,500.00	$ 5,000.00
7	Seeding & Mulching	AC	0.5	$ 2,500.00	$ 1,250.00
8	Erosion Control	LS	1	$ 1,000.00	$ 1,000.00
				Construction Subtotal	$ 22,120.00
				Contingencies (25%)	$ 7,000.00
				Utility Relocation	$ 5,000.00
				Project Easements ($5,000/AC)	$ 1,500.00
				Total Estimated Cost	**$ 35,620.00**

Total Cost of Improvements $ 1,113,870.00