

Projects Committee Meeting  
 Thursday, April 29, 2021 7:30 AM  
 Lower Platte North NRD Office  
 P.O. Box 126  
 Wahoo, NE 68066

1. UNFINISHED BUSINESS  
 There is no unfinished business to address.
2. SWCP

A. SWCP Application Approvals

Listed below are five qualifying applications for our 2021 summer SWCP program.

B. 2					
1					
-					
S	C.	D. HARTMA	E. \$		
-		N FAMILY			
1		IRR	9,492.8		F. GRASS WW
		TRUST	5		
G. 2					
1					
-					
S	H.	I. RANDY/R	J. \$		
-		ICK	1		
2		BERANE	0,000.0		K. TERRACE/WASC
		K	0		OB/TO
L. 2					
1					
-					
S	M.	N. DENNIS	O. \$		
-		BERANE	1		
3		K	0,000.0		P. WASC OB TO
			0		
Q. 2					
1					
-					
S	R.		T. \$		
-			1		
4		S. RUTH	0,000.0		U. TERRACE TO
		WIDMAN	0		
V. 2					
1					
-					
S	W.		Y. \$		
-			1		
5		X. DAVID	0,000.0		Z. WASC OB TO
		SLOUP	0		

AA. SWCP Payments

Bil Bos submitted paperwork for the emergency repair work that was approved on Jon Gehring's basin project. To qualify for "emergency repair" the structure damaged must be less than 2 years old and originally built to NRCS standards and specifications. Approved amount was the SWCP policy max for emergency repair (50% of \$2000 = \$1000.00) and the bill came in at \$970. That would make a claim of \$485.00.

BB. SWCP Cancellations

CC. Wahoo Creek Cost Share Approvals

3. WATERSHEDS

A. Shell Creek

1. Shell Creek Environmental Enhancement Plan Implementation

- a. Tom Sprunk Bank Stabilization/Wetlands Project  
Bill Bos reported that NRCS has reevaluated the Tom Sprunk Wetlands/Stabilization Project and is recommending some additional rock rip-rap that appears should have been included with the original project. The additional rock has a contractor estimate of \$4,150 as attached. LPNNRD provided 75% toward the original project. Committee consideration for approving assistance is requested. The additional assistance will be reimbursed from our Shell Creek grants.
- b. Update on Shell Creek Channel Improvement/Benching Project @ U.P. Railroad Bridge Replacement Project - Matt Bailely
- c. Shell Creek Grant Funding Update  
No new update. NDEE is working on a grant contract addendum to provide an additional \$225,000 of EPA 319 funds for the Shell Creek Watershed.

2. SHELL CREEK ENVIRONMENTAL ENHANCEMENT PLAN APPLICATIONS

SEPTIC SYSTEM UPGRADE:

- 3. MIKE DVORACK
- 4. \$4,800.00

5.

LIVESTOCK WATER:

- 6. RIVER ROAD INC
- 7. \$ 14,265.24
- 8. SOLAR PUMP/WELL

9.

FILTER STRIP

- 10. REECE/BEAU KLUG
- 11. \$ 3,456.48
- 12. FILTER STRIP

13.

B. Wahoo Creek Watershed

- 1. Wahoo Creek Dam Site Planning Update & FYRA Invoices - NRCS Discussion @ 8 a.m.  
As reported last month, NRCS investigated Wahoo Creek Dam Site 83 for evidence of additional archeological findings on March 30 & 31. FYRA has calculated economics based on 11 dam sites, including Site 83, and is waiting to

finalize things until NRCS makes a determination regarding the site. Allen Gerhing and Missy Baier, NRCS, will join the committee at 8:00 p.m. to discuss the findings and possible options for moving forward with completing the Wahoo Creek Watershed Plan. Our plan to have Missy also present this information at the May 10th Board Meeting.

Mike Sotak, FYRA, has outlined two paths moving forward with Site 83 and without. Once NRCS outlines what options are allowable, the Projects Committee and Board will be asked to select a path and move forward. We have also plan to meet with NRCS at 10 a.m. on May 26th to discuss options and timelines for proceeding. After the Projects Committee Met, FYRA submitted a \$833.75 invoice as attached. After this contract payment, \$17,052.50 will remain on our \$95,469 contract addendum.

2. Wahoo Creek Watershed Water Quality Plan Phase II  
No new information. As reported last meeting, we are working with Saunders County on the Road/lake shoreline stabilization project at Czechland Lake which is anticipated to be completed this summer. Other tasks underway are JEO is starting to work on the Wahoo Creek Water Quality Plan update, we have approved Lands for Conservation Contacts for conservation work to be completed this summer and we will be working with NDEE on water quality sampling in the watershed.

Attached is JEO's April 29th \$5,847.50 invoice for work completed on our Wahoo Creek Watershed Plan Update. After this contract payment, \$25,782.50 will remain under our \$31,630 contract.

3. Olsson Design Update and Invoice  
Looking ahead, I asked Andrew Phillips, Olsson, to give his projection on the timelines and expenses for their contract services anticipating that the Wahoo Creek Watershed Plan can receive NRCS approval soon. Below are Andrew's comments.

**Tom,**

***Below is the estimated fees sorted by NRD budget year assuming that we would have approval to begin design in May of 2021. I realize that the start date may likely change, but this is current as of the last update we completed to the schedule. We included a 16 month period for obtaining the USACE Section 404 permit but we understand that this may take less time.***

Dams	May 2021 to June 2021	July 2021 to June 2022	
Site 26A, 26B, and 27	\$55,000	\$170,000	Note: Design beginning in M
Remaining 8 sites		\$600,000	Note: Design beginning in O

***Also, please note that the above estimated fees do not include an escalation because of the delays from the original planned start of design date. We would likely request a 3.5% increase per year to account for the delay in the start of design.***

***If you would like this in another form, more detail, or if you would like the fees presented over a different time frame, please let me know.***

**Thanks,**

**Andrew**

4. JOINT WATER MANAGEMENT ADVISORY BOARD

Work continues on moving joint projects forward with Dodge County, Fremont and other JWMAB partners. Recent updates on a few of the projects are shown below.

A. Platte River Breach Repair Project (Rod & Gun Club) Bid Opening - May 12, 2021

Dodge County has notified us of a 10:00 a.m., May 12, 2021, bid opening for repairing the Platte River Breach Repair Project on Fremont Rod and Gun Club property. It is anticipated that participants may join in person or by Zoom. A notice for the Zoom connection has been forwarded to the LPNNRD Board members appointed to serve on JWMAB (Frank Pollard, Bill Saeger, Kelly Thompson, Lon Olson). Anyone else wanting to participate, please let us know. LPNNRD has committed up to \$50,000 toward this portion of the breach repair (Bid documents and Interlocal Agreement attached).

B. East Fremont/Elkhorn Township Project Proposal Review

The East Fremont/Elkhorn Township Project Proposal Review has a scheduled Zoom meeting 2:00-3:00 pm on Tuesday, June 1, 2021. This proposal is looking at improving the drainage ditch system east of Fremont. Dodge County Emergency Manager Tom Smith said NEMA indicated that this study proposal is approved for federal funding assistance from FEMA. LPNNRD has committed \$66,500 (8%) toward the local contribution. Attached is the draft of the RFP that will be sent out.

C. Rawhide Watershed Study Update

As reported earlier, Dodge County has received funding through NRCS's Watershed Flood Prevention Operation program to evaluate flood reduction opportunities for Dodge County and Fremont. Since this study is being 100% funded by NRCS, no commitment from LPNNRD was needed. Attached is the draft RFP that will be sent out.

5. HAZARD MITIGATION PLAN UPDATE

No new information. JEO continues to contact the few remaining entities that need to pass and submit a formal resolution adopting their portion of the Hazard Mitigation Plan.

6. EROSION AND SEDIMENT RULES AND REGULATIONS

7. OTHER

A. City of Schuyler Flood Reduction/Drainage Improvement Project Request - 8:30 a.m.

At the April 1st Projects Committee Meeting, the City of Schuyler presented a formal assistance request on their flood risk reduction/drainage improvement project. The project request involves placing three additional flap gate closure structures on storm sewer outfalls to Lost Creek and channel widening in the southeast part of the city. The gates are to prevent floodwater backflow into the City. Schuyler originally requested 50% assistance on a \$312,000 estimated project, but adjustments has been made as attached. Kevin Kruse, JEO, and City of Schuyler Administrator William Re Roos, will join the Projects Committee Meeting at 8:30 a.m. to discuss a more detailed description of the project components and cost breakdown. The committee is asked to consider a recommendation toward

assisting with project components. Also attached is Schuyler's Internal Drainage Study Report.

B. Platte Center - Elk Creek Bank Stabilization Project Update

Other the past 25-30years, LPNNRND has been a cost sharing partner with Platte Center to improve flowage and stabilize Elk Creek as it flows through the Village. We have been notified by a Village representative that they are working on getting a contractor estimate for additional creek bank stabilization north of the bridge on main street. This new project effort may be in the vicinity of a \$50,000. In the past, LPNNRD has provided 50% assistance. After we recieve a formal request, it will be presented for consideration.

8. ADJOURNMENT

Wemhoff Construction  
 P. O. Box 257  
 254 D. Street  
 Platte Center, NE 68653-0257

# Estimate

Date	Estimate No.
4/15/2021	28

Name/Address

Sprunk Tom  
 9680 63 Ave  
 Columbus, NE 68601

Project			
Description	Qty	Rate	Total
Job materials (Rip Rap).	1	2,000.00	2,000.00
Moving equipment from and/or to job.	1	250.00	250.00
Grading of dirt and placeing of rip rap.	1	1,900.00	1,900.00
<b>Total</b>			<b>\$4,150.00</b>

*James C. Wemhoff*  
 owner  
 Wemhoff Construction



**FYRA Engineering, LLC**

12702 Westport Parkway, Suite 300  
 Omaha, NE 68138  
 Phone: 402.502.7131  
 Fax: 402.932.6940

**INVOICE FOR SERVICES**

**Lower Platte North NRD**  
**Tom Mountford**  
**511 Commercial Park Road**  
**Wahoo, NE 68066**

**DATE:** 26 April 2021  
**PROJECT NO.:** 022-17-02  
**PERIOD COVERED:** 20 Mar 2021 Through 23 Apr 2021  
**INVOICE NO.:** 022-060  
**FED ID:** 45-5611118

**Project Name:** Wahoo Creek Watershed Plan/EA  
**Contract Amount:** \$574,990.00  
**31 Oct 2019 Addendum Amount:** \$48,000.00  
**Contract Date:** 8 December 2017  
**3 Sep 2020 Addendum Amount:** \$95,469.00  
**Contract Date:** 3 September 2020

**022-17-02-6.01-Additional Services-Economics-Project Management**

Description	Employee	Billing Rate	Hours	Current Due
Engineer	Kaufman, Janel	\$ 160.00	1.50 \$	240.00
Admin	Stratton, Ann	\$ 80.00	0.50 \$	40.00
<b>022-17-02-6.01-Additional Services-Economics-Project Management</b>			<b>2.00 \$</b>	<b>280.00</b>

**022-17-02-6.03-Additional Services-Economics-Revised Plan Economics**

Description	Employee	Billing Rate	Hours	Current Due
Principal	Sotak, Mike	\$ 225.00	1.75 \$	393.75
Engineer	Kaufman, Janel	\$ 160.00	1.00 \$	160.00
<b>022-17-02-6.03-Additional Services-Economics-Revised Plan Economics</b>			<b>2.75 \$</b>	<b>553.75</b>

**TOTAL DUE CURRENT INVOICE: \$ 833.75**

**CONTRACT AMOUNT:** \$ 718,459.00  
**PREVIOUS BILLING:** \$ 700,572.75  
**CURRENT INVOICE:** \$ 833.75  
**TOTAL INV'D. TO DATE:** \$ 701,406.50  
**CONTRACT REMAINING:** \$ 17,052.50

FYRA Engineering, LLC  
 12702 Westport Parkway, Suite 300  
 Omaha, NE 68138

Lower Platte North NRD  
Tom Mountford  
511 Commercial Park Road  
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Summary for Invoice: 022-060  
Project Name: Wahoo Creek Watershed Plan/EA

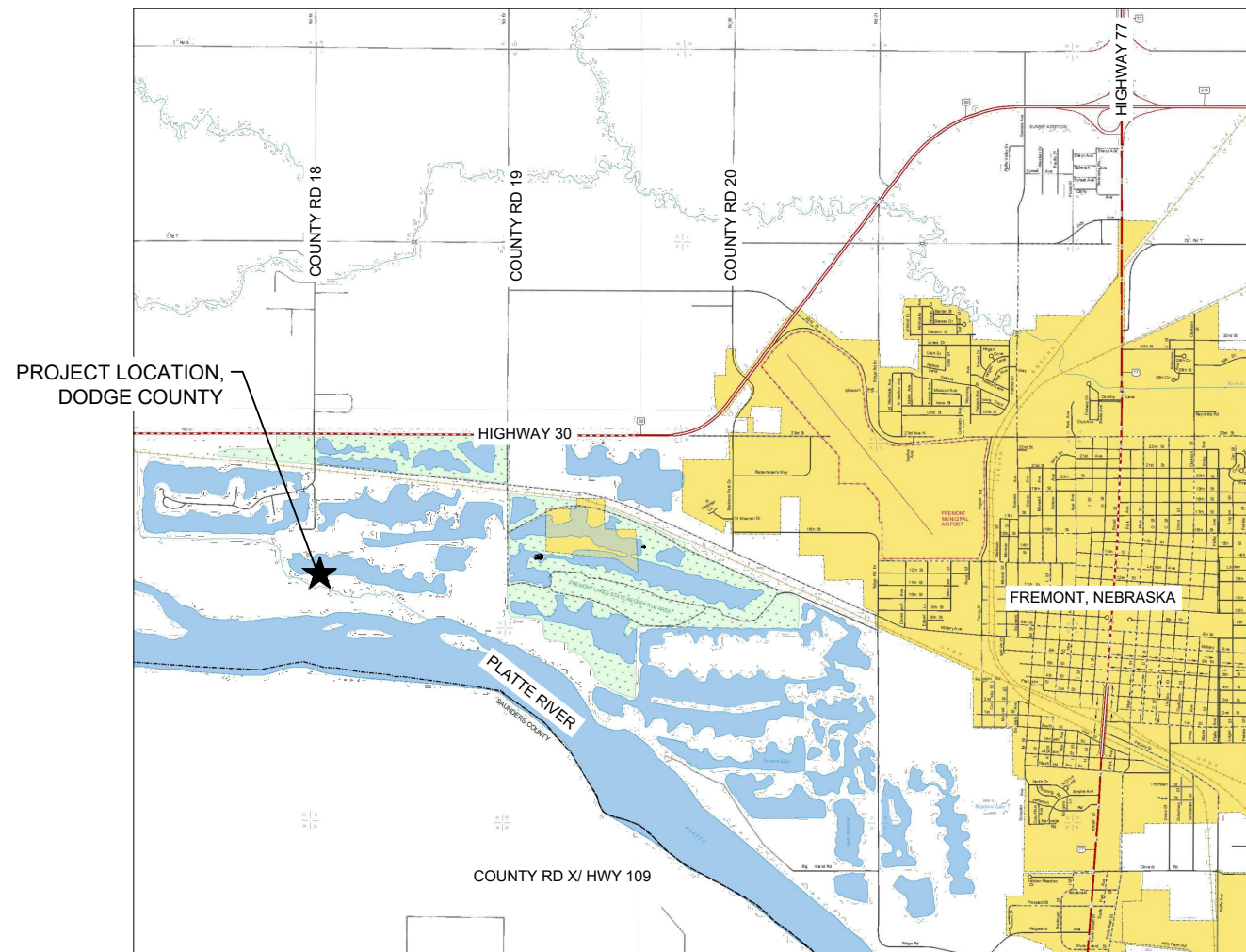
Tasks	Contracted Fee	Previously Billed	This Invoice	Total To Date
022-17-02-1.01 Coord Meetings w/LPNNRD	\$ 5,724	\$ 16,175.49	\$ -	\$ 16,175.49
022-17-02-1.02-Coord Meetings w/NRCS	\$ 8,904	\$ 11,366.25	\$ -	\$ 11,366.25
022-17-02-1.03-Project Meetings	\$ 49,372	\$ 23,605.04	\$ -	\$ 23,605.04
022-17-02-1.04-Monthly Invoicing/Schedule	\$ 7,875	\$ 13,510.50	\$ -	\$ 13,510.50
022-17-02-1.05-Project Scoping	\$ 7,170	\$ 7,068.75	\$ -	\$ 7,068.75
022-17-02-1.06-Plan Review	\$ 6,740	\$ 24,541.09	\$ -	\$ 24,541.09
022-17-02-2.01-Develop, Write & Summarize Plan	\$ 60,100	\$ 83,011.48	\$ -	\$ 83,011.48
022-17-02-2.02-Maintain Admin Record	\$ 3,560	\$ 859.25	\$ -	\$ 859.25
022-17-02-2.03-Develop and Describe Purpose & Need	\$ 2,320	\$ 1,820.00	\$ -	\$ 1,820.00
022-17-02-2.04-Formulate, Describe & Compare Alternatives	\$ 27,270	\$ 19,239.25	\$ -	\$ 19,239.25
022-17-02-2.05-Collect & Analyze Social/Demographic Data	\$ 1,435	\$ 1,562.50	\$ -	\$ 1,562.50
022-17-02-2.06-Historic & Cultural Resources	\$ 675	\$ 9,869.00	\$ -	\$ 9,869.00
022-17-02-2.07-Prime & Unique Farmland	\$ 675	\$ 2,404.75	\$ -	\$ 2,404.75
022-17-02-2.08-Identify Wetlands & Other Water Bodies	\$ 117,145	\$ 102,862.36	\$ -	\$ 102,862.36
022-17-02-2.09-Collect Soils Data	\$ 810	\$ -	\$ -	\$ -
022-17-02-2.10-Identify and Anlyze Soil Erosion	\$ 810	\$ 1,952.75	\$ -	\$ 1,952.75
022-17-02-2.11-Collect & Analyze Floodplain Data	\$ 3,900	\$ 6,521.00	\$ -	\$ 6,521.00
022-17-02-2.12-Collect & Analyze Data on Critical Areas	\$ 6,300	\$ 3,071.00	\$ -	\$ 3,071.00
022-17-02-2.13-Identify Land Use and Crop Inventory	\$ 810	\$ 1,125.00	\$ -	\$ 1,125.00
022-17-02-2.14-T&E Species & Migratory Birds	\$ 11,500	\$ 12,192.50	\$ -	\$ 12,192.50
022-17-02-2.15-Consumptive Use Data	\$ 1,840	\$ 1,366.50	\$ -	\$ 1,366.50
022-17-02-2.16-Effects on Public Health & Safety	\$ 4,440	\$ 1,936.00	\$ -	\$ 1,936.00
022-17-02-2.17-Effects to Homes/Bus/Ag	\$ 4,440	\$ 4,124.75	\$ -	\$ 4,124.75
022-17-02-2.18-Cummulative Impacts	\$ 11,080	\$ 2,821.25	\$ -	\$ 2,821.25
022-17-02-2.19-Federal, State & Local Permits	\$ 1,790	\$ 1,775.00	\$ -	\$ 1,775.00
022-17-02-2.20-Conflicts w/Other Plans	\$ 4,460	\$ 3,822.50	\$ -	\$ 3,822.50
022-17-02-2.21-Interagency & Public Involvement	\$ 2,940	\$ 5,197.02	\$ -	\$ 5,197.02
022-17-02-2.22-Risk & Uncertainty	\$ 4,880	\$ 4,292.00	\$ -	\$ 4,292.00
022-17-02-2.23-Preferred Alternatives Discussion	\$ 11,840	\$ 14,006.00	\$ -	\$ 14,006.00
022-17-02-2.24-Mitigation Features	\$ 6,760	\$ 4,486.00	\$ -	\$ 4,486.00
022-17-02-2.25-Hydrologic Investigation	\$ 26,460	\$ 33,403.25	\$ -	\$ 33,403.25
022-17-02-2.26-Economic Data & Discussion	\$ 14,640	\$ 51,211.00	\$ -	\$ 51,211.00
022-17-02-2.27-Installation & Financing	\$ 2,600	\$ 775.00	\$ -	\$ 775.00
022-17-02-2.28-Operations, Maintenance & Replacement	\$ 3,240	\$ 740.00	\$ -	\$ 740.00
022-17-02-2.29-Project Maps	\$ 24,850	\$ 28,438.25	\$ -	\$ 28,438.25
022-17-02-2.30-Utility Investigations	\$ 5,200	\$ 1,940.00	\$ -	\$ 1,940.00
022-17-02-2.31-Recreation Site 77 Planning	\$ 7,350	\$ -	\$ -	\$ -
022-17-02-3.01-Interagency Scoping Mtg	\$ 10,720	\$ 6,396.50	\$ -	\$ 6,396.50
022-17-02-3.02-Agency Coord	\$ 7,680	\$ 6,181.00	\$ -	\$ 6,181.00
022-17-02-4.01-Breach Analysis	\$ 26,343	\$ 36,054.50	\$ -	\$ 36,054.50
022-17-02-4.02-Hydraulics/Structure Sizing	\$ 19,244	\$ 30,321.25	\$ -	\$ 30,321.25
022-17-02-4.03-Develop Land Rights & Structure Costs	\$ 29,784	\$ 29,048.25	\$ -	\$ 29,048.25
022-17-02-4.04-Land Rights Assessment	\$ 4,534	\$ 1,496.25	\$ -	\$ 1,496.25
022-17-02-4.05-Site Survey	\$ 14,779	\$ 5,080.00	\$ -	\$ 5,080.00
022-17-02-5-Additional services for the Wahoo Creek Watershed Plan-EA	\$ 48,000	\$ 6,033.02	\$ -	\$ 6,033.02
022-17-02-6.01-Additional Services-Economics-Project Management	\$ 8,329	\$ 5,030.00	\$ 280.00	\$ 5,310.00
022-17-02-6.02-Additional Services-Economics-Flood Damage Reduction Economics	\$ 64,690	\$ 62,205.50	\$ -	\$ 62,205.50
022-17-02-6.03-Additional Services-Economics-Revised Plan Economics	\$ 22,450	\$ 9,634.00	\$ 553.75	\$ 10,187.75
<b>Totals:</b>	<b>\$ 718,459</b>	<b>\$ 700,572.75</b>	<b>\$ 833.75</b>	<b>\$ 701,406.50</b>

# BREACH LAKE FLOOD DAMAGE REPAIRS DODGE COUNTY, NE CDBG PROJECT NO. 19-EM-005

JEO PROJECT NO. 190890.02



BREACH LAKE FLOOD DAMAGE REPAIRS  
DODGE COUNTY, NE  
CDBG PROJECT NO. 19-EM-005



**LOCATION MAP**  
SCALE: 1" = 2,500'

**INDEX OF SHEETS:**

SHEET NO:	SHEET NAME:
C0.1	COVER SHEET
C0.2	SYMBOLS SHEET
C0.3 - C0.6	CONTROL SHEETS
C1.1	EXISTING SITE PLAN
C2.1	PROPOSED SITE PLAN
C2.2	PROPOSED GRADING PLAN
C2.3 - C2.4	EROSION CONTROL PLANS
PP1.1 - PP1.4	PLAN AND PROFILE SHEETS
D1.1	DETAILS
D1.2	TYPICAL CROSS SECTIONS
XS1.1	CROSS SECTIONS

COVER SHEET



PROJECT NO.	190890.02
DATE	4/15/2021
DRAWN BY	JAA
FILE NAME	S-190890.02.dwg
FIELD BOOK	Dodge Co. #29
FIELD CREW	DF
SURVEY FILE NO.	SV-190890.01
PLAN IN HAND	JTM
DATE	01/21/21
70 PERCENT REVIEW	JJS
DATE	01/26/21
95 PERCENT REVIEW	JJS
DATE	2/24/21
REVISIONS	

**NOTE:**  
NEITHER THE OWNER (CLIENT) NOR JEO CONSULTING GROUP, INC. ASSUMES ANY RESPONSIBILITY FOR UTILITY LOCATIONS BEING ACCURATELY SHOWN OR NOT SHOWN ON THE PLANS. A REQUEST FOR UTILITY LOCATES WAS MADE FOR THIS LOCATION AS PER THE ONE-CALL NOTIFICATION SYSTEM ACT. (DATA: 2/25/21 TICKET NO.: 210561072).  
UTILITIES SHOWN ARE FROM FIELD MARKINGS PROVIDED IN THE FIELD BY THE UTILITY PROVIDERS.  
THE EXACT LOCATION AND/OR SIZE OF UNDERGROUND FEATURES MAY NOT BE ACCURATELY, COMPLETELY AND RELIABLY DEPICTED. FIELD VERIFICATION OF UTILITIES MAY BE REQUIRED. CONTRACTOR(S) SHALL NOTIFY THE RESPECTIVE UTILITY COMPANIES BEFORE COMMENCING ANY WORK.





BREACH LAKE FLOOD DAMAGE REPAIRS  
 DODGE COUNTY, NE  
 CDBG PROJECT NO. 19-EM-005

SYMBOLS SHEET



PROJECT NO. 190890.02  
 DATE 4/15/2021  
 DRAWN BY JAA  
 FILE NAME S-190890.02.dwg  
 FIELD BOOK Dodge Co. #29  
 FIELD CREW DF  
 SURVEY FILE NO. SV-190890.01  
 PLAN IN HAND JTM  
 INITIALS DATE 01/21/21  
 70 PERCENT REVIEW JJS  
 INITIALS DATE 01/26/21  
 95 PERCENT REVIEW JJS  
 INITIALS DATE 2/24/21  
 REVISIONS



Know what's below.  
Call before you dig.

### PAVING FEATURES

ITEM	SYMBOL
EXISTING PAVEMENT JOINT	
TRANSVERSE JOINT	
LONGITUDINAL JOINT	
EXPANSION/KEYED JOINT	
PAVEMENT MARKING	
PAVEMENT REBAR	
HANDICAP SYMBOL	

### VEGETATION

ITEM	SYMBOL
BUSH	
CONIFEROUS TREE	
DECIDUOUS TREE	
MARSH/WETLAND	
TREE MASS LINE	
TREE STUMP	

### SWPPP

ITEM	SYMBOL
SILT FENCE	
INLET PROTECTION	
STRAW WATTLE CHECK	
STRAW BALE CHECK	
FLOW ARROW (PLAN)	
AREA INLET	
FILTER PROTECTION	

### GENERAL

ITEM	SYMBOL
PLAN REVISION	
NORTH ARROW	
GRAPHIC SCALE PLAN	<p>GRAPHIC SCALE</p> <p>UNIT OF MEASURE IS FEET</p>
GRAPHIC SCALE PROFILE/ CROSS SECTION	<p>HORIZ. = </p> <p>VERT. = </p>
KEYNOTE OR TABULAR NOTE	
REFERENCED NOTE	
ELEVATION	
SECTION	
ENLARGED DETAIL	

### SITE & SIGNAGE

ITEM	SYMBOL
SIGN	
BARRICADE	
ROAD SIGNS	
COUNTY ROAD	
INTERSTATE HIGHWAY	
STATE HIGHWAY	
U.S. HIGHWAY	
MILE MARKER POST	
RIGHT OF WAY MARKER	
RAILROAD CROSSING SIGNAL	
RAILROAD SWITCH	
FLAG POLE	
MAILBOX	
PROPANE TANK	
SATELLITE TV DISH	
WINDMILL	

### CONTROL & ELEVATION

ITEM	SYMBOL
BENCHMARK	
CONTROL POINT (NON-PROPERTY)	
MONUMENT FOUND (PROPERTY)	
MONUMENT SET	
TEMPORARY POINT	
TEST BORING	
POINT ELEVATION (EXISTING)	
POINT ELEVATION (PROPOSED)	
TOP OF PAVEMENT	TP
TOP OF CURB	TC
GROUND	GR
TOP OF WALL	TW
BOTTOM OF WALL	BW
FLOWLINE	FL
GRID TICK	+

### MISC FEATURES

ITEM	SYMBOL
CENTER PIVOT	
CEMETERY	
GRAVE	
CHURCH	
CAVE	
CISTERN	
LATRINE	
OIL WELL	
GUARD POST	

### UTILITIES

ITEM	SYMBOL
STORM SEWER	
CURB INLET	
GRATE INLET	
CATCH BASIN	
STORM SEWER MANHOLE	
SANITARY	
CLEANOUT	
SEPTIC TANK	
SANITARY MANHOLE	
POWER, ELECTRICAL, LIGHT, AND TRAFFIC	
AIR CONDITIONING UNIT	
ANTENNA	
ANCHOR POLE/POST	
GUY POLE	
GUY WIRE ANCHOR	
ELECTRICAL HIGHLINE TOWER (METAL OR CONCRETE)	
POWER POLE (EXISTING)	
POWER POLE (PROPOSED)	
POWER (ELEC) PEDESTAL	
POWER (ELEC) PULL BOX OR MANHOLE	
POWER (ELEC) METER	
LIGHT POLE	
TRAFFIC SIGNAL	
TRAFFIC SIGNAL BOX	
TELEVISION PEDESTAL	
TELEVISION MANHOLE	
WATER	
WATER MANHOLE	
WATER VALVE	
WATER SHUT OFF OR CURB STOP	
WELL	
WATER METER	
WATER METER PIT	
YARD HYDRANT	
WATER ELEVATION	
WATER TOWER	
FIRE HYDRANT (EXISTING)	
FIRE HYDRANT (PROPOSED)	
FIRE HYDRANT IN PROFILE	
WATER FITTINGS	
11- 1/4"	
22- 1/2"	
45°	
90°	
CROSS	
PLUG	
REDUCER	
TEE	
GAS	
GAS METER	
GAS MANHOLE	
GAS FILL PIPE	
GAS PUMP	
GAS VALVE	
GAS VENT	
TELEPHONE	
FIBER OPTICS PULL BOX	
TELEPHONE POLE	
TELEPHONE PULL BOX OR MANHOLE	
TELEPHONE PEDESTAL	
MANHOLE (NON-SPECIFIC)	
UNDERGRND STORAGE TANK	
VALVE (NON-SPECIFIC)	

### COMMON HATCHING

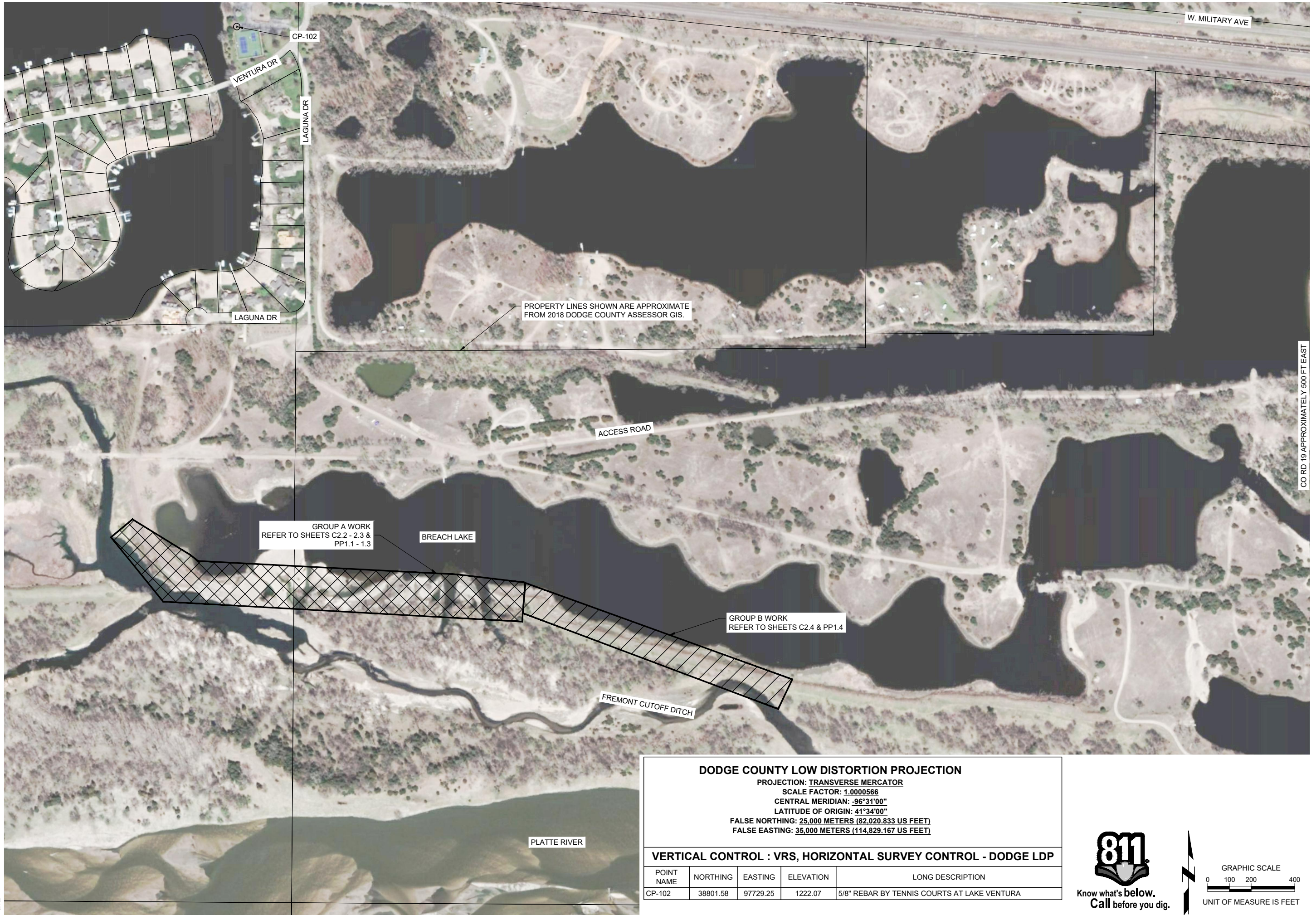
ITEM	HATCH
ASPHALT PAVEMENT (EX.)	
CONCRETE PAVEMENT (EX.)	
GRAVEL (EX.)	
BRICK PAVEMENT (EX.)	
ASPHALT PAVEMENT (PR.)	
CONCRETE PAVEMENT (PR.)	
CONCRETE SIDEWALK (PR.)	
GRAVEL (PR.)	
BRICK PAVEMENT (PR.)	
RIP RAP	
SEEDING	
MATTING	
UNDISTURBED EARTH	
EARTH	
GRANULAR FILL	
SAND MORTAR, PLASTER	
CONCRETE	
BRICK	
CONCRETE BLOCK	
METAL	
WOOD FRAMING	
WOOD FRAMING INTERRUPTED MEMBER	
BATT INSULATION	
RIGID INSULATION	

### LINESTYLES

ITEM	SYMBOL
BREAK LINE	
CABLE TELEVISION	
CABLE TV (NS)	
CENTERLINE OF ROAD	
CONTOUR MINOR (EX)	
CONTOUR MAJOR (EX)	
CONTOUR MINOR (EX, SCREENED)	
CONTOUR MAJOR (EX, SCREENED)	
CONTOUR MINOR (PR)	
CONTOUR MAJOR (PR)	
LIMITS OF CONSTRUCTION	
CULVERT	
ELECTRIC (OVHD)	
ELECTRIC (OVHD, NS)	
ELECTRIC (UGND)	
ELECTRIC (UGND, NS)	
FENCE (WOODEN)	
FENCE (WIRE OR UNKNOWN)	
FENCE (CHAINLINK)	
FENCE (SECURITY)	
FIBER OPTIC LINE	
FIBER OPTIC LINE (NS)	
FLOWLINE (BREAKLINE)	
GAS LINE	
GAS LINE (NS)	
GUARDRAIL	
PROPERTY BOUNDARY	
PROPERTY LOT LINES (PR)	
PROPERTY LINES (EX, NS)	
RIGHT-OF-WAY LINE	
RAILROAD RIGHT-OF-WAY	
RAILROAD TRACKS	
RETAINING WALL	
SANITARY SEWER (EX)	
SANITARY SEWER (NS)	
SANITARY SEWER (PR)	
SAN SEWER FORCE MAIN (EX)	
SAN SEWER FORCE MAIN (PR)	
STORM SEWER (EX)	
STORM SEWER (NS)	
STORM SEWER (PR)	
TELEPHONE LINE (UGND)	
TELEPHONE LINE (UGND, NS)	
TELEPHONE LINE (OVHD)	
TELEPHONE LINE (OVHD, NS)	
TERRACE	
CROPLINE	
TRAVELED WAY	
WATER (EX)	
WATER (NS)	
WATER (PR)	
FIRE SERVICE	
EXISTING	EX
EXISTING, NOT-SURVEYED	NS
PROPOSED	PR
OVERHEAD	OVHD
UNDERGROUND	UGND



PROJECT NO.	190890.02
DATE	4/15/2021
DRAWN BY	JAA
FILE NAME	S-190890.02.dwg
FIELD BOOK	Dodge Co. #29
FIELD CREW	DF
SURVEY FILE NO.	SV-190890.01
PLAN IN HAND	JTM
INITIALS	01/21/21
DATE	
70 PERCENT REVIEW	JJS
INITIALS	01/26/21
DATE	
95 PERCENT REVIEW	JJS
INITIALS	2/24/21
DATE	
REVISIONS	



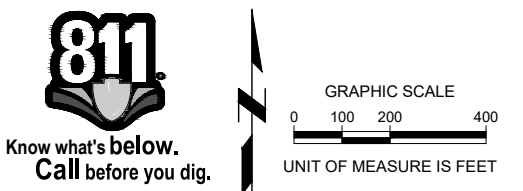
**DODGE COUNTY LOW DISTORTION PROJECTION**

PROJECTION: TRANSVERSE MERCATOR  
 SCALE FACTOR: 1.0000566  
 CENTRAL MERIDIAN: -96°31'00"  
 LATITUDE OF ORIGIN: 41°34'00"  
 FALSE NORTHING: 25,000 METERS (82,020.833 US FEET)  
 FALSE EASTING: 35,000 METERS (114,829.167 US FEET)

---

**VERTICAL CONTROL : VRS, HORIZONTAL SURVEY CONTROL - DODGE LDP**

POINT NAME	NORTHING	EASTING	ELEVATION	LONG DESCRIPTION
CP-102	38801.58	97729.25	1222.07	5/8" REBAR BY TENNIS COURTS AT LAKE VENTURA



**811**  
Know what's below.  
Call before you dig.

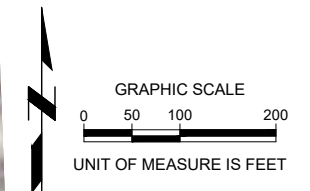
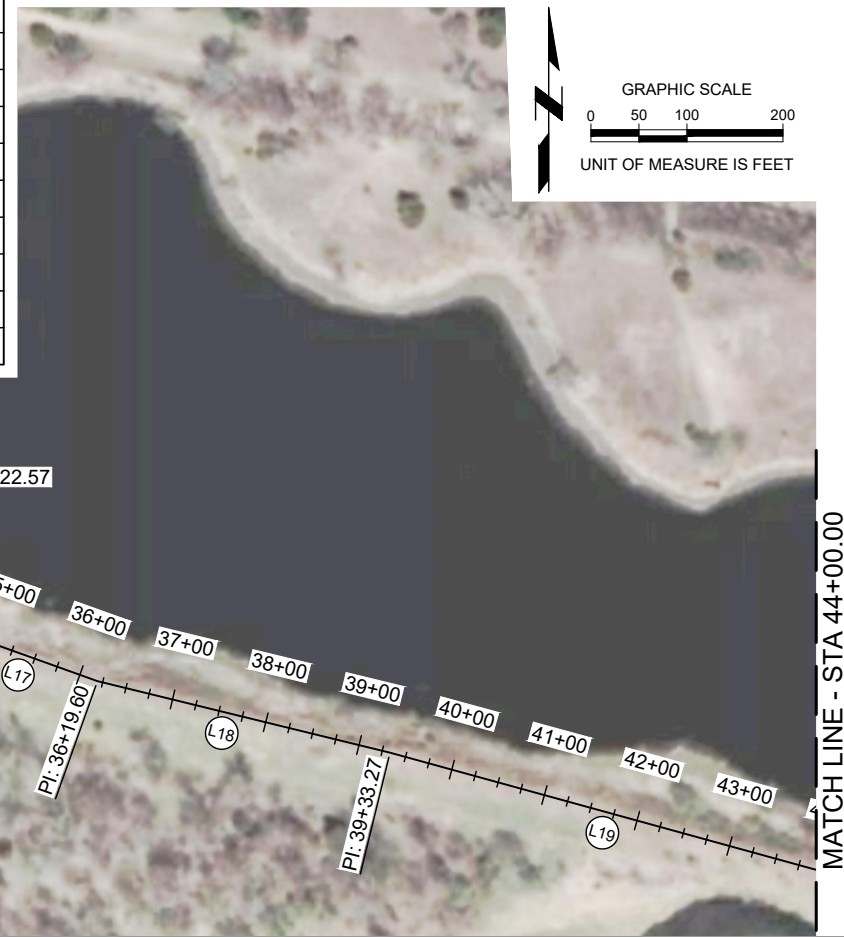
GRAPHIC SCALE  
0 100 200 400  
UNIT OF MEASURE IS FEET

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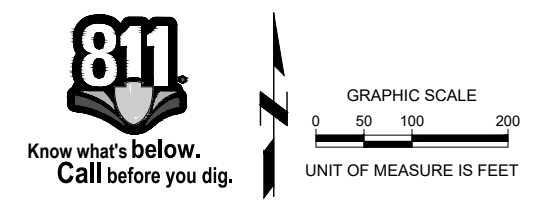


ALIGNMENT - BERM CL				
NUMBER	LENGTH	LINE/CHORD DIR	START STATION, N, E	END STATION N, E
L1	360.68	S07°50'20"E	10+00.00, 36889.59, 97215.82	13+60.68, 36532.27, 97265.02
L2	114.89	S22°17'46"E	13+60.68, 36532.27, 97265.02	14+75.57, 36425.97, 97308.61
L3	120.04	S41°07'44"E	14+75.57, 36425.97, 97308.61	15+95.61, 36335.56, 97387.56
L4	112.53	S53°11'12"E	15+95.61, 36335.56, 97387.56	17+08.14, 36268.13, 97477.65
L5	5.30	S68°17'18"E	17+08.14, 36268.13, 97477.65	17+13.44, 36266.17, 97482.57
L6	82.02	S87°35'12"E	17+13.44, 36266.17, 97482.57	17+95.46, 36262.72, 97564.52
L7	244.17	S87°35'12"E	17+95.46, 36262.72, 97564.52	20+39.63, 36252.43, 97808.48
L8	395.63	S87°57'41"E	20+39.63, 36252.43, 97808.48	24+35.25, 36238.36, 98203.85
L9	403.07	S84°47'23"E	24+35.25, 36238.36, 98203.85	28+38.33, 36201.76, 98605.26
L10	209.85	S86°58'26"E	28+38.33, 36201.76, 98605.26	30+48.18, 36190.68, 98814.82
L11	95.40	N86°55'49"E	30+48.18, 36190.68, 98814.82	31+43.58, 36195.79, 98910.08
L12	24.32	S77°23'28"E	31+43.58, 36195.79, 98910.08	31+67.89, 36190.48, 98933.81
L13	42.22	S83°27'36"E	31+67.89, 36190.48, 98933.81	32+10.11, 36185.67, 98975.76
L14	112.45	S86°46'41"E	32+10.11, 36185.67, 98975.76	33+22.57, 36179.35, 99088.03
L15	79.14	S42°20'23"E	33+22.57, 36179.35, 99088.03	34+01.71, 36120.85, 99141.33

ALIGNMENT - BERM CL				
NUMBER	LENGTH	LINE/CHORD DIR	START STATION, N, E	END STATION N, E
L16	69.12	S53°24'21"E	34+01.71, 36120.85, 99141.33	34+70.82, 36079.65, 99196.83
L17	148.77	S70°19'15"E	34+70.82, 36079.65, 99196.83	36+19.60, 36029.55, 99336.91
L18	313.67	S76°15'42"E	36+19.60, 36029.55, 99336.91	39+33.27, 35955.06, 99641.60
L19	595.41	S74°37'30"E	39+33.27, 35955.06, 99641.60	45+28.68, 35797.19, 100215.71
L20	71.32	S78°06'57"E	45+28.68, 35797.19, 100215.71	46+00.00, 35782.50, 100285.50



SYMBOL	DESCRIPTION
0+00 1+00	BASELINE ALIGNMENT (DESIGN)
(C1)	BASELINE ALIGNMENT CURVE TAG LABEL
(L1)	BASELINE ALIGNMENT LINE TAG LABEL
	BASELINE ALIGNMENT PI POINT
O	POINT OF CURVATURE OR TANGENCY



**811**  
Know what's below.  
Call before you dig.

BREACH LAKE FLOOD DAMAGE REPAIRS  
DODGE COUNTY, NE  
CDBG PROJECT NO. 19-EM-005

CONTROL SHEET  
ALIGNMENT



PROJECT NO.	190890.02
DATE	4/15/2021
DRAWN BY	JAA
FILE NAME	S-190890.02.dwg
FIELD BOOK	Dodge Co. #29
FIELD CREW	DF
SURVEY FILE NO.	SV-190890.01
PLAN IN HAND	JTM
DATE	01/21/21
70 PERCENT REVIEW	JJS
DATE	01/26/21
95 PERCENT REVIEW	JJS
DATE	2/24/21
REVISIONS	

LIMITS OF CONSTRUCTION		
POINT #	NORTHING	EASTING
LOC - 1	36859.22	97211.04
LOC - 2	36855.10	97331.44
LOC - 3	36868.45	97427.24
LOC - 4	36925.25	97514.88
LOC - 5	37004.81	97601.34
LOC - 6	37085.94	97644.61
LOC - 7	37300.06	97697.12
LOC - 8	37337.47	97739.33
LOC - 9	37364.25	97804.31
LOC - 10	37382.68	97861.00
LOC - 11	37388.15	97933.55
LOC - 12	37299.13	97963.02
LOC - 13	37192.27	98094.21
LOC - 14	37010.23	98434.74
LOC - 15	36938.14	98562.16
LOC - 16	36899.04	98654.25
LOC - 17	36880.90	98722.48
LOC - 18	36859.98	98887.12
LOC - 19	36902.06	99172.87
LOC - 20	36928.49	99397.42

LIMITS OF CONSTRUCTION		
POINT #	NORTHING	EASTING
LOC - 21	36970.61	99740.22
LOC - 22	37034.41	100237.68
LOC - 23	37064.10	100479.12
LOC - 24	37075.26	100610.65
LOC - 25	37091.39	100799.32
LOC - 26	37101.78	100970.06
LOC - 27	37108.70	101142.34
LOC - 28	37110.24	101411.27
LOC - 29	37114.57	101830.72
LOC - 30	37122.36	102045.10
LOC - 31	37137.18	102224.00
LOC - 32	37182.97	102515.72
LOC - 33	37239.42	102843.61
LOC - 34	37284.68	103107.88
LOC - 35	37307.81	103297.98
LOC - 36	37293.91	103299.67
LOC - 37	37270.82	103109.91
LOC - 38	37225.63	102845.98
LOC - 39	37169.16	102517.99
LOC - 40	37123.27	102225.67

LIMITS OF CONSTRUCTION		
POINT #	NORTHING	EASTING
LOC - 41	37108.38	102045.94
LOC - 42	37100.57	101831.04
LOC - 43	37096.24	101411.38
LOC - 44	37094.70	101142.66
LOC - 45	37087.80	100970.77
LOC - 46	37077.43	100800.34
LOC - 47	37061.31	100611.83
LOC - 48	37050.18	100480.57
LOC - 49	37020.52	100239.43
LOC - 50	36956.72	99741.96
LOC - 51	36914.59	99399.09
LOC - 52	36888.19	99174.73
LOC - 53	36849.51	98918.14
LOC - 54	36836.49	98806.98
LOC - 55	36820.89	98775.41
LOC - 56	36805.55	98646.20
LOC - 57	36818.39	97238.79
LOC - 58	36542.59	97264.32
LOC - 59	36411.35	97293.32
LOC - 60	36340.38	97369.99

LIMITS OF CONSTRUCTION		
POINT #	NORTHING	EASTING
LOC - 61	36393.69	97427.00
LOC - 62	36353.82	97522.57
LOC - 63	36334.52	98197.86
LOC - 64	36299.64	98675.00
LOC - 65	36246.06	99055.21
LOC - 66	36196.04	99050.73
LOC - 67	36186.73	99108.17
LOC - 68	36117.03	99163.76
LOC - 69	36047.34	99305.65
LOC - 70	36008.87	99491.20
LOC - 71	35947.33	99728.62
LOC - 72	35872.32	99973.60
LOC - 73	35768.97	100233.91
LOC - 74	35739.66	100234.08
LOC - 75	35687.84	100160.65
LOC - 76	35769.35	100029.11
LOC - 77	35772.11	99937.36
LOC - 78	35864.92	99912.29
LOC - 79	35923.27	99721.82
LOC - 80	35984.51	99485.52

LIMITS OF CONSTRUCTION		
POINT #	NORTHING	EASTING
LOC - 81	36023.50	99297.47
LOC - 82	36097.06	99147.70
LOC - 83	36163.59	99094.64
LOC - 84	36171.07	99048.50
LOC - 85	36069.41	99039.48
LOC - 86	36086.14	98937.97
LOC - 87	36098.80	98817.39
LOC - 88	36168.43	97767.56
LOC - 89	36167.78	97675.98
LOC - 90	36166.98	97422.93
LOC - 91	36215.73	97333.64
LOC - 92	36334.50	97225.29
LOC - 93	36457.01	97162.79
LOC - 94	36522.96	97241.03
LOC - 95	36818.61	97213.67
LOC - 96	36818.75	97198.70



**BREACH LAKE FLOOD DAMAGE REPAIRS  
DODGE COUNTY, NE  
CDBG PROJECT NO. 19-EM-005**

**CONTROL SHEET  
LIMITS OF CONSTRUCTION**



PROJECT NO.	190890.02
DATE	4/15/2021
DRAWN BY	JAA
FILE NAME	S-190890.02.dwg
FIELD BOOK	Dodge Co. #29
FIELD CREW	DF
SURVEY FILE NO.	SV-190890.01
PLAN IN HAND	JTM
DATE	01/21/21
70 PERCENT REVIEW	JJS
DATE	01/26/21
95 PERCENT REVIEW	JJS
DATE	2/24/21
REVISIONS	



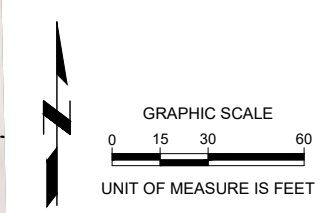
**BREACH LAKE FLOOD DAMAGE REPAIRS**  
**DODGE COUNTY, NE**  
**CDBG PROJECT NO. 19-EM-005**

**CONTROL SHEET**  
**RIPRAP BOUNDARIES**

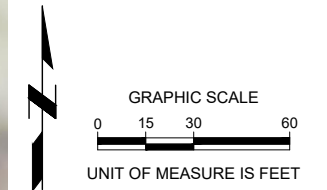


PROJECT NO. 190890.02  
 DATE 4/15/2021  
 DRAWN BY JAA  
 FILE NAME S-190890.02.dwg  
 FIELD BOOK Dodge Co. #29  
 FIELD CREW DF  
 SURVEY FILE NO. SV-190890.01  
 PLAN IN HAND JTM  
 INITIALS DATE 01/21/21  
 70 PERCENT REVIEW JJS  
 INITIALS DATE 01/26/21  
 95 PERCENT REVIEW JJS  
 INITIALS DATE 2/24/21  
 REVISIONS

LIMITS OF RIPRAP			LIMITS OF RIPRAP		
POINT #	NORTHING	EASTING	POINT #	NORTHING	EASTING
R - 97	36443.32	97198.36	R - 113	36213.35	97667.08
R - 98	36472.20	97231.52	R - 114	36169.23	97665.22
R - 99	36464.66	97238.09	R - 115	36175.48	97563.11
R - 100	36449.06	97220.17	R - 116	36176.67	97551.53
R - 101	36402.53	97250.03	R - 117	36171.92	97546.20
R - 102	36361.31	97272.14	R - 118	36169.38	97523.77
R - 103	36316.35	97309.79	R - 119	36170.72	97503.94
R - 104	36260.43	97368.04	R - 120	36175.24	97474.63
R - 105	36275.41	97379.73	R - 121	36178.53	97463.72
R - 106	36256.89	97396.40	R - 122	36190.03	97436.08
R - 107	36246.91	97406.98	R - 123	36207.21	97410.42
R - 108	36215.21	97452.92	R - 124	36244.20	97355.90
R - 109	36205.86	97480.47	R - 125	36302.65	97295.17
R - 110	36200.05	97523.34	R - 126	36350.05	97255.49
R - 111	36201.02	97540.30	R - 127	36392.32	97232.82
R - 112	36217.07	97578.86	R - 128	36435.78	97204.93



LIMITS OF RIPRAP		
POINT #	NORTHING	EASTING
R - 129	35837.98	99953.03
R - 130	35839.77	99962.87
R - 131	35823.77	99965.77
R - 132	35824.74	99994.55
R - 133	35817.03	100043.86
R - 134	35802.97	100086.50
R - 135	35772.83	100140.41
R - 136	35756.48	100167.79
R - 137	35766.49	100181.29
R - 138	35758.46	100187.24
R - 139	35737.61	100159.13
R - 140	35738.97	100158.12
R - 141	35784.56	100078.44
R - 142	35797.77	100037.63
R - 143	35804.69	99993.33
R - 144	35803.55	99959.27



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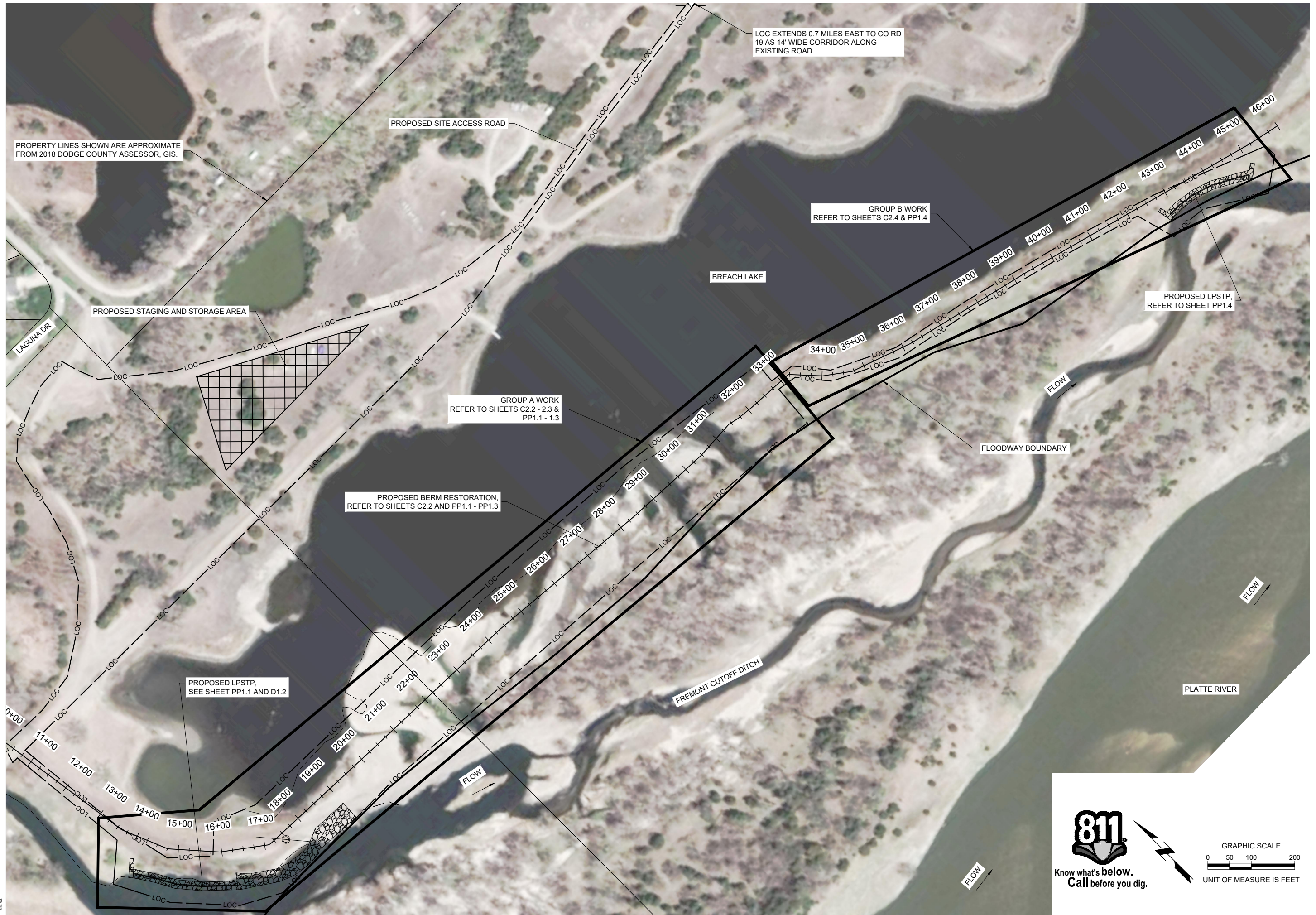

PROJECT NO.	190890.02
DATE	4/15/2021
DRAWN BY	JAA
FILE NAME	S-190890.02.dwg
FIELD BOOK	Dodge Co. #29
FIELD CREW	DF
SURVEY FILE NO.	SV-190890.01
PLAN IN HAND	JTM
INITIALS	01/21/21
70 PERCENT REVIEW	JJS
INITIALS	01/26/21
95 PERCENT REVIEW	JJS
INITIALS	2/24/21
REVISIONS	



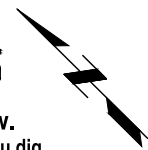
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PROJECT NO.	190890.02
DATE	4/15/2021
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FILE NAME	S-190890.02.dwg
FIELD BOOK	Dodge Co. #29
FIELD CREW	DF
SURVEY FILE NO.	SV-190890.01
PLAN IN HAND	ITM
INITIALS	01/21/21
70 PERCENT REVIEW	JJS
INITIALS	01/26/21
95 PERCENT REVIEW	JJS
INITIALS	2/24/21
REVISIONS	

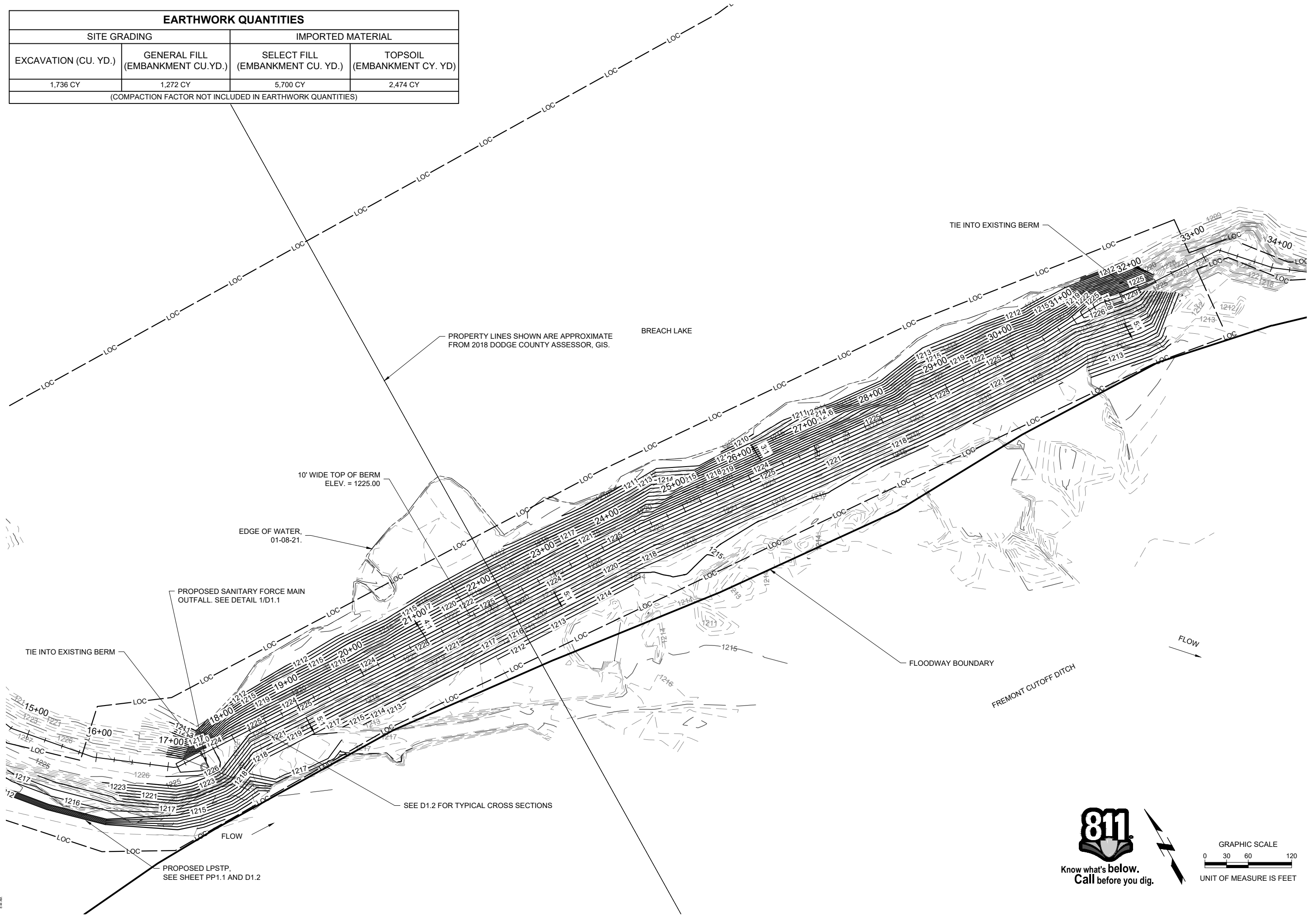
**811**  
Know what's below.  
Call before you dig.



GRAPHIC SCALE  
0 50 100 200  
UNIT OF MEASURE IS FEET

S:\Projects\190890.02 - Dodge Co. Flood Damage Repair Final Design\Drawings\Sheet C2.1.dwg, 4/15/2021, 10:00 AM  
 JAA

EARTHWORK QUANTITIES			
SITE GRADING		IMPORTED MATERIAL	
EXCAVATION (CU. YD.)	GENERAL FILL (EMBANKMENT CU.YD.)	SELECT FILL (EMBANKMENT CU. YD.)	TOPSOIL (EMBANKMENT CY. YD)
1,736 CY	1,272 CY	5,700 CY	2,474 CY
(COMPACTION FACTOR NOT INCLUDED IN EARTHWORK QUANTITIES)			



**BREACH LAKE FLOOD DAMAGE REPAIRS**  
**DODGE COUNTY, NE**  
**CDBG PROJECT NO. 19-EM-005**

**PROPOSED GRADING PLAN**  
**GROUP A**



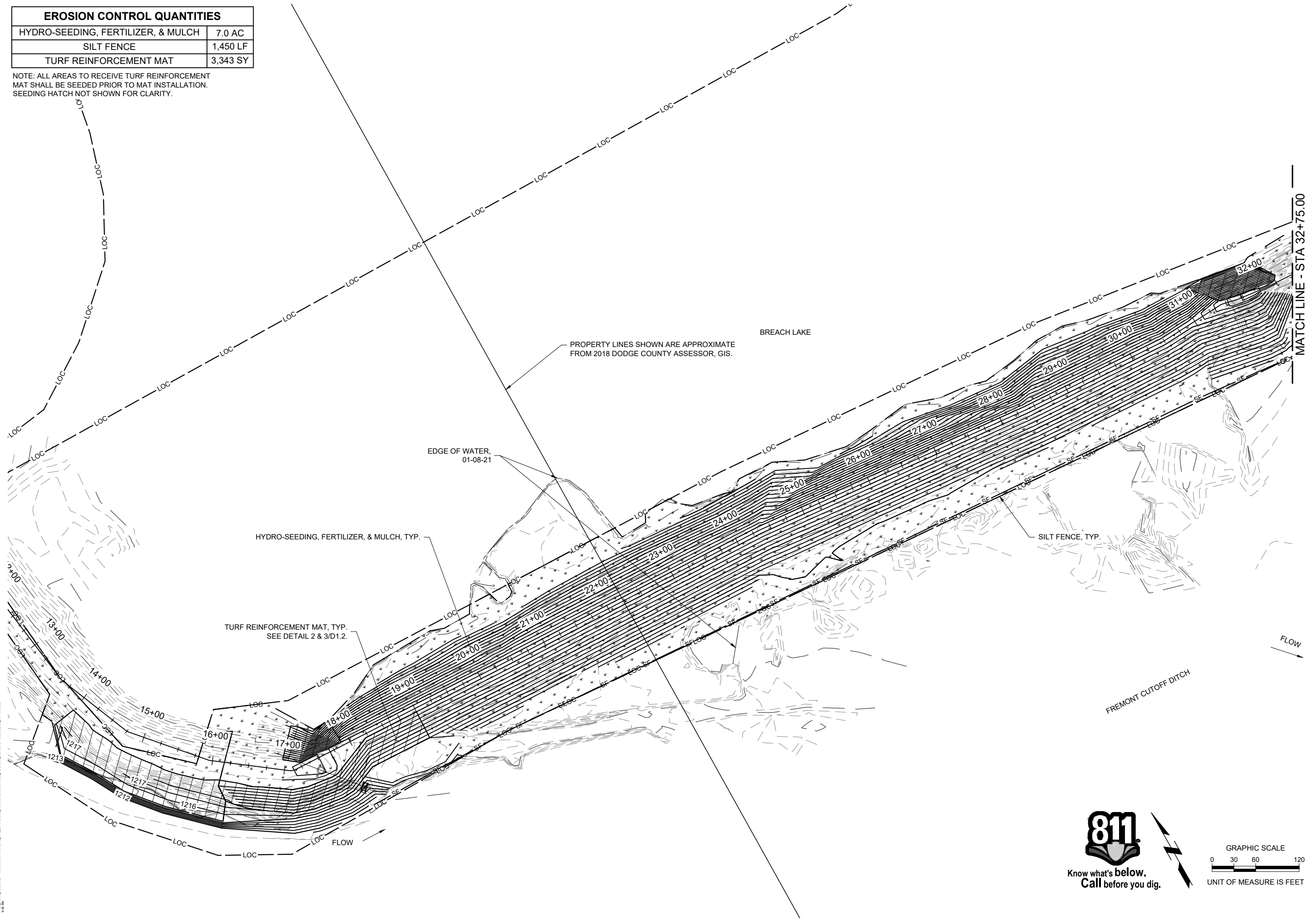
PROJECT NO.	190890.02
DATE	4/15/2021
DRAWN BY	JAA
FILE NAME	S-190890.02.dwg
FIELD BOOK	Dodge Co. #29
FIELD CREW	DF
SURVEY FILE NO.	SV-190890.01
PLAN IN HAND	JTM
INITIALS	01/21/21
70 PERCENT REVIEW	JJS
INITIALS	01/26/21
95 PERCENT REVIEW	JJS
INITIALS	2/24/21
REVISIONS	

**811**  
 Know what's below.  
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GRAPHIC SCALE  
 0 30 60 120  
 UNIT OF MEASURE IS FEET

EROSION CONTROL QUANTITIES	
HYDRO-SEEDING, FERTILIZER, & MULCH	7.0 AC
SILT FENCE	1,450 LF
TURF REINFORCEMENT MAT	3,343 SY

NOTE: ALL AREAS TO RECEIVE TURF REINFORCEMENT MAT SHALL BE SEED PRIOR TO MAT INSTALLATION. SEEDING HATCH NOT SHOWN FOR CLARITY.



**BREACH LAKE FLOOD DAMAGE REPAIRS**  
**DODGE COUNTY, NE**  
**CDBG PROJECT NO. 19-EM-005**

**EROSION CONTROL PLAN**  
**GROUP A**

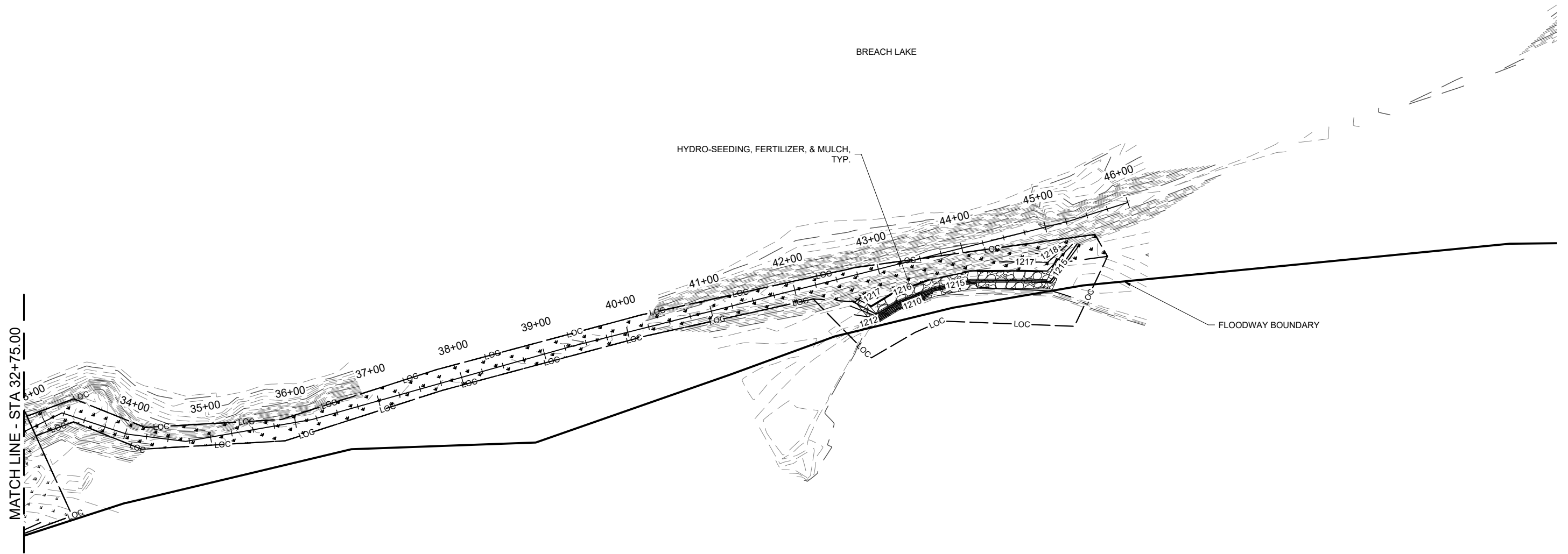


PROJECT NO.	190890.02
DATE	4/15/2021
DRAWN BY	JAA
FILE NAME	S-190890.02.dwg
FIELD BOOK	Dodge Co. #29
FIELD CREW	DF
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INITIALS	01/26/21
95 PERCENT REVIEW	JJS
INITIALS	2/24/21
REVISIONS	

**811**  
 Know what's below.  
 Call before you dig.

GRAPHIC SCALE  
 0 30 60 120  
 UNIT OF MEASURE IS FEET

EROSION CONTROL QUANTITIES		
HYDRO-SEEDING, FERTILIZER, & MULCH	0.8 AC	

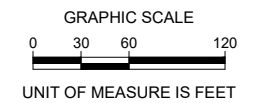


BREACH LAKE FLOOD DAMAGE REPAIRS  
DODGE COUNTY, NE  
CDBG PROJECT NO. 19-EM-005

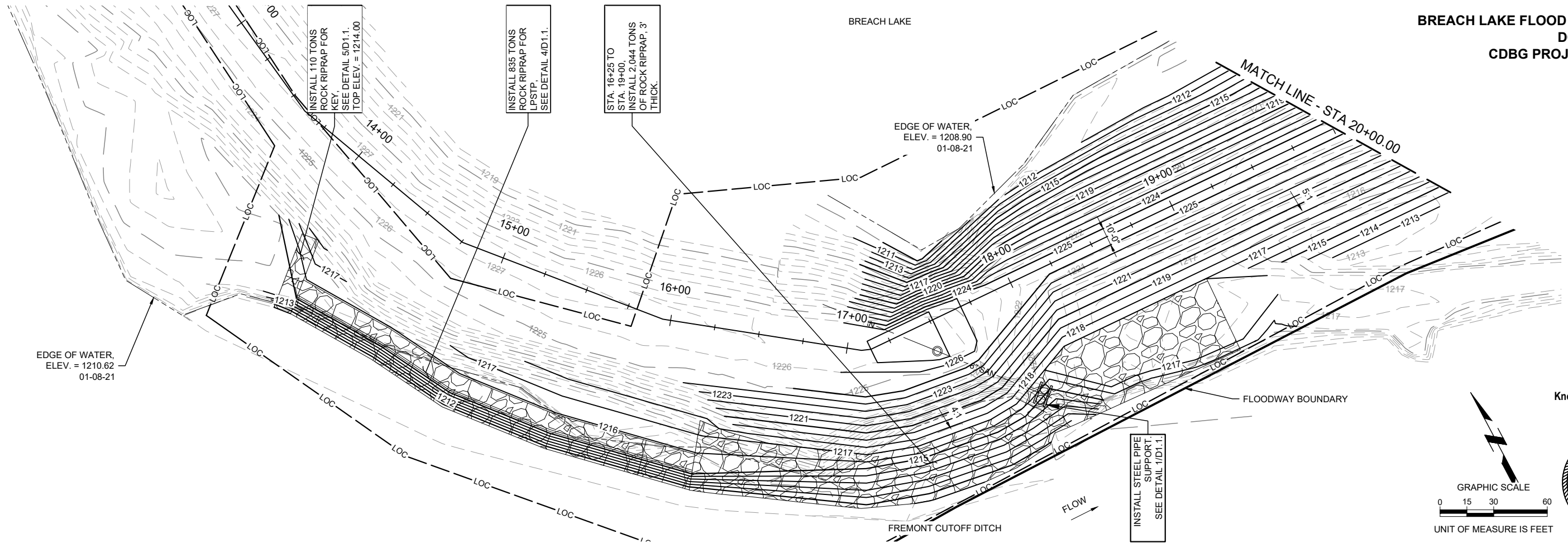
EROSION CONTROL SITE PLAN  
GROUP B



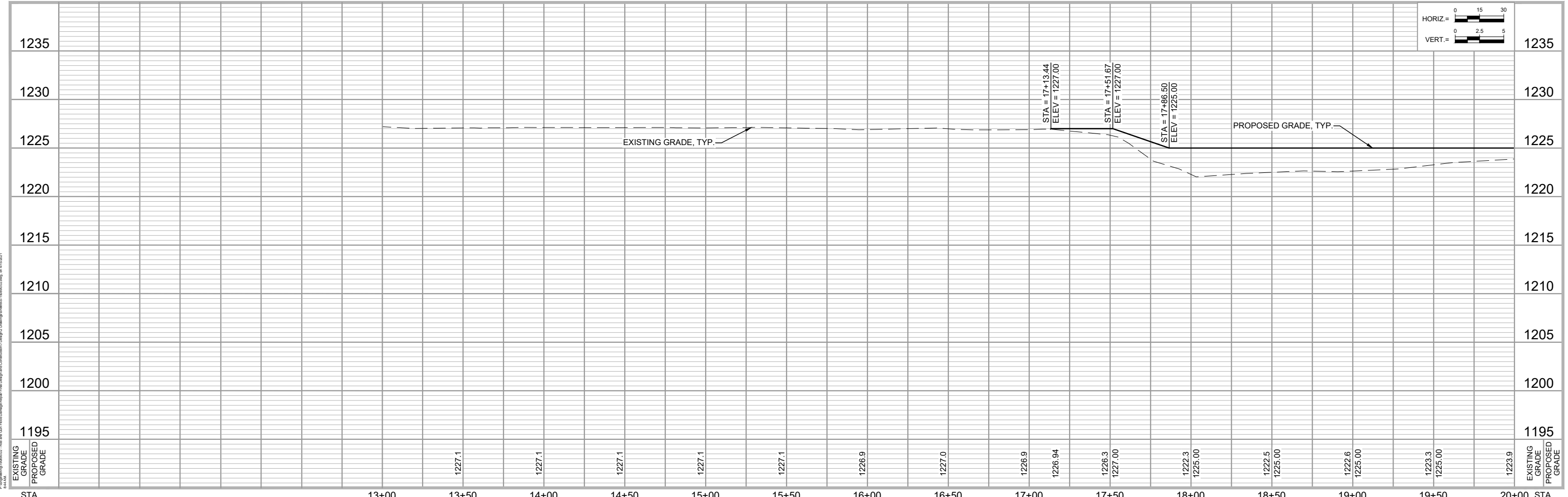
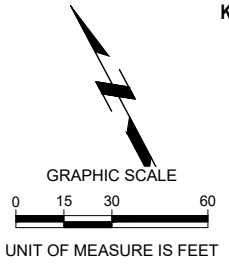
PROJECT NO.	190890.02
DATE	4/15/2021
DRAWN BY	JAA
FILE NAME	S-190890.02.dwg
FIELD BOOK	Dodge Co. #29
FIELD CREW	DF
SURVEY FILE NO.	SV-190890.01
PLAN IN HAND	JTM
INITIALS	01/21/21
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INITIALS	01/26/21
95 PERCENT REVIEW	JJS
INITIALS	2/24/21
REVISIONS	



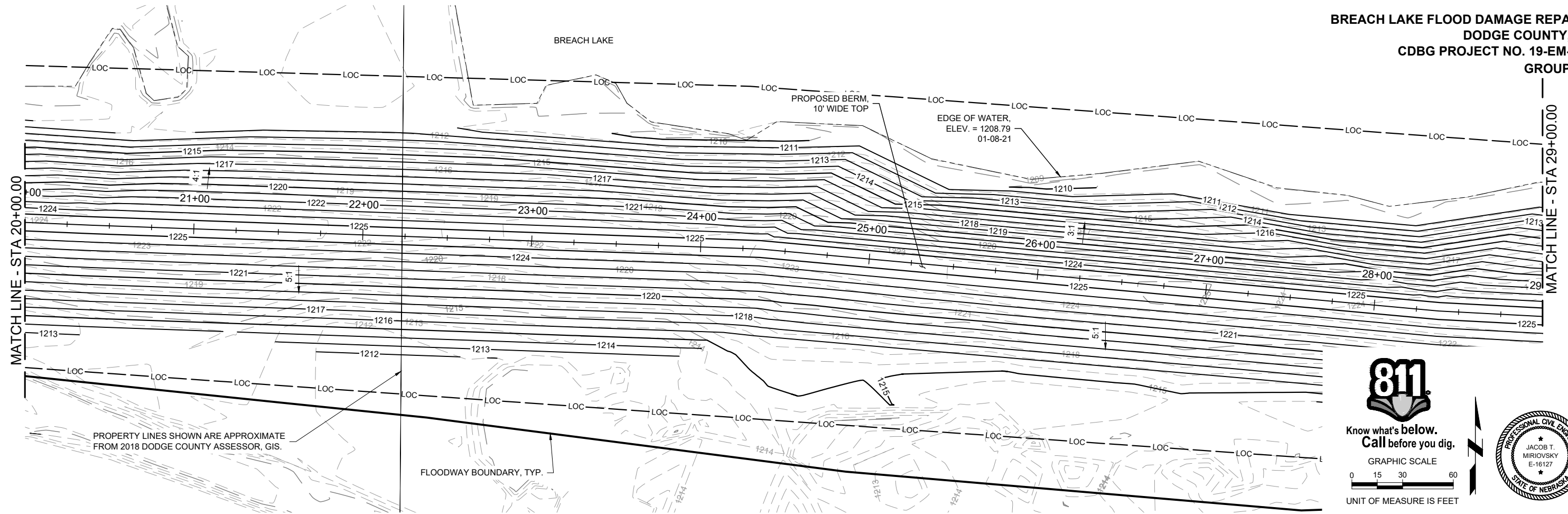
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Know what's below.  
 Call before you dig.



STA.	13+00	13+50	14+00	14+50	15+00	15+50	16+00	16+50	17+00	17+50	18+00	18+50	19+00	19+50	20+00	STA.
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FIELD BOOK		Dodge Co. #29														
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REVIEW BY				JJS												
REVIEW DATE				2/24/21												
DRAWN BY				JAA												
DATE				4/15/2021												
PROJECT NO.				190890.02												
FILE NAME				S-190890.02.dwg												



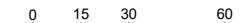
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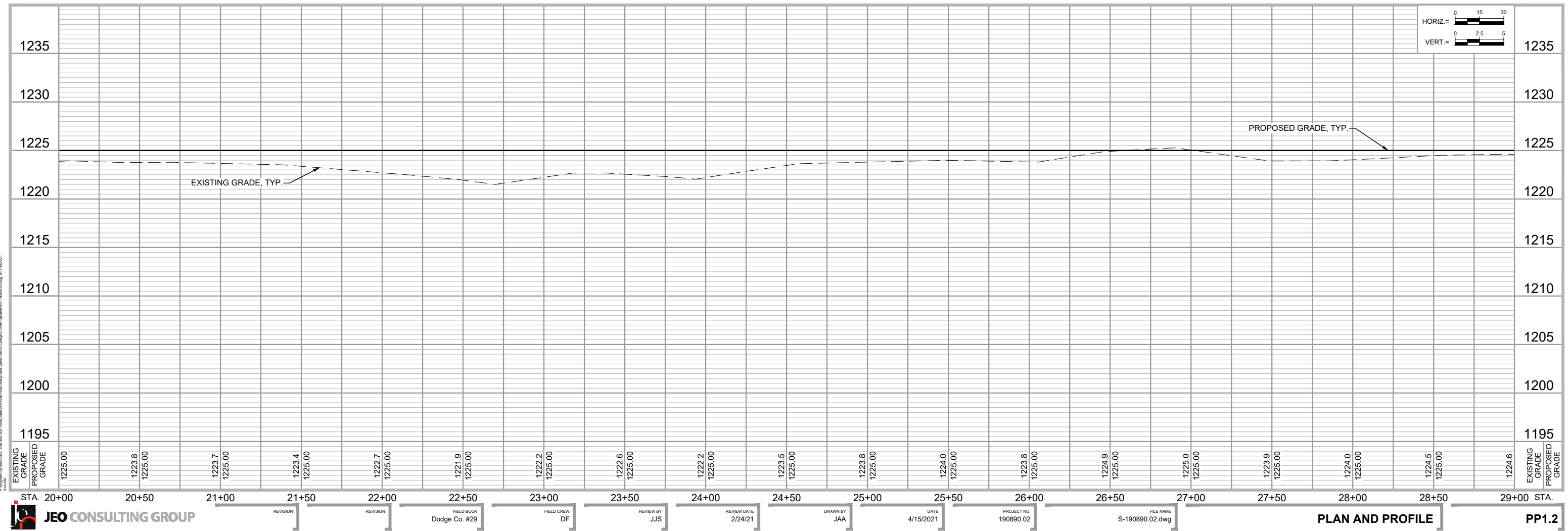


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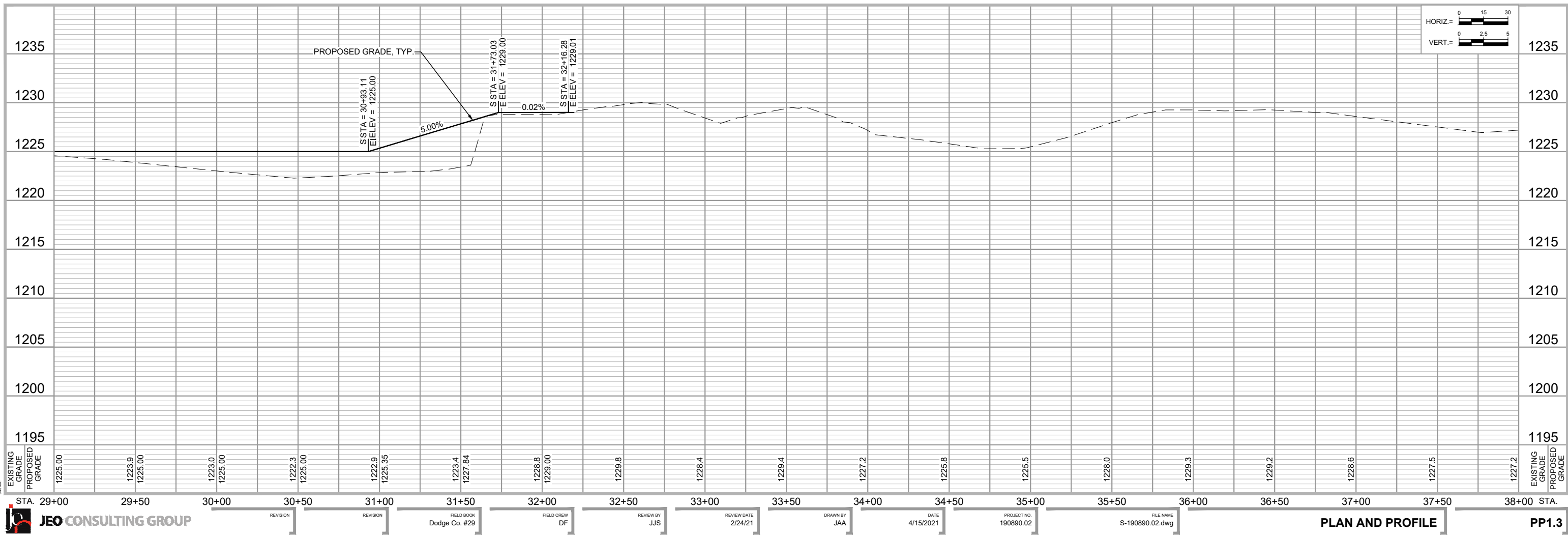
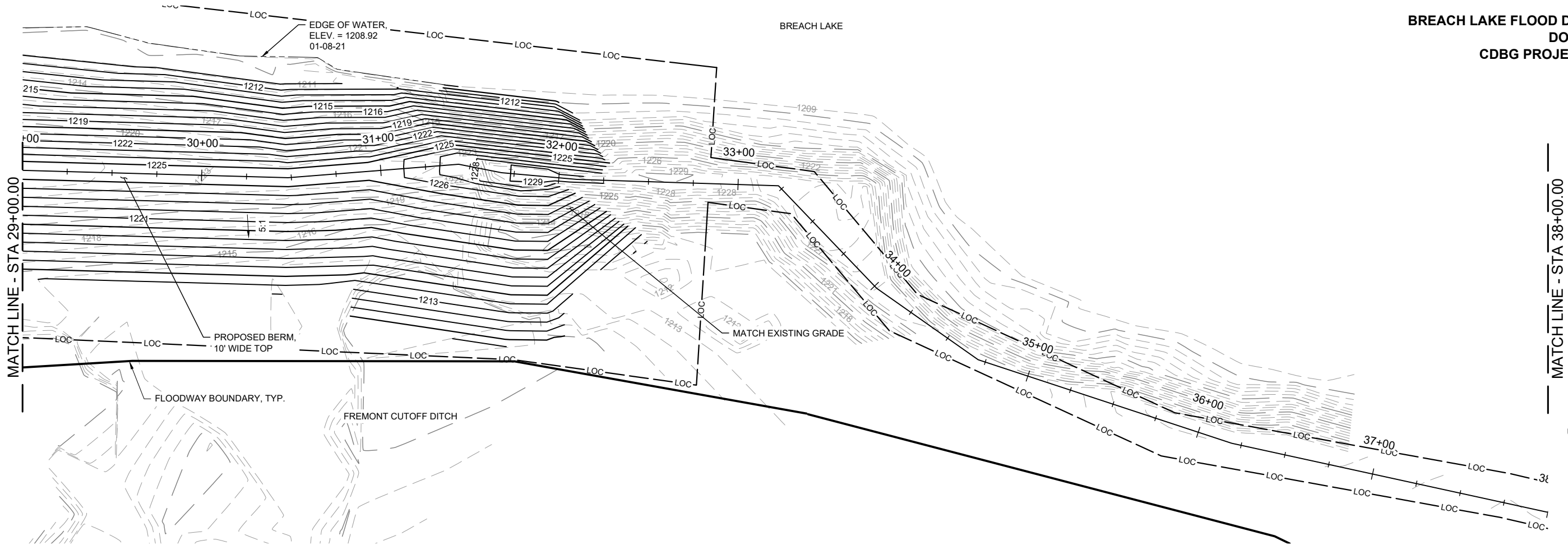
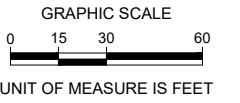
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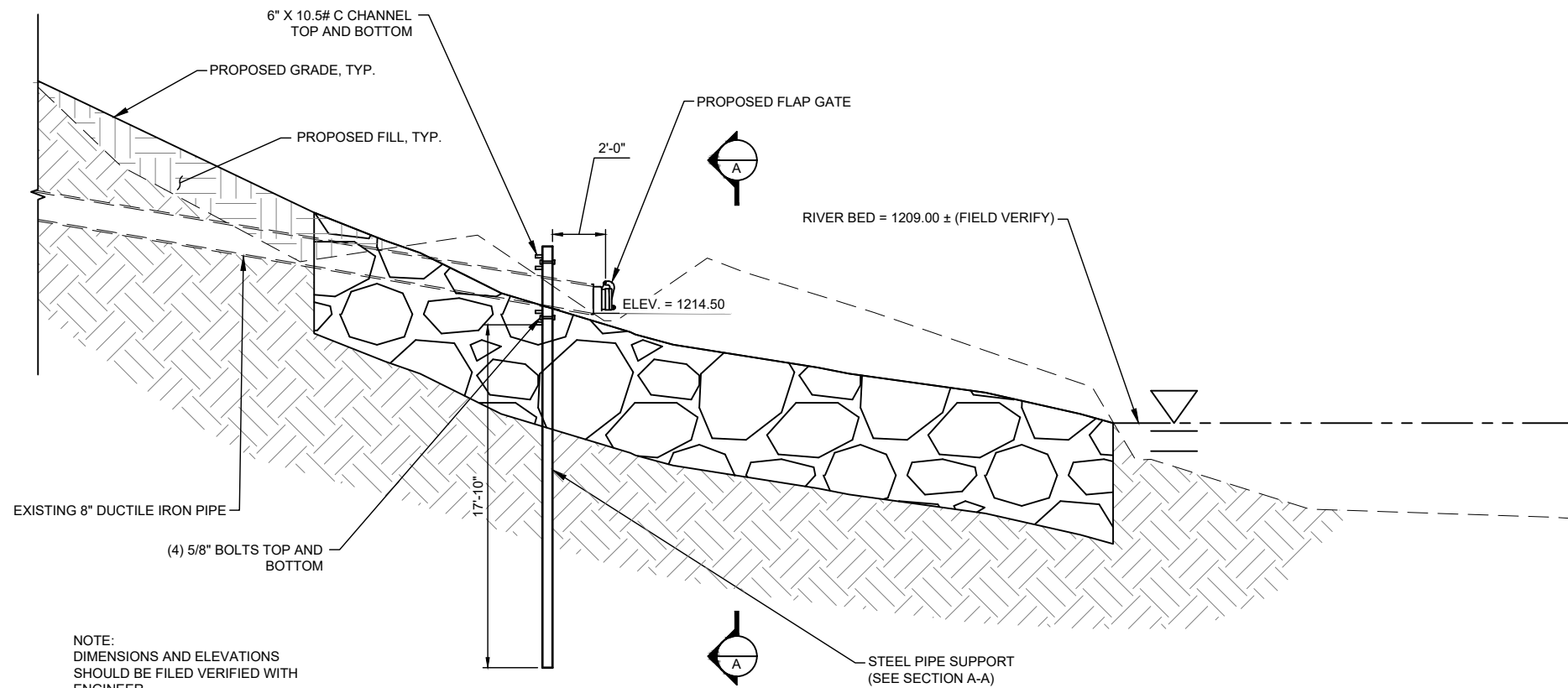


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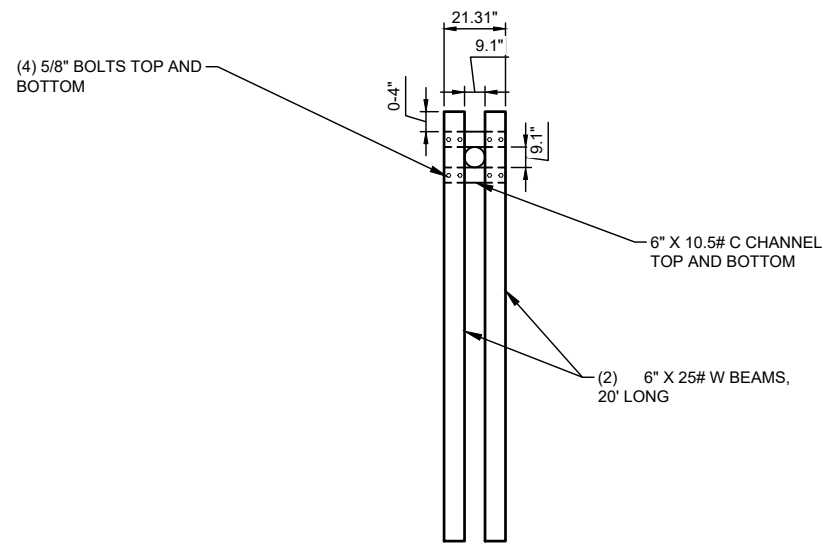


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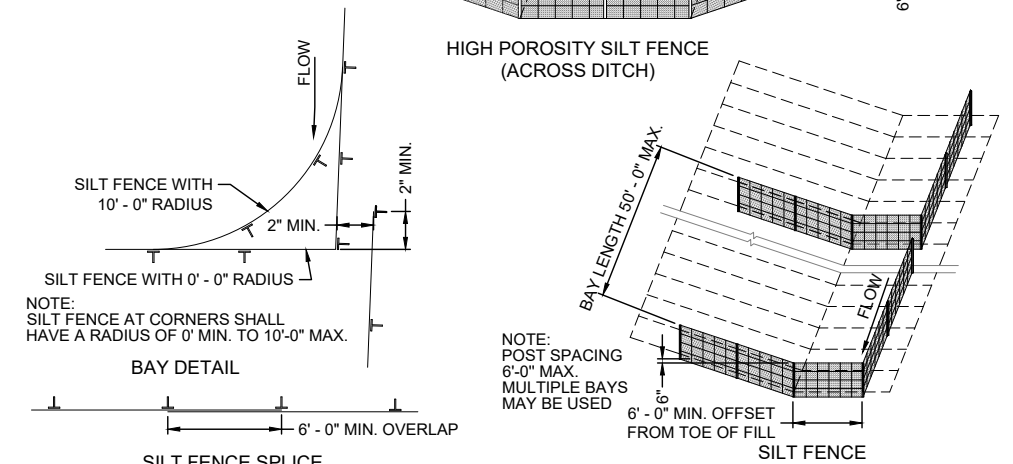
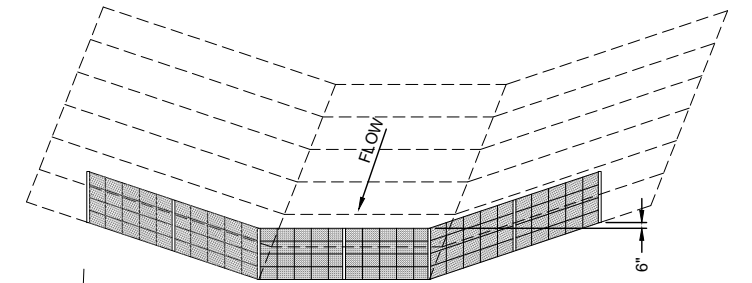
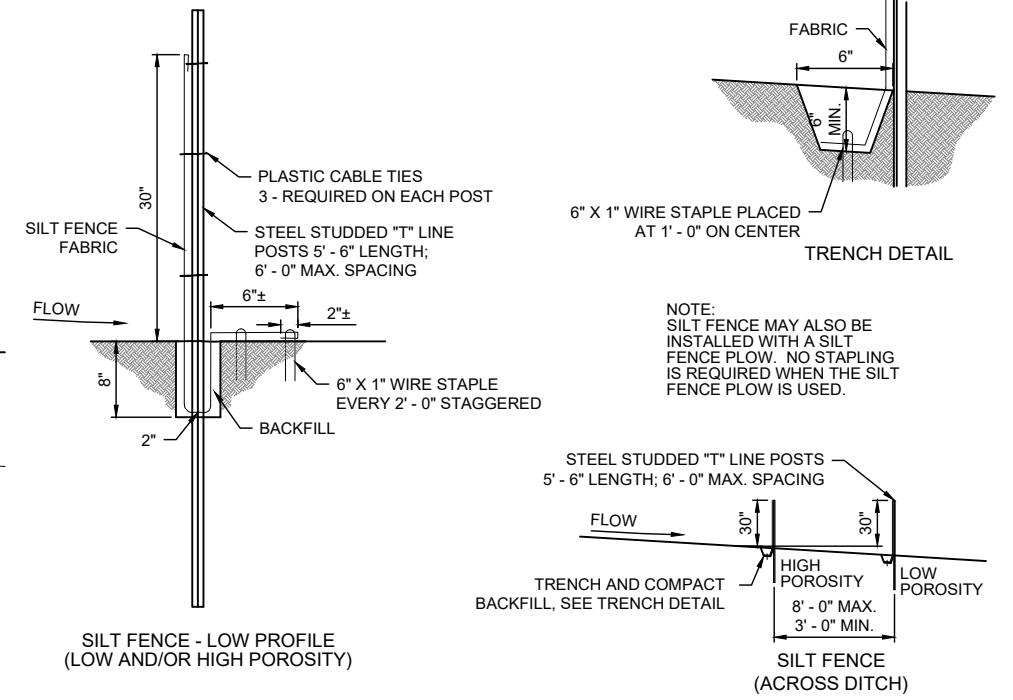




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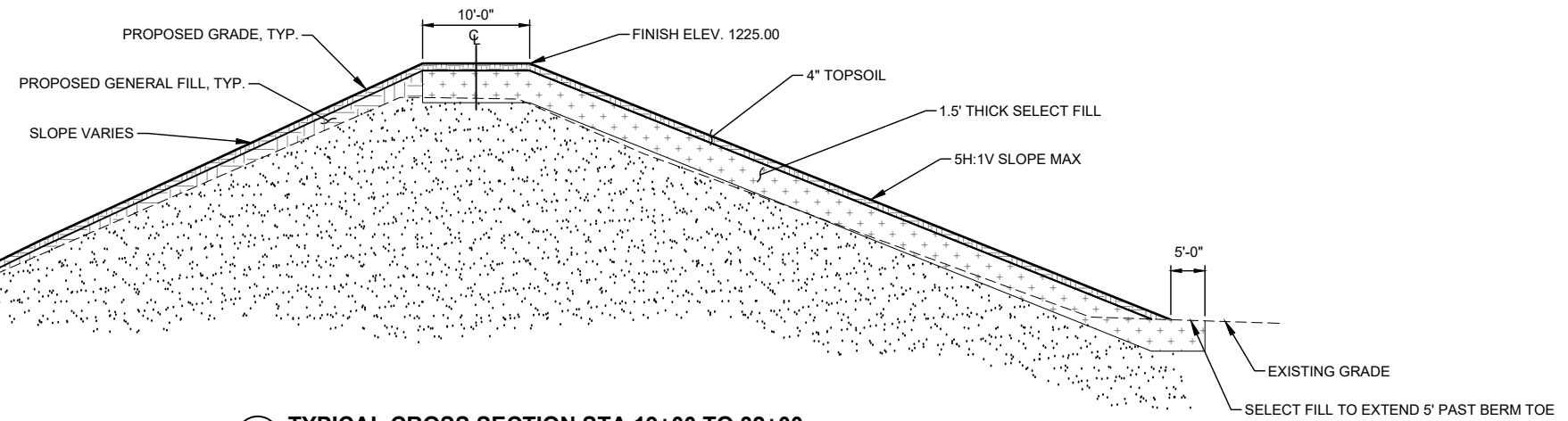
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BREACH LAKE FLOOD DAMAGE REPAIRS  
DODGE COUNTY, NE  
CDBG PROJECT NO. 19-EM-005

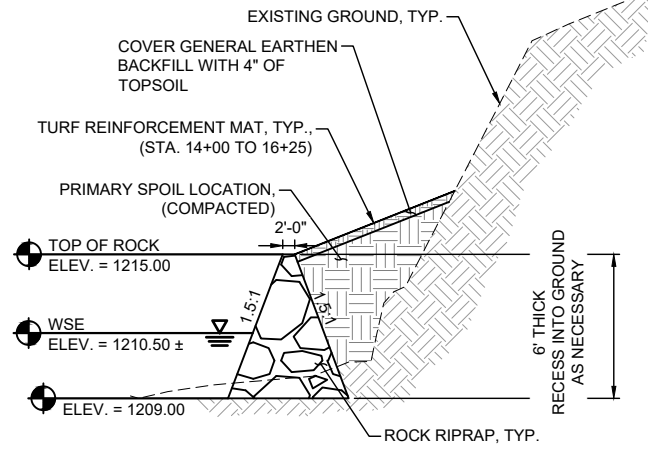
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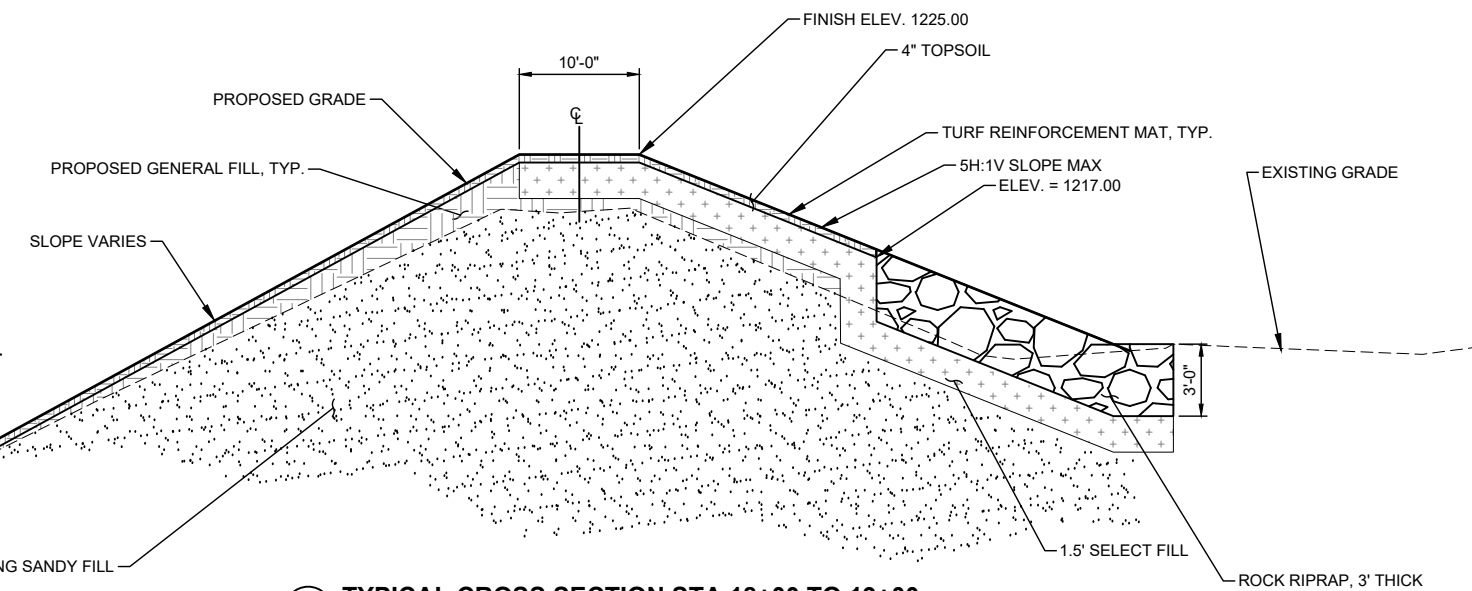
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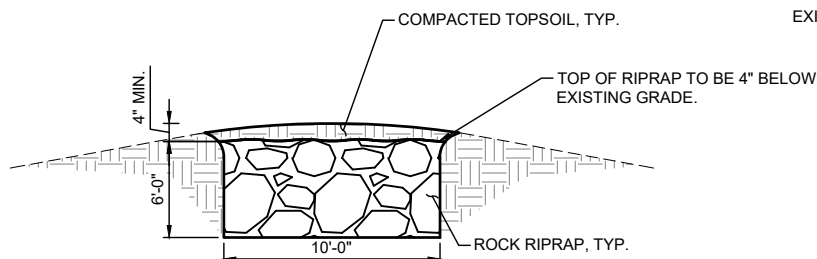
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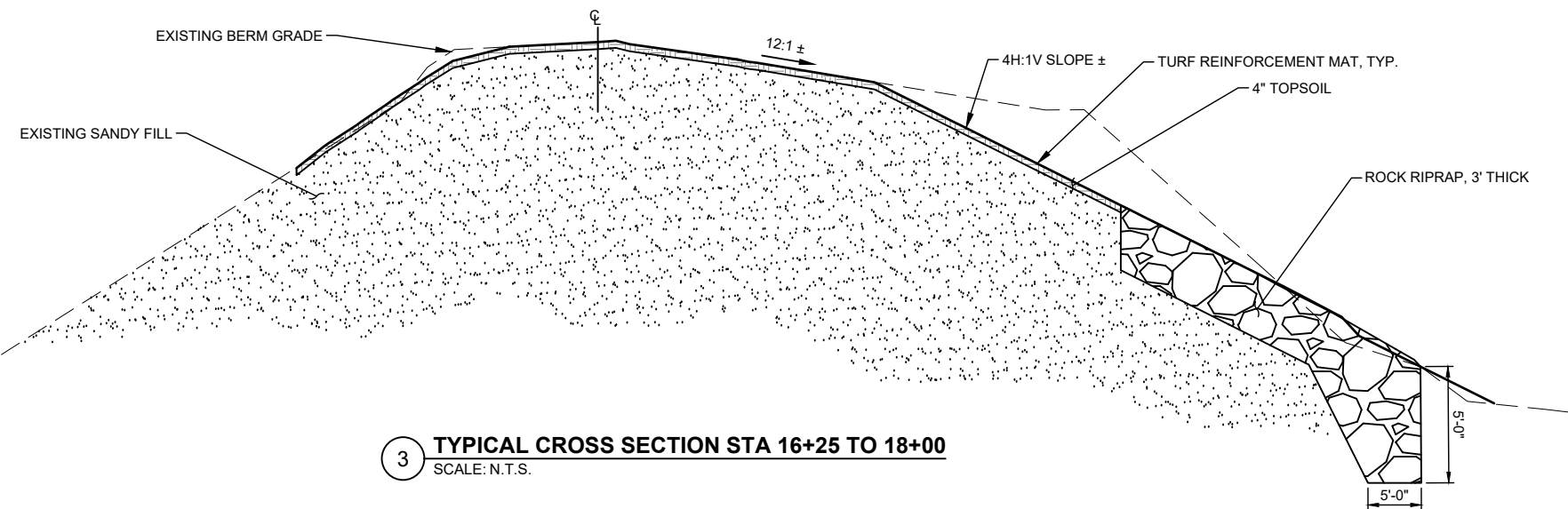
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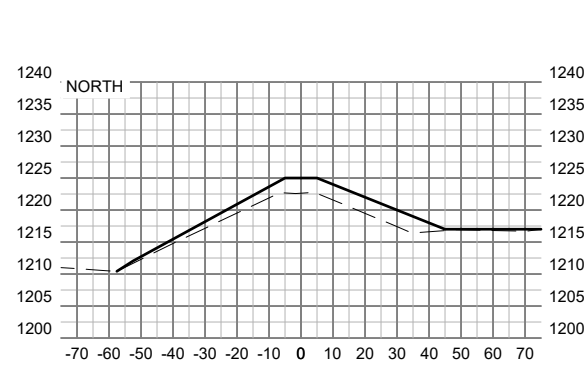
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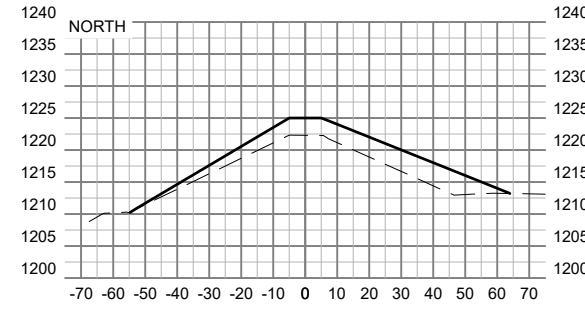
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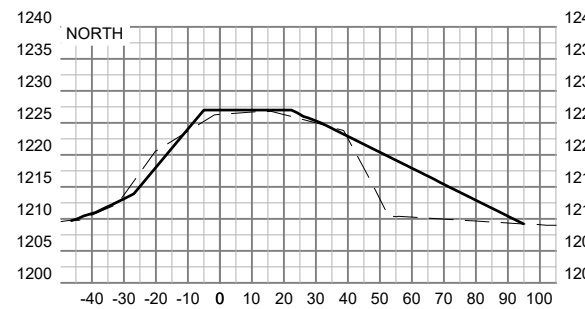
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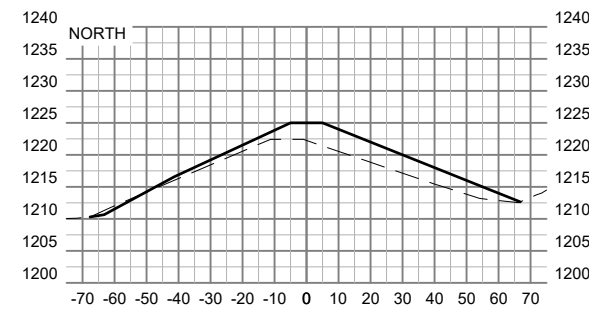
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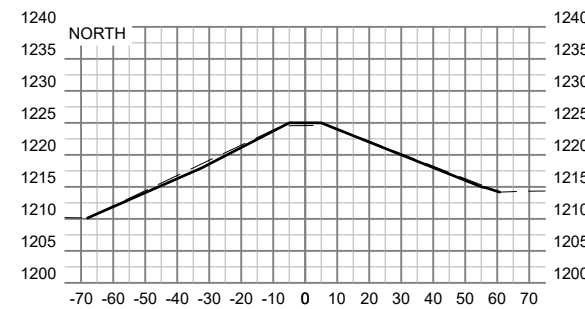
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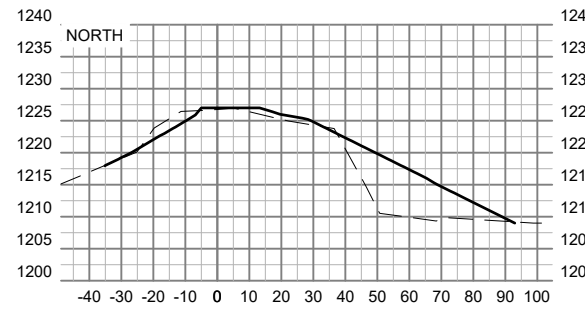
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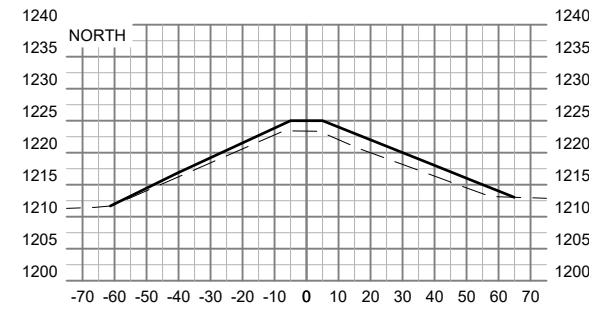
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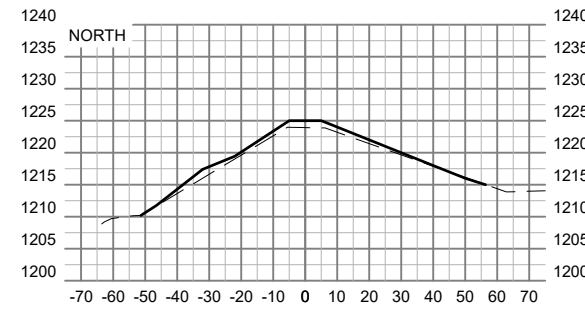
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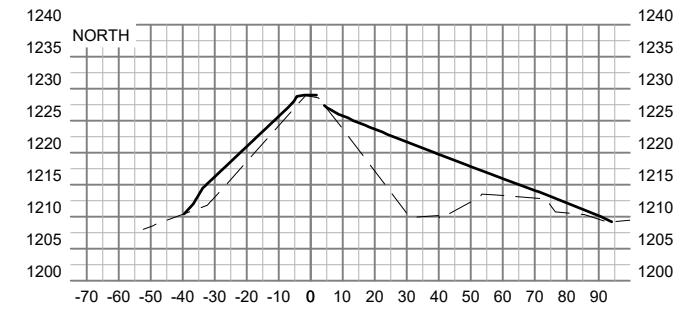
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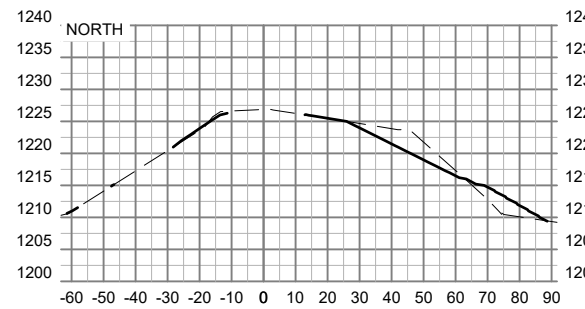
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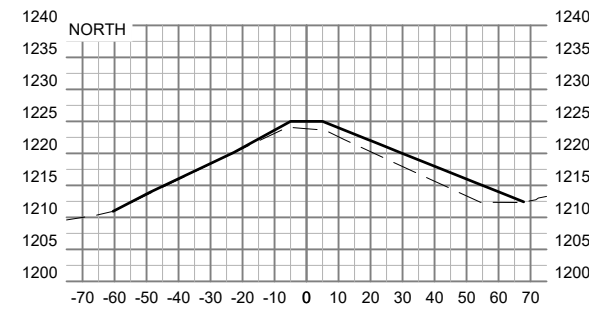
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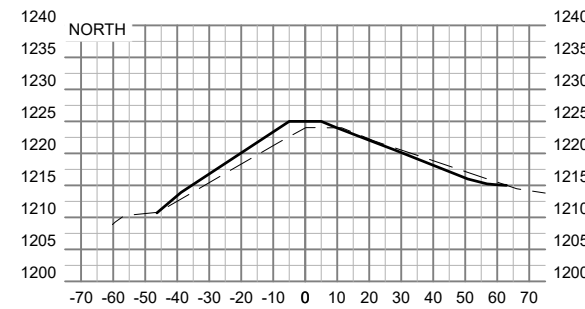
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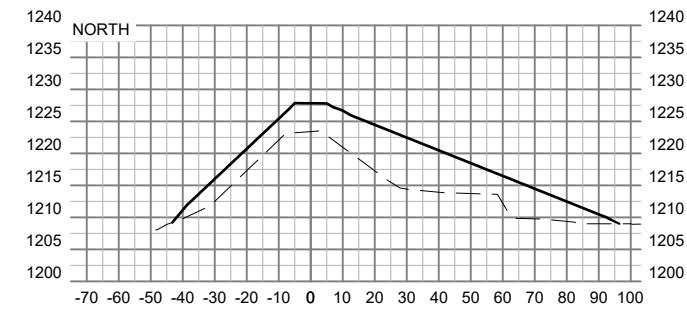
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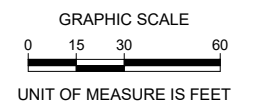
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# AGREEMENT

## PROJECT CONTRACTING/PAYMENT PROCESS & OPERATION & MAINTENANCE for PLATTE RIVER BREACH REPAIR PROJECT DODGE COUNTY

**This** “Agreement”, in reference to the Platte River Breach Repair Project, Dodge County, Nebraska, hereinafter referred to as the “Project”, is made and entered into by the following parties, hereinafter referred to individually as “Partner” and collectively as “Partners”, to wit:

City of Fremont (City)  
Dodge County (County)  
Lower Platte North Natural Resources District (LPNNRD)  
Fremont Rod & Gun Club (Club)

**Whereas**, the City, County and LPNNRD are political subdivisions of the State of Nebraska and the Club is an incorporated association.

**Whereas**, 2019 flood events along the Lower Platte River caused a substantial breach in the embankment on the west end of Club property, resulting in substantial damage to private property and public infrastructure.

**Whereas**, the Partners assisted with emergency repairs in early 2020, to divert Platte Water flood flows from reentering the breach until more substantial repairs could be made.

**Whereas**, as a result of dredging activities planned at Lake Ventura in 2020, there is an opportunity to use the resulting dredge material from Lake Ventura to engineer, fill, shape, and stabilize the breach area opening, at a total estimated Project cost of \$612,380.

**Whereas**, the County will act as the fiscal agent for the Project repair and will administer a \$485,000 Community Development Block Grant approved through the Nebraska Department of Economic Development to partially fund the Project.

**Whereas**, the City, County and LPNNRD have entered into a separate Interlocal Agreement, to assist with the local share of Project expense, up to \$50,000 each, totaling \$150,000.

**Whereas**, the City has agreed to obtain and hold all necessary public easements for the Project from the Club and be the public entity applicant for future disaster assistance.

**Whereas**, the Club has previously provided approximately \$20,000 toward repairs in the Project area and will provide up to an additional \$12,380 toward the local share of the Project.

**Whereas**, the City, County and LPNNRD previously agreed to enter into a future agreement with the Club addressing Project operation and maintenance responsibilities.

**Therefore**, in consideration of the foregoing recitals and their mutual covenants hereinafter expressed, the Partners agree as follows:

1. **Purpose:** The purpose of this Agreement is to define the Partners responsibilities for Project contracting, contractor selection, payment process, and future operation and maintenance of the completed Project.
2. **Project Contracting, Contractor Selection:** The County will enter into a contract with JEO Consulting Firm for Project engineering services and also enter into an eventual contract with the construction contractor for completing the Project. The Partners will jointly review submitted Project bids and approve selection of the construction contractor.
3. **Project Payment Process:** The County will receive and approve all said Project engineering and construction invoices and then forward all approved invoices to the County, who as the acting fiscal agent, will make payment to the contractors. The Club will pay \$12,380 toward the initial Project. It is understood that the County will use approved Community Development Block Grant (CDBG) funding first, up to \$485,000, for paying Project invoices. After CDBG funding is exhausted, the County will continue to pay all approved Project expenses that will be invoiced and shared equally by the City, County and LPNNRD up to \$50,000 each.
4. **Project Operation and Maintenance:** This Agreement between the City, County and LPNNRD, and Club is executed to identify operation and maintenance responsibilities of the completed Project. The Club agrees to complete all normal operation and maintenance activities on an annual basis, including but not limited to mowing, tree removal, noxious weed control and minor repairs to the Project. The Club agrees to complete an annual written operation and maintenance report, attached as Exhibit A, and provide each Partner a copy of said report.

In the event of needed major future Project repairs, as a result of flooding or ice-out damage, the City, as the easement holder, is responsible for coordinating with the Partners to secure available federal or state financial assistance and no Partner is obligated to contribute nor provide local financial assistance unless approved by each Partners.
5. **Effective Date of Agreement:** This Agreement becomes effective upon final execution by the Partners. The original copy of this Agreement will be maintained as part of the public records of the City, with a copy of the Agreement to be provided to the Partners. The Agreement may be signed in counterparts, as necessary.
6. **Hold Harmless:** The Club hereby agrees to indemnify and shall hold the City, County and LPNNRD harmless to the fullest extent allowed by law from and against any and all claims, damages, losses, and expenses, arising out of or resulting from its acts and the acts of its agents and employees in performance of this Agreement.
7. **Duration of Agreement:** This Agreement shall extend from the date of execution by the Partners and will remain in effect unless one or more Partners agree to amend, addend, or terminate the Agreement. City, County, or LPNNRD may terminate their obligations of this Agreement upon submitting a 90-day written notice to the other Partners.

**IN WITNESS WHEREOF,**

This Agreement for Platte River Breach Repair Project is executed by the City of Fremont on this \_\_\_\_\_ day of \_\_\_\_\_, 2020.

**City of Fremont**

**By:** \_\_\_\_\_  
**Scott Getzschman**

**Title:** Mayor \_\_\_\_\_

**IN WITNESS WHEREOF,**

This Agreement for the Platte River Breach Repair Project is executed by Dodge County on this \_\_\_\_\_ day of \_\_\_\_\_, 2020.

**Dodge County**

**By:** \_\_\_\_\_  
**Bob Missel**

**Title:** **Chairman** \_\_\_\_\_

**IN WITNESS WHEREOF,**

This Agreement, for the Platte River Breach Repair Project is executed by the Lower Platte North Natural Resources District on this 9<sup>th</sup> day of November, 2020.

**Lower Platte North Natural Resources District**

By: Gene Ruzicka  
**Gene Ruzicka**

Title: Chairman

This Agreement for the Platte River Breach Repair Project is executed by the Fremont Rod and Gun Club on this \_\_\_\_\_ day of \_\_\_\_\_, 2020.

**Fremont Rod & Gun Club**

**By:** \_\_\_\_\_  
John Miyoshi

**Title:** Board President

# REQUEST FOR PROPOSAL

**To: Engineering Floodplain Professionals**

**From: Dodge County, NE (via the Joint Water Management Advisory Board)**

**Subject: Request for Proposal (RFP) to develop eligible, cost effective and technically feasible "shovel-ready" Dodge County mitigation project.**

**Issue Date: May 5<sup>th</sup>, 2021**

**Due Date: June 1<sup>st</sup>, 2021 at 4:30 p.m.**

**Project Timeframe: 7/1/2021 to 8/1/2023 (24 months)**

The Joint Water Management Advisory Board (JWMAB), Dodge County Nebraska, on behalf of Dodge County, is seeking a professional engineering firm to provide consulting services for a FEMA Hazard Mitigation Grant Program Advanced Assistance project. Dodge County has been approved for Advanced Assistance to scope and develop a project to address water drainage system in east Fremont and Elkhorn Township. The intent of Advance Assistance under HMGP is to develop eligible, cost effective and technically feasible mitigation projects in the future. To that end, Advance Assistance funding is used to develop "shovel-ready" projects that are ready to go should funding become available.

Prior to the 2019 Flooding, Dodge County, the City of Fremont, and Lower Platte Natural Resource District began discussions to develop a consortium to address the drainage system. Following the 2019 floods, the consortium, Dodge County Joint Water Management Advisory Board (JWMAB), grew to members representing twelve different local governing bodies. The project remains the highest priority for the JWMAB. The JWMAB will facilitate the process for the collaborative development of project evaluation criteria and assure that each option is evaluated against such criteria. The concept design alternatives will explore variations on feasibility, efficiency, land use, environmental, and historical considerations. A preferred alternative will be selected and documented by the JWMAB to bring forward to the Dodge County Board.

## **BACKGROUND**

The Elkhorn Township ditch network captures storm water from City of Fremont and flood waters from the Maple and Elkhorn Rivers, City of Fremont, and Rawhide Creek diverting water back into the Elkhorn River while properly draining the City of Fremont, areas around the Cities' critical infrastructure, county roads, State Highways 275 and 30, and a rail line. The project area is concentrated on fifty-four miles of ditches draining approximately 25,000 acres including the City of Fremont (population 26,509).

## **SCOPE**

This Drainage Improvement Project's overall goal will be to develop a drainage project to be readily implemented in the Elkhorn Township area (East Fremont). A project study will be completed to assess Fremont's internal drainage needs and examine the out-letting drainage ditch system in the Elkhorn Township area east of Fremont. This project will assess the holistic situation and propose project alternatives to be pursued. Project funding covers the cost of development of hydrologic and hydraulic studies, environmental compliance consultation, historical compliance consultation, land right consideration summary, conceptual designs, final engineer project design, project estimate development, project summary, a completed benefit cost analysis, and a finalized hazard mitigation application to submit to State and Federal partners. Conceptual project design options will reflect future needs with respect to existing area conditions, including constraints and opportunities. Drainage strategies to be explored include, but not limited to, establishing wells in the Fremont area to pump groundwater to help dewater high water table where development is located or planned, detention basins/ponds to be developed into wetlands, and widening, rerouting, or straightening existing drainage ditches or a combination of aforementioned strategies.

The selected engineering firm will perform activities related to mitigation and resiliency measures for Dodge County, including, but not limited to:

- Stakeholder engagement and coordination
- Historical damage data collection
- Existing drainage infrastructure assessment (conveyance and constrictions)
- Hydrologic and hydraulic analyses to assess flood risks
- Identifying potential flood risk mitigation measures
- Environmental, Historical, Land Right Considerations
- Cost/benefit ratio of any proposed measure or improvement
- Conceptual Solution Design
- Detailed Design for selected Project Alternatives
- State HMPG project application completion
- Funding Source Analysis
- Project Summary Report

### **QUALIFICATIONS**

The professional engineering firm shall be:

1. Independent of any contractors, suppliers, manufacturers, or any interest that is construed as a conflict of interest to the proposal.
2. A professional firm that has experience in projects of similar scope and size as described in the scope of services section.

### **SUBMITTAL REQUIREMENTS**

The Consultant shall include in the submittal:

1. Letter of Interest (limited to 2 single-sided pages).
2. A brief discussion of your project understanding and scope of work outlining your project approach for the study. (limited to 3 single-sided pages).

3. List of proposed team members including project specific experience and proposed roles in the project (Specific emphasis on grant writing team is expected).
4. List of similar projects completed in the last 5 years.
5. Proposed timeline assuming 100% funding.

### **SELECTION PROCESS**

The final selection shall be determined by (but not limited to) a combination of the following criteria (interviews are not planned):

1. Consultant's understanding and recommended approach to complete the project.
2. Consultants history in successfully obtaining grant funding.
3. Consultant history on similar projects.
4. Consultant's ability to complete the project in a timely manner.

Submittals (including 3 hard copies and 1 digital copy) shall be delivered to the Dodge County Emergency Management by **June 1<sup>st</sup>, 2021 at 4:30 p.m.**

***Submittals shall be delivered to:***

**Dodge County Emergency Management  
435 N Park Ave STE 101 B  
Fremont, NE 68025**

**All submittals must be received no later than **June 1<sup>st</sup>, 2021 at 4:30 p.m.****





Date: April 30<sup>th</sup>, 2021

To: **Prospective Consultant-Engineering/Architectural Flood Plain Professionals**

From: Dodge County on behalf of Joint Water Management Advisory Board (JWMAB)

RE: **Request for Proposal** - Development of Watershed and Flood Prevention Operations (WFPO) Watershed Plan - Environmental Assessment for - Rawhide Creek Watershed Improvement Project in Dodge County, Nebraska

Dodge County, NE on behalf of the JWMAB is accepting proposals for the following project: Development WFPO Watershed Plan - Environmental Assessment for - Rawhide Creek Watershed Improvement Project in Dodge County, Nebraska

**Response Deadline:** May 18, 2020@ 4:30 PM Central Time

**Contact:** Tom Smith, Director  
Dodge County Emergency Management  
435 N Park Ave STE 101B, Fremont, NE 68025

Dodge County is leading this request on behalf of the Dodge County Area Joint Water Management Advisory Board (JWMAB), which includes a total of twelve public entities organized through an interlocal agreement and each having taxing authority to maintain public infrastructure. The Advisory Board's purpose is to collaborate on identifying and building projects to make the Rawhide Creek Watershed more resistant to damaging floods in the future. Dodge County has the responsibility to lead plan development in compliance with the National Environmental Policy Act (NEPA), in conjunction with USDA-NRCS, and will be supported by JMWAB and the member entities to: engage stakeholders, establish alternatives, evaluate preferred alternatives, and create an implementation strategy to put projects into action in a timely manner.

Prospective consulting firms may approach this project in any manner they see fit, provided that the core components of this request for proposals are met. Consulting firms may form teaming arrangements, but the submission must come from a single firm. Project information, scope of work, and submission requirements are detailed below.

**Project Objective:**

The JWMAB is seeking an engineering firm to develop an approved Natural Resources Conservation Service (NRCS) Watershed Plan - Environmental Assessment (EA) for the Rawhide Creek Watershed (See Figure 1 below) in Dodge County, Nebraska. The purpose of this initiative is flood prevention within the Rawhide Creek Watershed. The goal is to (1) establish a recommended Plan-EA through an assessment of alternatives supported by public engagement and (2) sponsor participation that follows the National Environmental Policy Act (NEPA) process. This project is needed to mitigate flood-related damages to Fremont, other communities and agricultural properties, improve flood resiliency, and stabilize streambanks.

**Project Background:**

Dodge County, Nebraska (Project Sponsor) was approved for Watershed and Flood Prevention Operations (WFPO) funds to develop the Rawhide Creek Watershed Plan and Environmental Assessment (Plan-EA), in

collaboration with the USDA-NRCS. The project area includes portions of seven HUC12 watersheds that combined make up the Rawhide Creek Watershed. The project planning area contains a series of aged drainage ditches, levees, and embankments whose inadequacies were exposed during the March 2019 flooding event. The JWMA B has received multiple requests to evaluate strategies to improve flood resilience in this area based on recent and regular flooding issues, including catastrophic flooding in March 2019 leading to Nebraska Disaster Declaration DR-4420.

The project planning area includes five communities and several smaller lake communities, but is predominately a rural/agriculturally based economy, emphasizing the need for utilizing all available financial resources to achieve this goal. The Sponsor has resources to complete large-scale planning and construction projects and is responsible for consistently maintaining county roads, highways, bridges, drainage infrastructure and streambank stabilization, and other infrastructure related projects.

The purpose of the Plan-EA is flood prevention. The Rawhide Creek Watershed provides diverse economic benefits to the local area, especially as the watershed is primarily rural and agricultural in land use (84%), with five communities. Agricultural benefits include protection of land resources and communities, improvement of soil health, and sustainability of the agricultural economy. Other benefits include protecting the over 12 lake communities, two of which are SIDs with taxing authority, and protecting the Nebraska Game and Parks Commission's (NGPC) Fremont State Recreation Area.

#### **Scope of Work:**

The JWMA B is seeking firms with qualifications to complete this plan in accordance with the policy set forth in the NRCS Title 390, NWPM. Planning procedural guidelines for creation of the NEW Watershed Work Plan-Environmental Assessment (Plan-EA) shall follow NRCS Title 390, National Watershed Program Handbook (NWPH). NRCS water resources projects must comply with the latest Principles, Requirements, and Guidelines (PR&G) for Water and Land Related Resources Implementation Studies. Refer to the following webpage for PR&G: <https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/nwmc/>

The primary components of the plan will include the following tasks:

#### **Task 1: Identify Problems, Opportunities, and Concerns**

This task will involve development of the Plan of Work and a public participation plan along with agency scoping meetings and two open house public meetings to obtain feedback on water resource concerns to be addressed in the plan.

#### **Task 2: Determine Objectives**

This task includes writing the purpose and need statement and establishing a plan outline. Includes correspondence and review with NRCS State Office staff. Ensuring the path forward is complete and compliant with Title 130 National Watershed Program Manual requirements.

#### **Task 3: Inventory Resources**

Includes data gathering, watershed site tour, formulation of feasible alternatives, economic and social assessment, cultural resource assessment, and geologic and engineering assessment. Preparing and sending letters/notifications to agencies and the public.

#### **Task 4: Analyze Resource Data**

This task includes an analysis of all collected resources through statistics, maps, hydrogeology, understanding of the JWMAB goals, and other similar watermanagement objectives. Information will be used to support the establishment of a list of initial alternatives.

**Task 5: Formulate Alternatives**

A list of initial alternatives, including no action, will be established, and discussed with the JWMAB and other key stakeholders. Establishment (or updating existing) hydrology and hydraulics model and use of LiDAR to guide design.

**Task 6: Evaluate Alternatives**

This task includes an alternatives assessment using an alternative screening assessment such as an evaluation matrix. A list of evaluation criteria will be used such as technical feasibility, social acceptance, financial, etc. to evaluate and score alternatives. Includes site selection, planning level design of preferred alternatives, and initial benefit-cost assessment (BCA).

**Task 7: Plan Development/Make Decisions**

Includes drafting the plan document and completing all reviews with the Nebraska State NRCS office and other resource agencies participating in the NEPA process. Includes preliminary design of the preferred alternatives, cost estimating, summary of permitting needs, data gaps, and completion of the BCA. Includes compiling and addressing all responses and input. Completing the final plan and working through the review process with the National Water Management Center. Printing and delivering appropriate hard and electronic copies after successful National Programmatic Review.

**Submittal Requirements:**

Proposals will be accepted at the Dodge County Emergency Management Office until 4:30 PM Central Time on **May 18<sup>th</sup>, 2021**. Three copies must be submitted along with an electronic (pdf) format on a memory stick or equivalent device. Late proposals will not be eligible for consideration. The following shall be included in the submission:

**Statement of Qualifications (Not to exceed 8 single sided pages):**

1. Firm name, address, telephone number.
2. Years established and former names.
3. Type of services particularly qualified to perform.
4. Names of principals and states in which they are registered.
5. Names of key personnel to be utilized, experience of each, and length of service with the firm.
6. Maximum number of the staff at any one time.
7. Outside consultants and associates that might be employed.
8. List of similar completed projects for which the firm was the principal professional.
9. Similar current projects of the firm and estimated costs of each.
10. History of professional negligence claims made against the firm during the past five years.

**Proposal for this project including the following items (Not to exceed 10 single sided pages):**

1. Cover Letter Expressing Interest in the Project

2. Project Understanding
3. Proposed Project Approach
4. Related Experience
5. Workload/Willingness and Capability to Meet Time Requirements
6. Conflict of Interest Statement
7. Description of Insurance
8. Proposed Project Schedule
9. Breakdown of Costs by Task Listed in Scope of Work
10. Total Cost of Project
11. Other Relevant Information

**Terms/Selection:**

Proposals will be reviewed, and the award made to the proposal giving consideration which shall ~~include~~ but not limited to, the following:

1. Firms which have sufficient professional manpower to meet the project schedule of 24 months.
2. Firms with a sound performance record for meeting time and budget requirements.
3. Firms which possess project experience and management ability.
4. Firms with recent, current, and/or a projected workload with the County.
5. Firms that display a strong project understanding.
6. Any other specialized qualification which the firms might possess to benefit the project.

Expenses for developing and presenting qualifications shall be the entire responsibility of the Respondent and shall not be chargeable to the requesting entity. All supporting documentation and manuals submitted with these qualifications will become the property of the JWMAB, unless requested by the Respondent, in writing, at the time of the submission, and agreed to, in writing, by the JWMAB. The selection committee may select a firm from the proposals submitted or may request additional information from a firm or firms.

**Accept/Reject Proposals:**

The JWMAB reserves the right to reject any or all proposals, wholly or in part; to waive technicalities, irregularities, and omissions; to make the award in a manner deemed to be in the best interest of the Advisory Board; and to correct any award erroneously made because of a clerical error on the part of the County.

**No Obligation:**

This RFP in no manner obligates the County, or other members of the JWMAB, to the eventual purchase of any products or services described, implied, or which may be proposed, until confirmed by written agreement. This RFP may be terminated by the JWMAB without penalty or obligation at any time prior to the signing of an agreement.

**Questions and Contact Information:**

For questions regarding the information contained in this RFP call or email:

Tom Smith, Director

Dodge County Emergency Management

[dodgecoema@gmail.com](mailto:dodgecoema@gmail.com)

(402) 727-2785

**Submissions will be accepted at the LRNRD Office until 4:30 PM Central Time on April 5, 2021:**

Attn: Tom Smith, Director

Dodge County Emergency Management

435 N Park Ave. STE 101B

Fremont, NE 68025

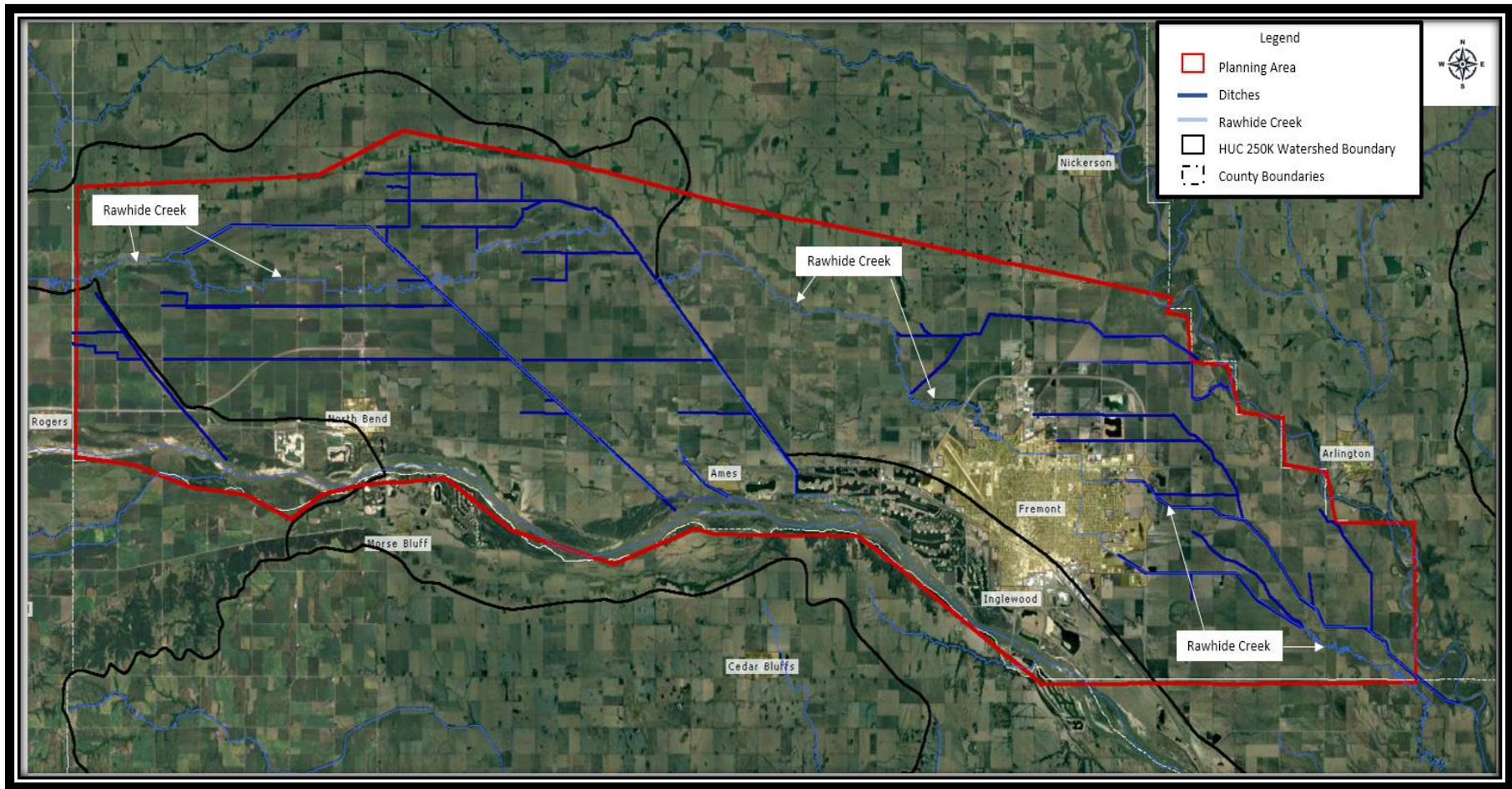


Figure 1: Planning Area

<b>ENGINEER'S CONCEPTUAL OPINION OF COST</b>	
<b>JEO PROJECT NO. 190483.00</b>	

<b>GOLD STREET OUTFALL</b>					
Item #	Description	Unit	Quantity	Unit Price	Total
1.	Remove Flared End Section	EA	1	\$500.00	\$500.00
2.	30" RCP Pipe	LF	8	\$200.00	\$1,600.00
3.	Concrete Collar	EA	1	\$1,000.00	\$1,000.00
3.	30" Dia. Flapgate	EA	1	\$8,000.00	\$8,000.00
4.	Concrete Headwall	EA	1	\$12,000.00	\$12,000.00
5.	Site Grading	LS	1	\$5,000.00	\$5,000.00
6.	Seeding and Erosion Control	LS	1	\$6,000.00	\$6,000.00
7.	Rock Rip Rap (Type C)	Ton	25	\$100.00	\$2,500.00
8.	Mobilization and Bonding	LS	1	\$4,250.00	\$4,250.00
<b>Subtotal of Construction:</b>					<b>\$40,850.00</b>

<b>HIGHWAY 15 OUTFALL</b>					
Item #	Description	Unit	Quantity	Unit Price	Total
1.	Remove Flared End Section	EA	1	\$500.00	\$500.00
2.	Install 48" RCP Pipe	LF	8	\$250.00	\$2,000.00
3.	Install Concrete Collar	EA	1	\$1,500.00	\$1,500.00
3.	48" Dia. Flapgate	EA	1	\$12,500.00	\$12,500.00
4.	Concrete Headwall	EA	1	\$15,000.00	\$15,000.00
5.	Site Grading	LS	1	\$5,000.00	\$5,000.00
6.	Seeding and Erosion Control	LS	1	\$5,000.00	\$5,000.00
7.	Rock Rip Rap (Type C)	Ton	25	\$100.00	\$2,500.00
8.	Pavement Removal/Replacement	SY	25	\$125.00	\$3,125.00
9.	Mobilization and Bonding	LS	1	\$5,300.00	\$5,300.00
<b>Subtotal of Construction:</b>					<b>\$52,425.00</b>

<b>B STREET OUTFALL</b>					
Item #	Description	Unit	Quantity	Unit Price	Total
1.	Remove Flared End Section	EA	1	\$500.00	\$500.00
2.	30" RCP Pipe	LF	8	\$200.00	\$1,600.00
3.	Concrete Collar	EA	1	\$1,000.00	\$1,000.00
3.	30" Dia. Flapgate	EA	1	\$8,000.00	\$8,000.00
4.	Concrete Headwall	EA	1	\$12,000.00	\$12,000.00
5.	Site Grading	LS	1	\$5,000.00	\$5,000.00
6.	Seeding and Erosion Control	LS	1	\$5,000.00	\$5,000.00
7.	Rock Rip Rap (Type C)	Ton	25	\$100.00	\$2,500.00
8.	Aggregate Surfacing	Ton	25	\$50.00	\$1,250.00
9.	Mobilization and Bonding	LS	1	\$4,300.00	\$4,300.00
<b>Subtotal of Construction:</b>					<b>\$41,150.00</b>

<b>Total Construction All Outfalls:</b>					<b>\$134,425.00</b>
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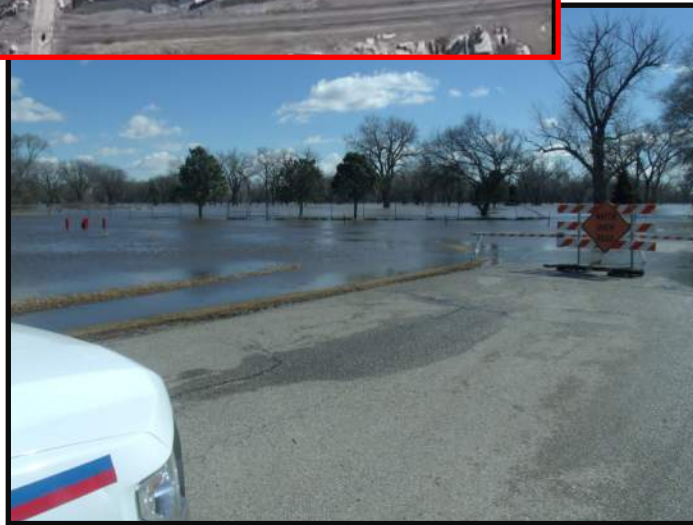
no control over the cost of labor, materials, equipment, or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, JEO cannot

Information from Gongol

Pipe Size	Flap Gate Size	Price Quote		Steel Installed Price
		Aluminum	Steel	
30"	37"	\$ 5,500	\$ 6,000	\$ 7,200
36"	44"	\$ 6,500	\$ 7,500	\$ 9,000
48"	58"	\$ 8,000	\$ 9,000	\$ 10,800
54"	65"	\$ 9,500	\$ 10,500	\$ 12,600

\$4,392.00

\$5,280.00



*August 2020*

**Schuyler Drainage Study and Flood Risk Evaluation**  
**JEO Project No. 190483.00**  
**Schuyler, Nebraska**

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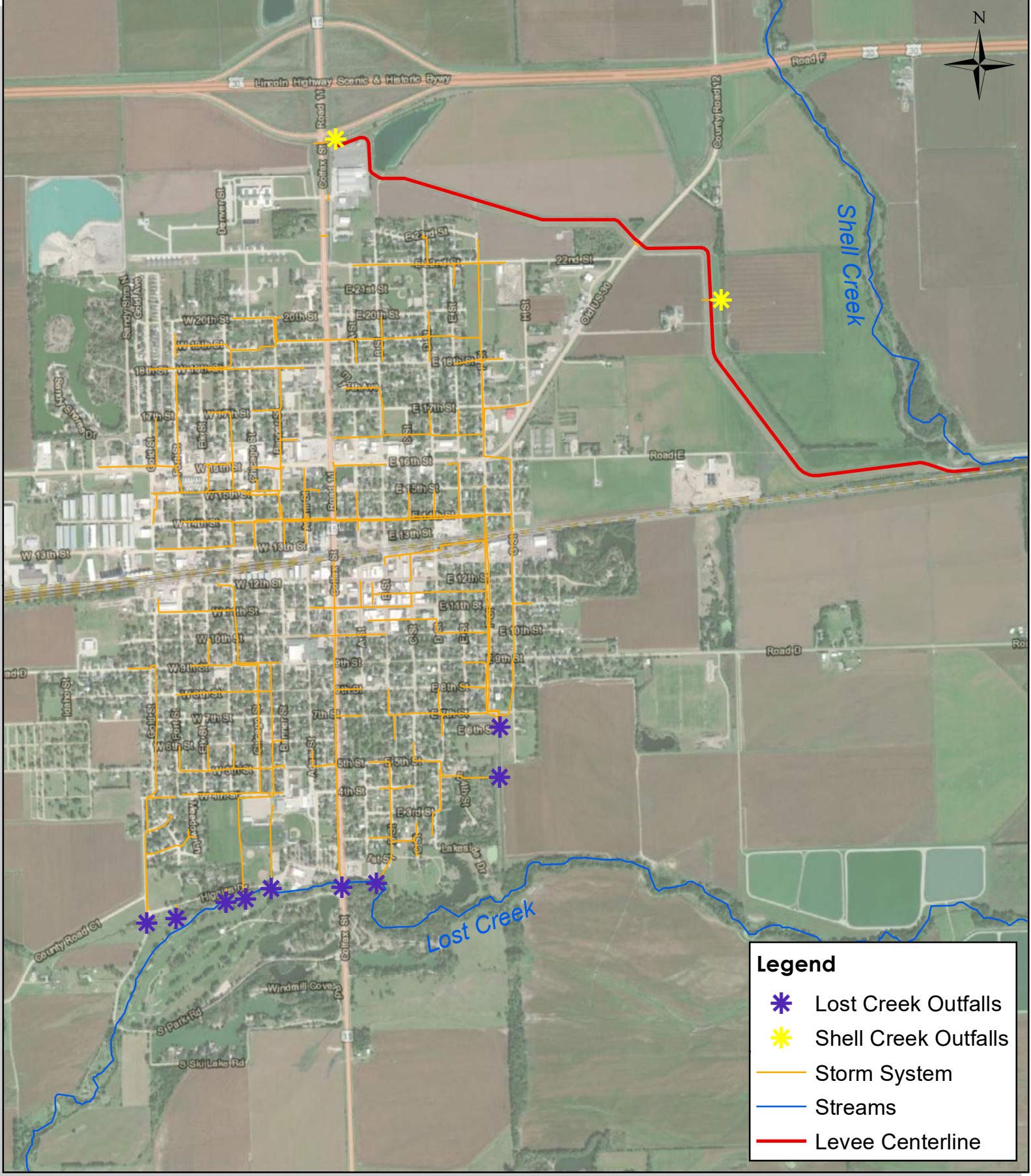
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# **1. BACKGROUND**

The City of Schuyler is in south-central Colfax County. Shell Creek flows along the northeast portion of the City while Lost Creek and the Platte River flow along the south. Underground storm systems serve to provide interior drainage out of a large portion of the City. As shown in Figure 1, ten (10) storm system outfalls discharge to Lost Creek south of the City. Two (2) additional outfalls provide interior drainage through the Shell Creek RB levee which drain via ditches before discharging to Shell Creek. Several of the outfalls do not have closure means, such as a flap gate or slide gate. Heavy rainfall can increase flows and flood levels in Lost Creek. When coupled with major flooding in the Platte River which will typically overflow into Lost Creek, for existing conditions water will back up into the City's storm system. This occurred during Platte River and Lost Creek flooding in March of 2019. Street ponding was observed throughout low lying areas in the City.

# **2. PURPOSE OF ASSESSMENT**

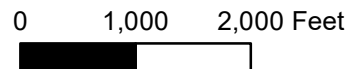
This assessment provides recommended actions to reduce flood risk for properties within the City based on the findings of a site visit completed December 5<sup>th</sup>, 2019 and follow up review and analysis of relevant best available site and flood risk background data. During the site visit JEO Consulting Group, Inc. reviewed the locations of flooding impact in the City based on the input of City staff and Schuyler Department of Utilities staff. To further understand what occurred during the March 2019 flood events, various locations were visited. Considering the information from the site visits as well as a hydrologic and hydraulic analysis completed by JEO, recommended actions were developed for the City to reduce flood risk. These actions focused on flood risk reduction for flooding on the scale of the March 2019 event for the impacted regions of the City. This report outlines the recommended actions and provides conceptual projects with estimated costs and likely permit requirements associated with these improvements, along with a preliminary prioritization and recommendations for next steps.



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 Software: ArcGIS 10.6  
 File: 190483.00

# Figure 1 : Site Overview

Schuyler, Nebraska



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### 3. STUDY AREA DESCRIPTION

The evaluation area includes a significant portion of the City and surrounding area comprised of approximately 1,480 acres of mostly developed and some undeveloped areas. The focus of the study is on three primary areas; sump locations (low areas of higher flood risk) south of the railroad tracks, sump locations north of the railroad tracks which ultimately drain to Lost Creek and sump locations north of the tracks which drain to Shell Creek. Each area was evaluated based on the drainage characteristics during regular rainfall events and drainage during significant flood events on the Platte River, Lost Creek, and Shell Creek such as what was experienced in March 2019.

### 4. ANALYSIS

Hydrologic and hydraulic analyses were completed for drainage areas within the City and their respective outlets. Multiple hydrologic and hydraulic scenarios were developed for various internal runoff conditions and external water surface elevations. The interior City area was divided into subareas, based on LiDAR topographic data, field visits and stormwater conveyance system GIS data. The delineated drainage areas are shown in Figure 2. The hydrologic and hydraulic analyses of the interior subareas and outlets were completed using XPStorm software (2019.1.1 version).

#### 4.1 Hydrology

Runoff hydrographs were calculated for the subareas using the methods described in Urban Hydrology for Small Watersheds (TR-55). The Soil Conservation Service (SCS) Method was used for the hydrologic evaluation of the 2-, 10-, 50- and 100-year return period runoff events. A curve number (CN) is used to represent the proportion of precipitation that contributes to runoff, based on land use types, hydrologic soil groups (HSG), and management practices. The curve number was established for each sub-basin based on the percentage of land cover shown to be impervious using the 2016 National Land Cover Database Percent Developed Imperviousness data. An initial curve number of 49, open parks in good condition with a hydrologic soil group of A, was assigned to each basin. This number was adjusted based upon the percent of impervious land using the equation shown below.

$$CN = (98 - CN_i) \times I + CN_i$$

- $CN_i$  – initial curve number
- $I$  – percent impervious

A time of concentration is also used to represent the amount of time elapsed after the beginning of a storm event to the point at which runoff rates peak. The total time of concentration was calculated using the SCS watershed lag method. Final basin parameters are shown in Table 1. The peak runoff rate is then determined by an empirical equation that relates the quantity of runoff from a given area to the total rainfall. A Type II rainfall distribution was utilized. Precipitation data was attained from the NOAA Atlas 14, point precipitation frequency estimates for Schuyler, Nebraska. The 24-hour rainfall depths for the 2-, 10-, 50- and 100-year storm events are estimated as 2.98, 4.35, 6.18 and 7.08 inches, respectively.

Table 1: Basin Parameters

Basin ID	Drainage Area (acres)	Curve Number	Time of Concentration (min)	Basin ID	Drainage Area (acres)	Curve Number	Time of Concentration (min)	Basin ID	Drainage Area (acres)	Curve Number	Time of Concentration (min)
2	21.6	61	45.2	55	1.7	67	11.8	107	1.9	75	11.0
3	11.7	69	30.5	56	3.1	65	16.4	108	1.4	68	9.9
4	12.4	73	30.9	57	3.5	68	13.9	109	1.4	70	14.4
5	6.9	88	16.8	58	2.5	67	15.5	110	2.1	66	16.9
6	6.5	79	12.1	59	1.1	69	11.3	111	2.2	69	13.2
7	4.0	68	21.0	60	1.9	68	9.1	112	1.8	70	13.1
8	10.8	75	21.9	61	2.8	64	19.1	113	2.1	64	17.4
9	1.3	78	9.8	62	3.6	67	17.5	114	8.7	60	38.6
10	4.6	72	14.1	63	0.5	58	10.5	115	10.8	51	36.5
11	6.6	74	18.7	64	12.3	58	39.8	116	3.0	66	13.2
12	2.9	64	15.5	65	1.8	67	5.7	117	1.4	66	13.1
13	5.1	68	26.8	66	2.9	67	14.8	118	86.3	66	94.3
14	8.8	67	28.6	67	7.7	60	24.4	119	36.3	62	97.7
15	2.0	65	14.7	68	1.4	68	9.7	120	31.1	60	60.7
16	4.0	74	19.3	69	2.1	69	12.1	121	185.1	67	127.6
17	3.6	70	12.3	70	8.2	68	24.8	122	45.3	52	129.5
18	3.1	70	15.3	71	2.0	71	12.0	123	17.7	70	27.1
19	13.1	65	38.8	72	3.7	62	18.4	124	12.2	69	30.8
20	181.8	64	137.6	73	4.0	62	24.2	125	1.5	67	9.0
21	0.7	71	7.6	74	1.4	54	15.9	126	1.0	57	16.1
22	2.1	70	12.7	75	0.6	69	9.0	127	17.7	74	32.5
23	1.3	91	4.0	76	1.8	65	16.1	128	9.1	67	29.5
24	1.1	65	8.0	77	5.6	77	19.4	129	22.1	76	30.2
25	1.5	77	12.0	78	4.1	70	15.7	130	12.0	68	29.9
26	0.5	73	3.0	79	4.4	66	16.9	131	13.4	75	36.4
27	2.6	69	11.9	80	4.6	66	17.6	132	16.0	67	44.9
28	1.6	90	11.0	81	3.2	68	16.8	133	7.2	68	23.3
29	1.8	73	10.4	82	2.0	65	17.7	134	18.7	74	30.4
30	2.0	68	13.5	83	6.9	65	25.7	135	11.1	69	33.5
31	6.1	66	18.1	84	9.4	68	28.4	136	5.0	67	16.3
32	7.3	70	27.5	85	1.8	66	12.1	137	31.4	71	43.3
33	2.5	67	13.0	86	0.8	68	10.6	138	15.1	65	43.0
34	7.1	67	30.8	87	2.1	69	14.9	139	11.5	64	39.4
35	2.7	80	9.7	88	1.5	66	15.0	140	6.7	62	39.6
36	1.9	83	12.2	89	1.8	62	21.3	141	6.0	64	21.5
37	4.0	87	9.3	90	1.5	59	19.3	142	6.5	63	19.6
38	1.6	94	5.8	91	2.0	64	16.1	143	28.7	62	57.2
39	2.9	83	11.1	92	2.8	68	22.6	144	14.6	59	41.6
40	3.1	93	6.0	93	2.0	68	12.4	145	23.9	65	40.2
41	1.1	90	4.0	94	0.9	51	28.8	146	11.9	67	18.9
42	2.2	91	6.2	95	4.1	64	18.3	147	16.9	61	39.0
43	1.1	91	5.7	96	7.3	66	26.1	148	8.0	65	24.7
44	0.8	94	4.3	97	6.4	65	28.3	149	20.4	67	29.7
45	1.1	95	4.9	98	4.8	65	22.1	150	21.0	70	42.9
46	2.2	79	11.5	99	2.3	69	20.9	151	11.5	68	34.2
47	11.4	79	22.9	100	3.8	67	21.2	152	3.0	70	20.4
48	2.9	68	15.9	101	1.3	68	12.7	153	13.6	70	30.5
49	6.7	70	25.9	102	2.2	66	15.3	154	9.3	76	18.1
50	2.3	67	16.0	103	3.0	72	14.4	155	10.1	72	28.2
51	4.7	71	14.7	104	5.9	70	17.2	156	3.8	88	13.2
52	3.0	63	12.2	105	4.2	66	16.1	157	23.5	74	26.5
53	6.2	66	23.7	106	7.4	63	24.5	158	4.5	72	19.5
54	1.5	65	13.4								

## 4.2 Hydraulics

XPStorm includes the capability to model 1D hydraulics and 2D overland flow conveyance and storage. The 1D component of the model includes pipes, manholes and junctions. Each pipe was modeled using GIS data including length, size and material.

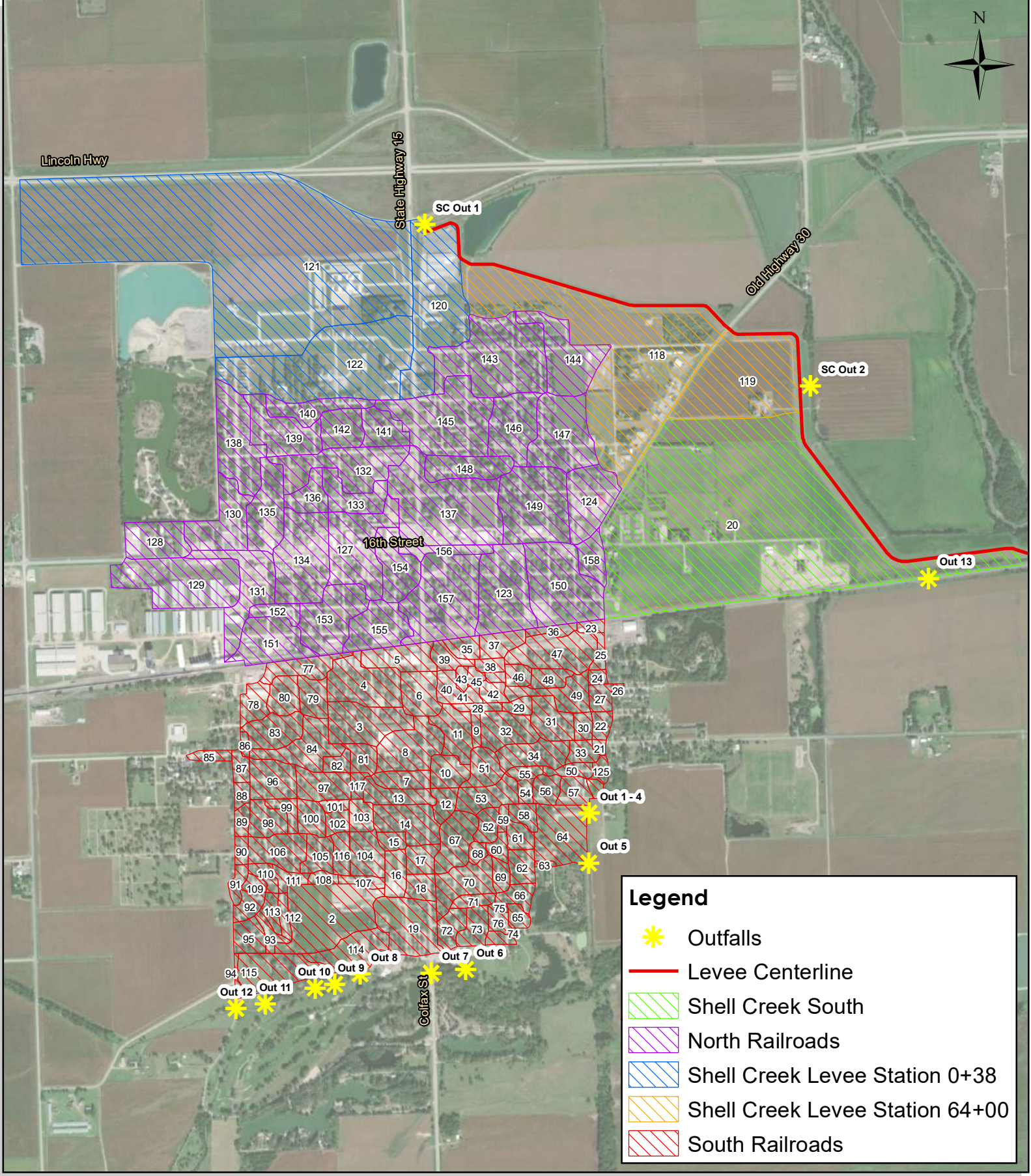
GIS data was cross-referenced and updated using as-built storm drainage system improvement plans. Pipe inverts were utilized using as-built plans, where available, and limited field survey conducted by JEO staff in January 2020. All other inverts were calculated assuming a pipe slope of 0.001 to 0.002 ft/ft based on the topographic limitations. It should be noted, due to the use of assumed slopes in place of survey, results may vary slightly in future more detailed studies.

The drainage outfalls were either modeled assuming a steady tailwater condition based upon approximated water surface elevations during the March 2019 event or assuming a free outfall condition. Refer to Table 2 and Figure 2 for outlet structure locations and details.





Table 2: Outlet Structures

Structure ID	Receiving Waters	Location	Drainage Structure	Outlet Flowline (NAVD 88)	March 2019 Assumed Tailwater (NAVD 88)
SC Out 1	Shell Creek	Shell Creek Levee Station 0+38	2 - 36" X 76" RCB	1345.9	Sluice Gate Closed
SC Out 2	Shell Creek	Shell Creek Levee Station 64+00	48" RCP	1344.4	Sluice Gate Closed
Out 1	Lost Creek	6th and F Street	54" RCP	1340.4	1348.2
Out 2	Lost Creek	6th and F Street	36" RCP	1340.3	1348.2
Out 3	Lost Creek	6th and F Street	36" RCP	1340.2	1348.2
Out 4	Lost Creek	6th and F Street	36" RCP	1340.2	1348.2
Out 5	Lost Creek	East Ditch	30" RCP	1341.8	1348.2
Out 6	Lost Creek	B Street	27" RCP	1339.4	1351.3
Out 7	Lost Creek	Highway 15	48" RCP	1339.4	1351.3
Out 8	Lost Creek	Chicago Street	48" RCP	1346.4	1352.4
Out 9*	Lost Creek	Denver Street	60" RCP	1341.8	1352.4
Out 10	Lost Creek	Higgins Drive	15" RCP	1344.9	1352.4
Out 11	Lost Creek	Higgins Drive	15" RCP	1343.5	1352.5
Out 12	Lost Creek	Gold Street	24" RCP	1344.4	1352.6

Runoff hydrographs calculated from the hydrologic component of the model were routed to the 1D pipe network. Flows greater than the pipe capacities were conveyed to the 2D component using a computational mesh derived from LiDAR data. The water surface elevation estimates for the March 2019 flood event were taken from a previous Platte River Flow Evaluation study completed by JEO which used the USACE river modeling software HEC-RAS combined with observed flooding and high-water marks to model the event.



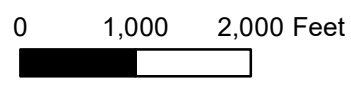
**Legend**

-  Outfalls
-  Levee Centerline
-  Shell Creek South
-  North Railroads
-  Shell Creek Levee Station 0+38
-  Shell Creek Levee Station 64+00
-  South Railroads

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 Software: ArcGIS 10.6  
 File: 190483.00

# Figure 2 : Drainage Areas

Schuyler, Nebraska



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### 4.3 Results

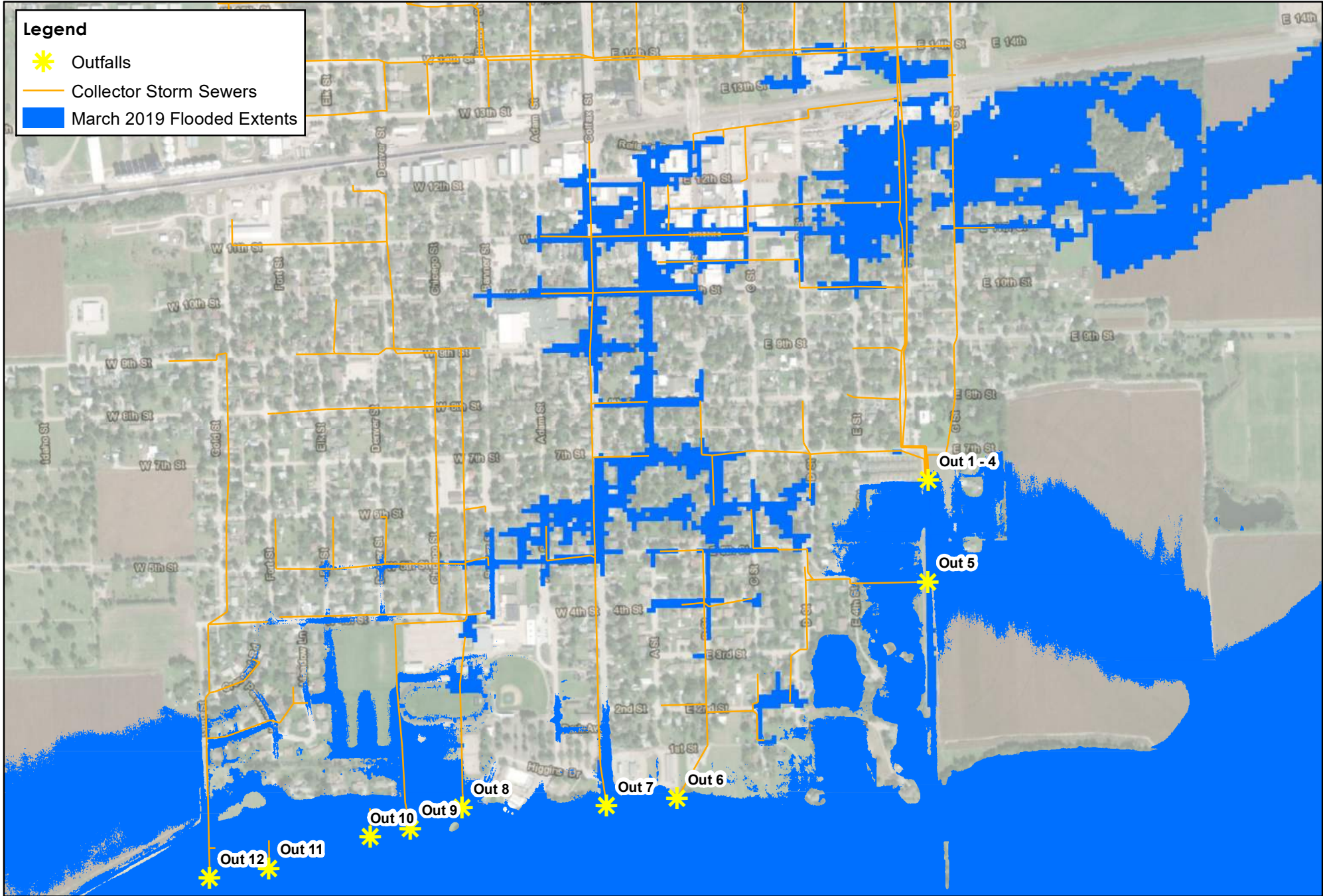
Numerous scenarios were analyzed of the existing conditions as shown in Table 3. The March 2019 flood event outfall assumed the slide gates at the outfalls to Shell Creek were closed. Results of the analysis of the March 2019 flood event are shown in Figure 3. The results were compared to information received during the site visit. The analysis only accounted for ponding resulting from backflow through the storm network. There was likely snowmelt and interior rainfall that occurred during the peak of the riverine flooding which could have resulted in additional ponding. As can be seen there are several low-lying areas within the city which experienced flooding during the event.

Results of the 10-Year interior rainfall event with both the March 2019 outfall condition and a free outfall condition are shown in Figure 4. As can be seen, the combination of an interior rainfall event coincident with riverine flooding such as was experienced in March 2019 results in significant flooding within the city limits. However, it is also noted flooding will still be evident during the free outfall scenario.

Table 3: Existing Conditions Scenarios Evaluated

Outfall Condition	Interior Rainfall Event
March 2019 Flood Event	None
	2-Year
	10-Year*
	50-Year
	100-Year
Free Outfall	2-Year
	10-Year*
	50-Year
	100-Year

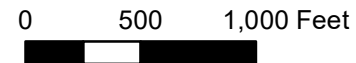
\*See Figure 4 for results



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 Date: 4/22/2020  
 Software: ArcGIS 10.7



# Figure 3 : March 2019 Flooded Extents

Schuyler, Nebraska





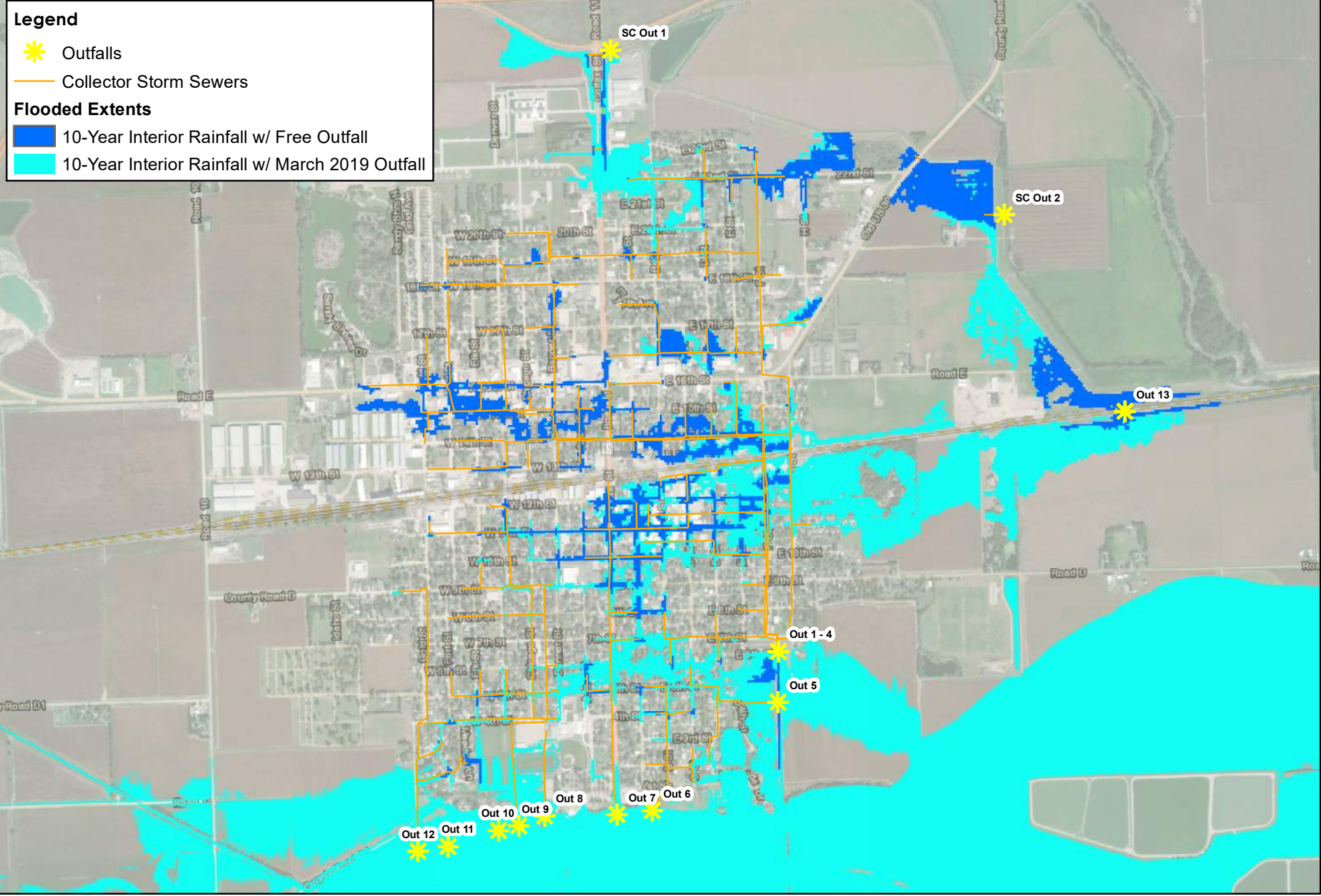
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**Legend**

-  Outfalls
-  Collector Storm Sewers

**Flooded Extents**

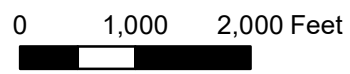
-  10-Year Interior Rainfall w/ Free Outfall
-  10-Year Interior Rainfall w/ March 2019 Outfall



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# Figure 4 : 10-Year Existing Conditions

Schuyler, Nebraska



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## 5. RECOMMENDATIONS

In this section, four preliminary improvement recommendations are provided to reduce the frequency of future flood risk impacts to the City. Each recommendation project sheet contains the site's existing conditions, a description of the conceptual recommended improvement(s), and estimated costs associated with the conceptual improvement(s). Following this section, permitting, next steps for each project, preliminary project prioritization, project sequencing, and funding are discussed. Engineering, survey, design and construction administration services were budgeted at 20% of total construction costs.

Overall, the projects and costs in this report are preliminary and are based on the data available; they do not represent a detailed design effort. Should design proceed on any individual recommendation, project details and costs will likely need adjusted as design progresses. In general, future design projects may require further background analysis in order to provide a foundation for key design decisions and to assure successful performance upon project completion.

## 5.1 Project 1: Install Flap Gates

### EXISTING CONDITIONS

As shown in Figure 3, the March 2019 flood event caused flooding of low-lying areas of the City. Much of this flooding was attributed to flows from Platte River and Lost Creek flooding backflowing through the existing storm sewer system to inundate areas which were otherwise protected by high ground from Platte River and Lost Creek flooding.

### RECOMMENDATION

To prevent backflow during high flow events, the installation of flap gates is recommended at the primary outlets to Lost Creek. The City has proactively begun this process with the installation of a flap gate at the newly constructed 60" outfall identified as Outfall 9 and the design and future construction of a berm and flap gates through the Electrical Transmission Corridor project to prevent backflow through Outfalls 1 through 5. Outfall 8 is also currently equipped with a flap gate. Project 1 therefore recommends the installation of flap gates at the remaining outlet structures; Outfalls 6, 7 and 12 as shown in Figure 5. Based on limited backflow impacts from the analysis completed, Outfalls 10 and 11 do not appear to require backflow prevention. Therefore, a flap gate is not recommended at these locations.

The reduction of flooding impacts during an event of the magnitude of the March 2019 flood event (with no interior rainfall occurring) solely due to backflow prevention from the installation of the proposed flap gates and Electrical Transmission Corridor berm is shown in Figure 6.

### CONCEPTUAL OPINION OF PROJECT COST

It is estimated the construction of Project 1 will cost \$144,000.



Picture 1: Flap Gate at Outfall 8

Table 4: Project 1 Estimated Costs

OUT 12 - GOLD STREET OUTFALL					
Item #	Description	Unit	Quantity	Unit Price	Total
1.	Mobilization, Bonding & Insurance	LS	1	\$3,000.00	\$3,000.00
2.	Remove Flared End Section	EA	1	\$350.00	\$350.00
3.	Backfill and Bank Protection	LS	1	\$3,500.00	\$3,500.00
4.	30" RCP Pipe	LF	10	\$110.00	\$1,100.00
5.	Concrete Collar	EA	1	\$1,500.00	\$1,500.00
6.	30" Dia. Flapgate	EA	1	\$12,000.00	\$12,000.00
7.	Timber Pile Pipe Support	EA	1	\$6,000.00	\$6,000.00
8.	Erosion Control	LS	1	\$1,000.00	\$1,000.00
<b>Subtotal of Construction Outfall 12:</b>					<b>\$29,000.00</b>
OUT 7 - HIGHWAY 15 OUTFALL					
Item #	Description	Unit	Quantity	Unit Price	Total
1.	Mobilization, Bonding & Insurance	LS	1	\$4,000.00	\$4,000.00
2.	Remove Flared End Section	EA	1	\$500.00	\$500.00
3.	Backfill and Bank Protection	LS	1	\$3,500.00	\$3,500.00
4.	Install 48" RCP Pipe	LF	10	\$165.00	\$1,650.00
5.	Install Concrete Collar	EA	1	\$2,000.00	\$2,000.00
6.	48" Dia. Flapgate	EA	1	\$18,000.00	\$18,000.00
7.	Concrete Headwall	EA	1	\$12,000.00	\$12,000.00
8.	Erosion Control	LS	1	\$1,000.00	\$1,000.00
<b>Subtotal of Construction Outfall 7:</b>					<b>\$43,000.00</b>
OUT 6 - B STREET OUTFALL					
Item #	Description	Unit	Quantity	Unit Price	Total
1.	Mobilization, Bonding & Insurance	LS	1	\$3,000.00	\$3,000.00
2.	Remove Flared End Section	EA	1	\$350.00	\$350.00
3.	Backfill and Bank Protection	LS	1	\$3,500.00	\$3,500.00
4.	30" RCP Pipe	LF	10	\$110.00	\$1,100.00
5.	Concrete Collar	EA	1	\$1,500.00	\$1,500.00
6.	30" Dia. Flapgate	EA	1	\$12,000.00	\$12,000.00
7.	Timber Pile Pipe Support	EA	1	\$6,000.00	\$6,000.00
8.	Erosion Control	LS	1	\$1,000.00	\$1,000.00
<b>Subtotal of Construction Outfall 6:</b>					<b>\$29,000.00</b>
<b>Subtotal of Construction ALL:</b>					<b>\$101,000.00</b>
Contingencies					\$21,000.00
<b>Total Construction All Outfalls:</b>					<b>\$122,000.00</b>
Engineering Survey, Design, Construction Admin:					\$22,000.00
<b>TOTAL PROJECT COST</b>					<b>\$144,000.00</b>

**ASSUMPTIONS AND NOTES.**

1. The cost opinion does not include any geotechnical evaluation which may be necessary to ensure proper support of the headwall proposed at Highway 15.



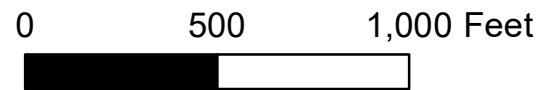
\* Outfalls 10 & 11 show limited backflow impacts. No improvements needed.



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 File: 190483.00

# Figure 5 : Flap Gates

Schuyler, Nebraska







**Legend**

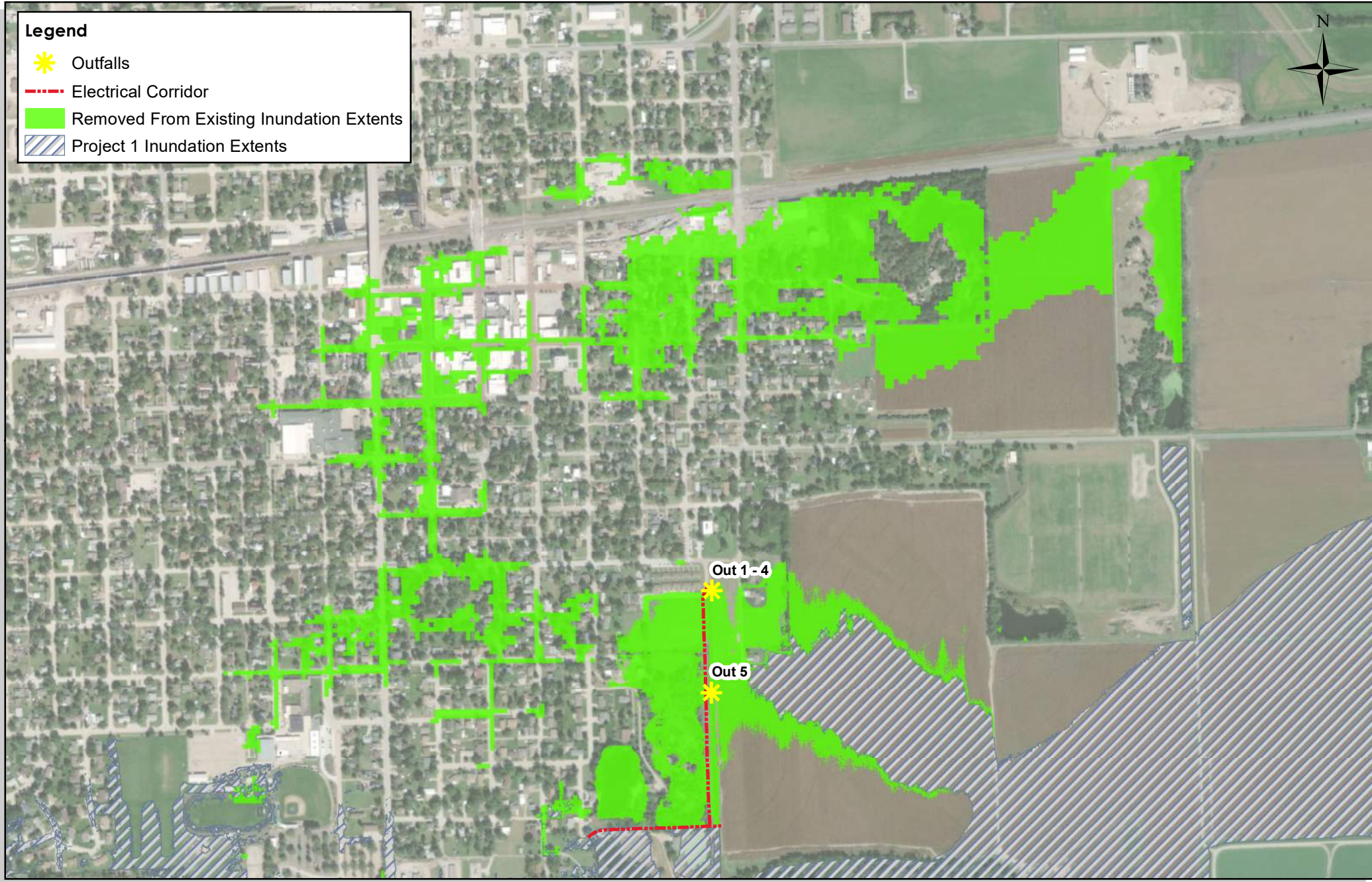
- Outfalls
- Electrical Corridor

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**Legend**

-  Outfalls
-  Electrical Corridor
-  Removed From Existing Inundation Extents
-  Project 1 Inundation Extents

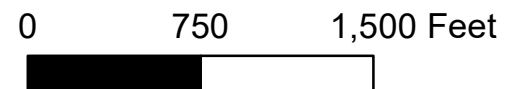


# Figure 6 : Flap Gates Benefits

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Schuyler, Nebraska



## 5.2 Project 1A: Install Slide Gate

### RECOMMENDATION

A slide gate may be installed upstream of a proposed flap gate to provide for redundancy in the case of flap gate failure. The proposed flap gate at Outfall 7 is located directly downstream of the Highway 15 bridge and as such is likely more susceptible to damage from higher velocities and debris being pushed through the bridge openings. A failure of this proposed flap gate will result in flooding of much of the low lying area just south of the railroad tracks including the City's downtown. Project 1A includes the construction of a slide gate structure upstream of the proposed flap gate at Outfall 7. The slide gate will be manually deployed during high flow events on Lost Creek and/or the Platte River, when flooding emergency conditions warrant closure. The flap gate will function as the primary backwater prevention which will still allow for interior drainage during a coincident flood and interior rainfall event.

### CONCEPTUAL OPINION OF PROJECT COST

It is estimated the construction of Project 1A will cost \$230,000.

Table 5: Project 1A Estimated Costs

<b>OUT 7 – HIGHWAY 15 OUTFALL SLIDE GATE</b>					
<b>Item #</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Unit Price</b>	<b>Total</b>
1.	Mobilization, Bonding & Insurance	LS	1	\$16,000.00	\$16,000.00
2.	48" Slidgate Gatewell	EA	1	\$155,000.00	\$155,000.00
3.	Erosion Control	LS	1	\$2,000.00	\$2,000.00
<b>Subtotal of Construction Outfall 7:</b>					<b>\$173,000.00</b>
Contingencies:					\$18,000.00
<b>Total Construction Highway 15 Outfall:</b>					<b>\$191,000.00</b>
Engineering Survey, Design, Construction Admin:					\$39,000.00
<b>TOTAL PROJECT COST</b>					<b>\$230,000.00</b>

### 5.3 Project 2: Portable South Stormwater Pump Station

#### EXISTING CONDITIONS

The design and future construction of the Electrical Transmission Corridor project will help to reduce flooding during high flow events on the Platte River and Lost Creek by improving the collection and discharge of stormwater in that area. The project includes the construction of a uniform ditch with an outfall structure comprised of two 60” RCPs with flap gates.

After construction of the project, there will still be a residual risk of flooding during precipitation events due to the potential of a coincident flood event with high flows on the Platte River or Lost Creek combined with the rainfall within the city limits. Outfalls 1 through 5 are the primary discharge within the city, serving approximately 600 acres of drainage area. Peak flows during the 2-, 5- and 10-Year flood events are shown in Table 6. During high flow events on Lost Creek and the Platte River, such as what occurred in March 2019, discharge through these outfalls could be significantly reduced or stopped, which may result in flooding of low-lying areas in the City.

Table 6: Outfalls 1 – Peak Discharge Flows

Structure ID	Location	Pipe Size	Pipe Slope	Free Outfall Discharge (cfs)		
				2-Year	5-Year	10-Year
Out 1	F Street Discharge	54"	0.0014	46	63	66
Out 3		36"	0.0021	35	40	43
Out 2		36"	0.0004	17	26	27
Out 4		36"	0.0048	10	17	21
Out 5	4th Street Discharge	30"	0.0014	7.0	13.3	19.1
East Ditch Outfall				<b>93.4</b>	<b>133.3</b>	<b>152.0</b>

#### RECOMMENDATION

One way to reduce flooding during this situation, is for the City to have a portable pump available that can remove ponded water from the Electrical Transmission Corridor project’s large channel. The purpose of deploying a pump would serve to discharge stormwater when the outside surrounding water levels would not normally allow water to drain out of the City.

It is preliminarily planned that a 20 cfs capacity pumping system would be utilized in this situation. While pumping 20 cfs of flow does not encompass an entire peak flow, the peak flow only occurs for a very short period of time while the pump output provides a continuous positive discharge of the stormwater. This results in excess stormwater ponding upstream of the outlet ‘waiting’ for the pump to incrementally draw that volume down. This reduces the duration of ponding/flooding in the surrounding low-lying areas of the City. The estimated time to remove the majority of the ponded water is shown in Table 7; this assumes the gravity outlet continues to be closed for the duration of the flood event. However, it is likely the gravity outlet will be open approximately 12-24 hours after peak flooding, which will allow the ponding to discharge more quickly overall.

Table 7: Ponded Duration w/ 20cfs Portable Pump

	2-Year Event	5-Year Event	10-Year Event
Duration Ponding (hours)	13	24	37

The portable pump(s) could be deployed to the inlet of the (closed) outfall piping for the channel to lift the ponded water up and over the flap gates and into the already flooded, downstream channel. Under this alternative, the portable pump(s) would be mounted onto a trailer(s) and electrically powered with an available connection to the City’s power system. Large flexible hoses, electrical cord(s) and other accessory items would also be necessary to complete the installation.

The City could also provide a measure of redundancy for this pumping system by also acquiring a portable diesel-powered generator. This would be useful in the event that no electrical power is available from the City’s power

system (i.e. power is out due to fallen power lines). Since flooding is frequently the result of severe storms, there is a realistic chance of both flooding and a power outage occurring simultaneously. If the City acquires a large enough portable generator, then the portable pump could be powered directly from that.

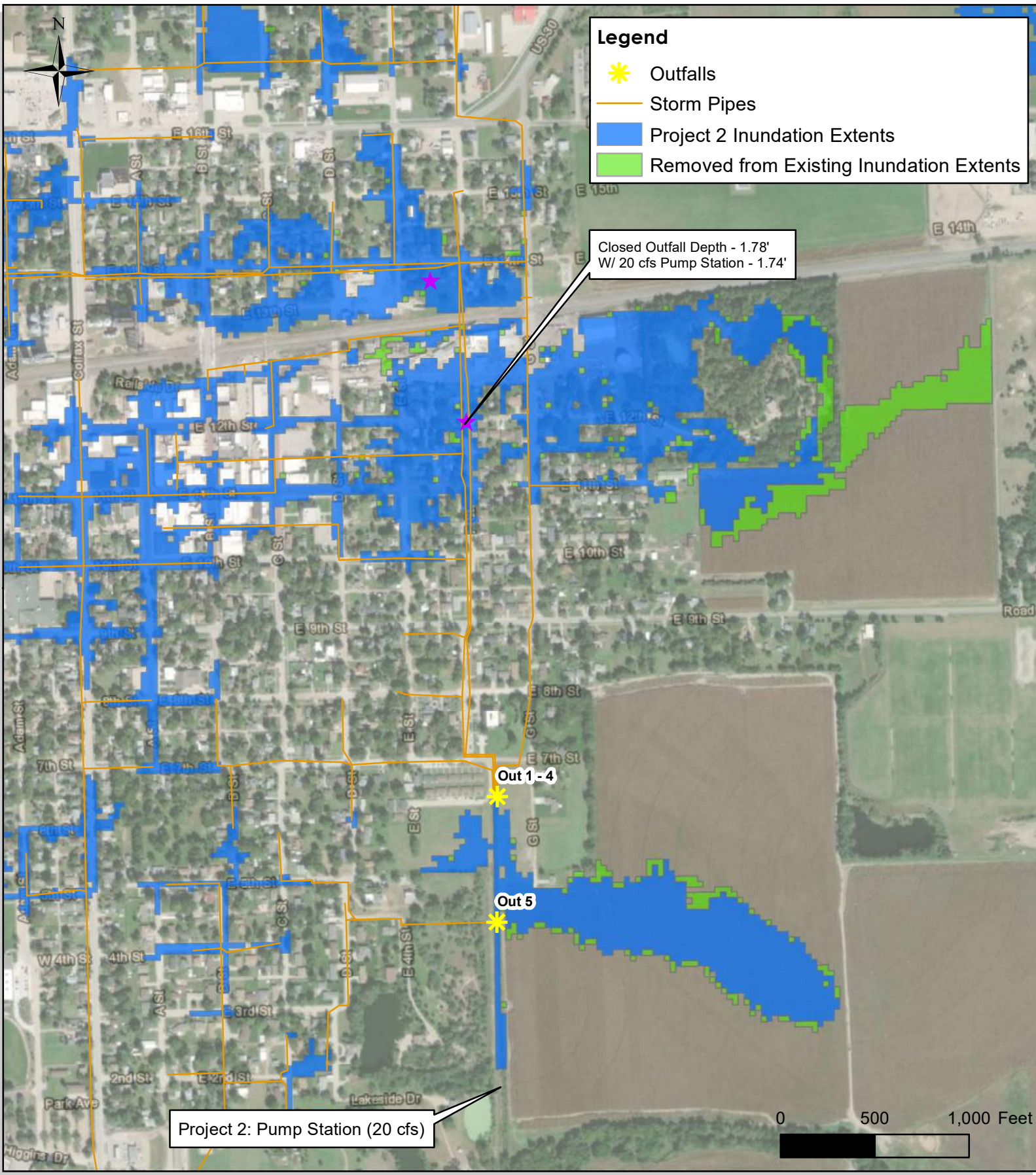
This alternative was added to the existing model to determine the potential impacts. Results of this analysis are shown in Figure 7. The figure shows the flooding impacts resulting from a 10-Year interior storm event with a March 2019 outfall condition and flap gates installed, with and without a pump. As can be seen the inclusion of the pump results in a small reduction of the flooding extents and depth of flooding. Not shown is the overall reduction in the duration of flooding resulting from the inclusion of the pump station.

### CONCEPTUAL OPINION OF PROJECT COST

The costs for the portable electrical pump(s) and the portable generator outlined in the following are primarily based on the City procuring the equipment directly. If the work of acquiring the equipment and starting up the equipment is passed onto a contractor, the costs listed will need to be increased to account for their labor and overhead. It is additionally noted that the pump and generator are priced together as one total project. It is an option to acquire only the pumping equipment without a generator based on the City’s tolerance for costs. A portable generator could then be acquired at a later date. It is estimated the proposed portable pump(s), portable generator and accessories could cost approximately \$416,000. Refer to Table 8 for further breakdown of the estimated costs involved.

Table 8: Project 2 Estimated Costs

Project 2 - 20 cfs Portable Pump & 300kW Portable Generator					
Item #	Description	Unit	Quantity	Unit Price	Total
1.	Mobilization, Bonding & Insurance	LS	1	\$32,000.00	\$32,000.00
2.	Trailer Mounted Electric 'Trash' Pump(s) (20 cfs @ 40' TDH)	EA	1	\$150,000.00	\$150,000.00
3.	Pump Accessory Cables and Hoses	LS	1	\$7,500.00	\$7,500.00
4.	City Electrical System Service and Disconnect	LS	1	\$7,500.00	\$7,500.00
5.	Trailer Mounted Diesel Generator (300 kW)	EA	1	\$140,000.00	\$140,000.00
6.	Generator Accessory Cables and Plugs	LS	1	\$8,500.00	\$8,500.00
<b>Subtotal of Construction:</b>					<b>\$346,000.00</b>
Contingencies:					\$70,000.00
<b>TOTAL PROJECT COST:</b>					<b>\$416,000.00</b>



**Figure 7 : South Pump Station  
10-Year Closed Outfall**

Schuyler, Nebraska

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## 5.4 Project 3: Portable North Stormwater Pump Station

### EXISTING CONDITIONS

The City of Schuyler was recently provided flood risk reduction through the construction of the Shell Creek RB Levee System directly north and east of the city. Two primary outfalls at levee station 00+38 and 64+00 provide drainage through the levee embankment during interior rain events. During coincident flood events the outfalls are equipped with slide gates which prevent backflow from Shell Creek through the outfall structures, but these also prevent positive drainage out of the City of the interior runoff resulting in water ponding of low-lying adjacent areas in or adjacent to the City.

Low-lying area adjacent to Levee Station 64+00 is primarily agricultural fields and therefore no risk reduction measures were evaluated at this location.

Ponding resulting from a closed outfall at Levee Station 00+38, at the intersection of Colfax St and Highway 30, can result in inundation of some local businesses and likely future developments. Peak flows for the 2-, 5- and 10-Year interior rainfall flood event at Shell Creek Levee Station 00+38 are show in Table 9.

Table 9: Shell Creek Levee Station 00+38 Outlet Discharge (SC Out 1)

Interior Rainfall Event	Peak Flow (cfs)
2-Year	25.0
5-Year	46.1
10-Year	70.7

### RECOMMENDATION

Flooding during this situation may be reduced by using a portable pump(s) to intake water at the inlet of the outfall structure and send it over or around the structure to discharge out into the flooded area downstream. This would help to reduce the duration of ponding/flooding in the upstream surrounding low-lying areas of the City.

It is preliminarily planned that a 10 cfs capacity pumping system would be utilized in this situation. While pumping 10 cfs of flow does not encompass an entire peak flow, the peak flow only occurs for a very short period of time while the pump output provides a continuous positive discharge of the stormwater. This results in excess stormwater ponding upstream of the outlet 'waiting' for the pump to incrementally draw that volume down. This reduces the duration of ponding/flooding in the surrounding low-lying areas of the City. The estimated time to remove the majority of the ponded water is shown in Table 10; this assumes the gravity outlet continues to be closed for the duration of the flood event. However, it is likely the gravity outlet will be open approximately 6-12 hours after peak flooding, which will allow the ponding to discharge more quickly overall.

Table 10: Ponded Duration w/ 10cfs Portable Pump

	2-Year Event	5-Year Event	10-Year Event
Duration Ponding (hours)	3	7	12

The portable pump could be deployed to the inlet of the (closed) outfall piping for the channel to lift the ponded water up and over the levee and into the already flooded, downstream channel. Under this alternative, the portable pump would be mounted onto a trailer and electrically powered with an available connection to the City's power system. Large flexible hoses, electrical cord(s) and other accessory items would also be necessary to complete the installation.

The City could also provide a measure of redundancy for this pumping system by also acquiring a portable diesel-powered generator. This would be useful in the event that no electrical power is available from the City's power system (i.e. power is out due to fallen power lines). Since flooding is frequently the result of severe storms, there is

a realistic chance of both flooding and a power outage occurring simultaneously. If the City acquires a large enough portable generator, then the portable pump could be powered directly from that.

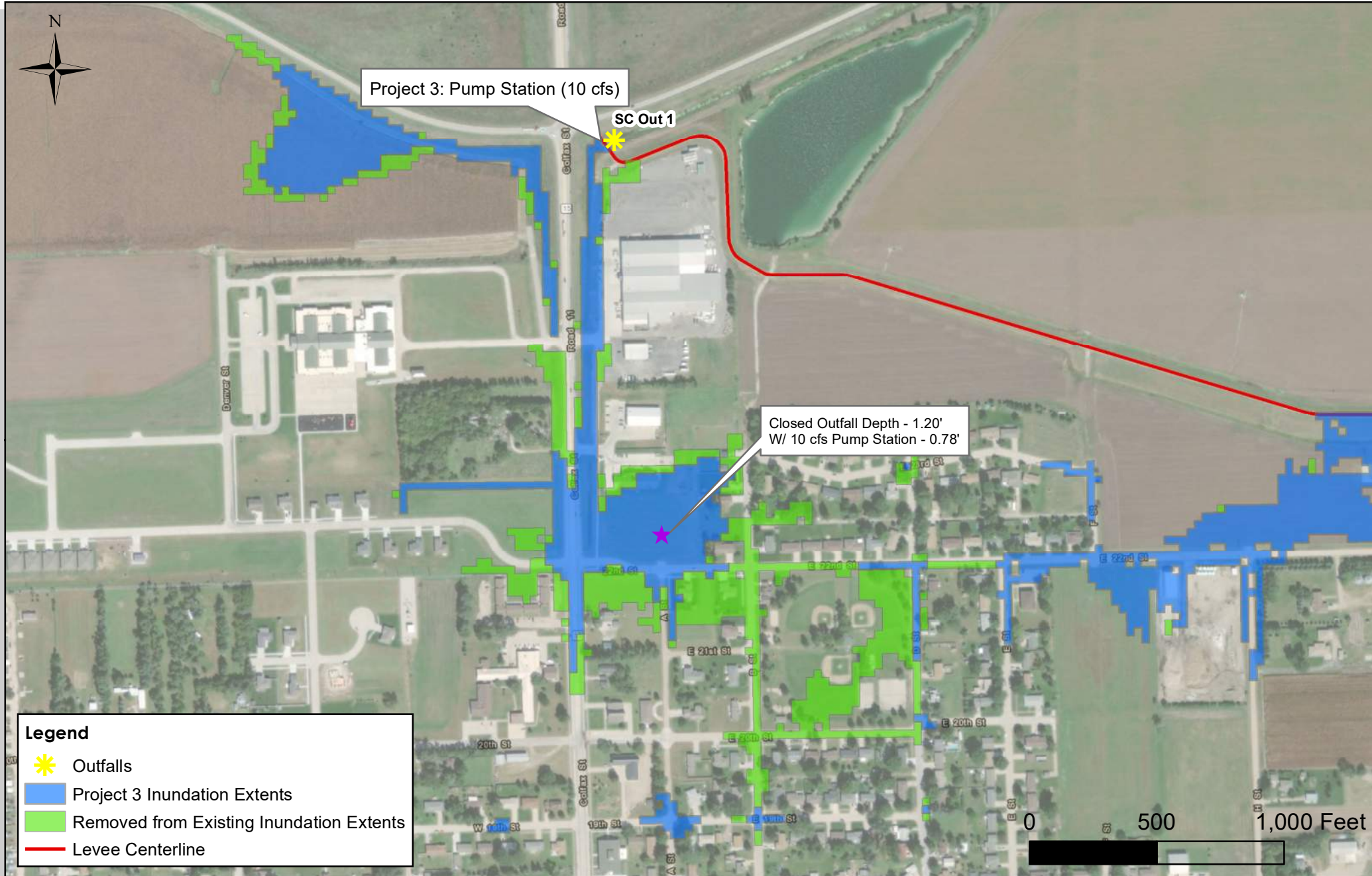
This alternative was added to the existing model to determine the potential impacts. Results of this analysis are shown in Figure 8. The figure shows the flooding impacts resulting from a 10-Year interior storm event with the slide gates closed, with and without a pump. The inclusion of the portable pump reduces the depth, extents and the duration of the flooding.

### CONCEPTUAL OPINION OF PROJECT COST

The costs for the portable electrical pump(s) and the portable generator outlined in the following are primarily based on the City procuring the equipment directly. If the work of acquiring the equipment and starting up the equipment is passed onto a contractor, the costs listed will need to be increased to account for their labor and overhead. It is additionally noted that the pump and generator are priced together as one total project. It is an option to acquire only the pumping equipment without a generator based on the City’s tolerance for costs. A portable generator could then be acquired at a later date. It is estimated the proposed portable pump(s), portable generator and accessories could cost approximately \$317,000. Refer to Table 11 for further breakdown of the estimated costs involved.

Table 11: Project 3 Estimated Costs

Project 3 - 10 cfs Portable Pump & 200kW Portable Generator					
Item #	Description	Unit	Quantity	Unit Price	Total
1.	Mobilization, Bonding & Insurance	LS	1	\$24,000.00	\$24,000.00
2.	Trailer Mounted Electric 'Trash' Pump(s) (10 cfs @ 40' TDH)	EA	1	\$110,000.00	\$110,000.00
3.	Pump Accessory Cables and Hoses	LS	1	\$6,000.00	\$6,000.00
4.	City Electrical System Service and Disconnect	LS	1	\$6,000.00	\$6,000.00
5.	Trailer Mounted Diesel Generator (200 kW)	EA	1	\$110,000.00	\$110,000.00
6.	Generator Accessory Cables and Plugs	LS	1	\$7,500.00	\$7,500.00
<b>Subtotal of Construction:</b>					\$264,000.00
Contingencies:					\$53,000.00
<b>TOTAL PROJECT COST:</b>					\$317,000.00



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# Figure 8 : North Pump Station 10-Year Closed Outfall

Schuyler, Nebraska



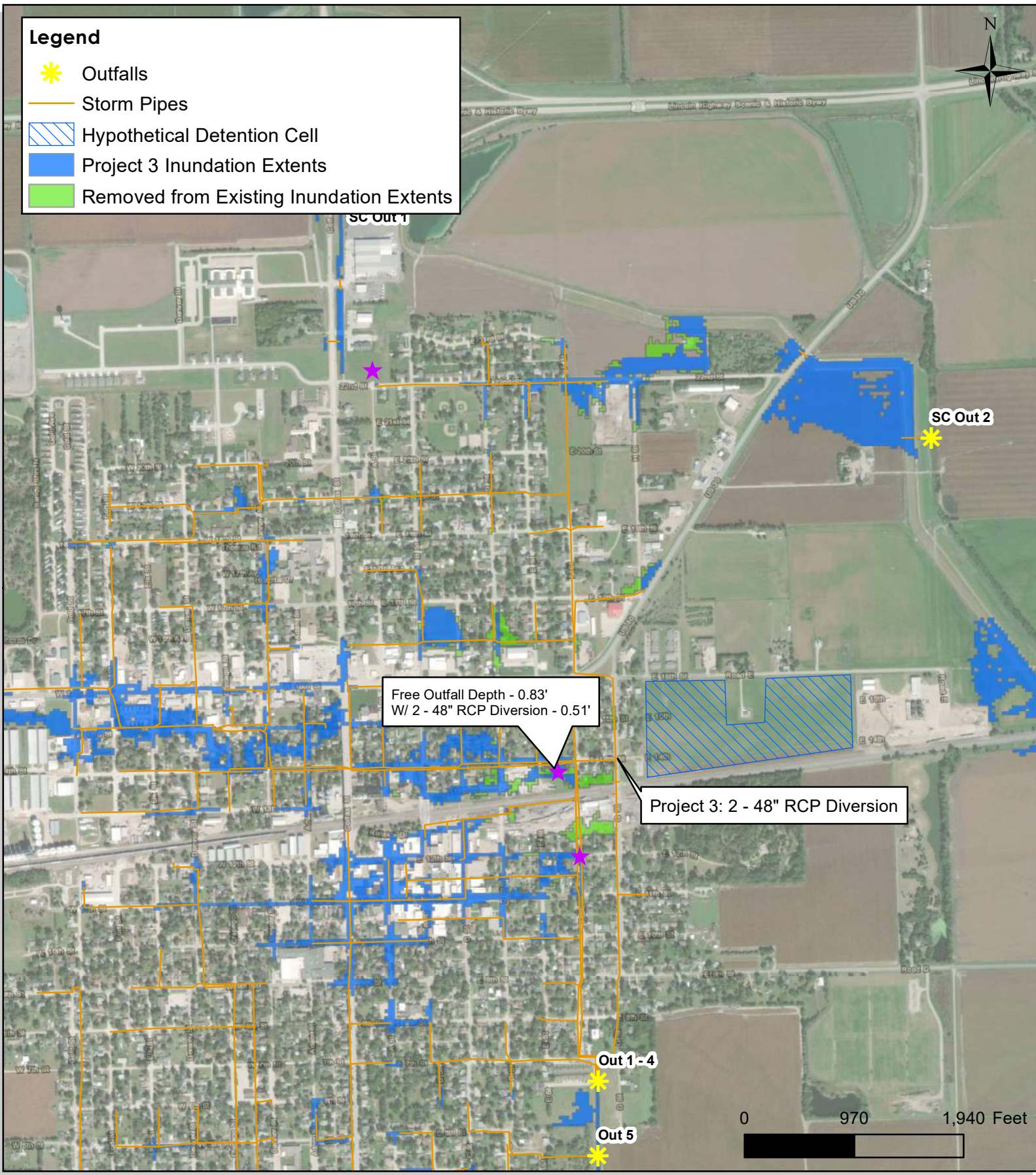
## 5.5 Project 4: North Railroad Detention

### EXISTING CONDITIONS

Primary drainage of much of the area north of the railroad tracks is accomplished through three pipes which convey flows to the south along F Street and G Street. Runoff which is not conveyed by the pipes results in ponding in low lying ground in two primary locations: the area between the railroad tracks and East 16<sup>th</sup> Street and low-lying area north of East 16<sup>th</sup> Street. The three pipes are connected to the system directly south of the tracks and are therefore impacted by the south storm drainage system. During the March 2019 flood event discharges were observed at the flared end section and adjacent ditch just north east of the intersection of the railroad tracks and G Street. An analysis was completed to determine the potential reduction in ponding which could be accomplished by elimination of the constriction and potential backflow of the storm system at the railroad tracks. This was done by adding two 48" RCP pipes to the existing system at the intersection of East 14<sup>th</sup> Street and G Street. The pipes were modeled to divert excess flows from the upstream system to the east. For the analysis it was assumed the pipes would be connected to an open channel or detention cell which would allow for them to flow freely (not being constricted by a downstream system). The results of this analysis are shown in Figure 9.

### RECOMMENDATIONS

The analysis indicates the diversion of flows from the north storm system to the east result in a reduction of the ponded extents and depths in the immediate area of the location of the diversion and the low-lying ground north of East 16<sup>th</sup> Street. The diversion resulted in minimal change to the extent and depth of the ponding of the low-lying ground west of Colfax Street. This project was therefore not further pursued as the benefits and the feasibility of constructing a channel or detention cell large enough to have an impact were minimal.



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# Figure 9 : North Diversion 10-Year Open Outfall

Schuyler, Nebraska



## 6. PERMITTING

Potential permits required for the implementation of Projects 1 -4 are shown in Table 12. “Yes” indicates the permit may be required.

Table 12: Potential Permit Requirements

Recommendation	Section 408 Permit (USACE)	NPDES Permit (State)
Project 1 – Flap Gates	Yes	Yes
Project 1A – Slide Gate	No	Yes
Project 2 – Portable South Stormwater Pump Station	No	Yes
Project 3 – Portable North Stormwater Pump Station	Yes	Yes
Project 4 – North Detention/Diversion	Yes	Yes

## 7. ADDITIONAL ALTERNATIVES

Finally, it should be noted that an alternative to some of the recommended construction projects is individual property flood risk reduction measures. These are measures residents could employ on their own properties or on selected groups of properties. These actions could also be particularly beneficial in circumstances where residual flooding risk exists due to interior rainfall events even after installation of recommended improvements. Possible mitigation actions include:

- Installation of localized permanent flood walls or berms for specific groups of at-risk structures.
- Filling in basements or converting basements to flood vented spaces used for building access and storage that allow flooding to enter and exit.
- Adding flood vents strategically for structures or properties with appurtenant facilities such as sheds, detached garages, and attached garages that are at lower elevations than the primary structure and are flood prone.
- Elevation of high-risk structures, including retrofitting downtown structures with elevated interior floors.
- Floodproofing, particularly for non-residential structures downtown.
- Development of a strategically targeted temporary flood barrier implementation plan associated with the development of the Flood Preparedness Plan. This would involve identification of temporary flood barriers capable of withstanding anticipated flood heights and velocities and identifying an action plan to deploy these measures in the event of a flood at key locations.

Costs and feasibility for these types of options can vary widely depending on the flood risk reduction performance needs. Many of these actions could carry a lower cost overall but benefits would be more localized and would vary by property. For any option involving dry floodproofing or a temporary barrier, manual installation procedures must be followed in order for the option to be effective at reducing flood risk. For more detail on these types of options and potential costs, refer to the recently completed ‘Schuyler Flood Risk Reduction Plan and Parcel Level Flood Risk Assessment’ developed as part of the Lower Platte North NRD Hazard Mitigation Plan Update process.

## 8. RECOMMENDED PROJECT SEQUENCING AND NEXT STEPS

The recommended project sequencing, or order of implementation, is shown below. This sequence was developed with the goals of the City and flood risk reduction benefits in mind. Overall, all actions listed here are recommended; sequencing presented here considers the most immediate benefit for the relative cost.

1. Project 1 – Flap Gates
  - a. This project will provide the most flood risk reduction for the cost and reduces major flooding backflow risk for flood events on the Platte River/Lost Creek. Installation of these features will provide significant flood risk reduction should a flood similar to the March 2019 flood event occur again.
    - i. Next step: Decide on flap gate implementation and funding process.
2. Project 2 – Portable South Stormwater Pump Station
  - a. This project is anticipated to provide flexible interior drainage flood risk reduction capability for a moderate cost and would operate to reduce flood risk in conjunction with installation of the flap gates.
    - i. Next step: Decide on project implementation and funding process.
3. Project 3 – Portable North Stormwater Pump Station
  - a. This project is anticipated to provide flexible interior drainage flood risk reduction capability for a moderate cost. This project could be completed separately from Project 2, or the portable pump for project 2 can be utilized at this location if necessary.
    - i. Next step: Decide on project implementation and funding process.
4. Project 4 – North Detention/Diversion
  - a. This project will help with ponding reduction for selected portions of the storm drain system as shown in Figure 9. Based on the current analysis, it appears the benefits are limited; if the City wishes to pursue this option further it is recommended the development of this alternative be assessed based on additional potential scenarios, such as storm drain sizing improvements. Additional detail regarding placement and sizing of this potential feature would also need to be completed, including an assessment of overall sizing and placement as well as utility and property considerations.
    - i. Next step: Refined preliminary design analysis.

## **9. FUNDING**

Given the costs to potentially implement large scale flood risk reduction projects such as those presented in these recommendations, the City should seek additional funding support beyond the general budget. Several potential funding options are summarized below, generally in order of complexity and effort needed to procure funding.

### **9.1 Local Bonding**

The City can issue General Obligation Bonds in a manner determined by the City Council in compliance with Nebraska law in order to fund flood risk reduction improvements. Schuyler is encouraged to contact their fiscal agent to determine current terms, conditions, and bonding capacity of the City.

### **9.2 Lower Platte North NRD**

Historically, the LPNRD has assisted communities within the NRD with flood risk reduction improvements as well as flood risk reduction planning. A typical cost share has ranged from 25-50% of project costs and may or may not include cost share assistance for engineering studies and design related to the projects. The NRD's ability to cost share on any specific project may vary based on other NRD project priorities and available funding year to year. Because of this, it is recommended that the City initiate discussions with the LPNRD regarding cost share opportunities and feasibility as soon as possible if the City wishes to pursue one or more potential construction projects.

### **9.3 CDBG**

The Small Cities Community Development Block Grant (CDBG) Program, administered through the Nebraska Department of Economic Development, helps smaller local governments fund community projects that might not otherwise be financially feasible. Under the CDBG Program, DED has several funding categories to address housing, downtown revitalization, water and wastewater, public works, planning, and economic development. One such category is Emergent Threat (EM). The purpose of the EM Category is to assist communities with situations that pose a serious and immediate threat to public health, safety, or welfare. Priority is given to those projects that are meeting the emergent threat criteria. All activities proposed in applications for CDBG funding in the EM Category must meet the national objective of benefitting low- and moderate- income persons (through the subcategories LMI Area Benefit and LMI Limited Clientele), aid in the prevention or elimination of slums or blight in either an area (SBA) or spot basis (SBS), and/or through urgent need (UN). The City's low- and moderate-income (LMI) percentage is 55.90% (American Community Survey 5-Year Estimate 2011-2015).

On December 4, 2019, Governor Ricketts issued a news release announcing that the U.S Department of Housing and Urban Development (HUD) awarded the State of Nebraska \$108.9 million to aid Nebraska in its long-term disaster recovery efforts. The rules, policies, and application guidelines governing this supplemental allocation of CDBG funds are expected to be released soon. The City should consider this funding source for drainage improvements, once available.

### **9.4 FEMA Hazard Mitigation Assistance**

FEMA Hazard Mitigation Assistance funding opportunities include Flood Mitigation Assistance (FMA), Building Resilient Infrastructure and Communities (BRIC), and Hazard Mitigation Grant Program (HMGP) opportunities. FMA and BRIC are annual grant funding opportunities that are generally nationally competitive, while HMGP funding is associated with post-disaster circumstances and therefore is variable, although funding is state specific. FMA is administered by NeDNR and BRIC and HMGP are administered by NEMA. While project eligibility and approval criteria are similar across each grant program, certain programs carry additional stipulations. For example, FMA will not fund levee improvements. Obtaining funding through these programs requires a detailed application process and must meet cost-benefit requirements.

For a summary of potential grants and eligibility by project, see Table 13 below.

Table 13: Funding Alternatives Summary

	Potential Additional Funding Sources			
Projects 1 – Flap Gates	LPNRD	FEMA HMA	CDBG - EM	Local Funding
Project 1A – Slide Gate	LPNRD	FEMA HMA	CDBG – EM	Local Funding
Project 2 – Portable South Stormwater Pump Station	LPNRD	FEMA HMA	CDBG - EM	Local Funding
Project 3 – Portable North Stormwater Pump Station	LPNRD	FEMA HMA	CDBG - EM	Local Funding
Project 4 – North Detention/Diversion	LPNRD			Local Funding

## 10. CONCLUSION

To reduce the City’s risk of flooding, four priority projects are recommended as described in Section 5. Project sheets in this assessment contain details for each recommendation and costs associated with each recommendation. The most beneficial, and lowest cost, recommendation is Project 1 – flap gate installation. Project 2 is also highly recommended; by obtaining a portable pump station the City can facilitate risk reduction for stormwater collection areas identified under both Projects 2 and 3.