

Projects Committee Meeting
 Thursday, April 1, 2021 7:30 AM
 Lower Platte North NRD Office
 P.O. Box 126
 Wahoo, NE 68066

1. UNFINISHED BUSINESS

No unfinished business to address.

2. SWCP

Attached is the 2021 SWCP policy with prior approved Lands For Conservation revision.

DNR reallocated returned SWCP funds to each NRD in the amount of \$1,887.51.

A. SWCP Application Approvals

B. SWCP Payments

C. 20-S-9	D. PAID	E. Norm Lindgren	F. \$ 76	G. TOT
			2,045.	

H. SWCP Cancellations

None

I. Wahoo Creek Cost Share Approvals

None

J. 2021 Tree Planting Cost-Share

Attached is the 2021 Tree Cost Share applicant list. There are six separate applicants for a total of 3,354 trees with NRD's 75% cost share totaling \$5,031.

3. WATERSHEDS

A. Shell Creek

1. Shell Creek Environmental Enhancement Plan Implementation

No new updates. Last month, JEO was approved to update the Shell Creek Watershed Water Quality Plan and they have started this effort.

a. Shell Creek Grant Funding Update

No new information to report since last month.

2. Shell Creek Environmental Enhancement Plan Payment

Septic System upgrade -

3. JAMES

BROCK

(PAID)

4.

5. \$ 4,800.
00

B. Wahoo Creek Watershed

1. Wahoo Creek Dam Site Planning Update & FYRA Invoices

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. An additional ancient earth lodge was verified in an area that appears would be covered with prement water from the proposed dam. NRCS will complete a formal report on their discoveries, including impacts and potential options to continue with keeping the dam site in the watershed plan. Our plan to have NRCS present this information at the next Projects Committee Meeting and at the May 10th Board Meeting.

Attached is FYRA's \$6,863.75 invoice for work completed on the Wahoo Creek Watershed Plan. After this payment, \$17,886.25 will remain on our \$95,469 contract addendum. Janel Kaufman, FYRA, reports that during the invoice period, they finished up the economics modeling, worked on bridge/road benefits, and consulted with NRCS. They are finalizing the economics and Plan and are waiting on any additional costs on Site 83.

Mike Sotak, FYRA, has outlined two paths moving forward:

1. "Site 83 stays in the Plan and we include some additional costs for what it takes to document what is on site and prepare it for whatever mitigation is required because of Site 83."
2. "We remove Site 83 from the plan and finish up."
2. "Removing Site 83 from the plan will actually take a lot more work than leaving it in. If you really need to have a schedule estimate now for both cases, Janel and I can come up with that...Otherwise, because the economics look good as currently prepared and reviewed by the State, let's see what they find in the field this week and plan on clearing up the path for the Plan right after we hear back. IF they know that there will not be a need to remove Site 83 and we'll just be adding some \$, it will be clearer on how to proceed and I can almost assure you that whomever needs to write up that part of the Plan will take longer than we will to finish it up. So our schedule to finish will not likely be the critical path."
3. Wahoo Creek Watershed Water Quality Plan Phase II
We have been in contact with Mark Mainelli, Saunders County Engineer and acting Road Superintendent about completing the Czechland Lake Shoreline/Road Stabilization Project this summer. Saunders County is securing a 404 permit (attached) and will also contribute all engineering services. The total Project estimate is \$299,103 (attached). The plan is that LPNNRD will provide the rip-rap and fabric (\$231,955) and the County will provide the engineering service and construction work. We plan to use available EPA 319 and NET grant funding to assist with at least 60% of LPNNRD expense.

As approved by the Board last month, JEO is working to update the Wahoo Creek Watershed Water Quality Plan.

4. Olsson Design Update and Invoice
No new update. As mentioned previously, Olsson is on hold completing any additional dam design work until the Wahoo Creek Watershed Plan is approved. On March 23, Gottschalk and Mountford met with Andrew Phillips and Joshua Shackelford, Olsson PE. Shackelford works out of the Olsson Denver Office and will be assisting with quality control on the Wahoo Creek Dam designs.

5.	Lands For Conservation PARTICIPANT			ACRES
6.	DAN PABIAN (Sec. 19-15-6)	7.	10	8. \$ 2,050.00
9.	JON SWANSON (Sec. 22-15-6)	10.	33	11. \$ 6,765.00
12.	ROBERT POKORNY (Sec. 4-14-6)	13.	64	14. \$ 13,120.00
15.	CARL & DOROTHY PETERSON TRUST (SEC. 35-15-6)	16.	50	17. \$ 10,250.00
18.	Total	19.	157	20. \$32,185.00

4. Nebraska Buffer Strip Program Contract Approvals
The following NeBSP applications have been reviewed by NRCS, NeDA, and NRD staff and are ready for approval:

5.	Charles Barjenbruch	6.	9.5	7.	100	8.	\$229.24
9.	Dan Gehring	10.	8.9	11.	21020	12.	\$2,148.46
13.	Reece/Beau Klug	14.	11.7	15.	21024	16.	\$2,632.50
17.	David Luckey	18.	12.7	19.	21022	20.	\$2,818.89
21.	Diann Svatora	22.	5.5	23.	21023	24.	\$1,327.70
25.	Sam Welch	26.	4.9	27.	21025	28.	\$1,050.32
29.	James Barjenbruch	30.	8.2	31.	362	32.	\$215.58

33.

Total acres = 61.42

Total NeBSP payments = \$13,672.85

34. JOINT WATER MANAGEMENT ADVISORY BOARD

No new updates from last month. It is anticipated that this spring and summer we will be working closely with JWMAG partners on our several joint projects. Director Thompson said that he listened in at the last Fremont City Council Meeting and commented that the general public in Fremont is becoming very aware of the many projects and overall efforts JWMAG partners are involved with to reduce flood impacts to community.

35. HAZARD MITIGATION PLAN UPDATE

No new updates.

36. EROSION AND SEDIMENT RULES AND REGULATIONS

No new issues to address.

37. OTHER

- A. Woodcliff (SID No.8) FEMA 406 Bank Stabilization Project JEO Update/Request
Jake Miriovsky, JEO, attended and Lonnie Mart, SID No. 8. participated (Zoom) on the progress report on the Woodcliff (SID No. 8) FEMA 406 Bank Stabilization Project. The 404 permit has been received from USACE and they are in the process of obtaining a permit from County Zoning. SID No. 8 is advertising for bids and is planning to award a construction bid in May. While LPNNRD has not yet made a formal commitment on this portion of the project, it was indicated previously that assistance would be considered as long as LPNNRD is kept informed on the process and a formal assistance request is presented prior to project construction. The project estimate (@ \$692,000) has been approved for 87.5% from FEMA (75%) and NEMA (12.5%). SID No. is requesting 50% LPNNRD assistance on the 12.5% total estimated local share of \$80,000. .
Attached are the project plans and information provided at the December 3, 2020, Projects Committee meeting.

As additional information, Jake Miriovsky reported on another repair project of the Levee/Road that was not part of the original project stabilization project. It has been discovered that significant erosion on 400 feet of the embankment has occurred. This is considered an emergency repair roughly estimated at \$275,000 - \$300,000 at this time. SID No. 8 will present a formal assistance request for this project repair after more details are finalized.

- B. Schuyler Flood Risk Reduction/Drainage Improvement Project Assistance Request
As attached, the City of Schuyler is submitting a formal assistance request on their flood risk reduction drainage improvement project. This project was previously discussed with the Projects Committee last month. The total 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 is requesting LPNNRD 50% assistance on the \$312,000 estimated project costs (\$156,000), as attached. Kevin Kruse, JEO, and City of Schuyler Administrator William Re Roos, were joined by Zoom to discuss their request. The committee will consider this request after having more time to review the project components. Also attached is Schuyler's Internal Drainage Study Report.

38. ADJOURNMENT

The Projects Committee adjourned at 9:12 a.m.

**Lower Platte North
Natural Resources District**

**Soil & Water Conservation Program
(SWCP)**

LPNNRD Board Approval 4/12/21

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**LOWER PLATTE NORTH NATURAL RESOURCES DISTRICT POLICY
2021 SOIL & WATER CONSERVATION PROGRAM (SWCP)**

I. PURPOSE

The purpose of this program is to provide guidance for administering federal (EPA 319 grants), state (NSWCP, Environmental Trust grants) and local cost-share assistance as an incentive to landowners for the construction and application of soil and water conservation practices.

II. ELIGIBILITY, DISTRIBUTION OF FUNDS

- A. Any landowner within the Lower Platte North NRD (LPNNRD), individual, partnership, corporation or other legal entity is eligible to apply for SWCP funds.
- B. Cost-share program funds will be approved and distributed based on the number of high priority applications received each fiscal year (July 1 - June 30).
- C. Funds may be reserved and targeted toward high priority watersheds and projects as determined and approved by the LPNNRD Projects Committee and Board.
- D. Unobligated or unused SWCP funds in priority watersheds may be redistributed to other areas if not used in a timely manner.
- E. The LPNNRD may supplement the Nebraska Soil and Water Conservation Program (NSWCP) state funds with available federal, other state & local funds. The amount of local funds budgeted and available will be decided each year.
- F. Landowners will be expected to apply for available federal EQIP cost-share funding when applicable and available for eligible high priority practices A, C through M, before state and local cost share funding is approved. It is also generally expected to approve available state funding before local funds are considered.
- G. Lands for Conservation (LFC) program is exempt from the payment cap stipulations of the SWCP policy.

III. APPLICATION REQUIREMENTS

- A. Eligible SWCP applicants are to apply at their local NRCS Service Office (also the LPNNRD office if for tree planting or windbreak renovations). Applications with appropriate NRCS comments/recommendations are to be forwarded to the NRD for consideration.
- B. Applications will contain sufficient information to include:
 - 1. Date construction (summer or fall) is expected to be completed.
 - 2. Type of Project to be installed.
 - 3. Whether the proposed project is located in a priority watershed area or if other special conditions exist.
 - 4. An aerial photograph showing the project location.
 - 5. Total estimated cost-share needed for the project.
 - 6. When applying for a small dam or grade stabilization structure, the estimated percent of land treatment draining to the proposed site (Attachment C).

IV. ELIGIBLE HIGH PRIORITY PRACTICES

- A. **Establishment of warm and cool season grass on crop land**
- B. **Small conservation project (terraces, basins, diversion, grass waterways and/or underground outlets) applications.** This priority practice includes newly established

grass waterways and/or replacement grass waterways.

- i. Small projects are only eligible on fields where a complete no-till cropping management system is currently being applied.
- ii. Existing grassed waterway applications must be over 10-years old and part of an approved terrace system or on 100% no-tilled fields)
- iii. Small Projects may involve the construction of a new terrace and/or sediment & water control basins systems or it may include the extension of an existing terrace system with the inclusion of sediment & water control basins (this priority does “NOT” include the replacement of functionally obsolete terrace systems, waterways and sediment & water control basins in excess of 10-years old).
- iv. Small projects do not include practice of installing tile outlets into existing functional terrace outlet systems (refer to priority G).
- v. Small projects will not exceed \$5000.00 in cost incentive request.
*For small projects, landowners will not be expected to apply for available federal EQIP cost-share funding for eligible high priority practice B. It will generally be expected to approve available state funding before local funds are considered.

- C. ***Construction of new terrace systems** (includes replacement of functionally obsolete terrace systems in excess of 20-years old).
- D. **Construction of sediment & water control basins when part of a new terrace system where cost share incentives exceeds \$5,000** (Attachment A).
- E. **Construction of Diversions when part of a new terrace system or dam** (Attachments A & C).
- F. **Planned Grazing Management Systems** (Attachment B)
- G. *** Installation of Tiled Outlets into Existing Terraces** (includes the storage portion of the terrace).
- H. **Water Impoundment and Grade Stabilization Structures** (Attachment C)
- I. **Tree/Shrub Planting** (Only when NRD stock is provided and planted by the District) For riparian buffer strips, field, acreage and farmstead windbreaks and for wildlife habitat 200- tree/shrub minimum is required for riparian buffer strips, and for field and farmstead windbreaks. A 300-tree/shrub minimum is required for wildlife habitat.
- J. **Windbreak Renovation** (Attachment D)
- K. **Supplementing EQIP Contracts in Priority Areas**
When federal EQIP funds are approved in LPNRRD priority areas, the District may approve additional local and/or state cost share not to exceed the established maximum cost share percentage approved for a practice or the specific area.
- L. **Emergency Repair of Conservation Practices** (Attachment E)
- M. **Lands for Conservation (LFC) Program :** (Attachment F) Any approved EQIP contract that agrees to the terms of the LFC program; summer construction Jun 1 – September 30 of the calendar year.

***NOTE:** Cost share only applies toward the tile outlet portion of approved terrace systems to establish a stable outlet. A stable outlet is considered to be on land that has a 2% grade or less. A landowner may choose to install a portion of the outlet without cost share assistance provided that it meets NRCS design standards and specifications.

V. INELIGIBLE PRACTICES

- A. Any application that would allow the installation of terraces on land that has established

- grass will not be approved.
- B. The LPNNRD will not approve any conservation practice that will encourage the conversion of grassland, including CRP land, to crop land. This includes CRP land in the last year of the contract.
 - C. Rebuilding grassed waterways or tile outlets if under 10-years old. Note: Cost share for replacing grass waterways will be considered on a case-by-case basis when over ten (10) years old and part of an approved terrace system or on 100% no-till fields (see IV. M.).
 - D. Work that is considered normal maintenance of existing conservation practices.
 - E. Rebuilding terraces on existing terrace lines.
 - F. Terraces systems on Class VI land or greater.
 - G. Sediment removal from small dams or other impoundments and/or from adjacent lands of said structures.
 - H. Work started or constructed prior to approval.
 - I. Livestock Waste Pits.
 - J. The District will not provide cost share for practices on farmland that does not have a certified Nitrogen operator or on irrigated land where the irrigated acres are not certified by LPNNRD.
 - K. Any practice on fields that are determined sod-busted by the NRCS.
 - L. Repair of damage to conservation practices that is determined to be landowner negligence in performing normal maintenance as outlined in NRCS specifications.

VI. APPLICATION SUBMITTAL, APPROVAL & PROJECT COMPLETION PERIODS

A. Summer Construction Applications (For June through September 15):

To insure LPNNRD consideration, **applications for summer construction must be submitted by February 1.** Most generally, the Projects Committee will review, rank and recommend summer application approvals at the **February/March Projects Committee Meeting.** However, consideration and approval of summer applications received after **February 1** may occur depending on available funds. All **summer construction projects are to be completed by September 15 and final paperwork submitted to the LPNNRD office by October 15.** The Projects Committee will review all uncompleted or unpaid applications at the end of each period to determine if application extensions and/or cancellations are warranted. **The field must be available for construction by August 1. The area must be planted to a cover crop or a crop preceding or after construction. The crop or cover may be harvested or pastured during the contract period.** Work not **completed by September 15,** may be canceled or receive reduced cost share as determined by the **Projects Committee/Board.**

NOTE: Cooperators who are approved for incentive payments within special designated watersheds, must follow these same summer construction requirements (refer to the “Lands for Conservation Program” – Attachment F).

B. Fall Construction Applications (September through December project completion):

To insure LPNNRD consideration, applications for fall construction must be received **by July 1.** Most generally, the Projects Committee will review, rank and recommend fall construction application approvals at the **July/August Projects Meeting.** However, additional approvals for fall work may occur after July/August as funds are available.

Approved fall applications will be given until December 31 to complete the work. The Committee will review all unpaid applications at the end of each year to determine application extensions and cancellations.

C. Grass, Tree Planting, Windbreak Renovation Applications:

Application periods for grass establishment will be approved based on NRCS seed and seeding specifications. Applications for trees are generally considered for approval just before the spring planting season. For approved Windbreak Renovation applications, tree removal will normally be completed in the summer or fall so the site will be ready before spring tree planting.

D. Small Dam Application (Attachment C):

To ensure consideration for approval, the **District will need NRCS/NRD technician recommended applications by December 15.** The Projects Committee will review and prioritize and submit a recommendation for approval at the January Board Meeting.

E. LPNNRD Signatures on Approved Applications & Related Documents:

The Manager, Assistant Manager and Projects Coordinator are authorized to sign Board approved SWCP applications, Completion and Document Certifications and other related documents on behalf of the LPNNRD.

VII. 2021 PRIORITY AREAS & ELIGIBLE COST-SHARE PERCENTAGES

Priority areas for 2021 listed below are given first consideration for District cost share assistance. Each year, high priority practice applications located in priority areas are reviewed and approved by the Projects Committee and Board for the upcoming program year. The cost-share assistance payment may not exceed a total of the eligible percent for an area when combining all sources of federal, state and local assistance. If there is not enough funding for all applications for all listed priority areas, the Projects Committee may rank areas for approval or approve a lower maximum cost share percent.

LPNNRD Cost-Share Amounts	Average (%) and Actual
FALL Work (District Wide) max \$ limit: \$12,500.00	75
FALL Work (Targeted Areas) max \$ limit: \$12,500.00	75
SUMMER Work (District Wide) max \$ limit: \$10,000.00	75
SUMMER Work (Targeted Areas) max \$ limit: \$12,500.00	75

Targeted Areas	Notes
A. LPNNRD Lands North of the Platte River	Platte, Boone, Madison, Colfax & Dodge Counties. Shell Creek is also in ET & EPA 319 grant area - actual percent depends on priority area and practice as defined in approved grant application).
B. Lake Wanhoo (Sand/Duck Creek) Watershed	
C. Czechland Lake Recreation Area Watershed	
D. Homestead Lake Recreation Area Watershed	
E. Wahoo Creek Sub-Basins	Dunlap Creek; North Fork Wahoo Creek; Miller Branch Creek. These Wahoo Creek Sub-Basins are designated EQIP NWQI, EPA 319 and Environmental Trust Priority Areas.
F. Skull Creek Watershed	It is anticipated to alternate this watershed with the Bone Creek Watershed every two years
G. Watersheds Above All Existing and Planned LPNNRD Flood Control Structures	Non-public structures that are or will be LPNNRD Flood Control Structures operated and maintained by the District
H. Watersheds Above Proposed or Completed Landowner SWCP Cost Share Dams	That will or have received LPNNRD assistance
I. Voluntary Compliance of Verified Erosion & Sediment Complaints	District-wide
J. All High Priority Practice Summer Applications	District-wide (June 1 through September 15 completion)
K. Tree/Shrub Planting	District-wide
L. Voluntary Compliance of Verified Erosion & Sediment Complaints	District-wide
M. All High Priority Practice Summer Applications	District-wide (June 1 through September 15 completion)
N. Tree/Shrub Planting	District-wide

VIII. COST SHARE PERCENTAGE - PRACTICE EXCEPTIONS

The maximum cost share percentage for most high priority conservation practices will be 75%; depending on the where the practice is located (**Refer to VII. above**). The exception to this is for the following high priority practices:

- A. **Water Impoundment Dams and Grade Stabilization Structures: 65% - 75%**
(Attachment C)
- B. **Windbreak Renovation Practice: 50%** (Attachment D)
- C. **Emergency Repair of Conservation Practices: 50%** (Attachment E)

IX. MAXIMUM COST SHARE LIMITS

A. **General Maximum Limit:**

A cooperator may receive up to \$12,500 SWCP funds within any program year (July 1 - June 30) for most high priority practices unless otherwise specified below.

B. **Priority Areas with Federal or State Grant Funding:**

Within priority areas (**Wahoo Creek and Shell Creek e.g.**) that are receiving reimbursable federal or state grant funding, the maximum limits may be exceeded to expedite use of those special funds within the specified grant period time line.

C. **Planned Grazing Systems – Livestock Well Pumping Plants:**

The maximum limit for planned grazing systems is \$12,500, however a maximum cost share limit of \$5,000 will also apply toward the livestock well and well pumping plant components (combined) when part of the approved system (Attachment B).

D. **Water Impoundment & Grade Stabilization Structures:**

The maximum limit for water impoundment dams and grade stabilization structures is \$15,000 upon NRCS recommendation and Projects Committee/Board approval on a case-by-case basis (Attachment C).

E. **Windbreak Renovation:**

The maximum limit for windbreak renovation is \$1,000 per landowner per year (Attachment D).

F. **Emergency Repair of Conservation Practices:**

The maximum limit for emergency repair of conservation practices is \$1,000 per landowner per year (Attachment E).

G. **2020 Summer Conservation Practices in Non-Priority Areas:**

For 2020, the maximum limit for approved conservation practices in non-priority areas will be \$10,000 per landowner per year.

X. AMENDMENTS FOR ADDITIONAL COST SHARE

When applications are approved under the maximum limit, additional funds, up to the limit, may be approved if notified by the landowner or technician before construction. LPNNRD staff is authorized to approve an additional \$1,000 above the original approval (up to the maximum limit) if the request is received from the landowner and/or technician prior to construction. Staff will notify the Projects Committee of any staff authorized changes.

XI. APPLICATION EXTENSIONS

Extensions may be granted for inclement weather or for other conditions beyond the landowner's control. All extension requests will be considered by the Projects Committee and Board on a case-by-case basis. No more than one 6-month extension can be approved for the same application.

XII. CONSERVATION PRACTICE DESIGN, STAKING & PERMITS

- A. All conservation measures must be designed and staked by Natural Resources Conservation Service personnel (NRCS), NRD technicians or other NRCS approved technical service providers. All completed conservation work must be according to the NRCS design standards and specifications as outlined in the NRCS Procedures Handbook for LPNNRD.
- B. The landowner is responsible for contacting the NRCS office to secure funds and schedule the layout (design and staking) of the approved work
- C. The landowner is responsible for obtaining all required local, state and federal permits.

XIII. SUBMITTING BILLS & PAPERWORK ON COMPLETED WORK

- A. The landowner is responsible for submitting all bills to the NRCS office. The NRCS will calculate the eligible cost share payment (on NSWCP form # 3) and submit completed and properly signed paperwork to the LPNNRD.
- B. Drawings of the completed practices at to be provided by the NRCS/NRD technician on an aerial photo and submitted with the payment request.

XIV. COST SHARE PAYMENTS

- A. LPNNRD has approved use of NeDNR's 2021 conservation practice payment rates for calculating SWCP contract cost-share payments. Payments will be based on NeDNR's conservation practice payment rates that were in force at the time the application was approved. The cost-share percent may be lowered if summer work is extended into fall.
- B. The LPNNRD calculates and pays cost-share on terraces only by the linear foot, not by the cubic yard.
- C. The cost-share percentages are calculated by multiplying the eligible cost share percentage by the approved cost share practice payment schedule rate or actual cost whichever is less. The cost-share assistance payment may not exceed a total of the eligible percent for an area when combining all sources of federal, state and local assistance.
- D. **Splitting Cost-Share Percentages:** When a field splits two cost-share priority areas, the corresponding eligible cost share percentage will be applied to each portion of the field being treated. When a field splits into a non-priority area, that area will be allowed up to 50% cost share assistance, if the non-priority area is 50% or less of the entire field being treated.
- E. When grant funds are available special conditions aligned with terms of grants will be implemented; in some cases a higher payment percentage rate, or payment cap may be allowed.

XV. PAYMENT OVERRUNS AND LANDOWNER REQUESTED REFUNDS

A. Payment Overruns:

Overruns of up to 10 % above the approved project amount may be approved by staff. Overruns above 10% will need Board approval. Payments are not to exceed the maximum cost share limits set for the various practices. Exception to this is when payments are combined with grant funds in priority areas.

B. Landowner Refunds:

If an SWCP practice is purposely damaged, removed or destroyed within ten years after completion (25 years for a small dam), the cooperator who received cost share, will be requested to reimburse the District, all or a portion of the SWCP cost share funds, as determined by the Projects Completion (25 years for a small dam), the cooperator who received cost share will be required to reimburse the District all or a prorated portion of the funding assistance, as determined by the Projects Committee and Board.

SWCP ATTACHMENT A
SEDIMENT & WATER CONTROL BASINS AND DIVERSIONS

This attachment is to help clarify the use of sediment & water control basins and diversions as an eligible cost-share practice. Basins and diversions are to be used as a part of an approved conservation system according to the NRCS technical guides and field manual.

- A. Sediment & water control basins and diversions may be approved as a high priority practice when in conjunction with terraces or dams.
- B. Basins and diversions will be considered a high priority practice when a part of a terrace system or in conjunction with a 100% no-till system. A 100% no-till system must have the goal of controlling soil erosion to soil replacement levels (“T”). A 100% no-till system is accepted land treatment when ephemeral and gully erosion is controlled, or “T” is met. Basins and/or diversions built separately on a terraced field are not considered a part of the terrace system.
- C. Basins and diversions not part of a terrace system may be considered as a high priority practice on fields where the NRCS or NRD technician determines terraces are not feasible and/or they offer the most practical solution to a problem. This will be determined by the Projects Committee on a case-by-case basis.

LOWER PLATTE NORTH NRDSWCP ATTACHMENT B PLANNED GRAZING SYSTEM PRACTICE

I. GENERAL REQUIREMENTS

- A. An applicant must have at least 40 acres of connecting grassland to be developed into at least two grazing cells with planned rest periods in accordance with Natural Resources Conservation Service (NRCS) recommendations.
- B. Applicants must complete a minimum 10-year planned grazing system developed by the NRCS prior to submitting an application.
- C. Applicants are required to sign a 10-year cost-share agreement with the LPNNRD. (Form NSWCP-10)
- D. All approved cost-share items must meet NRCS Standards and Specifications.
- E. Funds for approved practices may be used on CRP lands if such lands are in the last year of the CRP contract.
- F. The amount and type of eligible practices approved for each application will be determined by the overall grazing system plan and the most cost effective alternative available.
- G. Cost-share on eligible practices will be based on the approved cost-share percentage times the approved practice payment schedule cost share rate or 75 percent of the actual cost, whichever is less.

II. ELIGIBLE PRACTICES

- A. **Cross Fencing**: Only fencing designed to facilitate cell division is eligible for cost-share (Standard 382 specifications). Boundary fences are not eligible for cost-share.
- B. **Livestock Water Dugouts**: Dugouts will be sized by daily animal needs and Nebraska Engineering Handbook Standards.
- C. **Livestock Well Installation**: Livestock wells will be sized to provide a maximum of 15 gallons of water per animal-unit per day within each cell. No cost-share will be available for domestic or irrigation wells. Well test holes are not eligible for cost-share.
- D. **Pumping Plants for Livestock Wells** (As outlined by State NSWCP Guidelines): While a cooperator may receive up to \$12,500 SWCP funds toward completing a Planned Grazing System, a maximum cost share limit of \$5,000 will apply toward the livestock well and well pumping plant component (combined) if part of the approved system.
- E. **Livestock Water Tanks**: Tanks sized according to standard storage requirements in the NRCS Technical Guide, Standard 614, are eligible.
- F. **Livestock Water Pipeline Installation**

**LOWER PLATTE NORTH NRD
SWCP ATTACHMENT C
GUIDELINES FOR WATER IMPOUNDMENT (SMALL DAMS) &
GRADE STABILIZATION STRUCTURES**

I. PURPOSE

The purpose of this program is to assist landowners with the construction of water impoundment and grade stabilization structures on their property.

II. ELIGIBLE PROJECT ITEMS

A. Eligible Project Costs Include:

1. Construction (Not to include site preparation)
2. Seeding (Structure and emergency spillway)
3. Fencing when required by the NRCS

III. LAND TREATMENT REQUIREMENT

To be eligible for cost-share assistance, a minimum of 75% land treatment is required within the watershed above each proposed structure site. To calculate this percentage, non-highly erodible land is considered treated.

Land Treatment Definition:

Land treatment is defined as any practice or combination of practices (i.e. terraces, no-till etc.), that control soil erosion rates on highly erodible soils to soil replacement levels or less (Soil replacement level or "T" = 5 tons/acre in the LPNNRD). Any approved NRCS farm plan that treats land to "T" qualifies under this definition (8/2/00 Projects Committee).

IV. COST-SHARE PERCENTAGE AND MAXIMUM ASSISTANCE

The cost-share percent for approved applications outside selected priority areas is up to a maximum of 65%. For small dams approved within selected LPNNRD priority areas, the cost-share rate is up to a maximum of 75%. Eligible assistance will be based on the eligible cost-share percent times the county average costs or 75% of actual costs whichever is less. The maximum cost-share limit will be \$15,000 upon NRCS recommendation and Projects Committee approval on a case-by-case basis (see Special conditions below).

Special conditions: The Board may approve a higher cost-share percentage and increase the maximum assistance if an application site is above an LPNNRD recreation area, within a targeted watershed or when other special conditions exist. The Board may also approve a lower cost-share percent and decrease the maximum assistance for structure sites of lower priority. **Special** conditions will be evaluated by the Board on a case-by-case basis.

V. PRIORITY AREAS

Priority-areas for small dams and grade stabilization structures include the following watersheds:

- A. Sand & Duck Creek
- B. Wahoo Creek*

- C. Skull Creek
- D. Shell Creek* (Additional grant funding available)
- E. Bone Creek
- F. Watersheds above Pubic Recreation Structures (e.g. Czechland Lake, Homestead Lake, Lake Wanahoo)
- G. Above all existing LPNNRD Operated and Maintained Watershed Structures.

VI. APPLICATION ELIGIBILITY AND SIGN-UP

- A. Any landowner within the Lower Platte North NRD who is an individual, a partnership, a corporation or other legal entity.
- B. Applications may be submitted any time during the year; however, only NRCS inspected and recommended applications received by December 15, will ensure consideration for the following construction year. Unapproved applications will expire on May 1 of each year, requiring a new landowner application for future consideration. The Projects Committee will review, prioritize and submit a recommendation for approval at the January Board Meeting.
- C. The applicant shall apply at the county NRCS office on forms provided by the LPNNRD. An aerial photo showing the proposed project location must accompany the application. The application must be signed by the applicant and sent to the LPNNRD before December 15 of each year to insure consideration for the immediate year's construction.
- D. At the time of application, the NRCS will be requested to provide an estimate of drainage acres, percentage of land treatment present, quantities and costs for the project.

VII. APPLICATION EVALUATION AND TENTATIVE APPROVAL

- A. Application sites will be inspected by LPNNRD and NRCS representatives to evaluate feasibility, benefits and cost. Benefits to be evaluated will include but not be limited to: flood control, grade control, erosion and sediment control, wildlife habitat enhancement, livestock water, and protection to public roads and property.
- B. The Projects Committee will most generally review, prioritize, and make recommendations on applications at their January meeting.
- C. The NRD Board of Directors will generally approve, reject, or table each request at the January Board Meeting.
- D. After receiving LPNNRD approval, the applicant will be required to submit a \$500 deposit to the NRD before a survey or design is started. The deposit will be returned to the applicant after project completion. If the deposit is not received by February 1, the application will be canceled. If the applicant withdraws from the project after the design has been complete, the deposit will be retained by the LPNNRD unless conditions in XII. B. apply.
- E. In February of each year, the Natural Resources Conservation Service will be requested to proceed with survey and design of approved projects.
- F. After receiving LPNNRD approval, the applicant will be given two years to obtain necessary permits, complete the structure and submit all required paperwork. If the project is delayed due to adverse weather conditions, or other conditions beyond the

applicant's control, an extension may be granted by the LPNNRD Board of Directors. Extensions will be considered by the LPNNRD Board on a case-by-case basis.

VIII. LAND RIGHTS, AGREEMENTS AND PERMITS

- A. The applicant is responsible for obtaining any required easements and any required federal, state and local (i.e. NDNR, Army COE, and County Zoning) permits.
- B. The applicant is responsible for the relocation or modification of water lines, power lines and telephone lines and pay the costs involved.
- C. The applicant will be required to enter into a 25-year cost-share agreement with the LPNNRD. This agreement states that the applicant will refund cost-share funds if the project is removed, altered, or modified without the consent of the LPNNRD.

IX. STRUCTURE DESIGN AND CONSTRUCTION

- A. The NRCS will be requested to survey, design, and supervise all structures approved by the LPNNRD Board.
- B. Construction will not commence until formal notice to proceed is given by the LPNNRD. This notice will be given after NRD Board approval, and after receiving the applicant's deposit and signed cost-share agreement.

X. FINAL APPROVAL AND PAYMENT

- A. Final Approval and Payment will occur when:
 - 1. The project is completed and certified by the NRCS/NRD technician to meet all NRCS standards and specifications.
 - 2. The completed application form NSWCP-3 is signed and returned to the LPNNRD with a copy of all project bills.

XI. OPERATION AND MAINTENANCE

The landowner is responsible for all operation and maintenance after project construction.

XII. SMALL DAM DEPOSIT REQUIREMENT & REIMBURSEMENT

- A. The applicant will be required to submit a \$500 deposit to the NRD before a survey or design is started. The deposit will be returned to the applicant after NRCS approves the completed project and all paperwork is submitted and approved by the District. If the deposit is not received by February 1, the application will be canceled. If the applicant withdraws from the project after the design has been complete, the deposit will be retained by the LPNNRD unless conditions in B. apply.
- B. If a landowner does not proceed with the small dam project because the final cost estimate is 40% or more over the original project estimate, the LPNNRD will return the \$500 deposit based on financial hardship. All other conditions will be reviewed by the Projects Committee on a case-by-case basis.

**LOWER PLATTE NORTH NRD
SWCP ATTACHMENT D
WINDBREAK RENOVATION PRACTICE**

I. PURPOSE

To provide for the restoration of farmstead, acreage or field windbreaks that have been rendered substantially ineffective due to the death of trees or other windbreak plantings as a result of weather, disease, or other natural causes.

II. PLAN REQUIREMENT

A windbreak renovation plan is to be based on a plan reviewed and approved by a forester of the Nebraska Forest Service. The forester is to certify that the windbreak has lost its effectiveness, should be renovated and that they approve the plan of renovation.

III. SITE PREPARATION

Tree removal off the site is required to be accomplished in late fall/early winter at least before the planting occurs the following spring. The only area that is replanted with a new windbreak receives cost share for removal costs. Tree removal work should not be initiated until the application is approved by the Lower Platte North NRD and the landowner agrees to replant the windbreak in the same area.

IV. COST SHARE RATE AND MAXIMUM ASSISTANCE

The windbreak renovation cost-share payment will not be based on a cost greater than the county average unit cost adopted by the USDA-FSA. The renovation practice is not to include the replanting of the windbreak because of different cost-share percentage rates. The windbreak planting cost-share will be separate. The Lower Platte North NRD will cost share at a 50% rate, up to \$1,000.

Tree planting cost-share is eligible for riparian buffers, farmsteads, acreages, field and livestock protection windbreaks. Windbreaks must contain 200 or more trees and shrubs which are purchased through and planted by the NRD. When the planting is strictly for wildlife habitat, a minimum of 300 trees/shrubs purchased and planted by the NRD is required.

**LOWER PLATTE NORTH NRD
SWCP ATTACHMENT E
FOR EMERGENCY REPAIR OF CONSERVATION PRACTICES**

I. PURPOSE

On occasion, the LPNNRD Board of Directors may approve local SWCP funds for the Repair of conservation practices damaged from intense rainstorms. The decision for approving emergency repair funds will be considered annually, with the location and total amount of available funds dependent on the severity of storm damage to conservation practices in designated areas in the District. When approved by the Board, Emergency repair funds will be allocated in the following manner:

- A. The LPNNRD Board will consider approval of the amount and eligible area for emergency repair funds, with a recommendation from the Projects Committee. Typically, this will occur on or prior to the LPNNRD September Board Meeting.
- B. Only eligible Conservation Practices, two years old and newer that were originally built to NRCS design specifications, will be eligible for cost-share assistance.
- C. The committee will consider approval of emergency repair assistance only when it is determined by an NRCS technician that the damage was not due to landowner negligence in performing normal maintenance as outlined in NRCS O&M specifications.
- D. To be eligible for emergency repair funds, the landowner must be following an approved NRCS farm plan.
- E. Prior to LPNNRD approval, applications will receive recommendations from LPNNRD and NRCS staff. The LPNNRD Projects Committee will prioritize application practices and areas.
- F. Eligible assistance will be 50% of the approved amount up to a maximum of \$1,000 per landowner per program period.

**LOWER PLATTE NORTH NRD
SWCP ATTACHMENT F
2021 LANDS FOR CONSERVATION PROGRAM**

)

Purpose: The Lands for Conservation program provides landowners with an incentive to get conservation structures constructed on the land during the growing season.

1. The Lands for Conservation program will be on contractual basis between the landowner (cooperator) and the Lower Platte North Natural Resources District for one year while conservation practices are being established. Applications deadline for each calendar year will be February 1.
2. Sediment and Water Control Basins with tile outlets and/or terraces with grassed waterways and terraces with tile outlets qualify for this program. Sediment and Water Control Basins/Terraces and/or waterways must be seeded during the contract period.
3. NRCS and/or NRD personnel will design terraces with waterways or tile drains or Sediment and Water Control Basins with tile outlets. These practices must protect the entire field on which they are established. However, the area under contract will be the smallest practical area to encompass the practices, as agreed upon with the cooperator.
4. Land enrolled in another program (ex: CRP) may not be eligible for Lands for Conservation contracts.
5. Sediment and Water Control Basins with tile outlets and terraces with waterways or tile outlets may be cost-shared through the EQIP program administered by Natural Resources Conservation Service (NRCS). If federal funds are not available, cost-sharing assistance may be available through LPNNRD's Soil & Water Conservation Cost-Share Program.
6. **Construction must be done between June 1 and September 15.** The field must be available for construction by August 1. The area enrolled in the LPNNRD Lands for Conservation will be planted to cover crop or a non-grain forage crop (forage sorghum, etc.) preceding and/or after construction. The crop or cover may be harvested or pastured during the contract period.
7. **For 2020: Payment is \$205 per acre*.**
 - *Payment Rate will be reviewed annually. Payment rate is based on 2020 Nebraska Non-Irrigated Cropland Cash Rent Paid per Acre, Source: USDA National Agricultural Statistics Service.
 - Payment will not be processed and forward to the NRD applicant until the project (including the planting of the cover crop) has been certified as completed by the NRCS.**
8. If used for permanent pasture before or after the contract period, these areas are not eligible for the Lands for Conservation Program. Money received through this program resulting in permanent pasture after the contract period, must be returned. Land can be used for hayland as a normal part of the crop rotation.
9. If ownership of land changes during the contract period, the contract becomes void. The new owner may continue the contract, if agreed to with the Lower Platte North NRD.
10. Approval of contracts will be on a rotating basis.
11. The landowner will contract for the construction of Sediment and Water Control Basins, terraces, waterways, tile outlets and any other necessary construction.
12. Terraces, Sediment and Water Control Basins, waterways and tile outlets must be maintained for 10 years or as long as the current owner has control of the land, whichever is less.
13. **Eligible Watersheds for the Lands for Conservation Program: Within the Wahoo Watershed, three of the HUC 12 sub watersheds were identified as highest priority areas for this program: North Fork-Wahoo Creek, Dunlop Creek and Miller Branch-Wahoo Creek. The Shell Creek Watershed.**

14. Separate fund pool allotted in 2021 for the remainder of the LPNNRD outside of 319/NWQI watersheds.

Cost Share Assistance 2021 Tree Plantings

<u>Name</u>	<u>County</u>	<u># Trees</u>	<u>Landowner Total Cost w/out Tax</u>	<u>Cost Share CRP 50%</u>	<u>NRD Cost Share Program 75%/25% CRP</u>
Bruce Williams	Saunders	547 trees	\$ 1,094.00		\$ 820.50
Jason Scott	Saunders	899 trees	\$ 1,798.00		\$1,348.50
Lee Seeman	Saunders	1240 trees	\$ 2,480.00		\$1,860.00
Brian Stuart	Butler	248 trees	\$ 496.00		\$ 372.00
Sue Benzel	Dodge	220 trees	\$ 440.00		\$ 330.00
Elaine Zoucha	Colfax	200 trees	\$ 400.00		\$ 300.00
Totals		3,354 trees	\$6,708.00		\$5,031.00



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: 29 March 2021
PROJECT NO.: 022-17-02
PERIOD COVERED: 20 Feb 2021 Through 19 Mar 2021
INVOICE NO.: 022-057
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
Principal	Sotak, Mike	\$ 225.00	1.50 \$	337.50
Engineer	Kaufman, Janel	\$ 160.00	5.00 \$	800.00
022-17-02-6.01-Additional Services-Economics-Project Management			6.50 \$	1,137.50

022-17-02-6.02-Additional Services-Economics-Flood Damage

Reduction Economics

Description	Employee	Billing Rate	Hours	Current Due
Principal	Sotak, Mike	\$ 225.00	1.00 \$	225.00
Engineer Intern	Kelley, Connor	\$ 120.00	7.00 \$	840.00
Engineer Intern	Roenigk, Ryan	\$ 110.00	34.00 \$	3,740.00
022-17-02-6.02-Additional Services-Economics-Flood Damage Reduction Economics			42.00 \$	4,805.00

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

Description	Employee	Billing Rate	Hours	Current Due
Principal	Sotak, Mike	\$ 225.00	1.25 \$	281.25
Engineer	Kaufman, Janel	\$ 160.00	4.00 \$	640.00
022-17-02-6.03-Additional Services-Economics-Revised Plan Economics			5.25 \$	921.25

TOTAL DUE CURRENT INVOICE: \$ 6,863.75

CONTRACT AMOUNT: \$ 718,459.00
PREVIOUS BILLING: \$ 693,709.00
CURRENT INVOICE: \$ 6,863.75
TOTAL INV'D. TO DATE: \$ 700,572.75
CONTRACT REMAINING: \$ 17,886.25

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

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

DATE: 29 March 2021
 PROJECT NO.: 022-17-02
 PERIOD COVERED: 20 Feb 2021 Through 19 Mar 2021
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 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

Summary for Invoice: 022-039
 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	\$ 3,892.50	\$ 1,137.50	\$ 5,030.00
022-17-02-6.02-Additional Services-Economics-Flood Damage Reduction Economics	\$ 64,690	\$ 57,400.50	\$ 4,805.00	\$ 62,205.50
022-17-02-6.03-Additional Services-Economics-Revised Plan Economics	\$ 22,450	\$ 8,712.75	\$ 921.25	\$ 9,634.00
Totals:	\$ 718,459	\$ 693,709.00	\$ 6,863.75	\$ 700,572.75



March 25, 2021

U.S. Army Corps of Engineers
Wehrspann Regulatory Office
8901 South 154th Street, Suite 1
Omaha, NE 68138-3621

Project: Prague Northwest, Czechland Lake
Located in Section 26-T16N-R5E, Saunders County

RE: 404 Permit

Dear Corps Personnel:

Our firm is the Saunders County consulting engineer for the above project. On behalf of the county, we are submitting notification for a project involving the placement of rock riprap to stabilize a portion of the south bank of the Czechland Lake Reservoir. Construction is anticipated to begin in the spring of 2021.

The scope of this project is to stabilize a portion of the south bank of Czechland Lake Reservoir. Previously existing rock riprap has been eroded and needs maintenance. The roadway at the top of bank is in danger of being undermined due to erosion. Approximately 3130 Tons (2320 CuYd) of rock riprap will be placed for 1,600 feet along the south channel bank to stop the erosion caused by heavy wave action. Approximately 450 CuYd of the rock riprap will be placed below Ordinary High Water. All rock riprap will be placed on filter fabric. Any disturbed areas will be revegetated as appropriate. Construction is expected to be complete within 30 days of the start date.

Under Section 404(f)(1) of the Clean Water Act, we believe that this activity is exempt, as it is considered maintenance to a previously existing dame/levee structure. Please verify the project does not require a 404 permit.

The following items are included with this letter:

- Project location map (sheet 1)
- Aerial map
- Typical cross section of improvement (sheet 2-T)
- Plan and profile sheets (sheets 3 & 4)

If you have any questions or need additional information, please call.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Arlon Strahm', with several loops and a long horizontal stroke at the end.

Arlon Strahm

CC: Andy Nordstrom, Saunders County Hwy Superintendent
Shannon Sjolie, Nebraska Game and Parks
Tom Mountford, Lower Platte North NRD
Nebraska Historical Society

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	TITLE PAGE
2-T	TYPICAL CROSS SECTIONS OF IMPROVEMENT
3 TO 4	PLAN AND PROFILES
X-1 TO X-4	CROSS SECTIONS

PLANS FOR CONSTRUCTION PRAGUE NORTHWEST SAUNDERS COUNTY



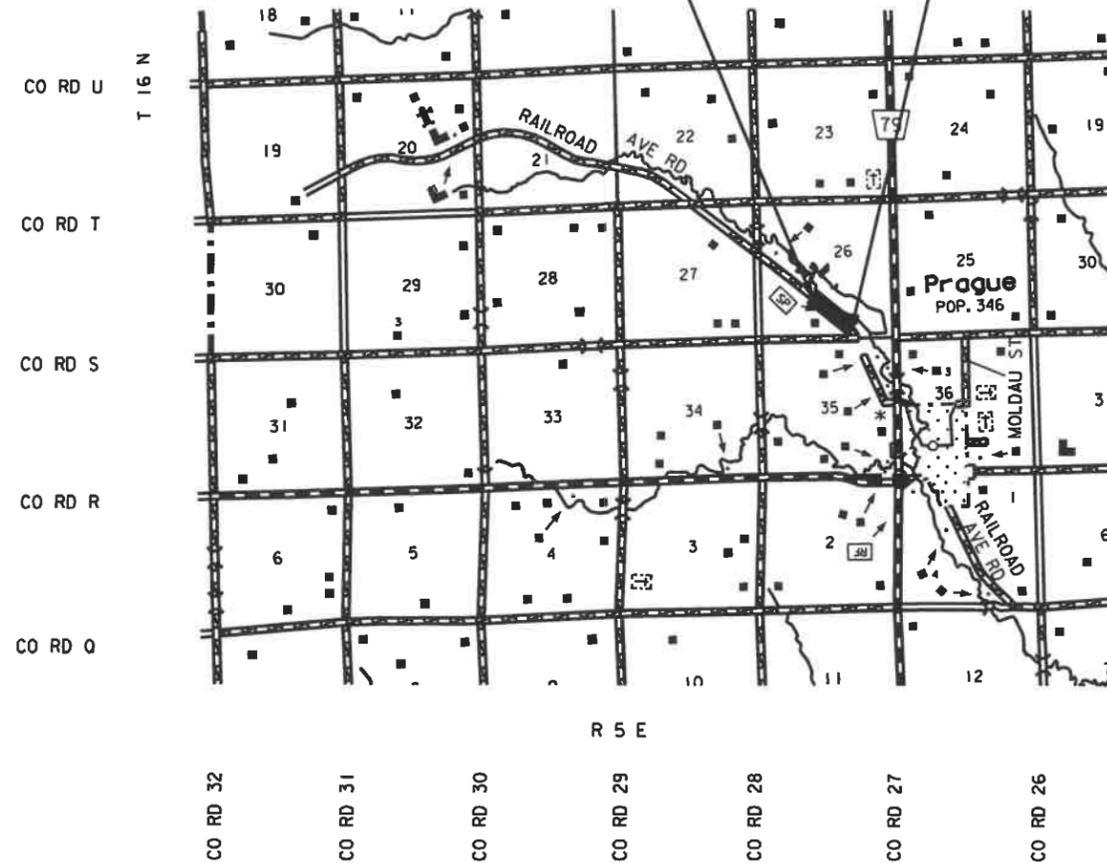
STANDARD PLANS

STANDARD PLAN NO.	DESCRIPTION
501-R7	(3 SHEETS) EROSION CONTROL
502-R2	(2 SHEETS) SILT FENCE DETAILS
920-R7	(3 SHEETS) TRAFFIC CONTROL, CONSTRUCTION AND MAINTENANCE
921-R8	(2 SHEETS) TRAFFIC CONTROL, CONSTRUCTION AND MAINTENANCE
923-R2	TRAFFIC CONTROL, ROAD CLOSURE

MEETS OR EXCEEDS MINIMUM DESIGN STANDARDS OF THE BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS FOR NEW AND RECONSTRUCTED ROADS IN RURAL AREAS.

STA. 14+00
BEGIN PROJECT
BEGIN CONSTRUCTION
BEGIN 2" x 25' CRUSHED
ROCK SURFACE COURSE

STA. 30+00
END PROJECT
END CONSTRUCTION
END 2" x 25' CRUSHED
ROCK SURFACE COURSE



THE 2017 EDITION OF THE NEBRASKA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION AND THE SPECIAL PROVISIONS APPLY TO THIS PROJECT.

HALF SIZE PLANS

DESIGN DESIGNATION	
YEAR:	- -
ADT:	- -
ZHT:	- -
N.F.C. =	LOCAL
S.F.C. =	LOCAL

CONVENTIONAL SIGNS

FENCE R.O.W. OR WIRE	— x —
GUARDRAIL	— — — — —
TRAVELED WAY	=====
DIKE	XXXXXXXXXXXX
CULVERT	— — — — —
POWER POLE	⊕
TELEPHONE POLE	⊕
MAILBOX	⊕
RAILROAD TRACKS	— — — — —
MARSH	— — — — —
TREE - CONIFEROUS	⊙
TREE - DECIDUOUS	⊙

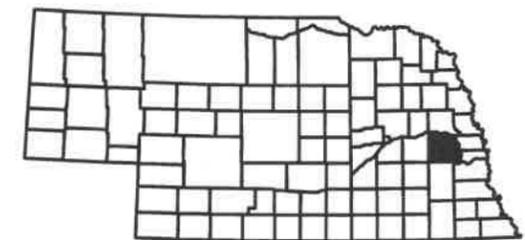
R.O.W. LEGEND

NEW CONTROLLED ACCESS	— — — — —
PREVIOUS CONTROLLED ACCESS	— — — — —
LIMITS OF CONSTRUCTION	— — — — —
PREVIOUS R.O.W.	— — — — —
NEW R.O.W.	— — — — —
EXISTING PERMANENT EASEMENT	— — — — —
TEMPORARY EASEMENT	— — — — —
EXCESS TAKING	— — — — —
PERMANENT EASEMENT	— — — — —
EXISTING RAILROAD EASEMENT	— — — — —
NEW RAILROAD PERMANENT EASEMENT	— — — — —
NEW RAILROAD TEMPORARY EASEMENT	— — — — —

REFERENCE POST NO. N/A TO REFERENCE POST NO. N/A

EXCEPTIONS: FROM STA. N/A TO STA. N/A

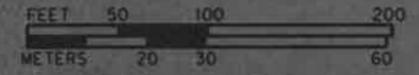
TOTAL NET LENGTH OF PROJECT: 0.303 MILES



Plans by:

**Mainelli
Wagner &
Associates, Inc.**

SAUNDERS COUNTY
CZECHLAND LAKE RECREATION AREA
PRAGUE NORTHWEST



APPROXIMATE AREA
OF PROPOSED ROCK RIPRAP

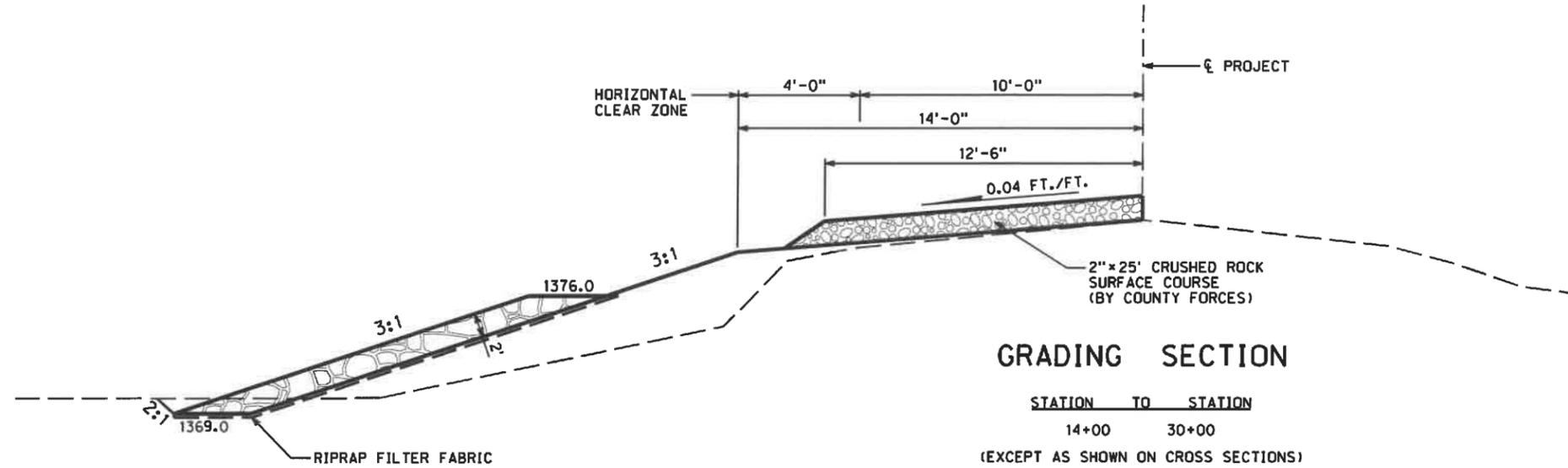
☉ PROJECT

☉ EXISTING ROADWAY

Rail Rd Ave



TYPICAL CROSS SECTION OF IMPROVEMENT



ANY UNSUITABLE MATERIAL ENCOUNTERED DURING CONSTRUCTION MUST BE EXCAVATED AND REMOVED FROM THE SITE. THE RESULTING VOID MAY BE FILLED WITH SUITABLE MATERIAL AS DIRECTED BY THE ENGINEER. ADDITIONAL EXCAVATION WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED SUBSIDIARY TO THE ITEM "SITE PREPARATION".

ANY EXCESS MATERIAL WILL BE DISPOSED OF BY THE COUNTY AS APPROVED BY THE ENGINEER. IF ADDITIONAL MATERIAL IS REQUIRED FOR FINAL GRADING, THE COUNTY WILL BE REQUIRED TO OBTAIN THE NECESSARY SUITABLE MATERIAL FROM A SITE APPROVED BY THE ENGINEER.

UPON COMPLETION OF THE GRADING OPERATIONS PERMANENT SEEDING OF THE DISTURBED AREAS CREATED BY THE GRADING OPERATIONS WILL BE PERFORMED BY THE COUNTY AS DIRECTED BY THE PROJECT MANAGER.

COMPACTION REQUIREMENTS	
ROADWAY EMBANKMENT	CLASS II
EMBANKMENT FOR INTERSECTING PUBLIC ROADS	CLASS II
PRIVATE DRIVES	CLASS I
(SEE SEC. 205 IN THE 2017 EDITION OF THE NEBRASKA STANDARD SPECIFICATIONS)	

THE LOCATIONS OF ALL AERIAL AND UNDERGROUND UTILITY FACILITIES MAY NOT BE INDICATED IN THESE PLANS. UNDERGROUND UTILITIES, WHETHER INDICATED OR NOT WILL BE LOCATED AND FLAGGED BY THE UTILITIES AT THE REQUEST OF THE COUNTY.

NO EXCAVATION WILL BE PERMITTED IN THE AREA OF THE UNDERGROUND UTILITY FACILITIES UNTIL ALL SUCH FACILITIES HAVE BEEN LOCATED AND IDENTIFIED TO THE SATISFACTION OF ALL PARTIES. THE EXCAVATION MUST BE ACCOMPLISHED WITH EXTREME CARE IN ORDER TO AVOID ANY POSSIBILITY OF DAMAGE TO THE UTILITY FACILITY.

THE COUNTY MAY CLOSE THE ROAD TO ALL BUT LOCAL TRAFFIC SUBJECT TO THE CONDITIONS PRESCRIBED IN THE 2017 EDITION OF THE NEBRASKA STANDARD SPECIFICATIONS.

THE COUNTY SHALL PROVIDE ROUTING THROUGH TRAFFIC AROUND THE PROJECT IF DEEMED NECESSARY.

ALL SIGNING AND PAVEMENT MARKING DURING CONSTRUCTION SHALL BE DONE BY THE COUNTY IN CONFORMANCE WITH THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

EARTHWORK QUANTITIES		DRIVES AND DIKES ARE NOT INCLUDED	
STATION TO STATION	DESCRIPTION	EXCAVATION AVAILABLE (cu. yds.)	EMBANKMENT (cu. yds.)
14+00 30+00	CHANNEL	804	2,502
	TOTALS	804	2,502

SUMMARY OF QUANTITIES

ITEM	QUANTITY	UNIT
MOBILIZATION	1.000	LUMP SUM
SITE PREPARATION	1.000	LUMP SUM
EARTHWORK MEASURED IN EMBANKMENT	2,502.000	CU. YDS.
CRUSHED ROCK SURFACE COURSE	167.000	TONS
ROCK RIPRAP, TYPE "A"	3,130.000	TONS
RIPRAP FILTER FABRIC	4,285.000	SQ. YDS.
COVERCROP SEEDING	2.100	ACRES
SEEDING, TYPE "A"	2.100	ACRES

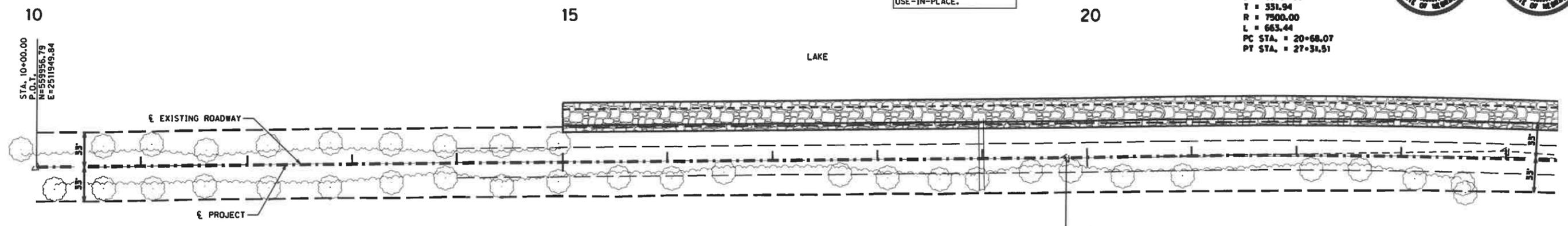
SEC. 26-T16N-R5E



PI STA. = 24+00.00
 H = 559068.78
 E = 2513032.17
 Δ = 05°04'06" RT.
 D = 05°04'06"
 T = 331.94
 R = 7500.00
 L = 663.44
 PC STA. = 20+68.07
 PT STA. = 27+31.51

NOTE: EXISTING NRD RIGHT-OF-WAY.
 NO ADDITIONAL EASEMENTS REQUIRED.

STA. 18+99
 48" x 69" CORR. METAL PIPE.
 USE -IN-PLACE.



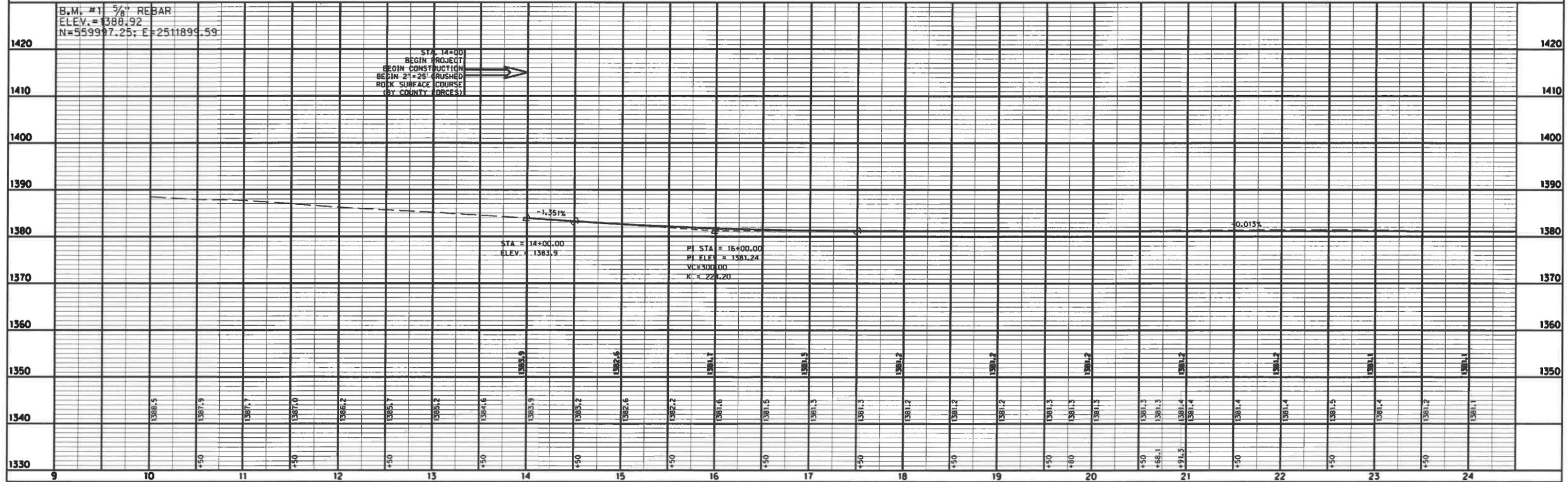
STA. 19+79.99
 P.O.T.
 N=559334.01
 E=2512706.49
 Δ=00°17'53" LT.

STA. 15+00 TO STA. 29+00
 PLACE 3,130 TONS OF ROCK RIPRAP,
 TYPE "A" ON 4,285 SQ. YDS. OF
 RIPRAP FILTER FABRIC.
 SEE SHEET 2-T FOR DETAILS.

NO TIES AVAILABLE.

SEC. 26-T16N-R5E

ALL BANDS FOR CORRUGATED METAL PIPE SHALL BE
 2'-0" WIDE (MINIMUM) UNLESS APPROVED BY THE ENGINEER.



SEC. 26-T16N-R5E

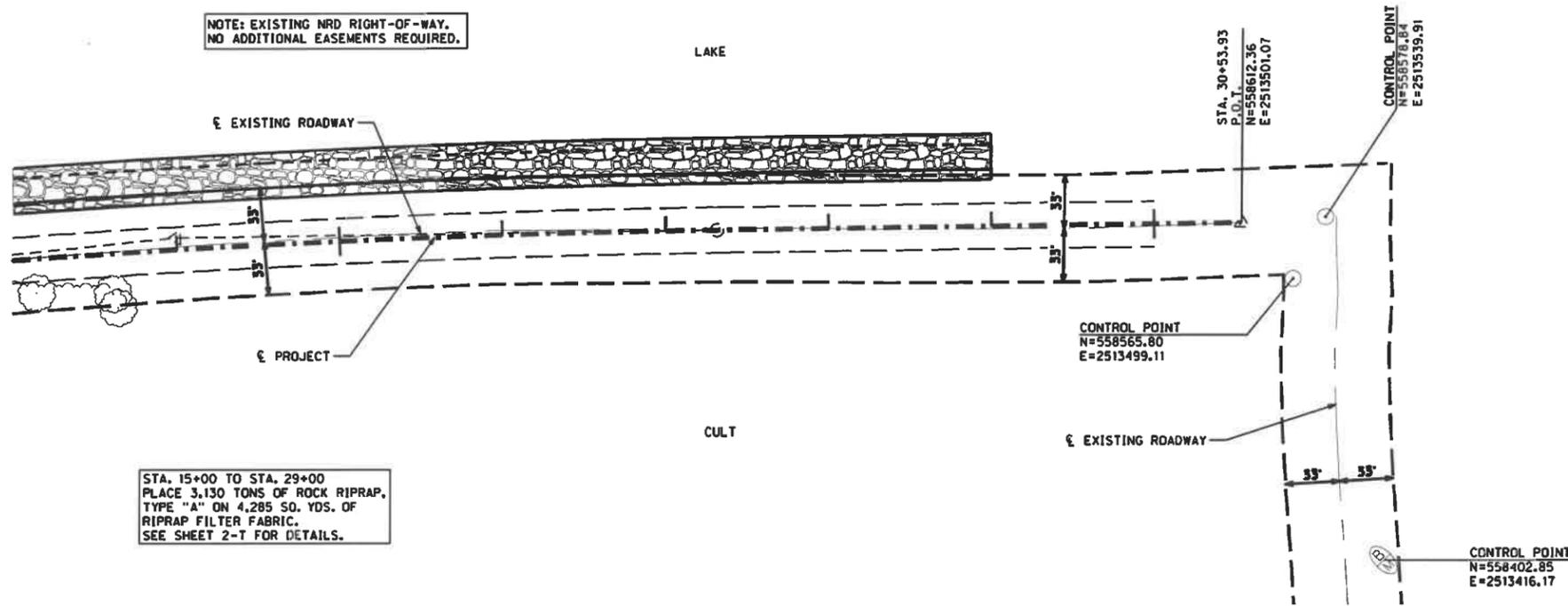


25

30



NOTE: EXISTING NRD RIGHT-OF-WAY.
NO ADDITIONAL EASEMENTS REQUIRED.

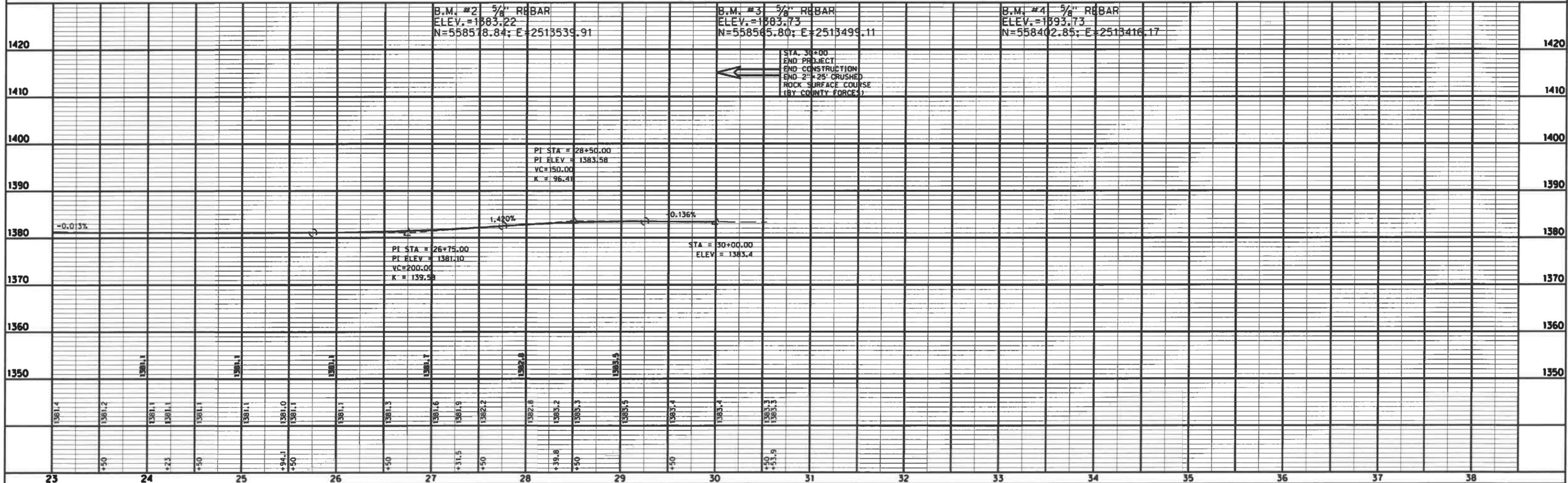


STA. 15+00 TO STA. 29+00
PLACE 3,130 TONS OF ROCK RIPRAP,
TYPE "A" ON 4,285 SQ. YDS. OF
RIPRAP FILTER FABRIC.
SEE SHEET 2-T FOR DETAILS.

SEC. 26-T16N-R5E

ALL BANDS FOR CORRUGATED METAL PIPE SHALL BE
2'-0" WIDE (MINIMUM) UNLESS APPROVED BY THE ENGINEER.

NO TIES AVAILABLE.



Engineer's Estimate

Project: Prague Northwest

County: Saunders

Project No.: Czech Lake

Description: Approximately 0.3 miles of grading.

Option 2



Engineer's Estimate

	Item Description	Plan Qty.	Units	Unit Price	Amount
1-1	Mobilization	1.000	Lump Sum	\$10,000.00	\$10,000.00
1-2	Site Preparation	1.000	Lump Sum	\$10,000.00	\$10,000.00
1-3	Traffic Control	1.000	Lump Sum	\$10,000.00	\$10,000.00
1-4	Crushed Rock Surface Course	167.000	Tons	\$40.00	\$6,680.00
1-5	Rock Riprap, Type "B"	3,130.000	Tons	\$70.00	\$219,100.00
1-7	Riprap Filter Fabric	4,285.000	Sq. Yds.	\$3.00	\$12,855.00
1-6	Earthwork Measured in Embankment	2,389.000	Cu. Yds.	\$12.00	\$28,668.00
1-7	Seeding, Type "A"	0.900	Acres	\$1,000.00	\$900.00
1-8	Covercrop Seeding	0.900	Acres	\$1,000.00	\$900.00
Total for Project:					\$299,103.00

BANK STABILIZATION IMPROVEMENTS WOODCLIFF LAKES SID #8 SAUNDERS COUNTY, NEBRASKA

JEO PROJECT NUMBER 190733.01

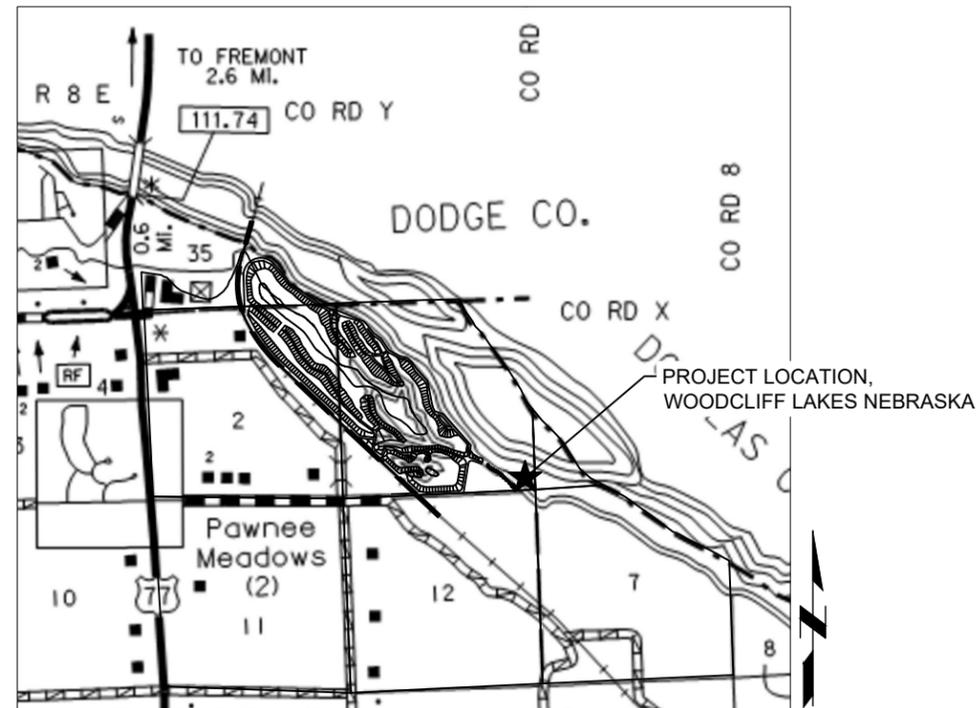
2019
BANK STABILIZATION IMPROVEMENTS
WOODCLIFF LAKES SID #8
SAUNDERS COUNTY, NEBRASKA

COVER SHEET

PRELIMINARY
NOT FOR
CONSTRUCTION
90%
DATE:
2/1/2021
PRELIMINARY

PROJECT NO. 190733.01
DATE 2/1/2021
DRAWN BY JAA
FILE NAME S-190733.01.dwg
FIELD BOOK Woodcliff #14
FIELD CREW JG
SURVEY FILE NO. SV-190733.01
PLAN IN HAND N/A
DATE N/A
70 PERCENT REVIEW JGP
DATE 12/02/2020
95 PERCENT REVIEW JGP
DATE
REVISIONS

C0.1



LOCATION MAP
SCALE: 1" = 2500'

INDEX OF SHEETS:

SHEET NO:	SHEET NAME:
C0.1	COVER SHEET
C0.2	SYMBOLS
C0.3	SUMMARY OF ESTIMATED QUANTITIES & PROJECT NOTES
C0.4	HORIZONTAL ALIGNMENT & CONTROL SHEET
C0.5	LOCATION MAP
C1.1	OVERALL SITE PLAN
C1.2	EROSION CONTROL
C2.1	PROPOSED SITE PLAN
D1.1- D1.2	DETAILS



Know what's below.
Call before you dig.

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.
(DATE: 09/12/2019 TICKET NO.: 192551122)
(DATE: 09/27/2019 TICKET NO.: 192670161)
(DATE: 09/27/2019 TICKET NO.: 192670164)
(DATE: 09/27/2019 TICKET NO.: 192670166)
(DATE: 09/27/2019 TICKET NO.: 192670174)
(DATE: 09/27/2019 TICKET NO.: 192670177)

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.

LINESTYLES

ITEM	SYMBOL
BREAK LINE	
CABLE TELEVISION	
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 (OVERHEAD)	
ELECTRIC (UNDERGROUND)	
FENCE (WOODEN)	
FENCE (WIRE OR UNKNOWN)	
FENCE (CHAINLINK)	
FENCE (SECURITY)	
FIBER OPTIC LINE	
FLOWLINE (BREAKLINE)	
GAS LINE	
GUARDRAIL	
PROPERTY BOUNDARY	
PROPERTY LOT LINES (PR)	
RIGHT-OF-WAY LINE	
RAILROAD RIGHT-OF-WAY	
RAILROAD TRACKS	
RETAINING WALL	
SANITARY SEWER (EXIST)	
SANITARY SEWER (PROP)	
SAN SEWER FORCE MAIN (EX)	
SAN SEWER FORCE MAIN (PR)	
STORM SEWER (EXIST)	
(OFFSET TO PIPE SIZE)	
STORM SEWER (PROP)	
(OFFSET TO PIPE SIZE)	
TELEPHONE LINE (UGND)	
TELEPHONE LINE (OVERHEAD)	
TERRACE	
CROPLINE	
TRAVELED WAY	
WATER (EXIST)	
WATER (PROP)	
FIRE SERVICE	

SWPPP

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

PAVING FEATURES

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

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)	

VEGETATION

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

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	
TOP OF CURB	
GROUND	
TOP OF WALL	
BOTTOM OF WALL	
FLOWLINE	
GRID TICK	

MISC FEATURES

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

PAVEMENT SYMBOLS AND HATCH

ITEM	SYMBOL	HATCH
ASPHALT PAVEMENT (EX.)		
CONCRETE PAVEMENT (EX.)		
GRAVEL (EX.)		
BRICK PAVEMENT (EX.)		
ASPHALT PAVEMENT (PR.)		
CONCRETE PAVEMENT (PR.)		
CONCRETE SIDEWALK (PR)		
GRAVEL (PR.)		
GRAVEL (PR.)		
BRICK PAVEMENT (PR.)		

GENERAL

ITEM	SYMBOL
PLAN REVISION	
NORTH ARROW	
GRAPHIC SCALE	

GRAPHIC SCALE
 0 10 20 40
 UNIT OF MEASURE IS FEET
 HORIZ. = 0 0 00
 VERT. = 0 0 00

ARCHITECTURAL MATERIALS

ITEM	SYMBOL	ITEM	SYMBOL	ITEM	SYMBOL
UNDISTURBED EARTH		CONCRETE BLOCK		LVL - GLU-LAM	
EARTH		METAL		GYPSUM BOARD (DBL LINE OMITTED AT SMALL SCALE)	
GRANULAR FILL		WOOD, FINISH		INSULATION, BATT	
SAND MORTAR, PLASTER		WOOD, FRAMING		GLASS - ELEVATION	
CONCRETE		WOOD, FRAMING INTERRUPTED MEMBER		INSULATION, RIGID	
BRICK		PLYWOOD			

ARCHITECTURAL SYMBOLS

ITEM	SYMBOL	ITEM	SYMBOL
DATUM POINT		REFERENCED NOTE	
EXISTING COLUMN LINE		ELEVATION	
REFERENCED DEMOLITION NOTE		BUILDING SECTION	
REFERENCED PHOTOGRAPH TAG		WALL SECTION	
COLUMN REFERENCE GRID LINES		DETAIL	
ROOM NAME & NO.		INTERIOR ELEVATION(S)	
DOOR NO.		ENLARGED DETAIL	
WINDOW NO.		REVISION	
WALL TYPE			
EQUIPMENT OR FIXTURE			



BENDWAY WEIR QUANTITIES											
Weir #	Station	Offset	Top Elevation	Length (Ft)	Weir Riprap (Ton)	Key Length (Ft)	Key Riprap (Ton)	Crushed Rock Base Course (Ton)	Live Pole Planting # Rows	Live pole Planting Length (LF)	Live Poles Required, 2/LF/Row (EA)
1	0+90.64	21.91' LT	1179.50	40	92	30	75	10	2	60	120
2	2+00.34	21.69' LT	1179.31	40	123	30	75	10	2	60	120
3	3+02.56	10.39' LT	1179.13	40	170	30	75	10	2	60	120
4	4+02.36	3.76' RT	1178.94	40	207	30	75	10	2	60	120
5	4+96.48	31.99' RT	1178.75	40	274	30	75	10	2	60	120
6	6+00.76	32.28' RT	1178.56	40	328	30	75	10	2	60	120
7	6+99.19	2.64' RT	1178.38	40	270	30	75	10	2	60	120
8	7+99.48	3.36' RT	1178.19	40	193	30	75	10	2	60	120
9	9+07.23	25.44' RT	1178.00	40	209	30	75	10	2	60	120

LPSTP WEIR QUANTITIES															
LPSTP	Segment	US	DS	US Elevation	DS Elevation	Length (Ft)	Top Width (Ft)	Approx. Height (Ft)	LPSTP Riprap (Ton)	Rock Key Length (Ft)	Key Riprap (Ton)	Crushed Rock Base Course (Ton)	Live Pole Planting # Rows	Live pole Planting Length (LF)	Live Poles Required, 1/LF/Row (EA)
1	Key	0+13.20	0+46.24			50	5	5		60	90	10			
	1	0+52.88	0+86.23	1180.50	1180.31	36	2	4.5	63.3				2	72	40
	2	0+98.16	1+97.05	1180.31	1180.13	90	2	5.1	174.2				2	180	90
	3	2+08.98	3+08.81	1180.13	1179.94	90	2	6.2	270.0				2	180	90
	4	3+19.18	4+00.83	1179.94	1179.75	90	2	7.8	386.4				2	180	90
	5	4+10.77	4+94.18	1179.75	1179.56	90	2	8.4	371.7				2	180	90
2	1	5+99.09	6+93.83	1179.56	1179.38	90	2	9.1	414.0				2	180	90
	2	7+04.53	7+94.16	1179.38	1179.19	90	2	9.0	230.7				2	180	90
	3	8+05.07	8+93.85	1179.19	1179.00	90	2	9.0	279.4				2	180	90
	4	9+01.55	9+22.91	1179.00	1186.69	22	2	8.0	28.0				2	44	20
	Key	9+22.91	9+88.63			120	5	5.0		90	135	15		240	

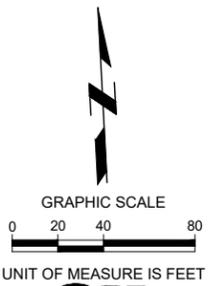
ESTIMATE OF QUANTITIES			
Item #	Description	Unit	Quantity
1	Mobilization	LS	1
2	Bonding and Insurance	LS	1
3	Site Grading	LS	1
4	Clearing and Grubbing	LS	1
5	Riprap, NDOT Type C	TON	1988
6	Surge/Erosion Stone	TON	1325
7	Crushed Rock Base Coarse	TON	116
8	Coarse Aggregate	TON	232
9	Live Pole Plantings	EA	2696
10	Low Porosity Silt Fence	LF	1100
11	Seeding and Mulching	AC	1

2019
 BANK STABILIZATION IMPROVEMENTS
 WOODCLIFF LAKES SID #8
 SAUNDERS COUNTY, NEBRASKA

SUMMARY OF ESTIMATED QUANTITIES
 & PROJECT NOTES

PRELIMINARY
 NOT FOR CONSTRUCTION
 90%
 DATE:
 2/1/2021
 PRELIMINARY

PROJECT NO. 190733.01
 DATE 2/1/2021
 DRAWN BY JAA
 FILE NAME S-190733.01.dwg
 FIELD BOOK Woodcliff #14
 FIELD CREW JG
 SURVEY FILE NO. SV-190733.01
 PLAN IN HAND
 INITIALS DATE N/A
 70 PERCENT REVIEW JGP N/A
 INITIALS DATE 12/02/2020
 95 PERCENT REVIEW JGP
 INITIALS DATE
 REVISIONS



LEGEND

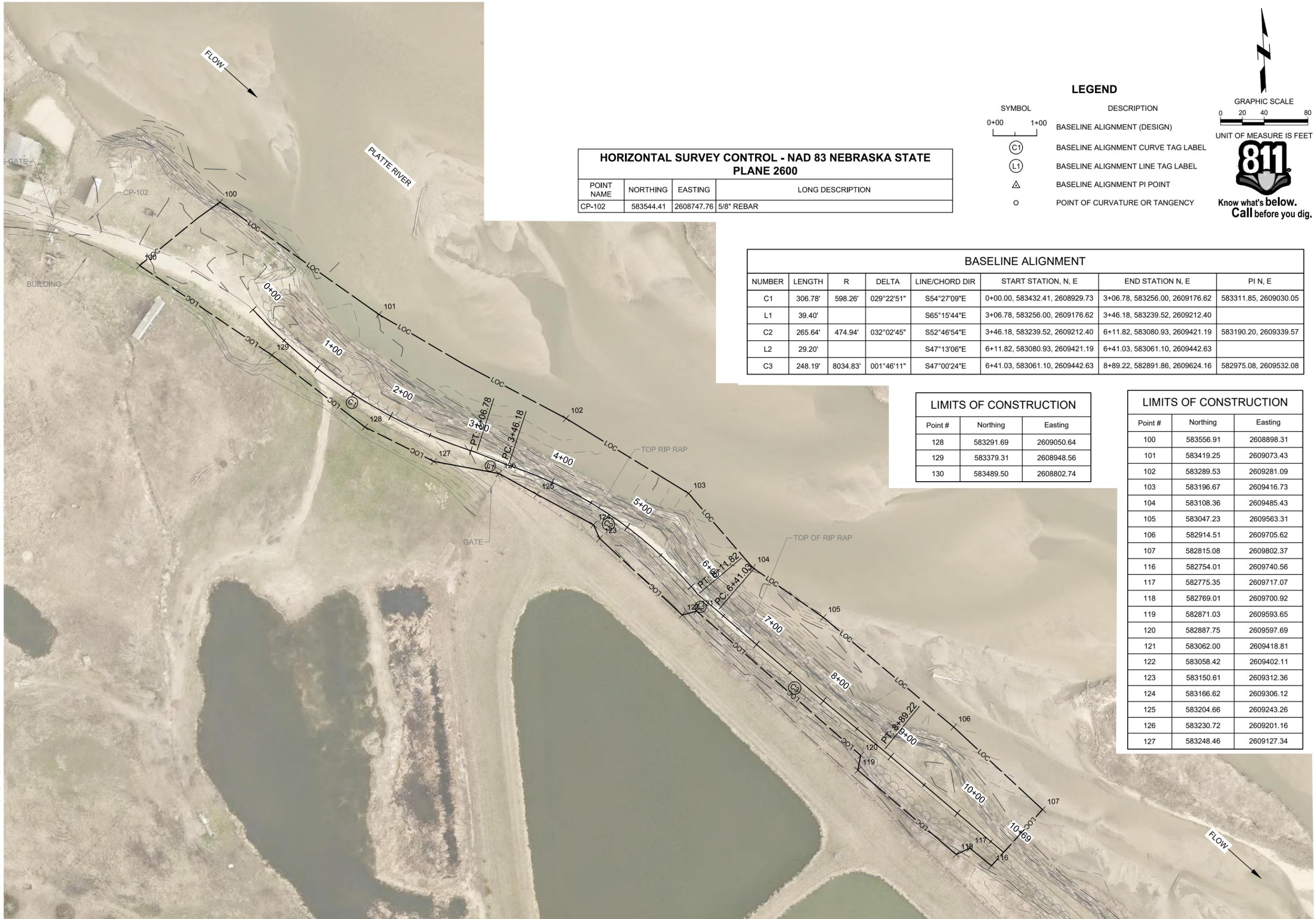
SYMBOL	DESCRIPTION
—	BASELINE ALIGNMENT (DESIGN)
(C1)	BASELINE ALIGNMENT CURVE TAG LABEL
(L1)	BASELINE ALIGNMENT LINE TAG LABEL
△	BASELINE ALIGNMENT PI POINT
○	POINT OF CURVATURE OR TANGENCY

HORIZONTAL SURVEY CONTROL - NAD 83 NEBRASKA STATE PLANE 2600			
POINT NAME	NORTHING	EASTING	LONG DESCRIPTION
CP-102	583544.41	2608747.76	5/8" REBAR

BASELINE ALIGNMENT							
NUMBER	LENGTH	R	DELTA	LINE/CHORD DIR	START STATION, N, E	END STATION N, E	PI N, E
C1	306.78'	598.26'	029°22'51"	S54°27'09"E	0+00.00, 583432.41, 2608929.73	3+06.78, 583256.00, 2609176.62	583311.85, 2609030.05
L1	39.40'			S65°15'44"E	3+06.78, 583256.00, 2609176.62	3+46.18, 583239.52, 2609212.40	
C2	265.64'	474.94'	032°02'45"	S52°46'54"E	3+46.18, 583239.52, 2609212.40	6+11.82, 583080.93, 2609421.19	583190.20, 2609339.57
L2	29.20'			S47°13'06"E	6+11.82, 583080.93, 2609421.19	6+41.03, 583061.10, 2609442.63	
C3	248.19'	8034.83'	001°46'11"	S47°00'24"E	6+41.03, 583061.10, 2609442.63	8+89.22, 582891.86, 2609624.16	582975.08, 2609532.08

LIMITS OF CONSTRUCTION		
Point #	Northing	Easting
128	583291.69	2609050.64
129	583379.31	2608948.56
130	583489.50	2608802.74

LIMITS OF CONSTRUCTION		
Point #	Northing	Easting
100	583556.91	2608898.31
101	583419.25	2609073.43
102	583289.53	2609281.09
103	583196.67	2609416.73
104	583108.36	2609485.43
105	583047.23	2609563.31
106	582914.51	2609705.62
107	582815.08	2609802.37
116	582754.01	2609740.56
117	582775.35	2609717.07
118	582769.01	2609700.92
119	582871.03	2609593.65
120	582887.75	2609597.69
121	583062.00	2609418.81
122	583058.42	2609402.11
123	583150.61	2609312.36
124	583166.62	2609306.12
125	583204.66	2609243.26
126	583230.72	2609201.16
127	583248.46	2609127.34

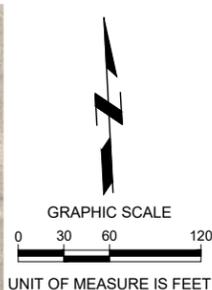


**2019 BANK STABILIZATION IMPROVEMENTS
WOODCLIFF LAKES SID #8
SAUNDERS COUNTY, NEBRASKA**

HORIZONTAL ALIGNMENT CONTROL

PRELIMINARY
NOT FOR CONSTRUCTION
90%
DATE: 2/1/2021
PRELIMINARY

PROJECT NO.	190733.01
DATE	2/1/2021
DRAWN BY	JAA
FILE NAME	S-190733.01.dwg
FIELD BOOK	Woodcliff #14
FIELD CREW	JG
SURVEY FILE NO.	SV-190733.01
PLAN IN HAND	
INITIALS	N/A
DATE	N/A
70 PERCENT REVIEW	
INITIALS	JGP
DATE	12/02/2020
95 PERCENT REVIEW	
INITIALS	
DATE	
REVISIONS	



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



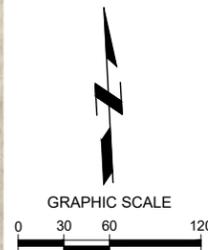
**2019
 BANK STABILIZATION IMPROVEMENTS
 WOODCLIFF LAKES SID #8
 SAUNDERS COUNTY, NEBRASKA**

OVERALL SITE PLAN

PRELIMINARY PRELIMINARY
 NOT FOR CONSTRUCTION
 90%
 DATE: 2/1/2021

PROJECT NO.	190733.01
DATE	2/1/2021
DRAWN BY	JAA
FILE NAME	S-190733.01.dwg
FIELD BOOK	Woodcliff #14
FIELD CREW	JG
SURVEY FILE NO.	SV-190733.01
PLAN IN HAND	
INITIALS	N/A
DATE	N/A
70 PERCENT REVIEW	
INITIALS	JGP
DATE	12/02/2020
95 PERCENT REVIEW	
INITIALS	
DATE	
REVISIONS	

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UNIT OF MEASURE IS FEET



Know what's below.
Call before you dig.



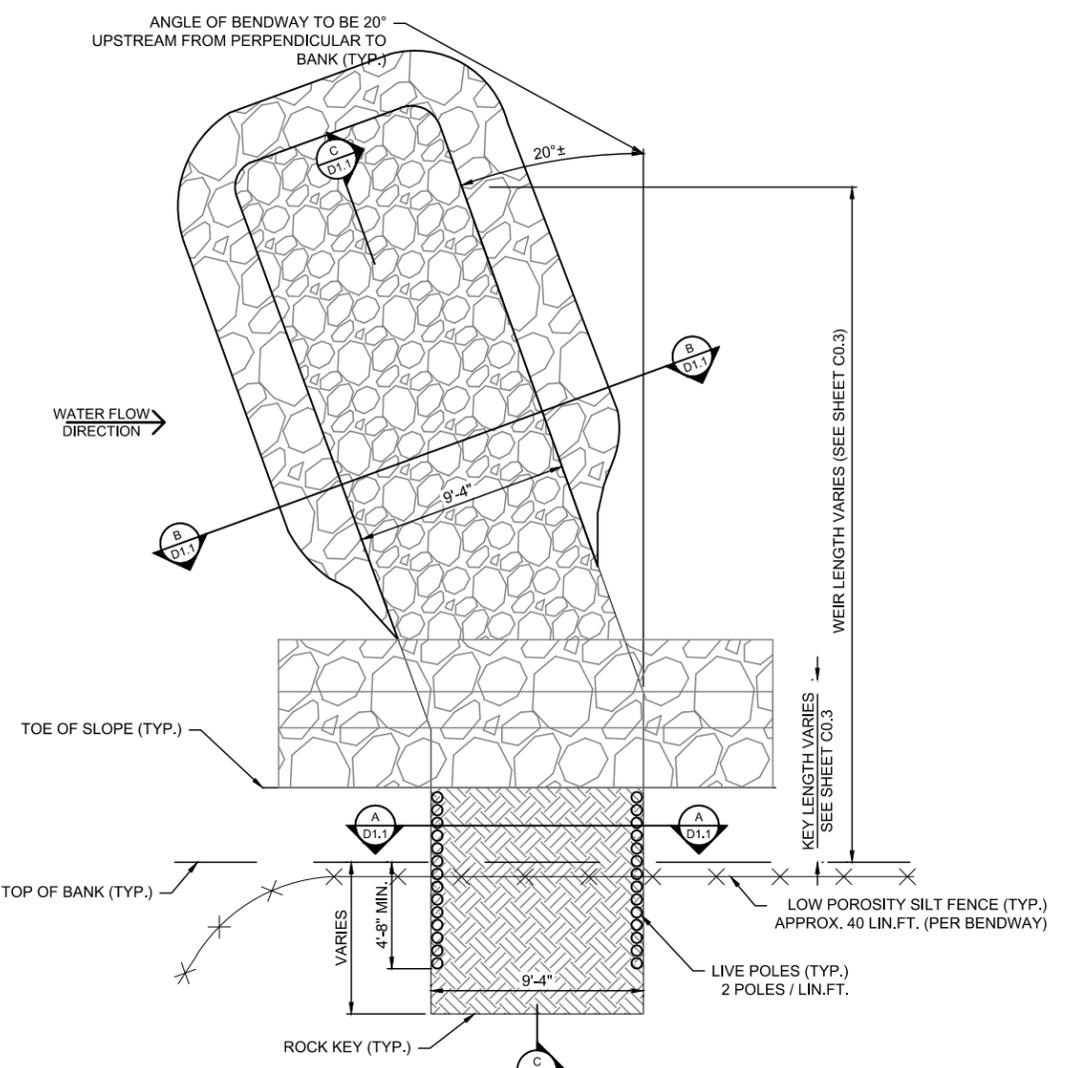
**2019
BANK STABILIZATION IMPROVEMENTS
WOODCLIFF LAKES SID #8
SAUNDERS COUNTY, NEBRASKA**

EROSION CONTROL

PRELIMINARY PRELIMINARY
NOT FOR CONSTRUCTION
90%
DATE: 2/1/2021

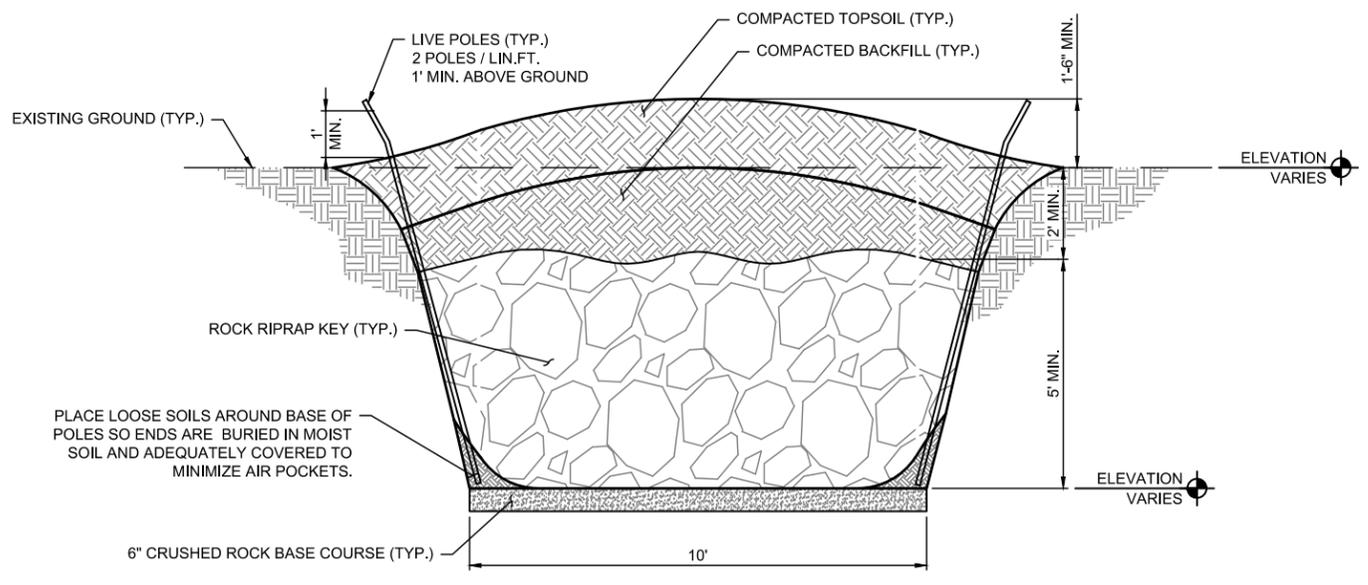
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DATE	2/1/2021
DRAWN BY	JAA
FILE NAME	S-190733.01.dwg
FIELD BOOK	Woodcliff #14
FIELD CREW	JG
SURVEY FILE NO.	SV-190733.01
PLAN IN HAND	
INITIALS	N/A
DATE	N/A
70 PERCENT REVIEW	
INITIALS	JGP
DATE	12/02/2020
95 PERCENT REVIEW	
INITIALS	
DATE	
REVISIONS	

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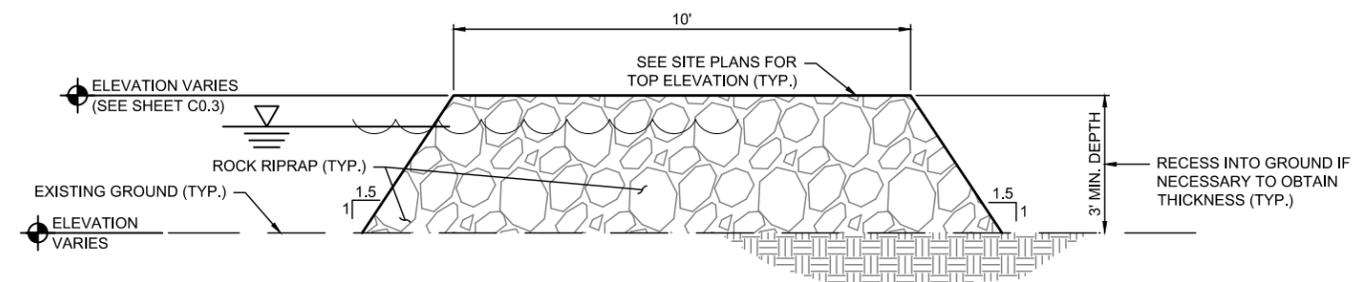


1 TYPICAL BENDWAY WEIR
SCALE: N.T.S.

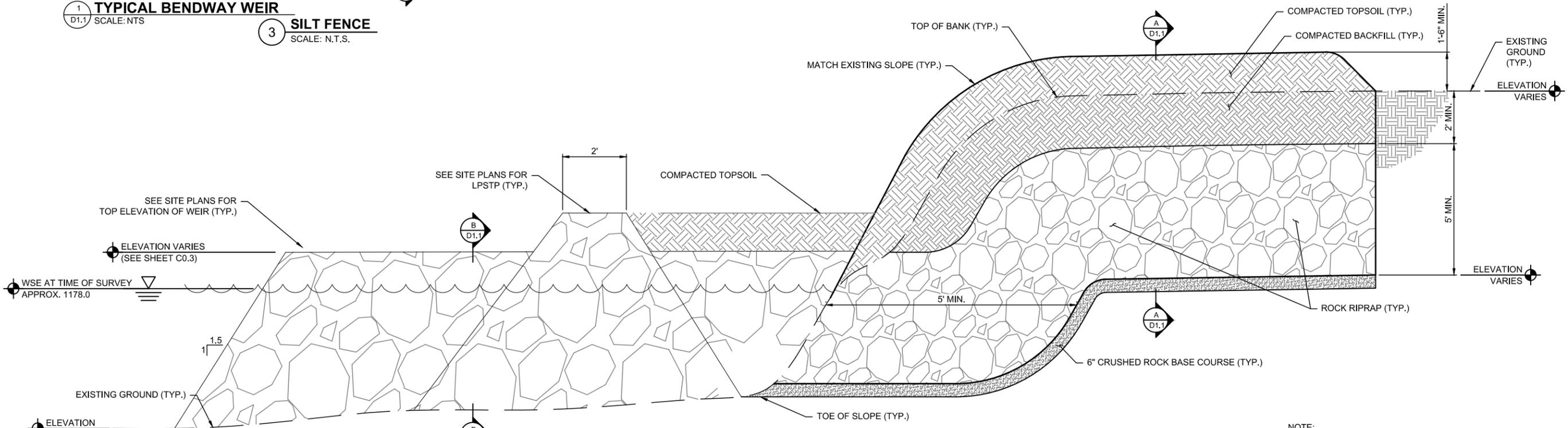
3 SILT FENCE
SCALE: N.T.S.



SECTION A-A - ROCK KEY (BENDWAY) - TYPICAL SECTION
SCALE: N.T.S.



SECTION B-B BENDWAY WEIR - TYPICAL SECTION
SCALE: N.T.S.



SECTION C-C - BENDWAY WEIR - TYPICAL LONGITUDINAL SECTION
SCALE: N.T.S.

NOTE:
LIVE POLES NOT SHOWN IN TYPICAL SECTION C-C FOR CLARITY.

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**Saunders County SID No. 8
(Woodcliff Lakes)
Lower Platte North NRD
Projects Committee Meeting**

December 2020





Post-2019 Flood Projects

- ✓ FEMA PA and 406 Mitigation Projects
 - Bank Stabilization/Roadway Repairs
 - Bank Stabilization near Lagoon
 - Emergency Measures
- ✓ Road Raise Flood Risk Reduction Project
 - Raise roadway adjacent to the River to 100-year elevation
 - Additional bank stabilization
 - Storm drainage improvements



FEMA PA/406 Mitigation Project

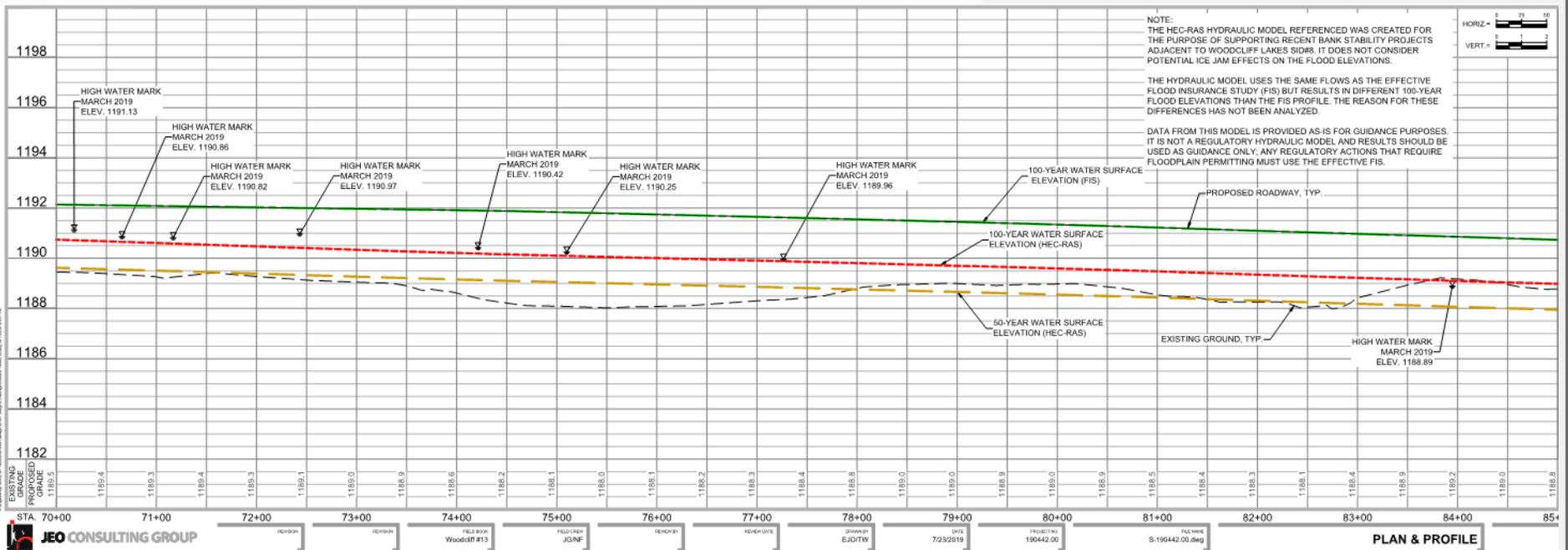
- ✓ Bank Stabilization Flood Damage Repairs: \$131,260
 - Construction complete
- ✓ Roadway Flood Damage Repairs: \$96,709
 - Construction complete
- ✓ Bank Stabilization near Lagoon: \$692,657
 - Currently awaiting USACE 404 Permit; Winter 2021 construction
- ✓ Emergency Protective Measures: \$78,542

- ✓ Total Cost Split
 - FEMA/NEMA: \$822,194
 - SID: \$137,032



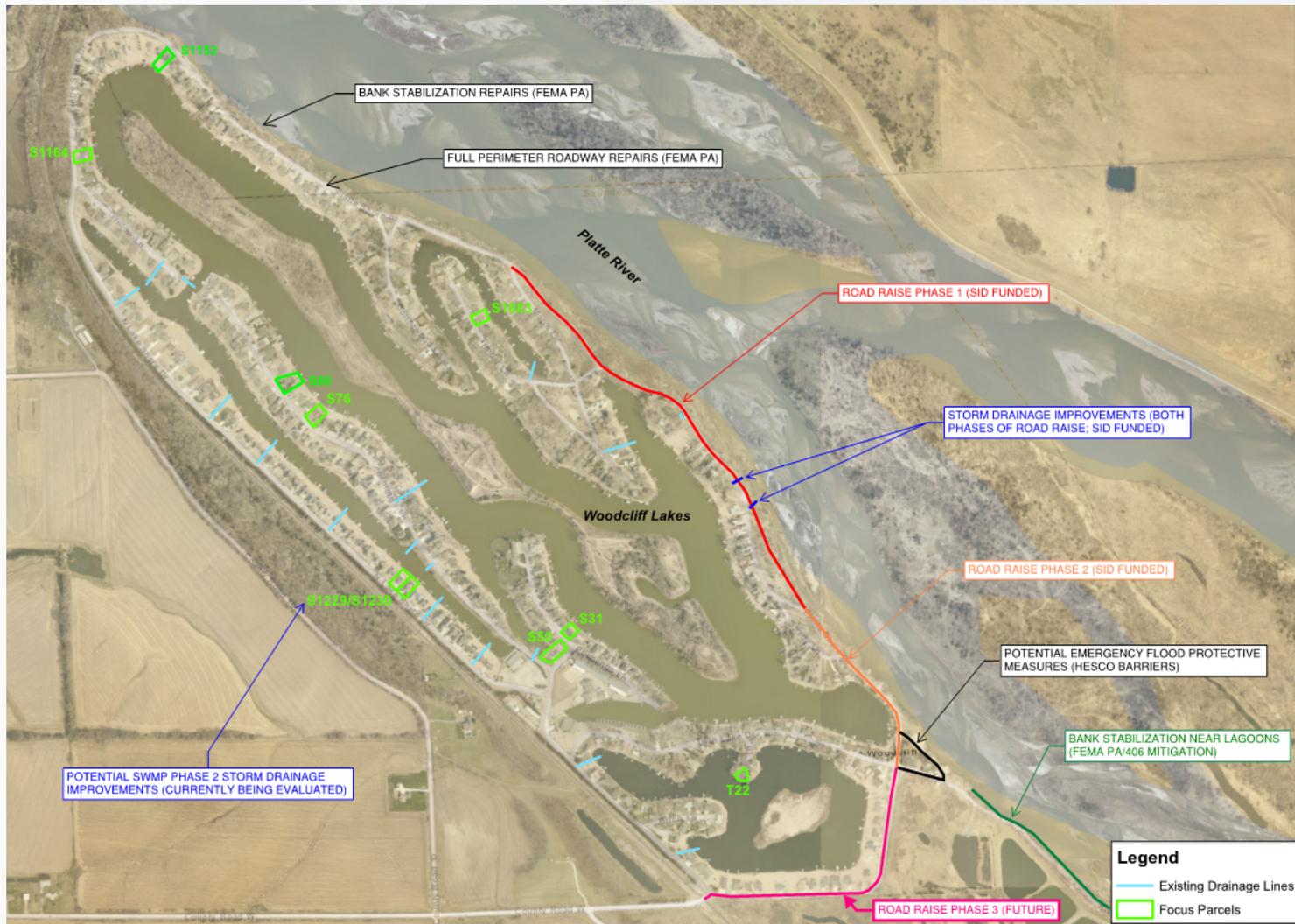
Road Raise Flood Risk Reduction Project

- ✓ FEMA HMGP NOI not prioritized
- ✓ SID elected to proceed with project to gain additional flood protection
- ✓ Construction completion estimated Spring 2021
- ✓ Total Cost (Engineering + Construction: \$800,000)





Overall Location Map



CITY of SCHUYLER
1103 B St., Schuyler, NE 68661

Phone: 402-352-3101
Fax: 402-352-3114

Jon Knufson
Mayor

William De Roos
Administrator

March 18, 2020

Board Members of the Lower Platte North NRD
511 Commercial Park Rd
Wahoo, NE
68066

RE: Flood Risk Reduction Assistance
Schuyler, NE

Dear Board Members:

Following the devastating floods in the spring of 2019, the City of Schuyler completed a comprehensive review of the city drainage infrastructure. The *Schuyler Drainage Study and Flood Risk Evaluation* was critical in evaluating and ultimately recommending practical improvements that could be implemented to reduce flood risk for the community.

The City of Schuyler is requesting NRD funding support for the following improvements:

- Flapgate closure structures on storm sewer outfalls to Lost Creek
 - 30" Flapgate at Gold St.
 - 48" Flapgate at Colfax St./Highway 15
 - 30" Flapgate at B St.
- Outlet channel widening

During the flood of 2019 as well as the recent high water from ice jamming and local rain events, water in Lost Creek/Platte River has backed up into the unprotected storm sewer outfalls. While no damage was observed in the recent 2021 events, during 2019 there was significant ponding in downtown Schuyler that remained for several hours/days during the flood. These proposed flapgates would provide protection from Lost Creek/Platte River backwater. The existing storm sewer system already includes flapgate closures at other critical discharge locations. Observations during this year's high-water events indicate that these structures were performing as intended. Additionally to these flapgates, a storm sewer outlet channel that is a tributary of Lost Creek needs to be widened to provide additional conveyance to the creek. The upstream reaches of this channel have recently been widened as part of an adjacent electrical utility project however approximately 800 LF of channel to the confluence remains.

Implementation of these two projects in 2021 will provide much needed protection to the southern portions of Schuyler (including downtown) for future events. It is our intent to begin the design and permitting process of

these projects immediately and prepare for construction in late summer/fall of 2021 so that they can be fully in place and operational for spring 2022.

Attached you will find select pages from the *Schuyler Drainage Study and Flood Risk Evaluation*. If a full copy of the report is of interest to the NRD we would be glad to forward a digital or hard copy for your use.

Detailed cost opinions for these projects including design, permitting and construction have also been developed. While these estimates may be adjusted through the design and bidding phase the City is currently budgeting for a total project cost of \$312,000. The City of Schuyler is formally requesting NRD assistance for 50% of this total project cost up to \$156,000. A summary of anticipated expenses is below.

2021 Schuyler Drainage Improvement - Anticipated Project Expenses	
Engineering (Design, Permitting and Construction Administration)	\$ 45,000.00
Flapgate Construction Estimate	\$ 140,000.00
Channel Widening	\$ 70,000.00
Easement Acquisition (If Needed)	\$ 5,000.00
Contingency (20%)	\$ 52,000.00
Total Project Costs (Budgetary)	\$ 312,000.00

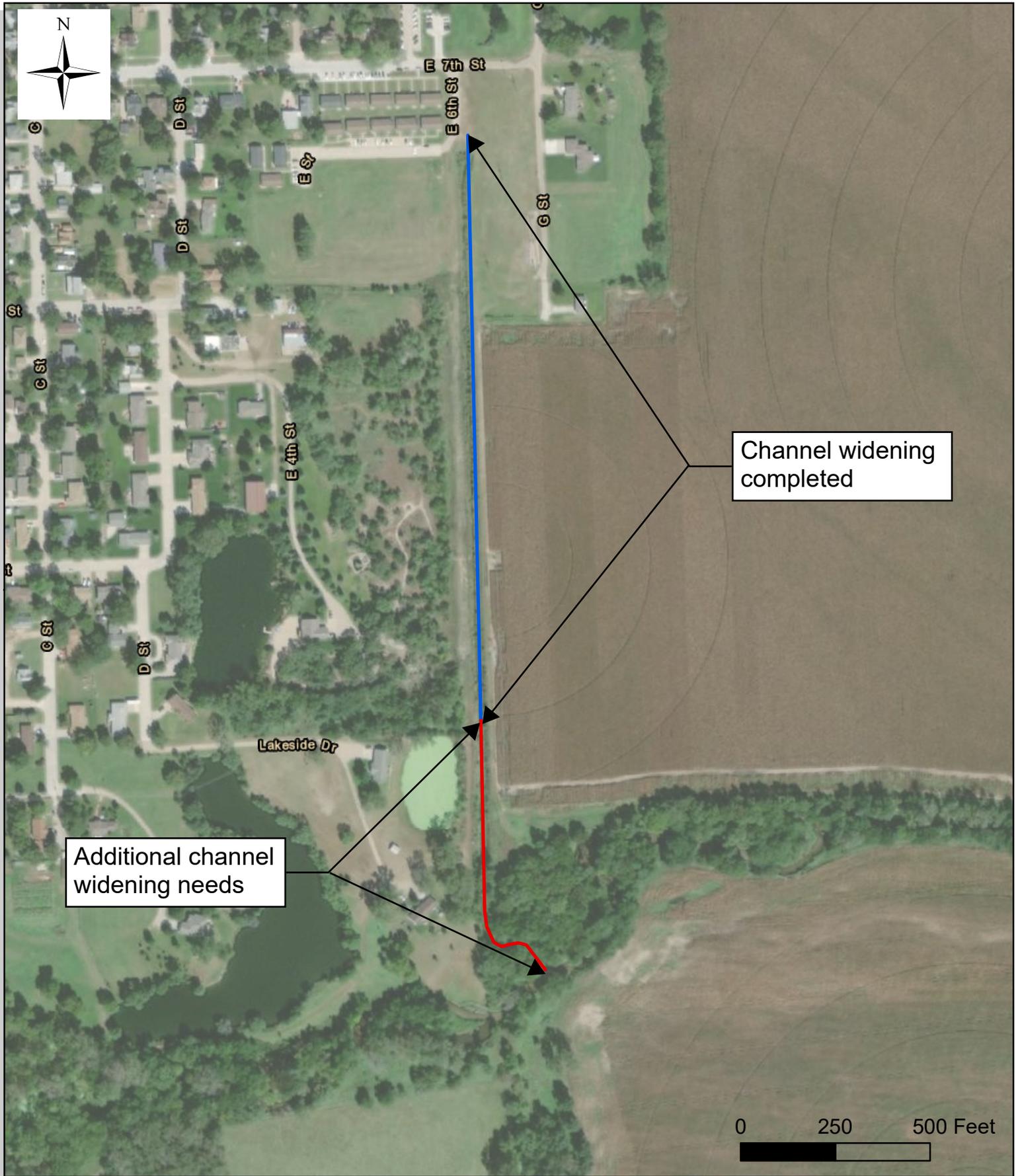
We understand that the projects committee will be meeting on April 1, 2021 and look forward to further conversations about this project.

If you have any questions about the enclosed, please contact us at your convenience.

Sincerely,

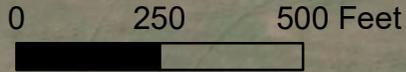
William De Roos, Administrator





Additional channel widening needs

Channel widening completed



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Channel Widening Extents

Schuyler, Nebraska

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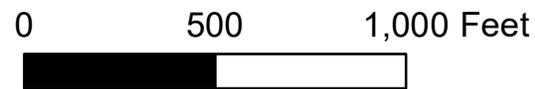
* Outfalls 10 & 11 show limited backflow impacts. No improvements needed.



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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

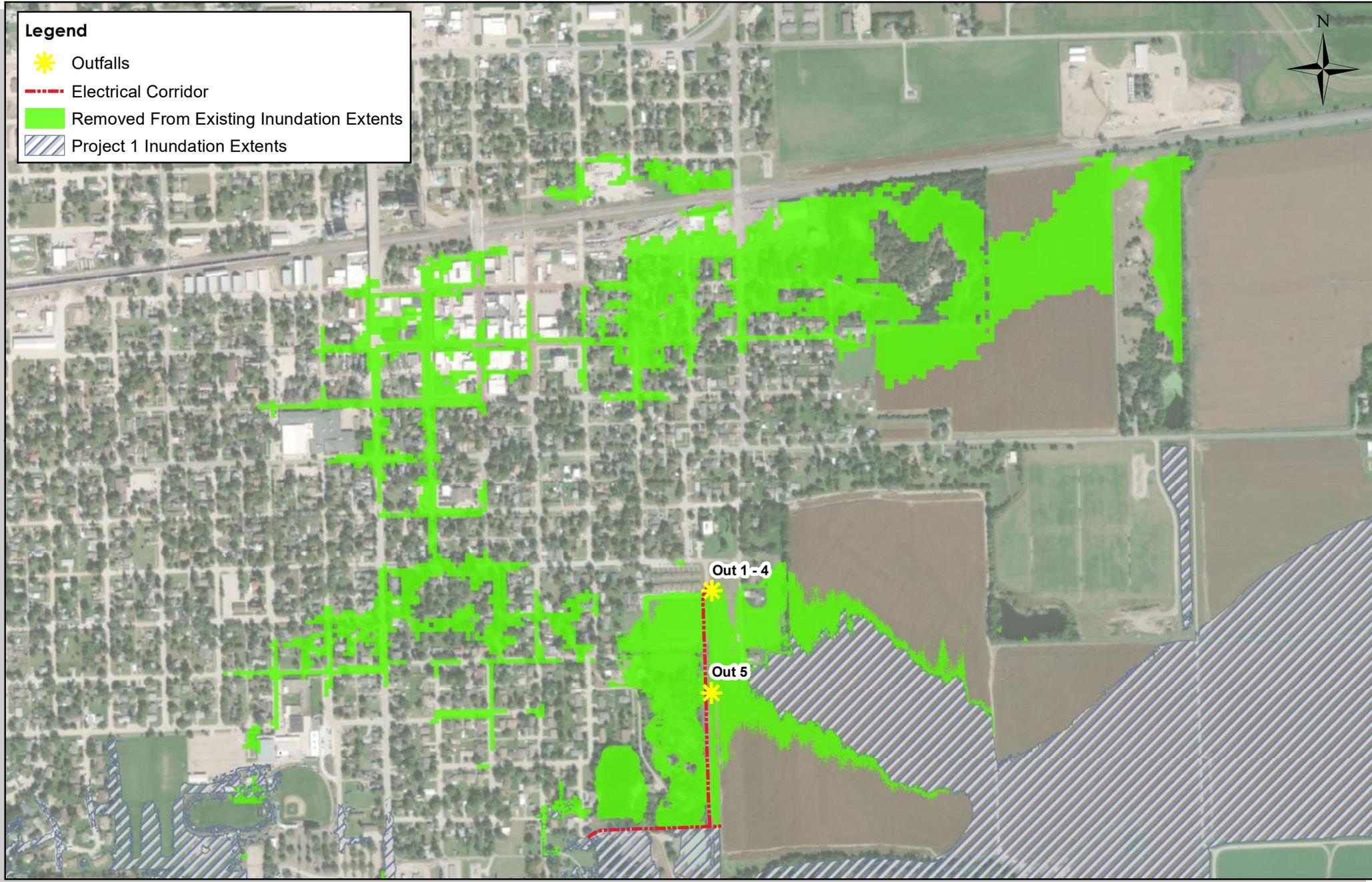
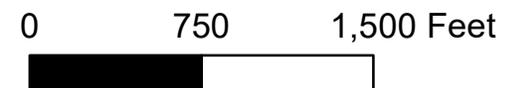


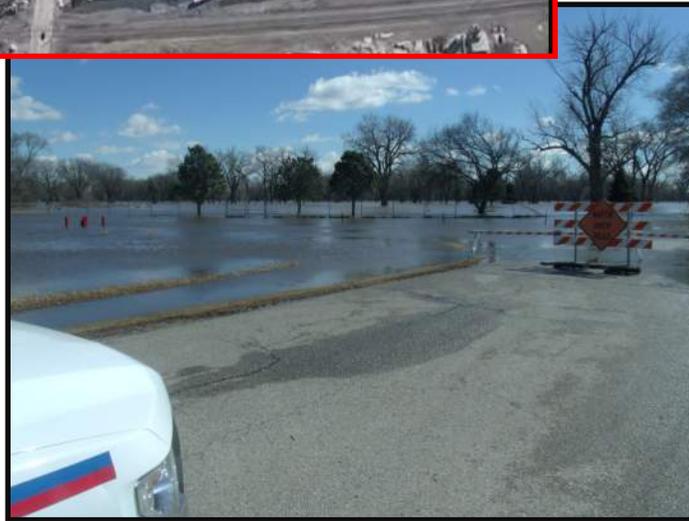
Figure 6 : Flap Gates Benefits

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Schuyler, Nebraska





August 2020

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

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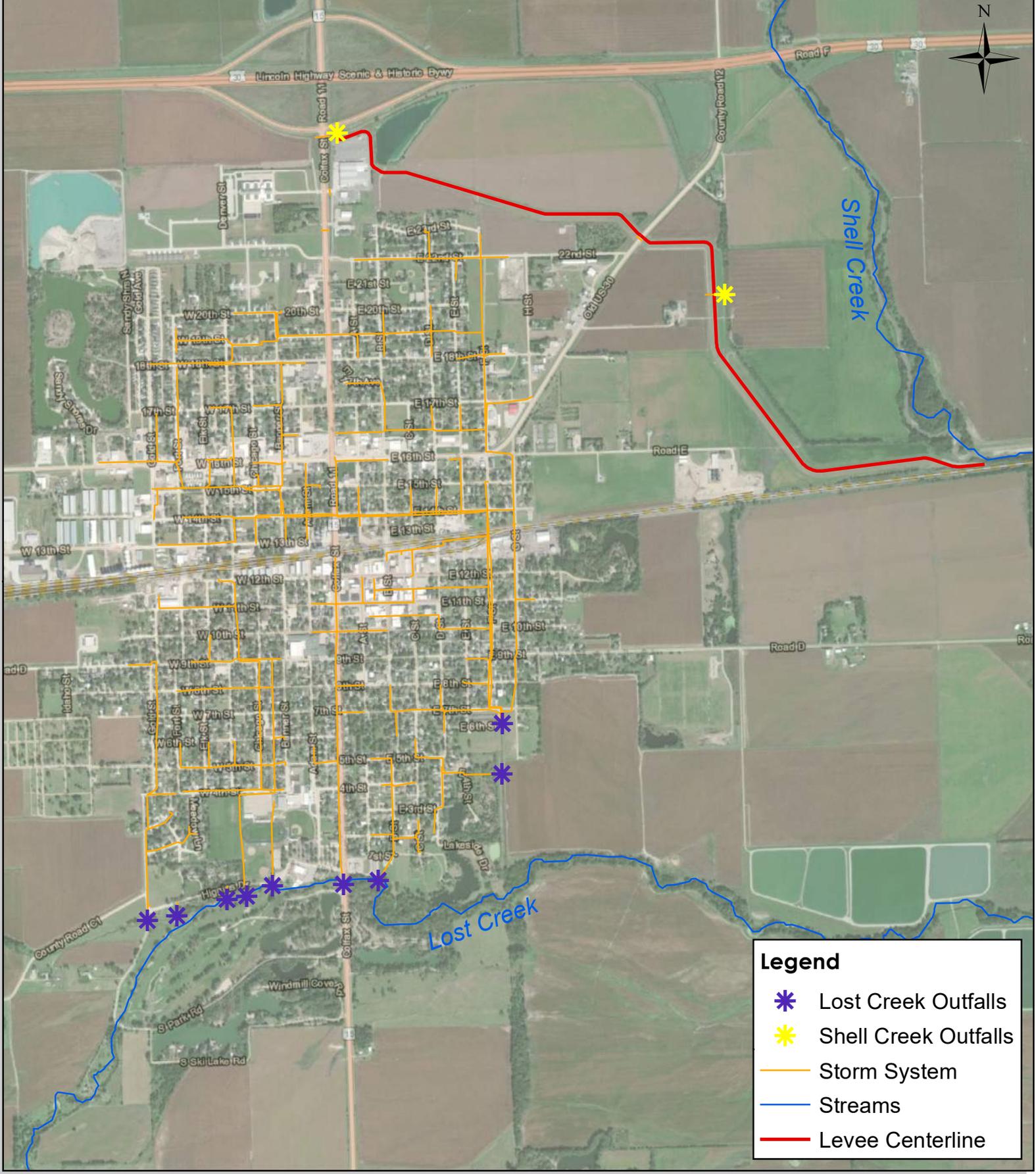
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1. BACKGROUND

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 5th, 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.



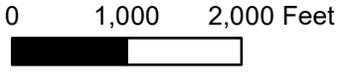
Legend

-  Lost Creek Outfalls
-  Shell Creek Outfalls
-  Storm System
-  Streams
-  Levee Centerline

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 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.

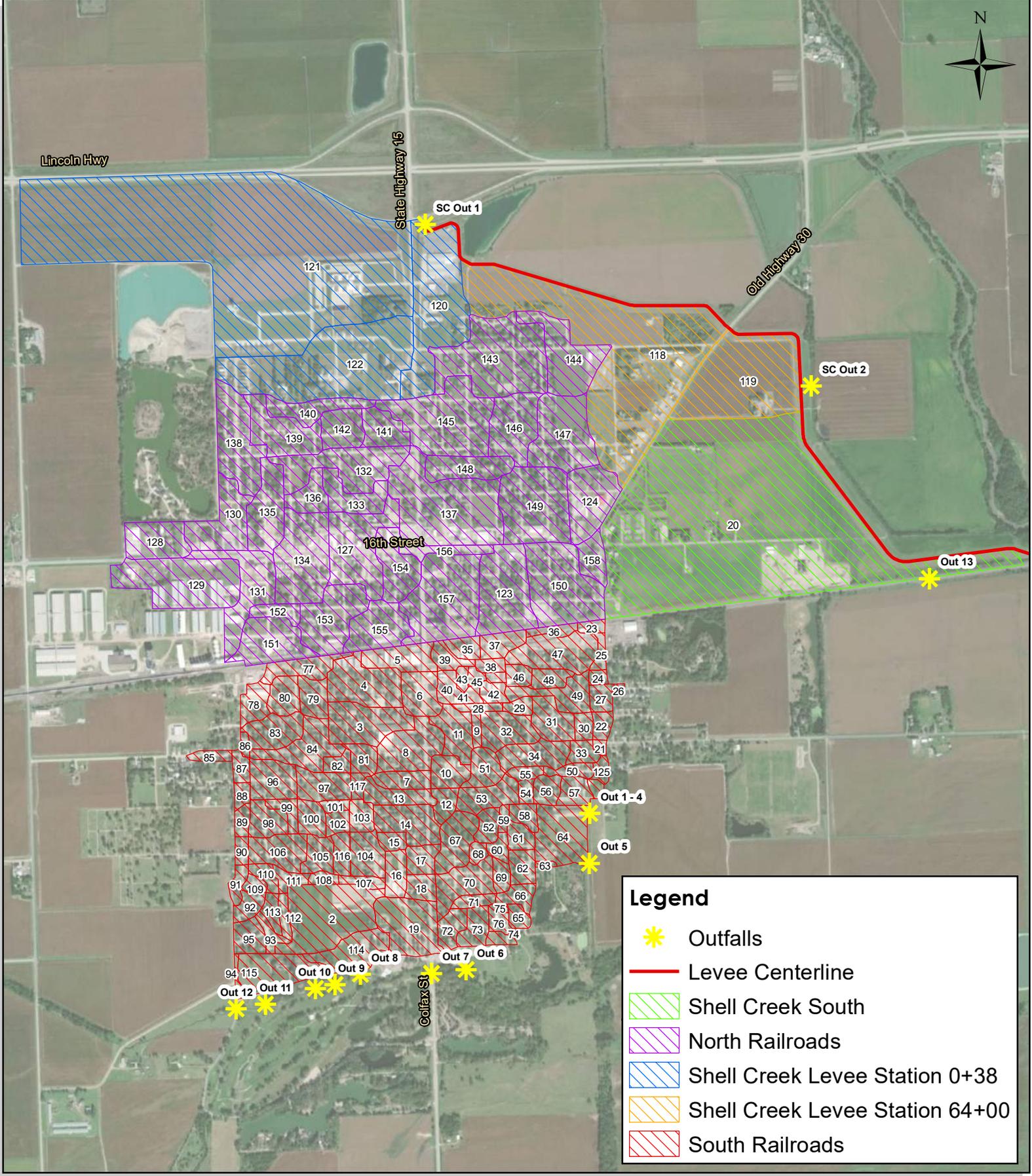
GIS data was cross-referenced and updated using as-built storm drainage system improvement plans. Pipe inverts were utilized using as-built plans, where available, and limited field survey conducted by JEO staff in January 2020. All other inverts were calculated assuming a pipe slope of 0.001 to 0.002 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.



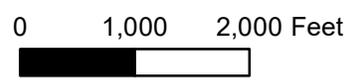
Legend

-  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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Figure 2 : Drainage Areas

Schuyler, Nebraska



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4.3 Results

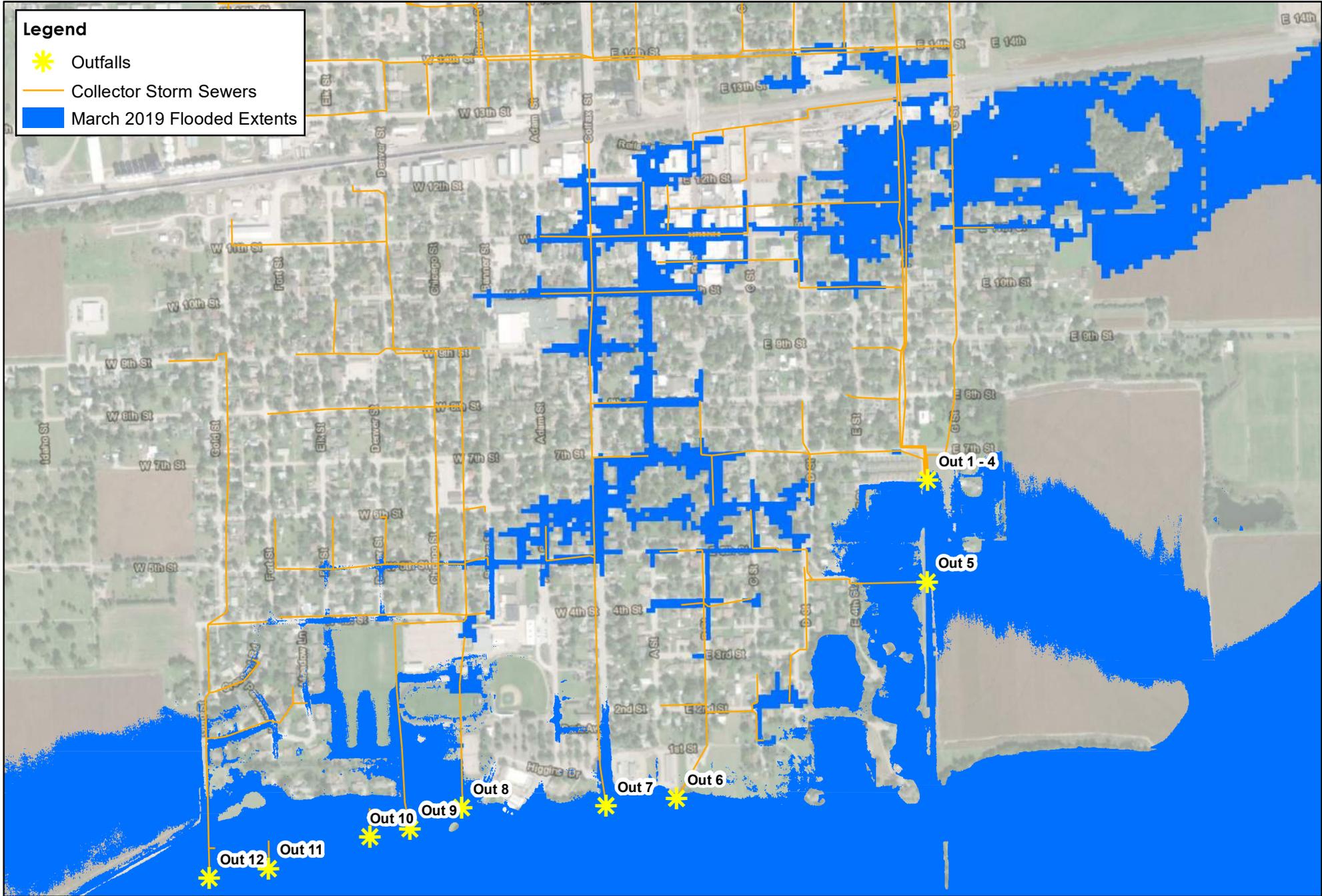
Numerous scenarios were analyzed of the existing conditions as shown in Table 3. The March 2019 flood event outfall assumed the slide gates at the outfalls to Shell Creek were closed. Results of the analysis of the March 2019 flood event are shown in Figure 3. The results were compared to information 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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Figure 3 : March 2019 Flooded Extents

Schuyler, Nebraska

0 500 1,000 Feet

JEO CONSULTING GROUP INC.

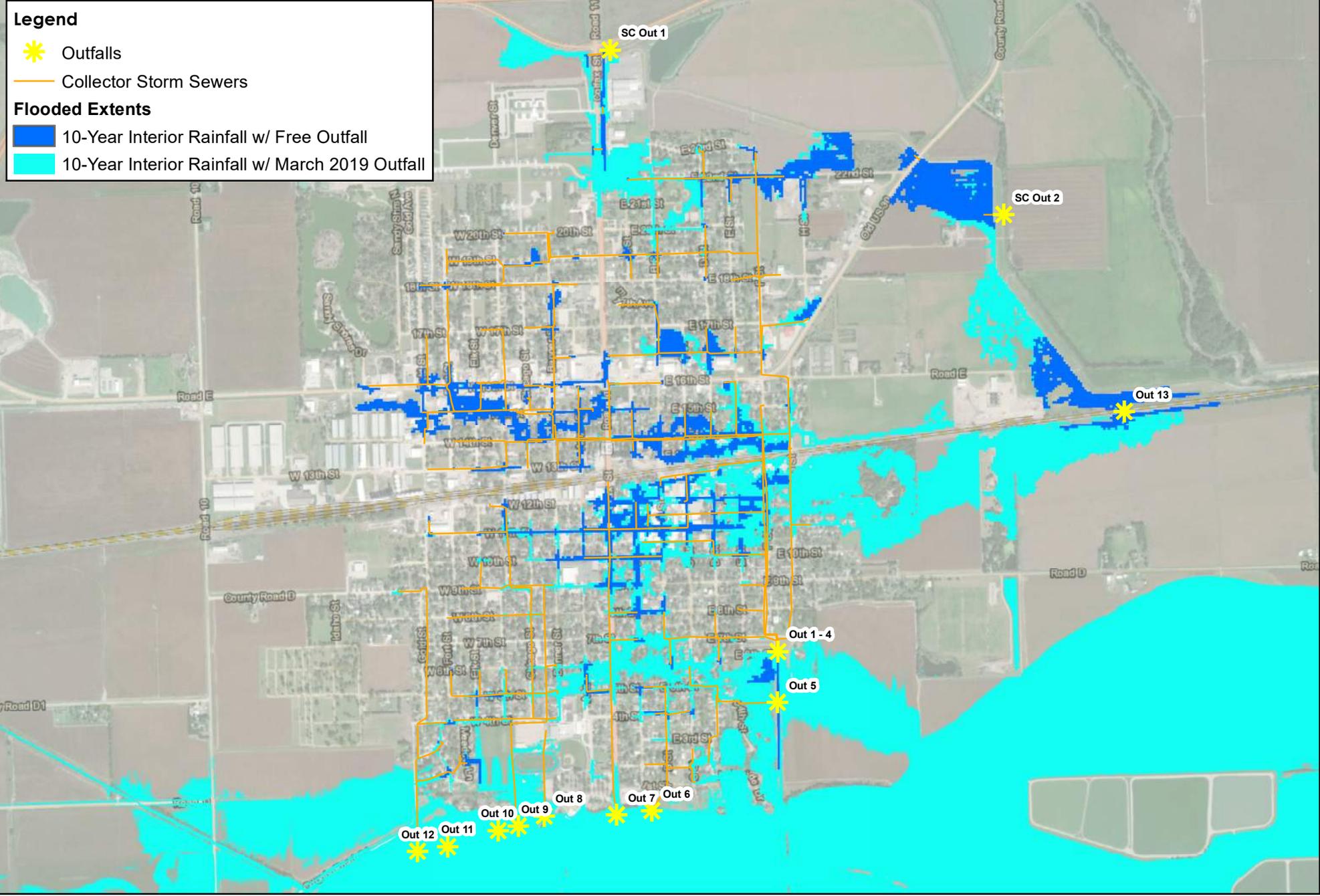
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Legend

-  Outfalls
-  Collector Storm Sewers

Flooded Extents

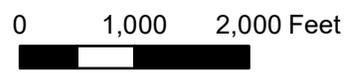
-  10-Year Interior Rainfall w/ Free Outfall
-  10-Year Interior Rainfall w/ March 2019 Outfall



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Figure 4 : 10-Year Existing Conditions

Schuyler, Nebraska



A north arrow pointing upwards and the logo for JEO Consulting Group Inc., which consists of the letters 'je' in a stylized font with a red dot above the 'e'.

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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
Subtotal of Construction Outfall 12:					\$29,000.00
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
Subtotal of Construction Outfall 7:					\$43,000.00
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
Subtotal of Construction Outfall 6:					\$29,000.00
Subtotal of Construction ALL:					\$101,000.00
Contingencies					\$21,000.00
Total Construction All Outfalls:					\$122,000.00
Engineering Survey, Design, Construction Admin:					\$22,000.00
TOTAL PROJECT COST					\$144,000.00

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.

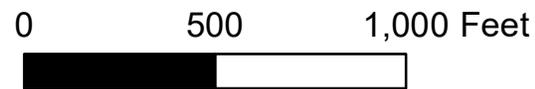


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Figure 5 : Flap Gates

Schuyler, Nebraska



Legend

- ✳ Outfalls
- - - - - Electrical Corridor



Legend

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

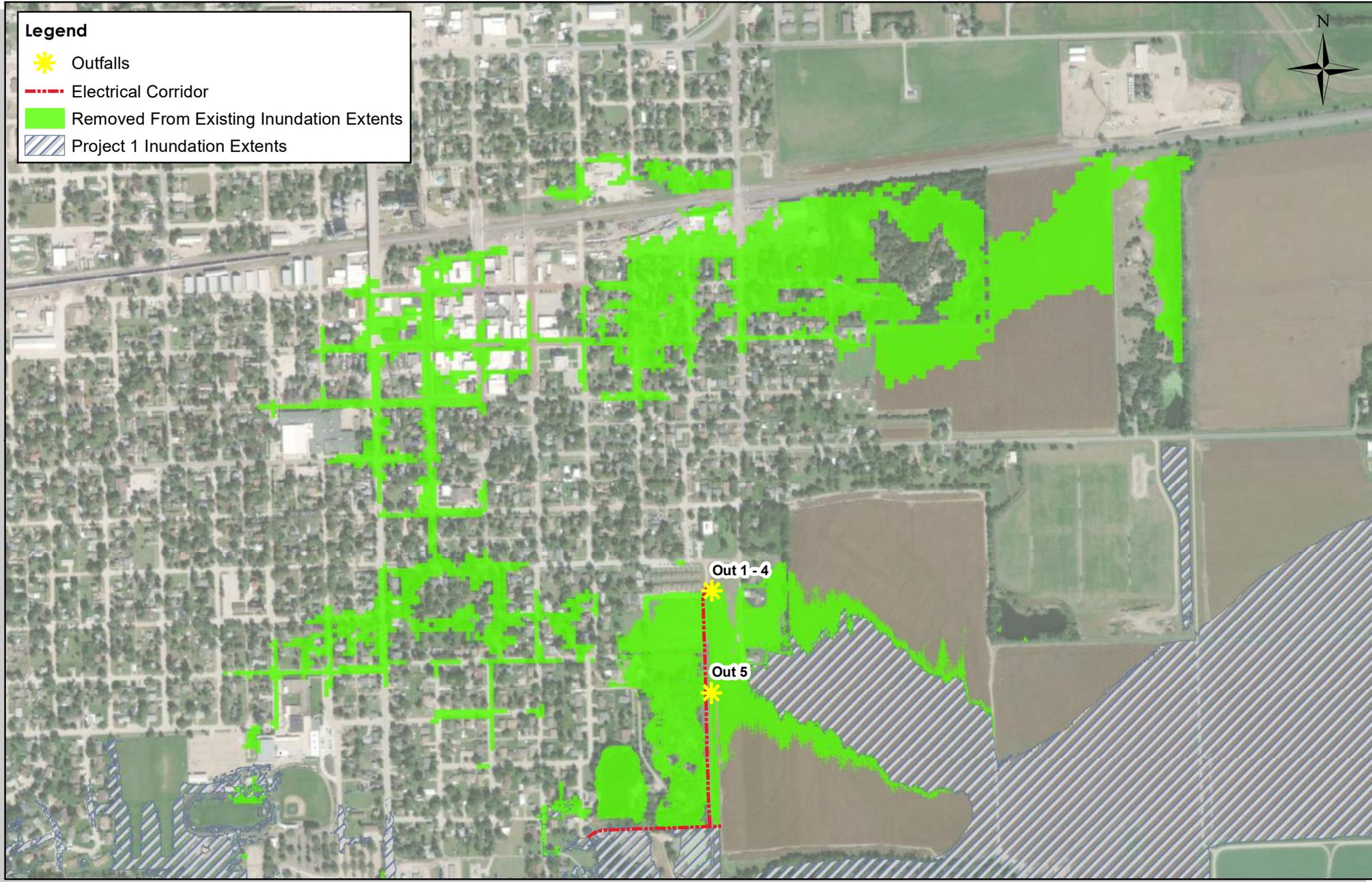
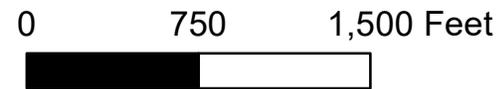


Figure 6 : Flap Gates Benefits

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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

OUT 7 – HIGHWAY 15 OUTFALL SLIDE GATE					
Item #	Description	Unit	Quantity	Unit Price	Total
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
Subtotal of Construction Outfall 7:					\$173,000.00
Contingencies:					\$18,000.00
Total Construction Highway 15 Outfall:					\$191,000.00
Engineering Survey, Design, Construction Admin:					\$39,000.00
TOTAL PROJECT COST					\$230,000.00

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				93.4	133.3	152.0

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.

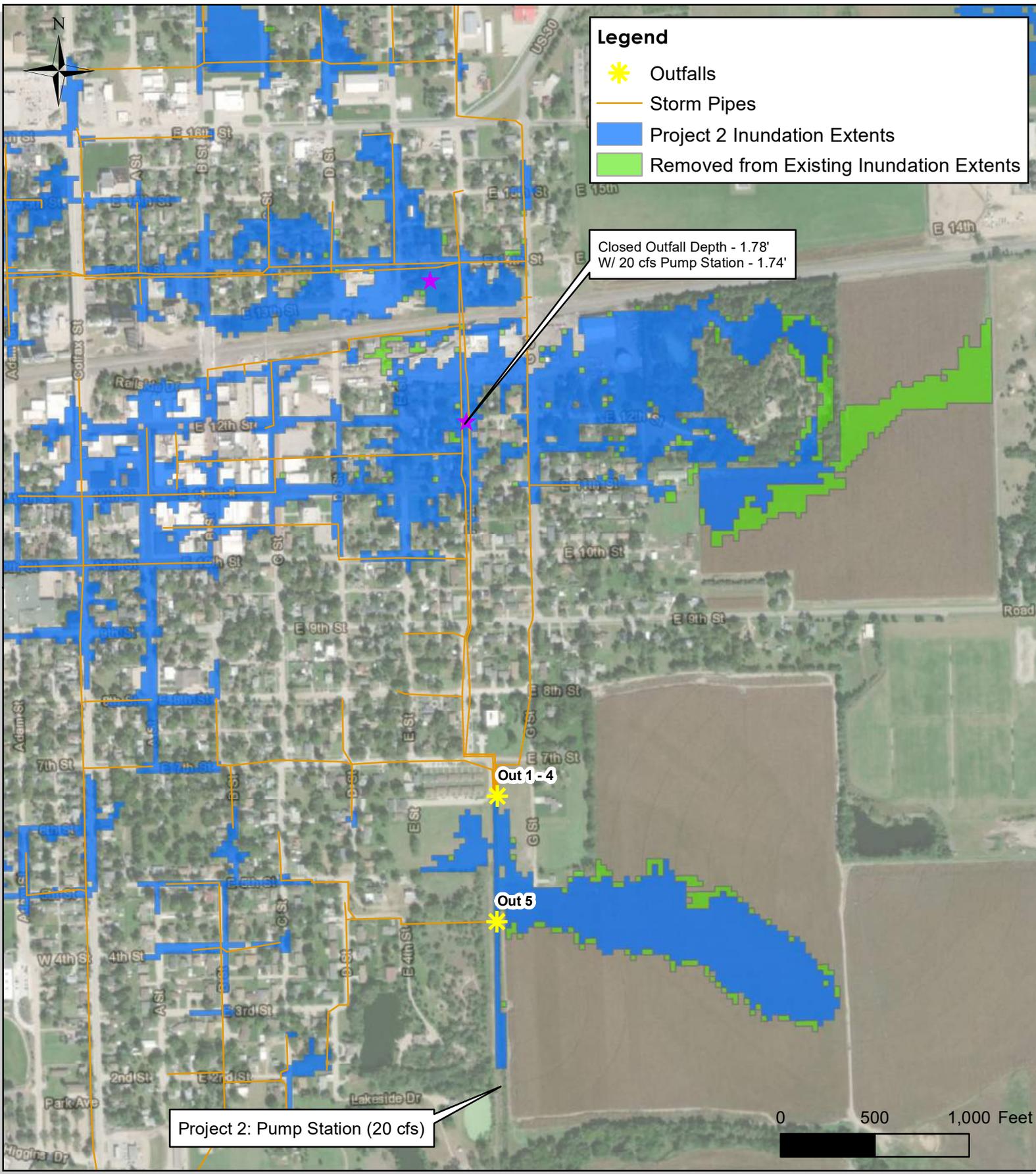
This alternative was added to the existing model to determine the potential impacts. Results of this analysis are shown in Figure 7. The figure shows the flooding impacts resulting from a 10-Year interior storm event with a March 2019 outfall condition and flap gates installed, with and without a pump. 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
Subtotal of Construction:					\$346,000.00
Contingencies:					\$70,000.00
TOTAL PROJECT COST:					\$416,000.00



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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.

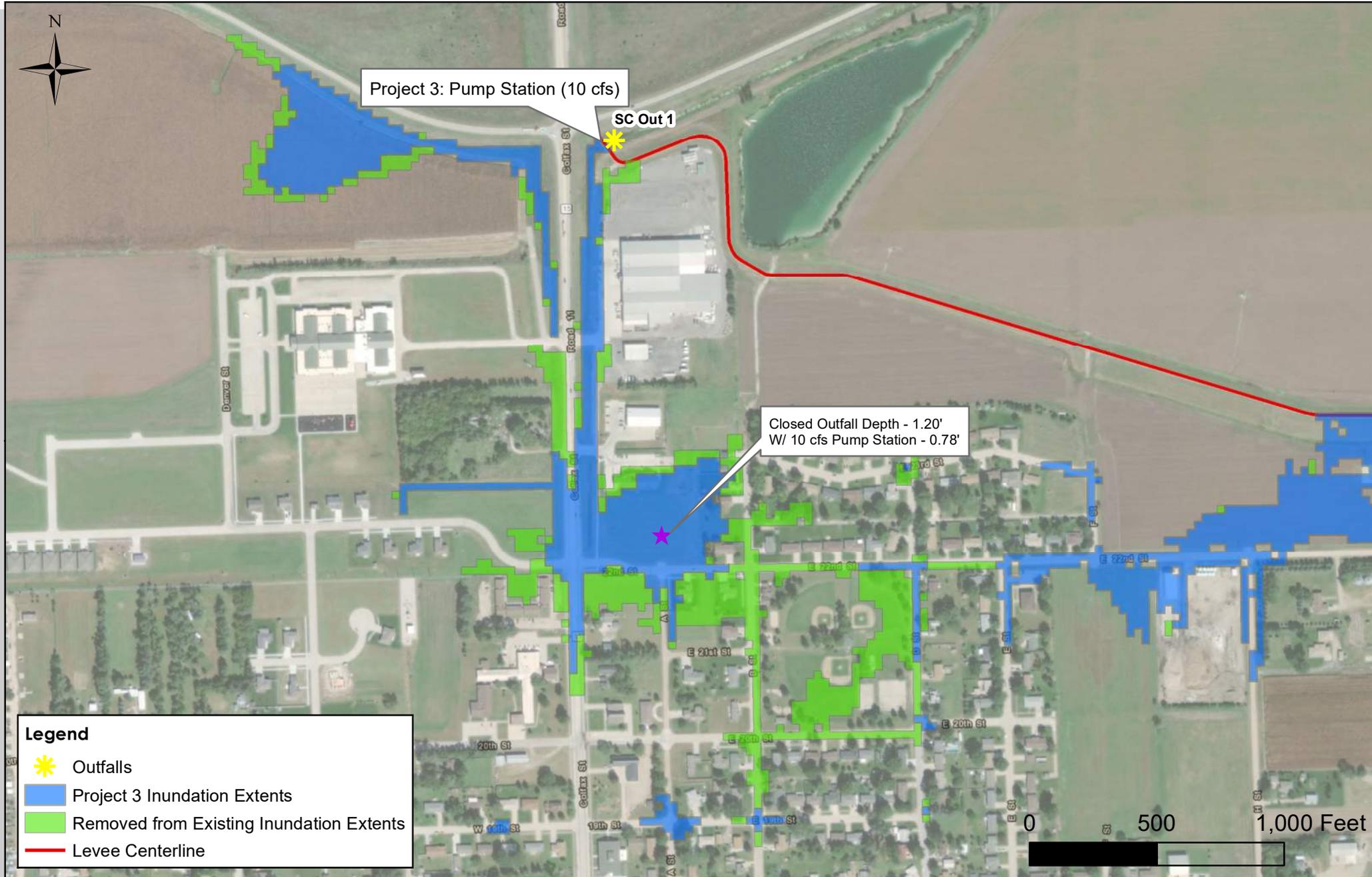
This alternative was added to the existing model to determine the potential impacts. Results of this analysis are shown in Figure 8. The figure shows the flooding impacts resulting from a 10-Year interior storm event with the slide gates closed, with and without a pump. The inclusion of the portable 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
Subtotal of Construction:					\$264,000.00
Contingencies:					\$53,000.00
TOTAL PROJECT COST:					\$317,000.00



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Figure 8 : North Pump Station 10-Year Closed Outfall

Schuyler, Nebraska



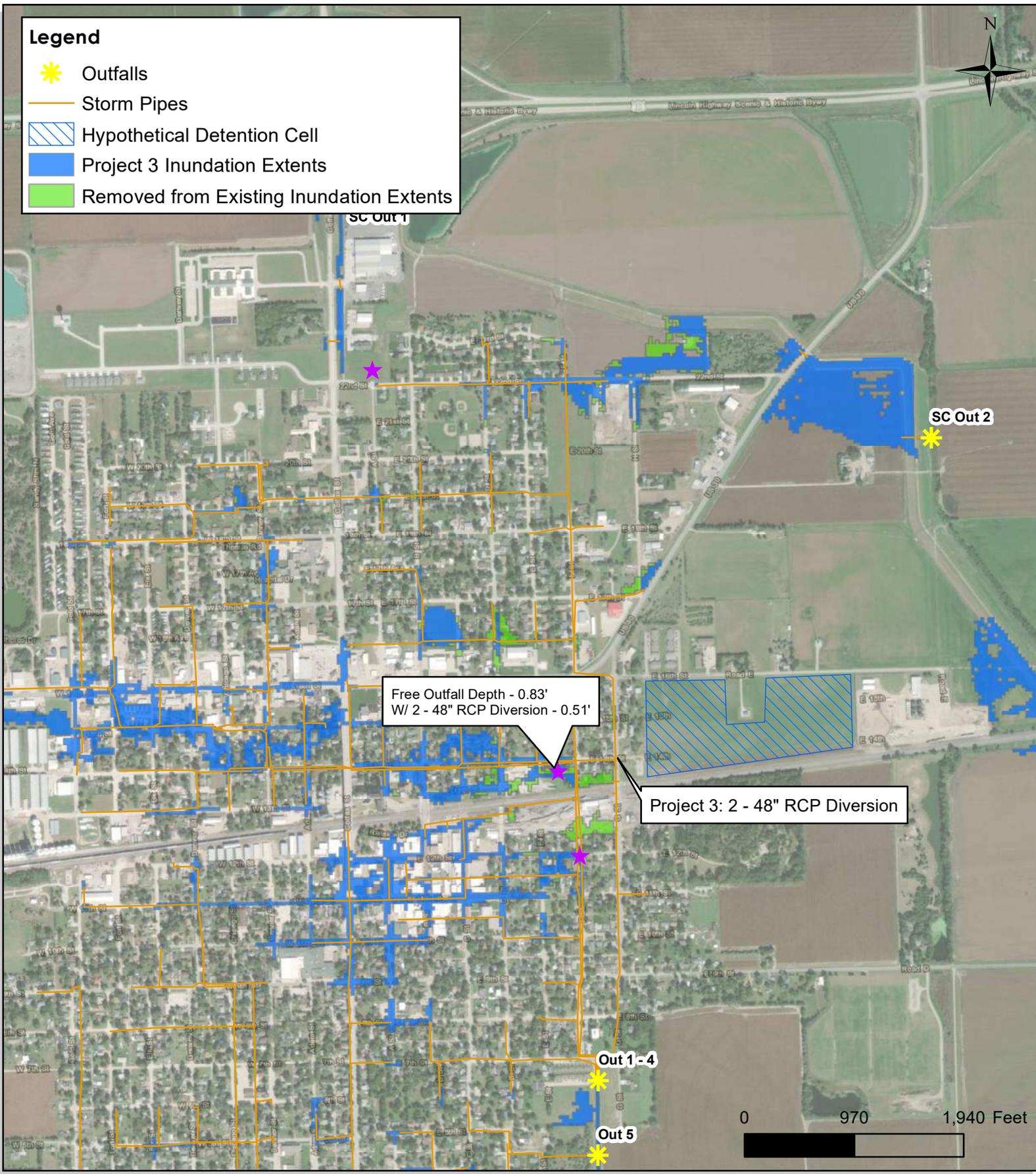
5.5 Project 4: North Railroad Detention

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 16th Street and low-lying area north of East 16th 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 14th 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 16th 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.