WATER QUALITY TRADING PLAN

City of Mineral Point
Iowa County, Wisconsin

Date: April 15, 2020

Project Number: D19-032

Prepared By: **Delta 3 Engineering, Inc.**
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I. Executive Summary -

This Water Quality Trading Plan summarizes the City of Mineral Point's (City) plan to utilize Water Quality Trading (WQT) for compliance with the final total phosphorus limit as provided in the Wisconsin Pollutant Discharge Elimination System (WPDES) Permit #WI-0024791-09-0. The Wastewater Treatment Facility (WWTF) treated 0.394 MGD in 2019. The WWTF had an average effluent Total Phosphorus (TP) concentration of 0.32 mg/L. The WWTF is required to offset 294 lbs of TP to meet the final annual six-month average limit of 0.075 mg/L and a monthly average limit of 0.225 mg/L, which will become effective September 30, 2021.

NRCS Streambank Erosion modeling methods were used to calculate the total phosphorus credits that would be generated based on the installation of best management practices (BMPs). These credits will be used to demonstrate compliance with the final total phosphorus limit as proposed in the WPDES Permit. Modeling results are provided in Table 1.1.

Table 1.1 – Modeling Results

Stream Reach	Current Phosphorus Loading (lbs/yr)	Proposed Phosphorus Loading (lbs/yr)	Proposed Phosphorus Reductions (lbs/yr)	Trade Ratio	Proposed Phosphorus Credits
1 (Right)	82.0	0	82.0	2:1	41.0
1 (Left)	72.9	0	72.9	2:1	36.5
2 (Right)	74.1	0	74.1	2:1	37.0
2 (Left)	77.3	0	77.3	2:1	38.7
3 (Right)	51.9	0	60.5	2:1	26.0
3 (Left)	53.5	0	62.5	2:1	26.8
4 (Right)	40.3	0	48.4	2:1	20.2
4 (Left)	38.3	0	46.0	2:1	19.2
5 (Right)	24.5	0	24.5	2:1	12.3
5 (Left)	35.9	0	35.9	2:1	18.0
6 (Right)	73.8	0	73.8	2:1	36.9
6 (Left)	29.2	0	29.2	2:1	14.6
7 (Right)	4.9	0	4.9	2:1	2.5
7 (Left)	3.6	0	3.6	2:1	1.8
8 (Right)	265.8	0	265.8	2:1	132.9
8 (Left)	293.8	0	293.8	2:1	146.9
9 (Right)	115.5	0	115.5	2:1	57.8
9 (Left)	170.8	0	170.8	2:1	85.4
				Total	**754.50**

Justification for Trade Ratio is provided below:

Trade Ratio = (Delivery + Downstream + Equivalency + Uncertainty – Habitat Adjustment):1

- Delivery = 0 (Trading within same HUC-12 Watershed)
- Downstream = 0 (All Trades are upstream of the Outfall 001)
- Equivalency = 0 (Not necessary of Total Phosphorus)
- Uncertainty:
  Streambank Stabilization with Habitat Restoration = 2 (Brewery Creek is eligible for habitat restoration since it is classified as an impaired water)

As demonstrated in Table 1.1, the WWTF has the ability to register approximately 754.5 credits. The WWTF intends to perform construction of the streambank stabilization in phases to account for future loadings to the WWTF. The implementation of this WQT Plan will result in compliance with the final TP limits.

II. Background -

The purpose of this Water Quality Trading Plan (Plan) is to describe the City's use of Water Quality Trading to comply with the total phosphorus limits as provided in City's WPDES Permit #WI-0024791-09-0. The Plan was developed following the Notice of Intent to Conduct Water Quality Trading, provided in Attachment #1. The Water Quality Trading Checklist Form 3400-208 is provided in Attachment #2.

The City of Mineral Point is located in Iowa County adjacent to United States Highway '151' in southwest Wisconsin. The City operates and maintains its own public wastewater and water systems. The City is located in Sections 36, 1, 31, 32, 6, and 5, Town 4 and 5 North, Range 2 and 3 East of the Fourth Principal Meridian. The City has a population of 2,487 and contains one (1) service area, which is the City Proper. The City of Mineral Point Location Map is provided in Attachment #3.

The downtown portion of the City is comprised mostly of commercial and residential development and is situated along Brewery Creek. Industrial development is primarily located on the north end of the City. The City has many rolling hills with the grade sloping throughout the area anywhere from 5% to 15%. Elevations in the area range from approximately 940'± at the Wastewater Treatment Facility (WWTF) to 1138'± at the water tower, which is located at the intersection of Church Street and Ridge Street.

The existing sanitary sewer collection consists of 521 sanitary sewer manholes; ten (10) sanitary lamp holes; seven (7) sanitary lift stations; 90 feet of six-inch (6") sanitary sewer; 94,250 feet of eight-inch (8") sanitary sewer; 3,180 feet of 10" sanitary sewer; 1,500 feet of 12" sanitary sewer; 2,100 feet of 15" sanitary sewer; and 8,970 feet of four-inch (4") sanitary force main. The gravity sewer varies in composition between concrete, clay, and PVC. The manholes vary in composition between brick, block, and precast structures. As of August 1, 2016, the City had developed its Capacity, Management, Operation, and Maintenance (CMOM) Program according to Schedule 5.3.2 of the City's Wisconsin Pollutant Discharge Elimination System (WPDES) Permit. The CMOM Program is used for documenting operation and maintenance activities within the collection system.

The City of Mineral Point owns and operates a WWTF that utilizes a bio-tower treatment system. The facility consists of a mechanical screen, grit removal, primary clarifier, bio-tower, and secondary clarifier. Screenings and grit are disposed at a sanitary landfill. Sludge from the treatment process is anaerobically digested and stored prior to land application. Alum is used at the treatment facility for the removal of Phosphorus. Please refer to Attachment #4 for the flow schematic of the City of Mineral Point's WWTF. The City of Mineral Point's WWTF has one (1) receiving water and effluent discharge location, Outfall 001: Brewery Creek (Mineral Point Branch Watershed, SP09-Sugar-Pecatonica River Basin).

The monthly average influent and effluent flows and loadings at the WWTF for 2019 are shown in Table 2.1.

Table 2.1 – 2019 Monthly Averages

Month	Outfall	Flow MGD Effluent	Phosphorus mg/L Effluent	Phosphorus lbs./day Effluent
Jan. ('19)	001	0.323	0.20	0.54
Feb. ('19)	001	0.297	0.27	0.67
Mar. ('19)	001	0.534	0.16	0.71
Apr. ('19)	001	0.333	0.31	0.86
May ('19)	001	0.605	0.25	1.26
June ('19)	001	0.316	0.39	1.03
July ('19)	001	0.327	0.42	1.15
Aug. ('19)	001	0.204	0.26	0.44
Sept. ('19)	001	0.559	0.40	1.86
Oct. ('19)	001	0.560	0.35	1.63
Nov. ('19)	001	0.352	0.26	0.76
Dec. ('19)	001	0.321	0.61	1.63
Average =		**0.394**	**0.32**	**1.05**

To reduce effluent TP, the City has made efforts to optimize TP reduction at the WWTF. The City has also implemented source reduction measures such as investigating potential TP contributors. None of the businesses were determined to be substantial contributors for TP. The City tested Municipal Well #3 and Well #4 for TP and determined background TP was negligible. The City has attempted to optimize the WWTF and evaluated minor facility modifications. Since the bio-tower treatment system was not designed for effluent TP reduction, little to no benefits were achieved through optimization. The City has implemented chemical addition and evaluated Alum dosage rates to identify the optimal dosage. The City has determined that Alum alone will not satisfy final Effluent TP Limits.

Additionally, the City has investigated watershed compliance alternatives such as Water Quality Trading (WQT) and Adaptive Management (AM). Utilizing the results from PRESTO, the watershed for the City of Mineral Point's WWTF has a nonpoint source ratio of 4:96 and is considered to be nonpoint source dominated. Stream monitoring data for TP is not available on the Brewery Creek. The City should investigate background concentrations within the Brewery Creek to evaluate whether the stream is meeting the water quality criteria (WQC).

Following the initial watershed investigation, the City elected to move forward with WQT. The City intends to perform WQT projects within the City's HUC-12 #070900030103 as provided in Attachment #5. The Iowa County Land Conservation Department (LCD) has been contacted for possible WQT funding.

Flow and loading data from 2019 was utilized to determine credits needed. Annual effluent TP was estimated at 384 lbs. The final limit would allow annual discharge of 90 lbs. The City would be required to offset 294 lbs of effluent TP. Calculations for required WQT reductions are provided below.

1) The current annual Phosphorus loading discharged at the WWTF is calculated as follows:

Average Daily Flow (Q) = 0.394 MGD
Average Phosphorus concentration = 0.32 mg/L

0.32 mg/L x 0.394 MGD x 8.34 x 365 days/yr. = **384 lbs./yr.**

2) The proposed allowable annual Phosphorus mass limit at the WWTF is calculated as follows:

Average Daily Flow (Q) = 0.394 MGD
Proposed Seasonal Phosphorus Concentration Limit = 0.075 mg/L

0.075 mg/L x 0.394 MGD x 8.34 x 365days/yr. = **90 lbs./yr.**

3) Reduction of Total Phosphorus required at WWTF -
384 lbs./yr. – 90 lbs./yr. = **294 lbs/yr**

Utilizing a proposed 2:1 trade ratio, the required non-point source TP reduction would be 588 lbs./yr.

To provide an adequate safety factor for credits generated, the City will generate credits to meet the Maximum Monthly Phosphorus Discharge. The calculation for credits required to meet the Maximum Monthly Phosphorus Discharge is provided below:

Maximum Monthly Flow (Q) = 0.560 MGD
Average Phosphorus Concentration = 0.32 mg/L
Proposed Seasonal Phosphorus Concentration Limit = 0.075 mg/L

(0.32 – 0.075) mg/L x 0.560 MGD x 8.34 x 365 days/yr. = **417 lbs/yr**

Utilizing a proposed 2:1 trade ratio, the required non-point source TP reduction would be **834 lbs/yr**.

To generate the required 417 TP credits, the City intends to perform streambank stabilization. Streambank stabilization will utilize grading and riprap to prevent the erosion of sediment from the streambanks. Streambank stabilization will not only prevent sediment from entering the steam, but will also prevent phosphorus, nitrogen, and other pollutants from discharging to the Brewery Creek. Reducing pollutant discharge will restore stream habitat and generate water quality trading credits.

III. Location and Description of Credit Generation Sites –

The City discharges to the Brewery Creek (Mineral Point Branch Watershed, SP09-Sugar-Pecatonica River Basin) at Outfall 001. As mentioned previously, the City intends to perform WQT projects within the City's HUC-12 #070900030103. The City plans to implement BMPs to generate TP credits. Specifically, Streambank stabilization is planned along the banks of the Brewery Creek on the following properties:

- Parcels 251-0908, 2510907, and 251-0893.01
- Parcels 251-0355, 251-0357, 251-0359, 251-0360, 251-0361, and 251-0346
- Parcel 251-0362.A
- Parcels 251-0361.02 and 251-0362.B
- Parcel 018-0630
- Parcels 251-0346.017 and 251-0339
- Parcel 251-0352
- Parcel 251-0187
- Parcel 251-0188.B
- Parcels 251-0188.04 and 251-0344.01
- Parcel 251-0188.C
- Parcel 251-0190
- Parcels 251-0344 and 251-0341
- Parcels 251-1040, 251-1041, 251-1006, 251-1042, and 251-1123
- Parcel 018-0462.01

See Figure 3.1 and Figure 3.2 for additional project location information.

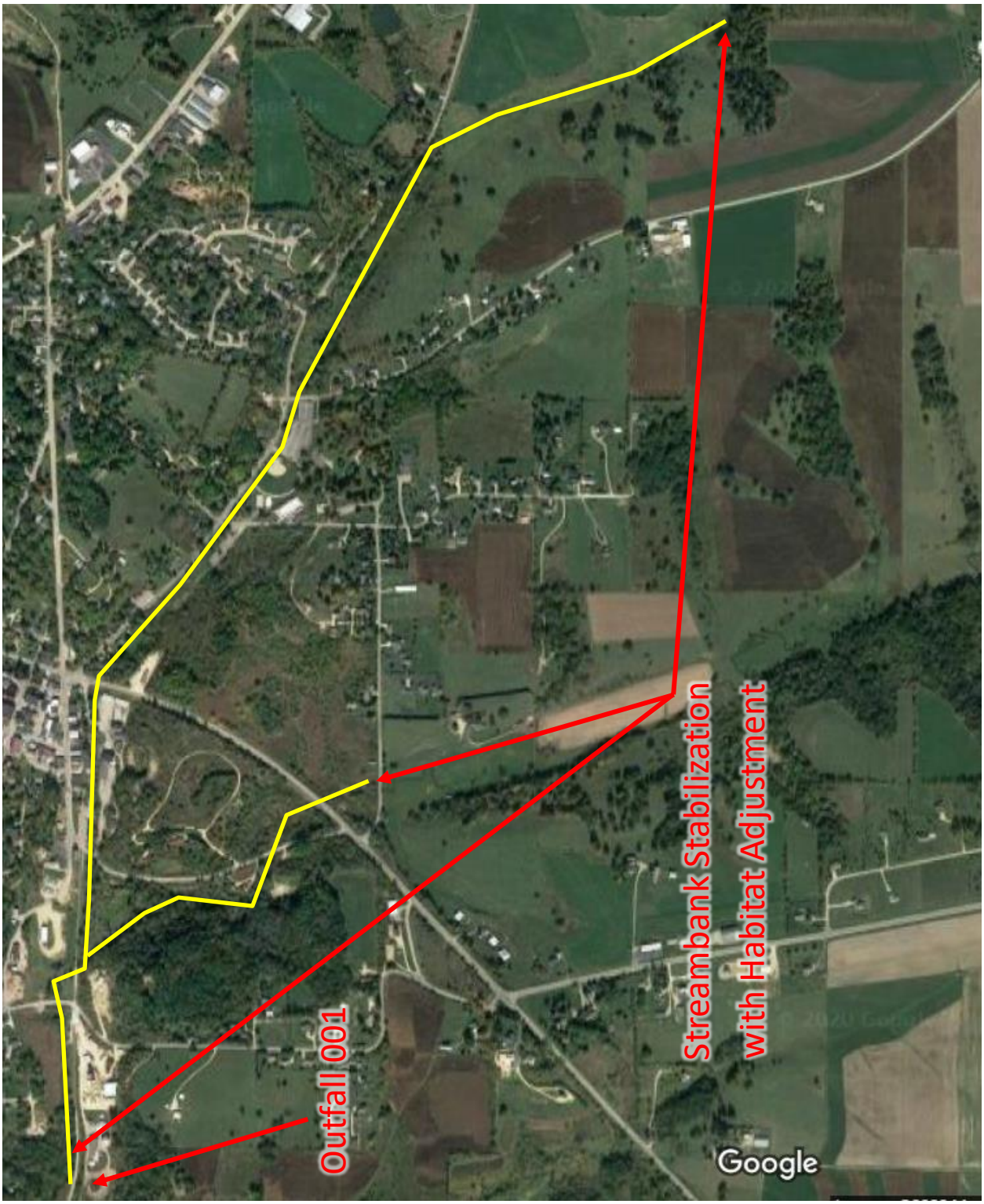

Figure 3.1 – Streambank stabilization locations in relation to Outfall 001.

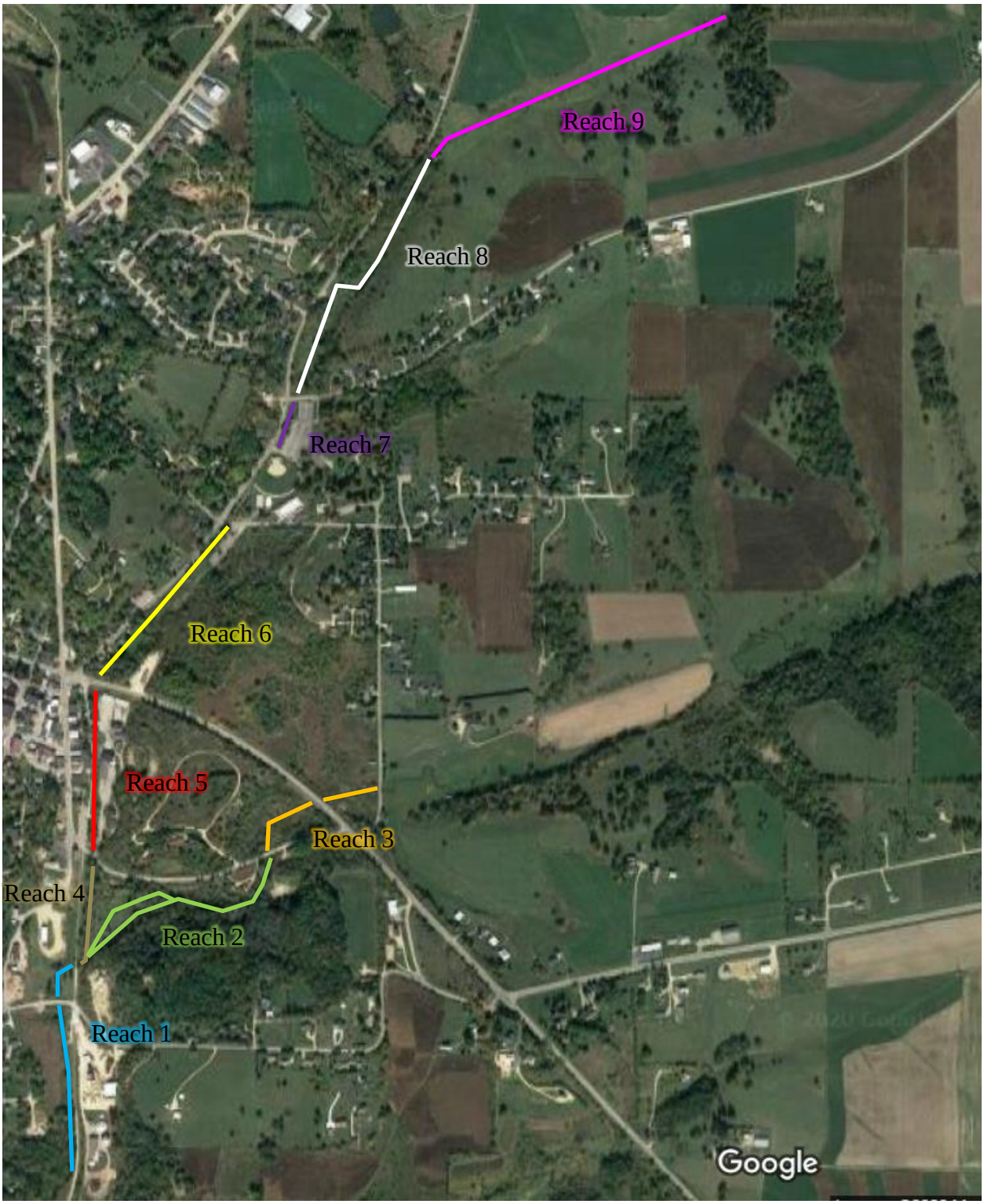

Figure 3.2 – Streambank stabilization locations.

IV. Methods for Nonpoint Source Load Reduction –

The City would like to acquire at least 417 WQT trading credits to serve as insurance in the event that effluent credits are lost or the WWTF discharges additional mass of TP. The Plan identifies trading practices that will reduce TP runoff by 1,1508 lbs and will utilize a 2:1 trade ratio. The WQT practices identified for this Water Quality Trading Plan will generate approximately 755 TP credits/year indefinitely as long as trading practices are maintained.

A. Methods Used to Generate Load Reductions

For streambank stabilization, City plans to generate TP load reductions through streambank grading with minor riprapping as needed for approximately 14,240' of streambank. Streambank Stabilization will be performed as per NR 328 *Shore Erosion Control Structures in Navigable Waterways*, NRCS 580 *Streambank and Shoreline Protection*, and NRCS 395 *Stream Habitat Improvement and Management*. Riprapping the streambank in high energy locations will better protect the streambank as compared to grading alone. The streambank stabilization project will occur within HUC-12 #070900030103 in order to generate TP credits. A Plan of the grading and riprap implementation is provided in Attachment #6.

The City is contracted with Bart Nies, PE/Owner for Delta 3 Engineering, Inc. to design the BMPs and prepare the plans, specification, and operation and maintenance manual. The City will acquire all required permits and authorizations prior to construction. To register credits, the City has entered into trade agreements with Property Owners A and B pursuant to *s. 283.84(1)(b), Wis. Stats*.

B. History of Project Site

Mineral Point is located within the Southwest Savanna ecological landscape. The City was settled in 1827 and has undergone significant development. Currently, the land use within the watershed is a mix of commercial, residential, undeveloped, and pasture. The commercial and residential areas consist of manicured lawns, impermeable surfaces, and storm sewer. The undeveloped areas typically consist of forest, wetland, and savannah ecosystems. Pastured areas consist of short grass with minimal trees. Existing trees are primarily boxelder, willow, and cottonwood. The streambanks have experienced significant erosion as the Brewery Creek Watershed has been developed and cleared for agricultural and residential use. The banks are predominately undercut with some rills and vegetative overhang. Tree roots are readily visible throughout the reaches. Fallen trees and slumps are also visible in areas. Recession rates for each Reach along with documentation regarding existing condition were estimated in Attachment #7.

C. Model Used to Derive Load Reductions

NRCS Streambank Erosion modeling methods were used to calculate the total phosphorus credits that would be generated based on the installation of BMPs. These credits will be used to demonstrate compliance with the final total phosphorus limit as proposed in the WPDES Permit. Modeling results are provided in Table 4.1.

Table 4.1 – Modeling Results

Stream Reach	Current Phosphorus Loading (lbs/yr)	Proposed Phosphorus Loading (lbs/yr)	Proposed Phosphorus Reductions (lbs/yr)	Trade Ratio	Proposed Phosphorus Credits
1 (Right)	82.0	0	82.0	2:1	41.0
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Justification for Trade Ratio is provided below:

Trade Ratio = (Delivery + Downstream + Equivalency + Uncertainty – Habitat Adjustment):1

- Delivery = 0 (Trading within same HUC-12 Watershed)
- Downstream = 0 (All Trades are upstream of the Outfall 001)
- Equivalency = 0 (Not necessary of Total Phosphorus)
- Uncertainty:
  Streambank Stabilization with Habitat Restoration = 2 (Brewery Creek is eligible for habitat restoration since it is classified as an impaired water)

Soil testing has been completed to determine TP concentrations within the soil. Soil sampling was performed every 100 feet and included the use of a soil sampler which pulled ¾" cores at 8" depth. Approximately six (6) cores were taken at each sampling location to provide a representative sample. Soils maps and soil testing data is provided in Attachment #8. Soil sample locations are provided in Attachment #6. An onsite evaluation has been conducted to estimate stream bank recession rate. The streambank has also been surveyed horizontally and vertically via Global Position System (GPS) Equipment. The survey data, narrative, and photos documenting the current state of eroding stream banks is provided in Attachment #7.

With the collected data, the NRCS Streambank Erosion Model was used to calculate TP loss from each reach of the eroding streambank. The modeling data for the NRCS

Streambank Erosion Model is available in Attachment #9. The designed streambank stabilization grading and riprap will eliminate streambank recession thus eliminating TP inputs due to streambank recession in planned areas. For the Habitat Restoration portions of the WQT Plan, the City has been in contact with the DNR Fisheries Biologist for Iowa County for direction regarding stream habitat improvements. The City will submit the final design plans and specifications to the DNR for approval. TP Credits will be registered following construction of the BMPs.

If the Plan or model inputs change, the City will submit to the DNR the revised models and calculations to more accurately reflect and number of credits generated.

D. Stream Habitat Improvements

As provided in NRCS 395 Stream Habitat Improvement and Management, the definition of *stream habitat improvement and management* is to maintain, improve physical, chemical, and biological functions of a stream, and its associated riparian zone, necessary for meeting the life history and requirements of desired aquatic species. The goal of stream habitat improvements within this Plan is to provide suitable habitat for desired fish and other aquatic species as well as provide riparian condition that maintain the stream corridor ecological processes which supports diverse stream habitat and aquatic species.

Prior to designing stream habitat improvements, the current conditions of the Brewery Creek and surrounding land uses were evaluated. The Brewery Creek watershed is dominated by urban development and livestock production practices. The Brewery Creek experiences significant storm water runoff issues including flooding, increased bank erosion, sedimentation, and limited riparian habitat. This is primarily caused by residential agricultural development within the watershed. The Brewery Creek is listed on State of Wisconsin 2018 Impaired Waters List due to degraded biological community and chronic toxicity due to lead and zinc. This contamination is due to the areas historic mining background and the mine waste piles that remain.

The Brewery Creek is a cold-water aquatic community. At the Outfall 001, the stream is classified as Limited Aquatic Life (LAL). Limited fishing opportunities are available on the Brewery Creek; however, brown trout were found in Brewery Creek even though the stream is not stocked. Brewery Creek is comprised primarily of hard substrates consisting of rubble/cobble or broken bedrock along with some silt substrates. Brewery Creek has one of the lowest width-to-depth ratios in the Mineral Point Branch watershed. Pools are scarce throughout and is a major attributor to limited fish numbers and species diversity. Additionally, perched culverts limit upstream mobility of aquatic organisms. The City is working with Justin Haglund (DNR Fisheries Biologist) for incorporation of in-stream habitat improvements with the Project Plans and Specifications.

E. Operation and Maintenance

An Operation and Maintenance (O&M) Plan is provided in Attachment #10. The O&M plan describes in how the Stream Stabilization Practices will be operated and maintained. The O&M Plan also addresses response procedures for Practice

Registration, Noncompliance Notification, and Notification of Trade Agreement Termination.

As previously mentioned, City is planning to perform streambank stabilization by installing rip-rap along approximately 14,240' of streambank. The stabilization practices will be installed and maintained as per NR 328 *Shore Erosion Control Structures in Navigable Waterways,* NRCS 580 *Streambank and Shoreline Protection*, and NRCS 395 *Stream Habitat Improvement and Management*. Restoration landscaping and seeding will be installed following construction and will be closely monitored for a minimum of two (2) growing seasons to ensure the new seeding grows and erosion is not prevalent. The City should also address weed and invasive vegetation growth if present. The riprap will be inspected following heavy rain events at a minimum. Inspection will be used to determine appropriate actions in order to maintain the riprap for continuous and ongoing streambank stabilization and TP credit generation.

The BMPs will be inspected annually by a licensed Professional Engineer to ensure that the BMPs are functioning as intended in order to meet the requirements of this WQT Plan.

V. Trade Timeline –

Schedule for Installation of the above mentioned trading practices for Total Phosphorus Credit Generation for TP compliance is provided in Table 5.1 below.

Table 5.1 – Trade Timeline

Item	Completion Date
Site Investigation	March 31, 2019
Conceptual Design	September 30, 2019
Final Design	June 30, 2020
Construction Permits	June 30, 2020
DNR Review of Final Design	August 31, 2020
Construction of BMPs	Fall, 2020
Phosphorus Credit Registration	June 30, 2021
Use of Phosphorus Credits by City of Mineral Point (Ongoing for Permit Compliance)	September 30, 2021

The City has been in contact with the DNR Water Regulation & Zoning Senior Specialist for Lafayette County who has provided guidance for required permits for the WQT Plan. At this time, no permitting issues have arisen to hinder the Project Progress. Credits will be used by the City beginning 9/30/2021. Credits will continue as long as the trading practices are maintained as outlined in this WQT Plan.

VI. Inspection Reporting –

A. Tracking Procedures

The City will track credits used monthly. The City will report credit usage to the DNR on a monthly basis in the Discharge Monitoring Reports (DMRs). The annual report will summarize the 12 months of credit usage and credit generation. The City will report to DNR any concern that they have that may result in a need to modify the trade agreement and/or this trade plan. For example, a need to generate additional credits based on discharge.

B. Inspection

Inspection of the BMPs shall occur during construction phase to ensure they are installed per the design and meet all applicable codes and permits. Once completed, inspections of the established BMPs shall occur each month at a minimum or following heavy rain events. A licensed professional engineer will perform an annual certification to ensure the practice is performing as designed and the City remains in compliance.

The inspection reports will include:

i. Name and contact information of the inspector
ii. Inspection Date
iii. Relevant standards set forth in the Design Plan or Operation and Maintenance Plan
iv. Issues identified
v. When and how any issues identified were addressed
vi. When and how any issues identified will be addressed in the future

Inspection reports generated during each routine or after rain event inspection will be included with the Annual Water Quality Trading Report submitted by the City to DNR. Annual inspections by a professional engineer will typically occur in April or May. This time of year is ideal for evaluating the condition of BMPs as it follows the freeze/thaw which poses the greatest potential for changes to the BMPs. Minimal vegetation cover will allow for adequate visual inspection.

C. Management Practice Registration Form

The City will file a completed registration form 3400-207 for Water Quality Trading Management Practice Registration separately from this Plan.

D. Annual Water Quality Trading Report Submittal

The following shall be submitted to the DNR by January 31 of each year:

i. The number of pollutant reduction credits (lbs/month) used each month of the previous year to demonstrate compliance;
ii. A summary of the annual inspection of the practice that generated any of the pollutant reduction credits used during the previous year, this inspection shall be completed by a licensed Professional Engineer;
iii. All monthly inspection reports;

iv. Identification of noncompliance or failure to implement any terms or conditions of this permit with respect to water quality trading that have not been reported in discharge monitoring reports;
v. A list of all noncompliance and the correction measures and timing to address the issues throughout the year; and
vi. An updated WQT plan if management practices have or will change.

E. Monthly Certification of Management Practices

Each month, the City will certify that the BMPs are maintained and operating in a manner consistent with this Water Quality Trading Plan or provide a statement noting noncompliance with this Plan. The monthly Discharge Monitoring Report (DMR) will include the following statement as a certification of compliance when the Credit Generating Practice is operating in a manner consistent with the Plan:

> "I certify that to the best of my knowledge that the management practices identified in the approved water quality trading plan as the source of phosphorus credits is installed, established and properly maintained."

F. Notification of Failure to Generate Credits

The City will notify DNR by telephone call to DNR's regional wastewater compliance engineer within 24 hours or next business day of becoming aware that phosphorus credits used or intended for use by City are not being generated as outlined in this Water Quality Trading Plan.

The City will submit a written notification within five days after the City recognizes that the phosphorus credits are not being generated as outlined in the Trading Plan. DNR may waive the requirement for submittal for a written notice within five days and instruct the City to submit the written notice with the next regularly scheduled monitoring report required by City's WPDES Permit.

The written notice will contain a description of how and why the TP credits are not being generated as outlined in the Water Quality Trading Plan, the steps taken or planned to prevent reoccurrence of the identified problems and the length of time anticipated it will take to address the issue.

The City will work to rectify the problem as laid out in the Operation and Maintenance Plans.

G. Conditions under which Management Practices May Be Inspected

Any DNR authorized officer, employee, or representative has the right to access and inspect the credit generating practice so long as the City's trade agreement with the property owner(s) and this Water Quality Trading Plan remain in effect.

VII. Certification –

The undersigned hereby certifies that this Water Quality Trading Plan is accurate and correct to the best of his knowledge.

City of Mineral Point Wastewater Treatment Facility

By: _____

Jason Basting
Mayor
City of Mineral Point
137 High Street, Suite 1
Mineral Point, WI 53565
Telephone: (608) 987-2361
Email: mpmayor@cityofmineralpoint.com

Attachment #1

State of Wisconsin
Department of Natural Resources
101 South Webster Street
Madison WI 53707-7921
dnr.wi.gov

Notice of Intent to Conduct Water Quality Trading

Form 3400-206 (1/14)

Notice: Pursuant to s. 283.84, Wis. Stats., and ch. NR 217 Wis. Adm. Code, this form must be completed by any WPDES permittee that is using water quality trading as a method of complying with a permit limitation. Failure to complete this form would not result in penalties. Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records Law (ss. 19.31 - 19.39, Wis. Stats.).

Applicant Information

Permittee Name	Permit Number	Facility Site Number
City of Mineral Point	WI- 0024791-09-0	

Facility Address	City	State	ZIP Code
Bollerude Street, (NEQ, SEQ, Section 6, T4N-R3E)	Mineral Point	WI	53565

Project Contact Name (if applicable)	Address	City	State	ZIP Code
Jordan Fure (Delta 3 Eng.)	875 South Chestnut Street	Platteville	WI	53818

Project Name
Proposed 2021 Stream Improvements - Brewery Creek

Receiving Water Name	Parameter(s) being traded	HUC 12(s)
Brewery Creek	Total Phosphorus	070900030103

Is the permittee in a point or nonpoint source dominated watershed?
(See PRESTO results - http://dnr.wi.gov/topic/surfacewater/presto.html)

- ○ Point source dominated
- ◉ Nonpoint source dominated

Credit Generator Information

Credit generator type (select all that apply):

- ☐ Permitted Discharge (non-MS4/CAFO)
- ☐ Permitted MS4
- ☐ Permitted CAFO
- ☒ Urban nonpoint source discharge
- ☒ Agricultural nonpoint source discharge
- ☐ Other - Specify: _____

Are any of the credit generators in a different HUC 12 than the applicant?

- ○ Yes; HUC 12: _____
- ◉ No
- ○ Unsure

Are any of the credit generators downstream of the applicant?

- ○ Yes
- ◉ No
- ○ Unsure

Will a broker/exchange be used to facilitate trade?

- ○ Yes; Name: _____
- ◉ No
- ○ Unsure

Point to Point Trades (Traditional Municipal / Industrial Discharge, MS4, CAFO)

Discharge Type	Permit Number	Name	Contact Address	Is the point source credit generator currently in compliance with their permit requirements?
○ Traditional ○ MS4 ○ CAFO				○ Yes ○ No ○ Unsure
○ Traditional ○ MS4 ○ CAFO				○ Yes ○ No ○ Unsure
○ Traditional ○ MS4 ○ CAFO				○ Yes ○ No ○ Unsure
○ Traditional ○ MS4 ○ CAFO				○ Yes ○ No ○ Unsure
○ Traditional ○ MS4 ○ CAFO				○ Yes ○ No ○ Unsure

Point to Nonpoint Trades (Non-permitted Agricultural, Non-Permitted Urban, etc.)

List the practices that will be used to generate credits:

Streambank Stabilization

Method for quantifying credits generated:
- ☐ Monitoring
- ☒ Modeling, Names: NRCS Streambank Erosion Estimator
- ☐ Other: _____

Projected date credits will be available: 09/30/2021

The preparer certifies all of the following:

- I am familiar with the specifications submitted for this application, and I believe all applicable items in this checklist have been addressed.
- I have completed this document to the best of my knowledge and have not excluded pertinent information.

Signature of Preparer	Date Signed
Jordan Fine	3/17/2020

Authorized Representative Signature

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision. Based on my inquiry of those persons directly responsible for gathering and entering the information, the information is, to the best of my knowledge and belief, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature of Authorized Representative	Date Signed
Erin M. Hirn	4/15/2020

Attachment #2

State of Wisconsin
Department of Natural Resources
101 South Webster Street
Madison WI 53707-7921
dnr.wi.gov

Water Quality Trading Checklist

Form 3400-208 (1/14)

Notice: Pursuant to s. 283.84, Wis. Stats., this form must be completed by any WPDES permittee that intends to pursue pollutant trading as a method of complying with a permit limitation. Failure to complete this form would not result in penalties. Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records Law (ss. 19.31 - 19.39, Wis. Stats.).

Applicant Information

Permittee Name	Permit Number	Facility Site Number
City of Mineral Point	WI- 0024791	

Facility Address	City	State	ZIP Code
Bollerude Street, (NEQ, SEQ, Section 6, T4N-R3E)	Mineral Point	WI	53565

Project Contact Name (if applicable)	Address	City	State	ZIP Code
Jordan Fure (Delta 3 Eng.)	875 South Chestnut Street	Platteville	WI	53818

Project Name
Proposed 2021 Stream Improvements - Brewery Creek

Receiving Water Name	Parameter(s) being traded	HUC 12(s)
Brewery Creek	Total Phosphorus	070900030103

Credit Generator Information

Credit generator type (select all that apply):

- ☐ Permitted Discharge (non-MS4CAFO)
- ☐ Permitted MS4
- ☐ Permitted CAFO
- ☐ Urban nonpoint source discharge
- ☒ Agricultural nonpoint source discharge
- ☐ Other - Specify: _____

Are any of the credit generators in a different HUC 12 than the applicant?
- ○ Yes; HUC 12: _____
- ◉ No

Are any of the credit generators downstream of the applicant?
- ○ Yes
- ◉ No

Will a broker/exchange be used to facilitate trade?
- ○ Yes *(include description and contact information in WQT plan)*
- ◉ No

Point to Point Trades (Traditional Municipal / Industrial, MS4, CAFO)

Are each of the point source credit generators identified in this section in compliance with their WDPES permit requirements?
- ○ Yes
- ○ No

Discharge Type	Permit Number	Name	Contact Information	Trade Agreement Number
○ Traditional ○ MS4 ○ CAFO				
○ Traditional ○ MS4 ○ CAFO				
○ Traditional ○ MS4 ○ CAFO				
○ Traditional ○ MS4 ○ CAFO				
○ Traditional ○ MS4 ○ CAFO				

Point to Point Trades (Traditional Municipal / Industrial, MS4, CAFO) *cont.*

Does plan have a narrative that describes:			Plan Section
a. Summary of discharge and existing treatment including optimization	○ Yes	○ No	
b. Amount of credit being generated	○ Yes	○ No	
c. Timeline for credits and agreements	○ Yes	○ No	
d. Method for quantifying credits	○ Yes	○ No	
e. Tracking and verification procedures	○ Yes	○ No	
f. Location of credit generator in proximity to receiving water and credit user	○ Yes	○ No	
g. Other: _____	○ Yes	○ No	

Point to Nonpoint Trades (Non-Permitted Urban, Agricultural, Other)

Discharge Type	Practices Used to Generate Credits	Method of Quantification	Trade Agreement Number	Have the practice(s) been formally registered?
○ Urban NPS ◉ Agricultural NPS ○ Other	Streambank Stabilization	NRCS Streambank Erosion Estimator	N/A	○ Yes ◉ No ○ Only in part
◉ Urban NPS ○ Agricultural NPS ○ Other	Streambank Stabilization	NRCS Streambank Erosion Estimator	N/A	○ Yes ◉ No ○ Only in part
○ Urban NPS ○ Agricultural NPS ○ Other				○ Yes ○ No ○ Only in part
○ Urban NPS ○ Agricultural NPS ○ Other				○ Yes ○ No ○ Only in part
○ Urban NPS ○ Agricultural NPS ○ Other				○ Yes ○ No ○ Only in part
○ Urban NPS ○ Agricultural NPS ○ Other				○ Yes ○ No ○ Only in part
○ Urban NPS ○ Agricultural NPS ○ Other				○ Yes ○ No ○ Only in part
○ Urban NPS ○ Agricultural NPS ○ Other				○ Yes ○ No ○ Only in part

Does plan have a narrative that describes:			Plan Section
a. Description of existing land uses	◉ Yes	○ No	Section IV
b. Management practices used to generate credits	◉ Yes	○ No	Section IV
c. Amount of credit being generated	◉ Yes	○ No	Section IV
d. Description of applicable trade ratio per agreement/management practice	◉ Yes	○ No	Section IV
e. Location where credits will be generated	◉ Yes	○ No	Section III
f. Timeline for credits and agreements	◉ Yes	○ No	Section V
g. Method for quantifying credits	◉ Yes	○ No	Section IV

Does plan have a narrative that describes:			Plan Section
h. Tracking procedures	◉ Yes	○ No	Section IV
i. Conditions under which the management practices may be inspected	◉ Yes	○ No	Section VI
j. Reporting requirements should the management practice fail	◉ Yes	○ No	Section VI
k. Operation and maintenance plan for each management practice	◉ Yes	○ No	Section IV
l. Location of credit generator in proximity to receiving water and credit user	◉ Yes	○ No	Section III
m. Practice registration documents, if available	○ Yes	◉ No	
n. History of project site(s)	◉ Yes	○ No	Section IV
o. Other: _____	○ Yes	○ No	

The preparer certifies all of the following:

- I am familiar with the specifications submitted for this application, and I believe all applicable items in this checklist have been addressed.
- I have completed this document to the best of my knowledge and have not excluded pertinent information.
- I certify that the information in this document is true to the best of my knowledge.

Signature of Preparer	Date Signed
Jordan Fine	4-14-2020

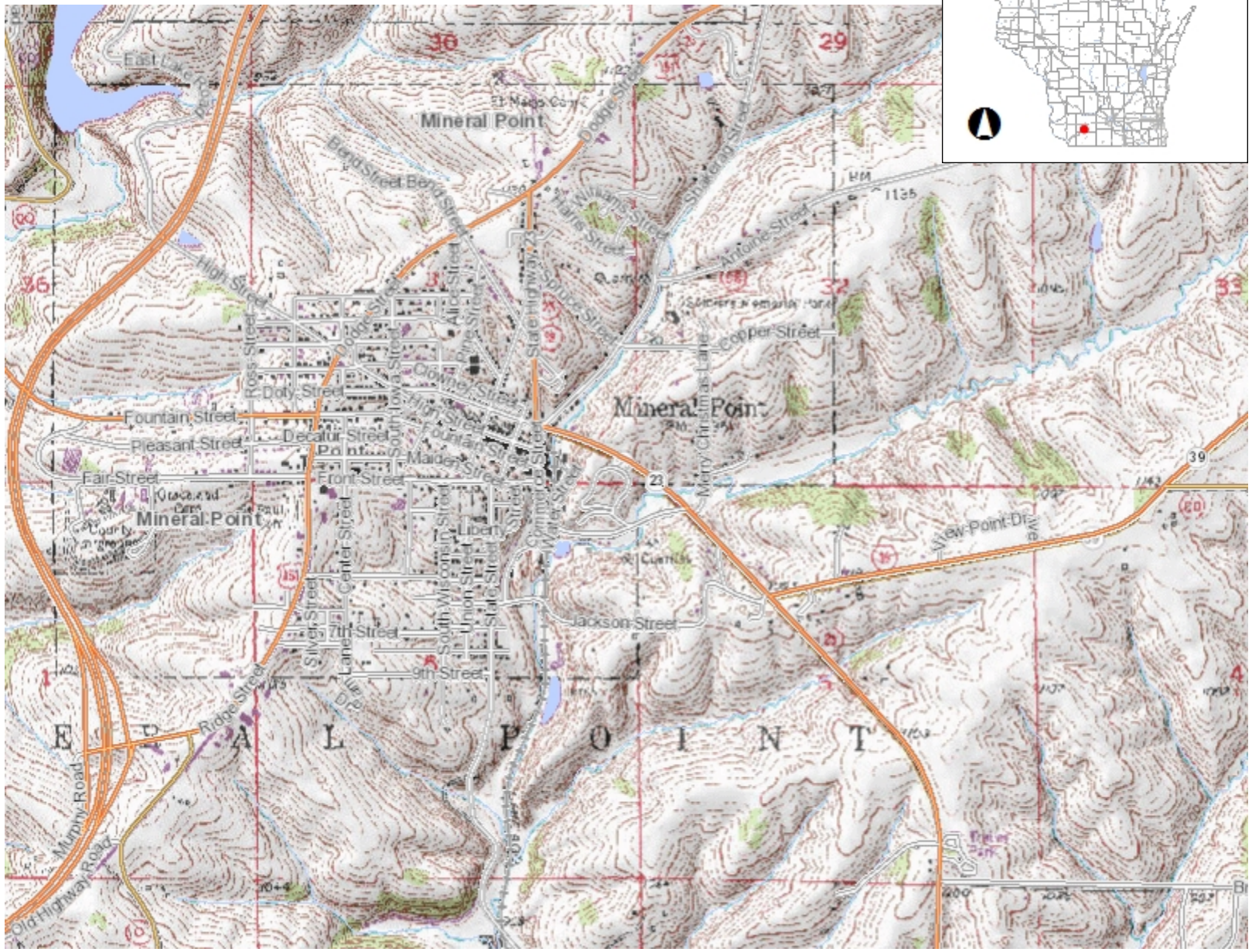
Authorized Representative Signature

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision. Based on my inquiry of those persons directly responsible for gathering and entering the information, the information is, to the best of my knowledge and belief, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature of Authorized Representative	Date Signed
Erin M. Hirn	04/15/2020

Attachment #3

Location Map



Legend

- Municipality
- State Boundaries
- County Boundaries
- Major Roads
  - Interstate Highway
  - State Highway
  - US Highway
- County and Local Roads
  - County HWY
  - Local Road
- Railroads
- Tribal Lands
- Rivers and Streams
- Intermittent Streams
- Lakes and Open water
- 24K USGS Quad Index - Level 7 - 16

0.8 0 0.38 0.8 Miles

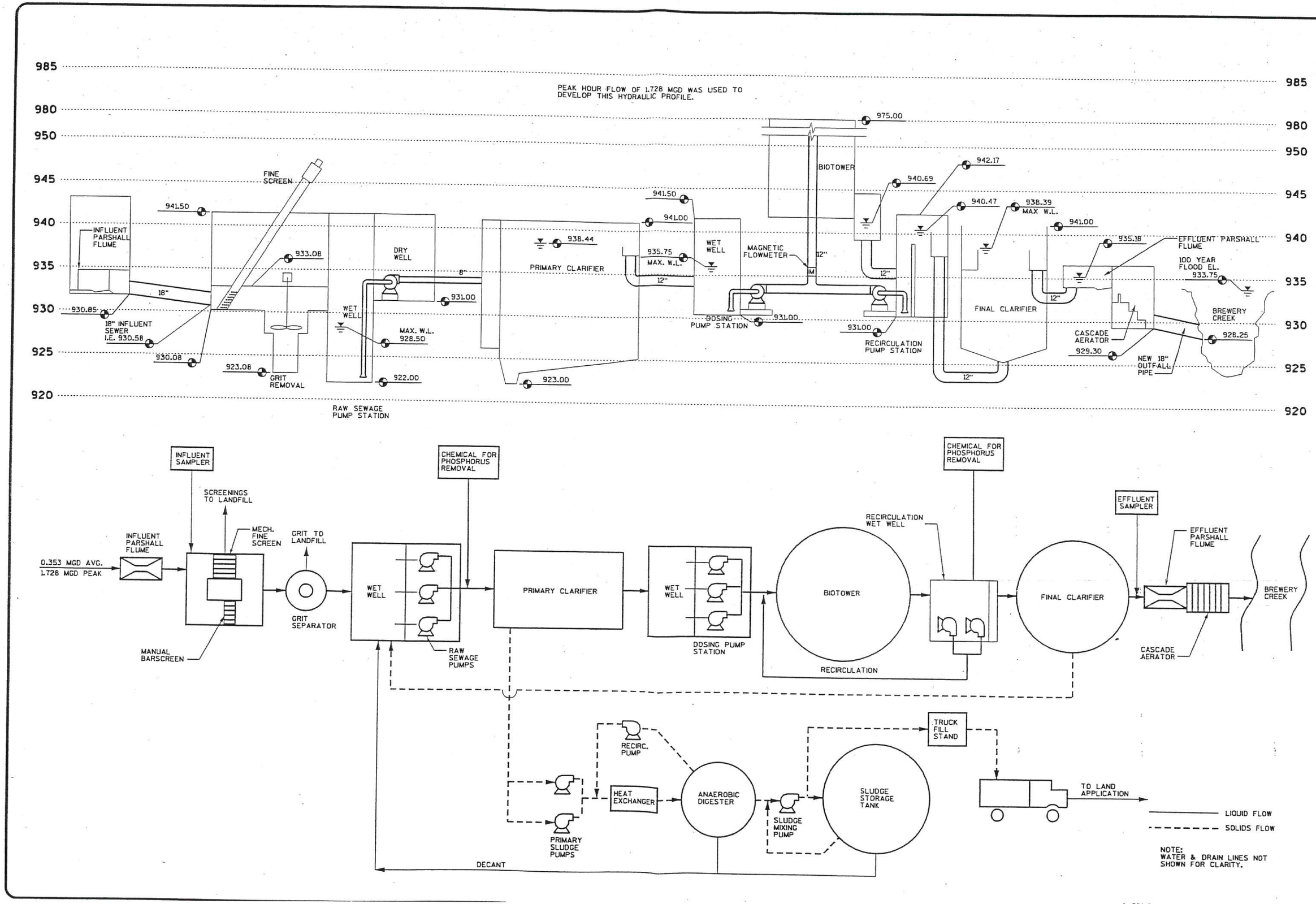
NAD_1983_HARN_Wisconsin_TM

1: 23,760

DISCLAIMER: The information shown on these maps has been obtained from various sources, and are of varying age, reliability and resolution. These maps are not intended to be used for navigation, nor are these maps an authoritative source of information about legal land ownership or public access. No warranty, expressed or implied, is made regarding accuracy, applicability for a particular use, completeness, or legality of the information depicted on this map. For more information, see the DNR Legal Notices web page: http://dnr.wi.gov/legal/

Notes

Attachment #4



MSA PROFESSIONAL SERVICES
TRANSPORTATION • MUNICIPAL • REMEDIATION
DEVELOPMENT • ENVIRONMENTAL
1230 South Boulevard Baraboo, WI 53913
608-356-2771 1-800-362-4606 Fax: 608-356-2770
© MSA PROFESSIONAL SERVICES

NO.	DATE	REVISION	BY

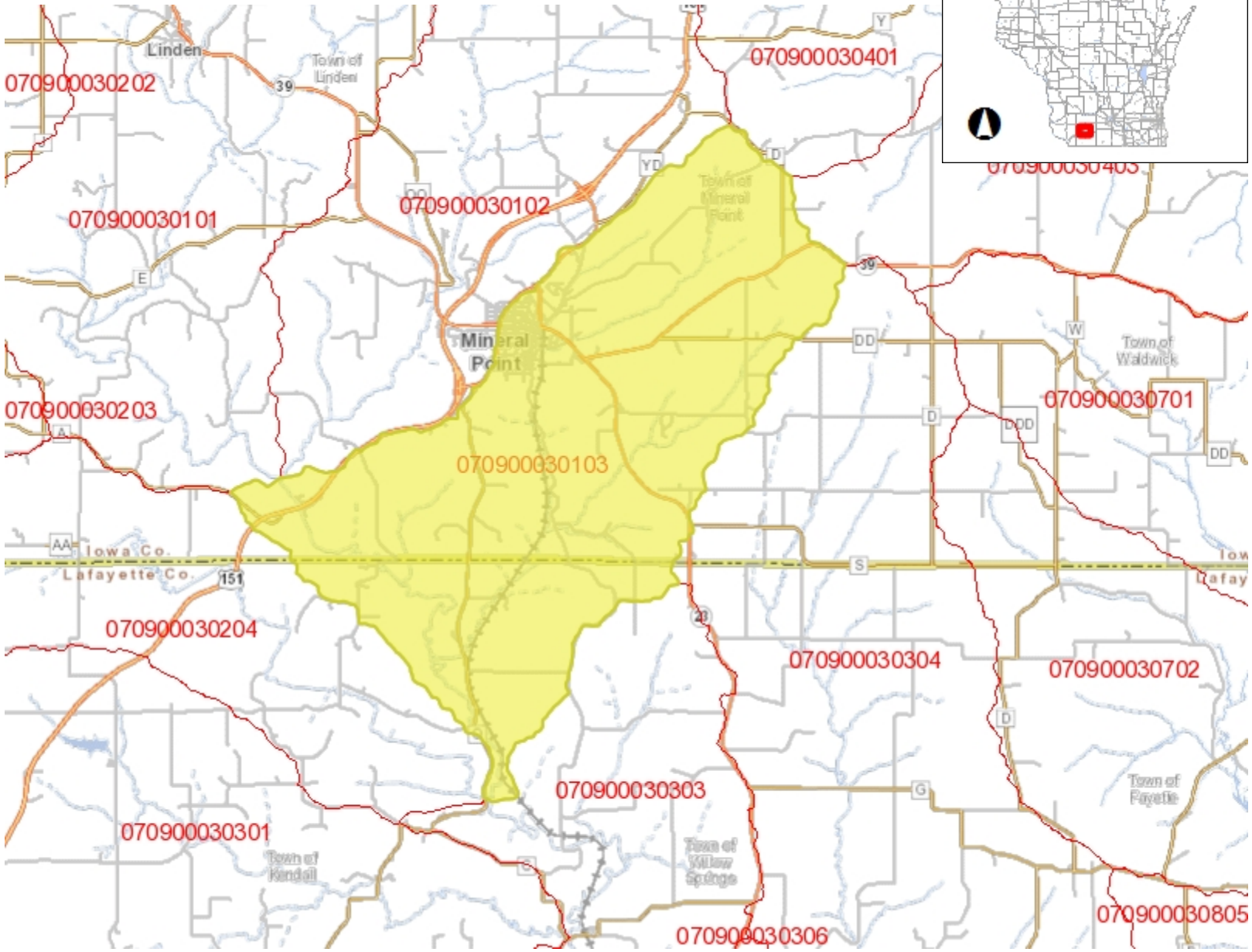
PROJECT NO.: 240101
DATE: FEBRUARY 2002
SCALE: AS SHOWN
F.B.: 1051
DRAWN BY: MER
CHECKED BY: CJM
CADD FILE NO.: 240101g9.dgn
PLOT DATE: 2/14/02
PLOT TIME: 3:30 PM

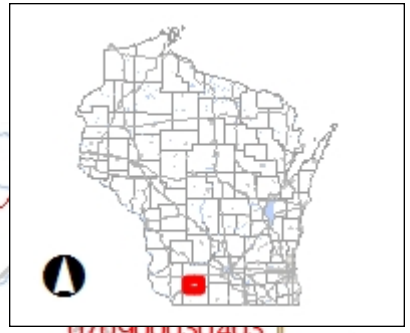
FLOW DIAGRAM AND HYDRAULIC PROFILE
WASTEWATER TREATMENT FACILITY UPGRADE
CITY OF MINERAL POINT
IOWA COUNTY, WISCONSIN

FILE NO. M24-103
SHEET G-9

Attachment #5

HUC-12 Watershed Map





Legend

- 12-digit HUCs (Subwatersheds)
- Municipality
- State Boundaries
- County Boundaries
- Major Roads
  - Interstate Highway
  - State Highway
  - US Highway
- County and Local Roads
  - County HWY
  - Local Road
- Railroads
- Tribal Lands
- Rivers and Streams
- Intermittent Streams
- Lakes and Open water

Notes

4.0 0 2.00 4.0 Miles

NAD_1983_HARN_Wisconsin_TM

1: 126,720

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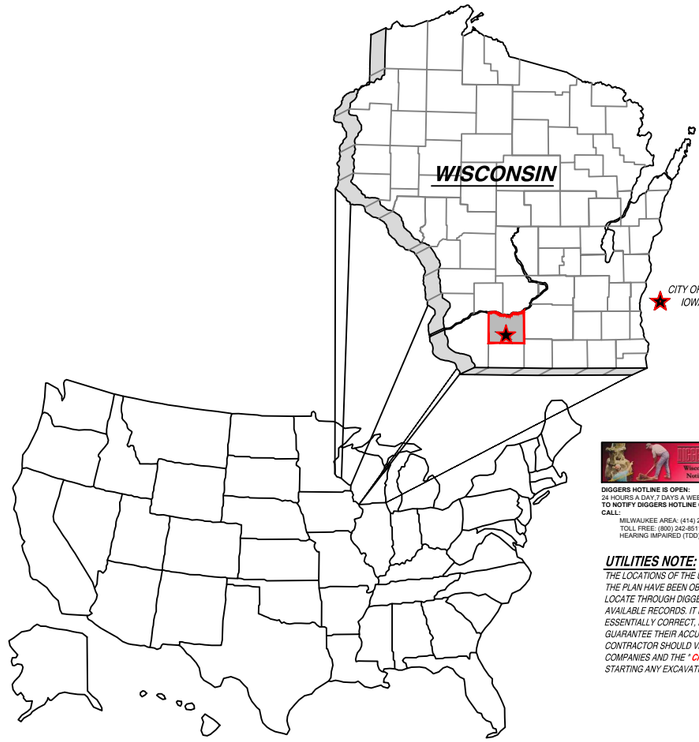
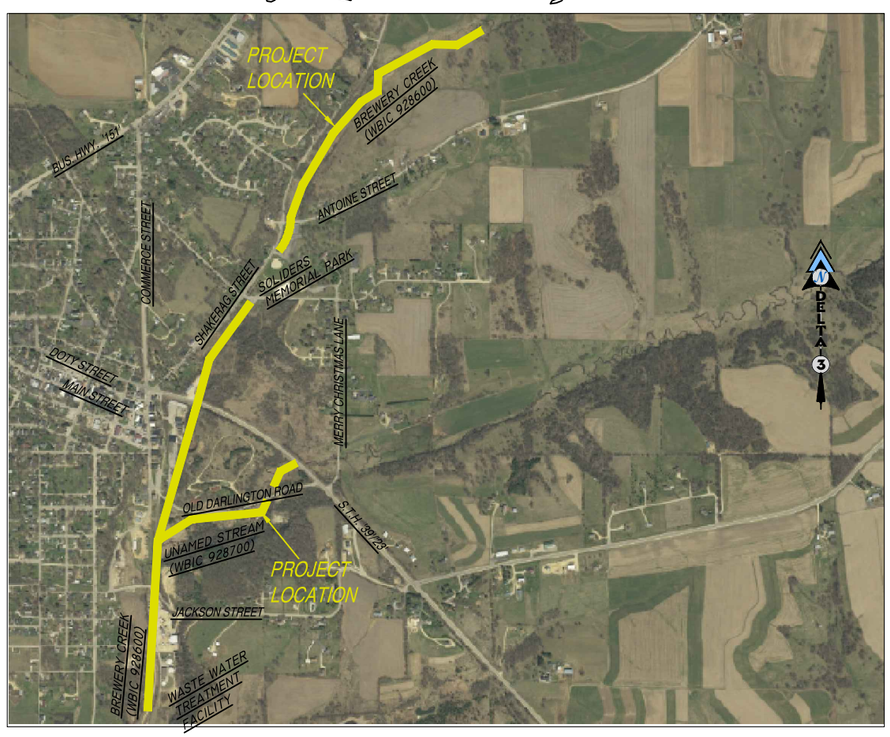
Attachment #6



DIGGERS HOTLINE IS OPEN:
24 HOURS A DAY,7 DAYS A WEEK, 365 DAYS A YEAR!
TO NOTIFY DIGGERS HOTLINE OF YOU INTENT TO DIG CALL:
MILWAUKEE AREA: (414) 259-1181
TOLL FREE: (800) 242-8511
HEARING IMPAIRED (TDD) (800) 542-2289

UTILITIES NOTE:
THE LOCATIONS OF THE UNDERGROUND UTILITIES SHOWN ON THE PLAN HAVE BEEN OBTAINED BY FIELD CHECKS, A UTILITY LOCATE THROUGH DIGGER'S HOTLINE, AND SEARCHES OF AVAILABLE RECORDS. IT IS BELIEVED THAT THEY ARE ESSENTIALLY CORRECT, BUT THE SURVEYOR DOES NOT GUARANTEE THEIR ACCURACY OR COMPLETENESS. THE CONTRACTOR SHOULD VERIFY LOCATIONS W/ THE UTILITY COMPANIES AND THE "CITY OF MINERAL POINT" PRIOR TO STARTING ANY EXCAVATION.



PROJECT LOCATION MAP
SCALE: N.T.S.

PROPOSED 2021 STREAM IMPROVEMENTS - BREWERY CREEK

OWNER: CITY OF MINERAL POINT

SHEET INDEX:

SHEET TITLE:	SHEET DESCRIPTION:	DATE OF ISSUE:	DATE OF REVISION:
G000	TITLE SHEET & PROJECT LOCATION MAP	MARCH 31, 2020	-
G001	LEGEND & GENERAL NOTES	MARCH 31, 2020	-
C101	PLAN VIEW - SOUTH BREWERY CREEK	MARCH 31, 2020	-
C102 - C103	PLAN VIEW - TRIBUTERY TO BREWERY CREEK	MARCH 31, 2020	-
C104 - C107	PLAN VIEW - BREWERY CREEK	MARCH 31, 2020	-
C201	DETAILS - EROSION CONTROL & NOTES	MARCH 31, 2020	-
C202	DETAILS - STREAM BANK	MARCH 31, 2020	-

PROJECT INFORMATION:

OWNER:
CLERK/ADMINISTRATOR
MS. DEBI HEISNER
CITY OF MINERAL POINT
137 HIGH STREET, SUITE 1
MINERAL POINT, WI 53565
(608) 987-2361

STREETS AND STORM SEWERS:
CITY OF MINERAL POINT
MR. TODD DONEY
137 HIGH STREET, SUITE 1
MINERAL POINT, WI 53565
(608) 987-2960

WATER AND SANITARY SEWER UTILITIES:
CITY OF MINERAL POINT
MR. PAT O' FLAHRITY
137 HIGH STREET, SUITE 1
MINERAL POINT, WI 53565
OFFICE: (608) 987-3442
CELL: (608) 574-2348

TELEPHONE UTILITY:
FRONTIER CONSTRUCTION DETAILER
MR. JERRY MOORE
100 COMMUNICATIONS DRIVE
SUN PRAIRIE, WI 53590
CELL: (608) 742-9507

CABLE TELEVISION UTILITY:
CHARTER COMMUNICATIONS
MR. STEVE HEGGE
2701 DANIELS STREET
MADISON, WI 53718
(608) 274-3822 x 6687

ELECTRICAL & NATURAL GAS UTILITIES:
ALLIANT ENERGY
MR. PATRICK MUELLER
490 SHAKERAG STREET
MINERAL POINT, WI 53565
(920) 948-3927

ENGINEER:
DELTA 3
EVERY ANGLE COVERED
PROFESSIONAL CIVIL, MUNICIPAL, & STRUCTURAL ENGINEERING • ARCHITECTURE
GRANT WRITING • LAND DEVELOPMENT • PLANNING & CADD SERVICES
875 SOUTH CHESTNUT STREET PLATTEVILLE, WISCONSIN 53818 PHONE: (608) 348-5355
898 JACKSON STREET DUBUQUE, IOWA 52001 PHONE: (563) 542-9035

FOR QUESTIONS REGARDING THIS PROJECT, PLEASE CONTACT:
MR. BART NIES, P.E.
DELTA 3 ENGINEERING, INC.
TELEPHONE: (608) 348-5355

CONSENT STATEMENT
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PROPOSED 2021 STREAM IMPROVEMENTS - BREWERY CREEK
CITY OF MINERAL POINT
PROJECT LOCATION: WITHIN MINERAL POINT CITY LIMITS, BREWERY CREEK(928600) & UNAMED STREAM(928700)
OWNER: CITY OF MINERAL POINT, 137 HIGH STREET, MINERAL POINT, WI 53565

REVISIONS:		
NO.	DATE	DESCRIPTION
AS-BUILT:		BY:
--/--/----		-.-----

FOR AGENCY REVIEW	
PROJECT NUMBER	D19-032
SHEET SCALE	NOT TO SCALE
DRAWN BY	C.COYIER
DATE ISSUED	MARCH 31, 2020
SHEET DESC.	TITLE SHEET & PROJECT LOCATION MAP

SHEET TITLE:
G000

SHEET NUMBER # 01 of 11

LEGEND

EX. CON. MANHOLE
EX. ECC. MANHOLE
EX. LIFT STATION
EX. CLEAN OUT
EX. FIRE HYDRANT
EX. WATER SERVICE
EX. WATER VALVE
EX. YARD HYDRANT
EX. CATCH BASIN
EX. STORM INLET
EX. NATURAL GAS VALVE
EX. NATURAL GAS METER
EX. POWER POLE
EX. LIGHT POLE
EX. WARNING SIREN
EX. TEL. PEDESTAL
EX. MAILBOX
EX. LP TANK
EX. SATELLITE DISH
Ex. POST OR POLE
EX. STREET SIGN
EX. EVERGREEN TREE
EX. DECIDUOUS TREE
EX. TREE STUMP
EX. BUSH/SHRUB
EX. TREE/BRUSH LINE
EX. WINDMILL
EX. PARK BENCH
EX. BENCHMARK
SURVEY CONTROL POINT
EX. PROPERTY PIN
R/W — RIGHT-OF-WAY
P/L — PROPERTY LINE
EASEMENT
San. Lat. — EX. SAN. S. LATERAL
6" San. S. — EX. 6" SAN. S. MAIN
8" San. S. — EX. 8" SAN. S. MAIN
10" San. S. — EX. 10" SAN. S. MAIN
12" San. S. — EX. 12" SAN. S. MAIN
15" San. S. — EX. 15" SAN. S. MAIN
EX. FLOW DIRECTION
EX. CAPPED SERVICE
EX. WATER SERVICE
4" Water — EX. 4" WATER MAIN
6" Water — EX. 6" WATER MAIN
8" Water — EX. 8" WATER MAIN
10" Water — EX. 10" WATER MAIN
12" Water — EX. 12" WATER MAIN
EX. <12" STORM SEWER
12" St. Sewer — EX. 12" STORM SEWER
15" St. Sewer — EX. 15" STORM SEWER
18" St. Sewer — EX. 18" STORM SEWER
24" St. Sewer — EX. 24" STORM SEWER
27" St. Sewer — EX. 27" STORM SEWER
30" St. Sewer — EX. 30" STORM SEWER
36" St. Sewer — EX. 36" STORM SEWER
42" St. Sewer — EX. 42" STORM SEWER
48" St. Sewer — EX. 48" STORM SEWER
EX. CURB AND GUTTER
GAS — EX. U.GRD N. GAS UTILITY
UGE — EX. U.GRD ELECTRIC UTILITY
UGC — EX. U.GRD CABLE TV UTILITY
TEL — EX. U.GRD TELEPHONE UTILITY
FO — EX. U.GRD FIBER OPTIC UTILITY
OHE — EX. OVERHEAD ELECTRIC
EX. FENCE
EX. RAILROAD TRACKS
99 — EX. CONTOUR
EX. DRAINAGE SWALE

PROP. SANITARY SEWER LATERAL
PROP. <6" SANITARY SEWER MAIN
PROP. 6" SANITARY SEWER MAIN
PROP. 8" SANITARY SEWER MAIN
PROP. 10" SANITARY SEWER MAIN
PROP. 12" SANITARY SEWER MAIN
PROP. 15" SANITARY SEWER MAIN
PROP. 18" SANITARY SEWER MAIN
PROP. CIPP LINER
PROP. FLOW DIRECTION
PROP. WATER SERVICE
PROP. <4" WATER MAIN
PROP. 4" WATER MAIN
PROP. 6" WATER MAIN
PROP. 8" WATER MAIN
PROP. 10" WATER MAIN
PROP. 12" WATER MAIN
PROP. 15" WATER MAIN
PROP. <12" STORM SEWER
PROP. 12" STORM SEWER
PROP. 15" STORM SEWER
PROP. 18" STORM SEWER
PROP. 24" STORM SEWER
PROP. 30" STORM SEWER
PROP. 36" STORM SEWER
PROP. 48" STORM SEWER
PROP. CURB AND GUTTER
PROP. CURB BACK OPENING
GAS — PROP. U.GRD GAS UTILITY
UGE — PROP. U.GRD ELECTRIC UTILITY
UGCTV — PROP. U.GRD CABLE TV UTILITY
UGT — PROP. U.GRD TELEPHONE UTILITY
FIBER — PROP. U.GRD FIBER OPTIC UTILITY
OHE — PROP. OVERHEAD ELECTRIC
CAUTION NATURAL GAS — PROP. CROSSING OF N. GAS UTILITY
PROP. UTILITY POLE
PROP. LIGHT POLE
PROP. FENCE
TEMPORARY EASEMENT
CONSTRUCTION EASEMENT
ESTIMATED DISTURBANCE LIMITS
99 — PROP. CONTOUR
PROP. DRAINAGE SWALE
PROP. SILT FENCE
PROP. EROSION CONTROL SEDIMENT LOG
PROP. PAVEMENT MARKING
PAINTED TRAFFIC ARROW
ADA PARKING DESIGNATION
10 — PARKING STALL COUNT
5'R / 0+00 — RADIUS POINT/SIZE STA. ON CENTERLINE
PROP. HANDICAP RAMP WITH DETECTABLE WARNING FIELD
SOIL BORING LOCATION
RIVER FLOW DIRECTION
PROP. 4' DIA. SANITARY MANHOLE
PROP. 5' DIA. SANITARY MANHOLE
PROP. MANHOLE CHIMNEY REHABILITATION / TOP ADJUSTMENT
PROP. SANITARY LIFT STATION

PROP. TYPE "X" CURB & GUTTER
PROP. REVERSE-PITCH CURB & GUTTER
PROP. HOT MIX ASPHALT PAVEMENT (DRIVEWAY)
PROP. 4" CONCRETE SIDEWALK
PROP. 6" CONCRETE PAVEMENT
PROP. 8" CONCRETE PAVEMENT
PROP. GRAVEL SHOULDER / DRIVEWAY
EROSION MATTING (MILD SLOPES)
EROSION MATTING (STEEP SLOPES)
PROP. REGRADING AND LANDSCAPING
PROP. RIP-RAP
PROP. STORM STRUCTURES - PROFILE
PROP. STORM PIPE(RCP) - PROFILE
PROP. STORM PIPE(CMP OR HDPE) - PROFILE
PROP. SANITARY STRUCTURE - PROFILE
PROP. WATER MAIN PIPE - PROFILE
PROP. CLAY LINER - PROFILE
PROP. SANITARY SEWER FORCE MAIN - PROFILE
PROP. SPOT REPAIR - PROFILE / PLAN VIEW
PROP. CASING PIPE - PROFILE
PROP. CLEARING AND GRUBBING
PROP. BUILDING REMOVAL
PROP. SIDEWALK REMOVAL
PROP. PRESSURE-REDUCING VALVE STATION
PROP. FIRE HYDRANT
PROP. WATER SERVICE
PROP. WATER SERVICE WITH VALVE BOX SLEEVE
PROP. WATER VALVE
PROP. WATER BEND - HORIZONTAL
PROP. WATER BEND - VERTICAL
PROP. WATER BEND <5°
PROP. WATER TEE
PROP. WATER CROSS
PROP. WATER REDUCER
PROP. MJ PLUG
PROP. 4' DIA. STORM MANHOLE
PROP. 5' DIA. STORM MANHOLE
PROP. INLET
PROP. 4' DIA. INLET
PROP. 6' DIA. INLET
PROP. 4' DIA. CATCH BASIN- W/ 2'X3' CASTING
PROP. 5' DIA. CATCH BASIN- W/ 2'X3' CASTING
PROP. 6' DIA. CATCH BASIN- W/ 2'X3' CASTING
PROP. 4'X6' CATCH BASIN W/2'X3' CASTING
PROP. CURB OPENING CASTING
PROP. 2'X3' CATCH BASIN
PROP. ADJUSTED CATCH BASIN TOP
PROP. WISDOT TYPE 8 INLET
PROP. WISDOT TYPE 9 INLET
PROP. CMP ENDWALL
PROP. RCP ENDWALL

KEY NOTES 100 :

100 PROPOSED SILT FENCE FOR EROSION CONTROL.
101 PROPOSED SEDIMENT LOG FOR EROSION CONTROL.
102 PROPOSED TRACKING PAD FOR EROSION CONTROL.
103 RE-GRADE YARD/DITCH LINE (MIN. SLOPE 1.0%).
104 PROPOSED EROSION MAT CLASS I, TYPE 'B'.
105 INSTALL TYPE 'D' INLET PROTECTION.
106 PROPOSED MAIL BOX RELOCATION.
107 ITEM TO REMAIN.
108 CONTRACTOR TO REMOVE ITEM.
200 PROPOSED SANITARY SEWER [SIZE].
201 NEW SANITARY SEWER LATERAL [SIZE].
202 REPLACE EXISTING SANITARY SEWER LATERAL.
203 RECONNECT EXISTING SANITARY SEWER LATERAL.
204 CONNECTION TO EXISTING SANITARY SEWER PIPE/STRUCTURE.
205 REMOVE EXISTING SANITARY SEWER PIPE /STRUCTURE.
206 REHABILITATE SANITARY MANHOLE; SEE TABLE 'B'.
207 SANITARY SEWER SPOT REPAIR.
208 ABANDON AND CAP EXISTING SANITARY SEWER.
209 ABANDON EXISTING SANITARY SEWER LATERAL.
210 CONTRACTOR TO FIELD VERIFY SANITARY SEWER LATERAL LOCATION/ACTIVITY AND REPLACE ACCORDING TO ENGINEER.
300 PROPOSED WATER MAIN [SIZE].
301 NEW WATER SERVICE [SIZE].
302 REPLACE EXISTING WATER SERVICE WITH 1" WATER SERVICE.
303 RECONNECT EXISTING WATER SERVICE.
304 DIRECTIONAL DRILL PROPOSED WATER SERVICE.
305 CONNECTION TO EXISTING WATER MAIN.
306 EXISTING HYDRANT TO BE REMOVED AND SALVAGED TO OWNER.
307 REMOVE EXISTING WATER MAIN VALVE BOX/STRUCTURE.
308 ADJUST EXISTING WATER MAIN VALVE BOX.
309 ABANDON, DRAIN, & CAP EXISTING WATER MAIN.
310 ABANDON EXISTING WATER SERVICE.
311 CONTRACTOR TO FIELD VERIFY WATER SERVICE LOCATION/ACTIVITY AND REPLACE ACCORDING TO ENGINEER.
400 PROPOSED STORM SEWER [SIZE].
401 CONNECT EXISTING ROOF DRAIN TO CURB OPENING
402 CONNECTION TO EXISTING STORM SEWER PIPE/STRUCTURE.
403 REMOVE EXISTING STORM SEWER PIPE/STRUCTURE.
404 ABANDON & CAP EXISTING STORM SEWER.
405 ADJUST EXISTING STORM STRUCTURE.
500 TREE & STUMP TO BE REMOVED (LESS THEN 12")
501 TREE & STUMP TO BE REMOVED (12" & GREATER)
502 SHRUB TO BE REMOVED.
503 CLEAR AND GRUB BRUSH LINE AS NECESSARY TO COMPLETE CONSTRUCTION. ALL CLEARING TO BE VERIFIED BY PROJECT ENGINEER.
504 REMOVE AND REINSTALL/REPLACE EXISTING LANDSCAPING, FENCE, RETAINING WALL, ETC. (IF NECESSARY).
505 REMOVE EXISTING LANDSCAPING, FENCE, RETAINING WALL, ETC.
506 POLE/PEDESTAL TO BE SECURED BY UTILITY COMPANY DURING CONSTRUCTION.
507 POLE TO BE RELOCATED BY UTILITY COMPANY.
508 GUY WIRE TO BE RELOCATED BY UTILITY COMPANY.
509 PEDESTAL TO BE RELOCATED BY UTILITY COMPANY.
510 UTILITY CONFLICT - TO BE RELOCATED/ADJUSTED BY UTILITY COMPANY.
511 POTENTIAL UTILITY CONFLICT - VERIFY WITH UTILITY COMPANY.
512 **CAUTION!** - UTILITY CROSSING.
600 REMOVE EXISTING CURB & GUTTER.
601 PROPOSED 24" CONCRETE CURB & GUTTER.
602 PROPOSED 30" CONCRETE CURB & GUTTER.
603 PROPOSED 36" CONCRETE CURB & GUTTER.
604 MATCH TO EXISTING CURB & GUTTER.
605 PROVIDE TYPE 'X' CURB.
606 PROVIDE REVERSE-PITCH CURB & GUTTER.
607 PROVIDE CURB TAPER.
608 REMOVE ASPHALT/CONCRETE/WALL/STEPS.
609 PROPOSED 4" CONCRETE SIDEWALK.
610 PROPOSED 6" CONCRETE SIDEWALK/DRIVEWAY.
611 PROPOSED 6" CONCRETE PAVEMENT.
612 PROPOSED 8" CONCRETE PAVEMENT.
613 PROPOSED CONCRETE STEPS. STEP RISE HEIGHT AND STEP TREAD DEPTH SHALL MEET APPLICABLE BUILDING CODES. CONTRACTOR SHALL CONFIRM REQUIRED NUMBER OF STEPS WITH PROJECT ENGINEER PRIOR TO INSTALL.
614 PROPOSED 2' GRAVEL SHOULDER.
615 REGRADE EXISTING GRAVEL.
616 PROPOSED GRAVEL DRIVEWAY.
617 REMOVE & REPLACE GRAVEL DRIVEWAY.
618 REMOVE GRAVEL DRIVEWAY & REPLACE WITH BITUMINOUS DRIVEWAY/APRON.
619 REMOVE & REPLACE HMA PAVEMENT.
620 REMOVE & REPLACE HMA PAVEMENT DRIVEWAY.
621 PROPOSED HMA PAVEMENT.
622 MATCH TO EXISTING EDGE PAVEMENT.
623 PROPOSED RESIDENTIAL HMA PAVEMENT DRIVEWAY.
624 PROPOSED COMMERCIAL HMA PAVEMENT DRIVEWAY.
625 REMOVE & REPLACE 4" CONCRETE SIDEWALK.
626 REMOVE & REPLACE 6" CONCRETE SIDEWALK/DRIVEWAY.
627 PROPOSED HANDICAP RAMP WITH - D. WARN. FIELD [S.F].
628 SAW CUT PCC PAVEMENT.
629 SAW CUT HMA PAVEMENT.
630 PROPOSED BITUMINOUS WEDGE CURB.

NOTES:

TRAFFIC CONTROL NOTE:
ALL CONTRACTORS MUST CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND THE REQUIREMENTS OF THE WISCONSIN DEPARTMENT OF TRANSPORTATION. ONE LANE OF TRAFFIC MUST REMAIN OPEN DURING AND AFTER ALL CONSTRUCTION ACTIVITIES FOR EMERGENCY VEHICLE ACCESS.

STREET SIGN NOTE:
CONTRACTOR WILL BE RESPONSIBLE FOR REMOVING, STORING, AND RESETTING ALL PERMANENT SIGNS. CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL EXISTING SIGNS UNTIL REMOVED. CONTRACTOR IS RESPONSIBLE FOR ANY AND ALL TEMPORARY SIGNS THAT MAY BE REQUIRED.

TRAFFIC SIGN NOTE:
CONTRACTOR TO PROVIDE TEMPORARY TRAFFIC SIGNS FOR ANY TRAFFIC SIGNS DISTURBED DURING CONSTRUCTION. ALL DISTURBED TRAFFIC SIGNS MUST BE REPLACED AND INSTALLED AS PER LOCAL REGULATIONS AT THE COMPLETION OF THE PROJECT.

EROSION CONTROL NOTE:
CONTRACTOR TO INSTALL BACKFILL MATERIAL INTO THE EXCAVATED TRENCH AS SOON AS POSSIBLE TO IMPLEMENT EROSION CONTROL.

PROPERTY LINE AND RIGHT-OF-WAY NOTE:
ALL RIGHT-OF-WAYS AND PROPERTY LINES SHOWN ARE APPROXIMATE AND FOR ILLUSTRATIVE PURPOSES ONLY. A PROPERTY SURVEY PERFORMED BY A PROFESSIONAL LAND SURVEYOR SHOULD BE COMPLETED TO DETERMINE THE ACTUAL PROPERTY LINE AND RIGHT-OF-WAY LOCATIONS.

MAILBOX RELOCATION NOTE:
CONTRACTOR TO RELOCATE EXISTING MAILBOXES DURING CONSTRUCTION (COORDINATE AND VERIFY WITH LOCAL POSTAL SERVICE ON LOCATION). RESET BEHIND CURB AND GUTTER OR SHOULDER ACCORDING TO THE REQUIREMENTS OF THE LOCAL POSTMASTER UPON COMPLETION OF STREET CONSTRUCTION.

TREE TRIMMING NOTE:
CONTRACTOR TO PROPERLY TRIM ALL TREE BRANCHES, ROOTS, AND BUSHES DISTURBED DUE TO SANITARY SEWER, WATER SYSTEM, STORM SEWER, AND STREET CONSTRUCTION.

TREE REMOVAL NOTE:
CONTRACTOR TO CONTACT ENGINEER OR ***CITY OF MINERAL POINT*** FOR VERIFICATION PRIOR TO ANY TREE REMOVAL.

SAW CUT NOTE:
CONTRACTOR TO PROVIDE FULL DEPTH SAW CUTS AND REPLACE PAVEMENT.

UTILITIES' NOTE:
THE LOCATIONS OF THE UNDERGROUND UTILITIES SHOWN ON THE PLAN HAVE BEEN OBTAINED BY FIELD CHECKS, A UTILITY LOCATE THROUGH DIGGER'S HOTLINE , AND SEARCHES OF AVAILABLE RECORDS. IT IS BELIEVED THAT THEY ARE ESSENTIALLY CORRECT, BUT THE SURVEYOR DOES NOT GUARANTEE THEIR ACCURACY OR COMPLETENESS. THE CONTRACTOR SHOULD VERIFY LOCATIONS W/ THE UTILITY COMPANIES AND ***CITY OF MINERAL POINT*** PRIOR TO STARTING ANY EXCAVATION.

SANITARY SEWER LATERAL NOTE:
THE LOCATION OF EXISTING SANITARY SEWER LATERALS ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY THE LOCATION AND STATUS OF EACH SANITARY SEWER LATERAL ENCOUNTERED. ONLY ACTIVE SANITARY SEWER LATERALS SHALL BE CONNECTED TO THE NEW SANITARY SEWER MAIN.

CASTING NOTE:
ALL EXISTING MANHOLE CASTINGS AND STORM SEWER CASTINGS TO BE REMOVED AND/OR REPLACED SHALL BE SALVAGED TO THE ***CITY OF MINERAL POINT.***

WATER SYSTEM NOTE:
CONTRACTOR TO SALVAGE EXISTING HYDRANTS TO BE REMOVED TO THE ***CITY OF MINERAL POINT*** . REMOVE EXISTING HYDRANTS TO A MINIMUM DEPTH OF 4'-0".

TRACER WIRE NOTE:
TRACER WIRE (12 GAUGE) TO BE INSTALLED WITH ALL POLYVINYL CHLORIDE (PVC) WATER MAIN.

CABLE-BOND NOTE:
ALL PROPOSED CLASS 52 DUCTILE IRON PIPE WATER MAIN TO BE CABLE-BOND.

WATER SERVICE NOTE:
CONTRACTOR TO VERIFY STATUS AND LOCATION OF EACH WATER SERVICE ENCOUNTERED. CONTRACTOR TO REPLACE ACCORDING TO ENGINEER. ONLY ACTIVE WATER SERVICES SHALL BE CONNECTED TO THE NEW WATER MAIN.

SITE RESTORATION NOTE:
CONTRACTOR WILL BE RESPONSIBLE FOR REPLACEMENT OF ALL DISTURBED PROJECT AREA COMPONENTS INCLUDING, BUT NOT LIMITED TO, EXISTING CONCRETE, BITUMINOUS PAVEMENT, GRAVEL, CULVERTS, WATER AND SANITARY SEWER SYSTEM COMPONENTS, STORM SEWER SYSTEM COMPONENTS, TREES, LAWN ORNAMENTS, FENCING, YARD LANDSCAPING, RETAINING WALLS, MAILBOXES, AND LANDSCAPE AREAS.

PROPERTY DAMAGES:
THE CONTRACTOR IS RESPONSIBLE FOR THE PRESERVATION OF ADJACENT PROPERTY AND FOR ANY DAMAGE TO THE SITE OR TO ADJACENT PROPERTY INCIDENTAL TO THE CONSTRUCTION ACTIVITIES. AFTER THE COMPLETION OF CONSTRUCTION, ANY AREAS ADJACENT TO THE CONSTRUCTION SITE DAMAGED BY THE CONTRACTOR DURING EXECUTION OF THE CONTRACT SHALL BE RESTORED TO MATCH THE PRECONSTRUCTION CONDITIONS.

DISCIPLINE	DESIGNATION
REMOVAL	R
GENERAL	G
CIVIL	C
LANDSCAPE	L
AQUATIC	AQ
ARCHITECTURAL	A
STRUCTURAL	S
ELECTRICAL	E
INSTRUMENTATION/CONTROLS	N
PROCESS	D
PLUMBING	P
HVAC /MECHANICAL	M

DISCIPLINE DESIGNATORS

TYPE	DESIGNATION
NOTES & SCHEDULES	0
PLANS	1
ELEVATIONS & DETAILS	2
CROSS-SECTIONS	3
DIAGRAMS	4

DRAWING SHEET DESIGNATION

C102
- DRAWING NUMBER
- DRAWING SHEET DESIGNATION
- DISCIPLINE DESIGNATION (MAY HAVE MULTIPLE)

SHEET NUMBER IDENTIFICATION

ENGINEER:
DELTA 3
(VERY ANGLE COVERED)
PROFESSIONAL CIVIL, MUNICIPAL, & STRUCTURAL ENGINEERING • ARCHITECTURE
GRANT WRITING • LAND DEVELOPMENT • PLANNING & CADD SERVICES
875 SOUTH CHESTNUT STREET PLATTEVILLE, WISCONSIN 53818 PHONE: (608) 348-5355
898 JACKSON STREET DUBUQUE, IOWA 52001 PHONE: (563) 542-9035

FOR QUESTIONS REGARDING THIS PROJECT, PLEASE CONTACT:
MR. BART NIES, P.E.
DELTA 3 ENGINEERING, INC.
TELEPHONE: (608) 348-5355

CONSENT STATEMENT
ALL RIGHTS RESERVED, AND NO REPRODUCTION WITHOUT CONSENT. ALL DRAWINGS, SPECS., REPORTS, DATA, AND OTHER DOCUMENTS CONTAINED ON THIS PLAN SHEET ARE CREATED BY AND FOR DELTA 3 ENGINEERING AND THEIR CLIENTS' USE. USE, REPRODUCTION, OR DISTRIBUTION OF ANY CONTENT HEREIN, IN ANY FORM, WHETHER PRINTED, ELECTRONIC, OR OTHERWISE, REQUIRES THE EXPLICIT WRITTEN PERMISSION OF THE OWNER.

PROPOSED 2021 STREAM IMPROVEMENTS - BREWERY CREEK

CITY OF MINERAL POINT

PROJECT LOCATION: WITHIN MINERAL POINT CITY LIMITS, BREWERY CREEK(928600) & UNAMED STREAM(928700)
OWNER: CITY OF MINERAL POINT: 137 HIGH STREET, MINERAL POINT, WI 53565

REVISIONS:

NO.	DATE	DESCRIPTION

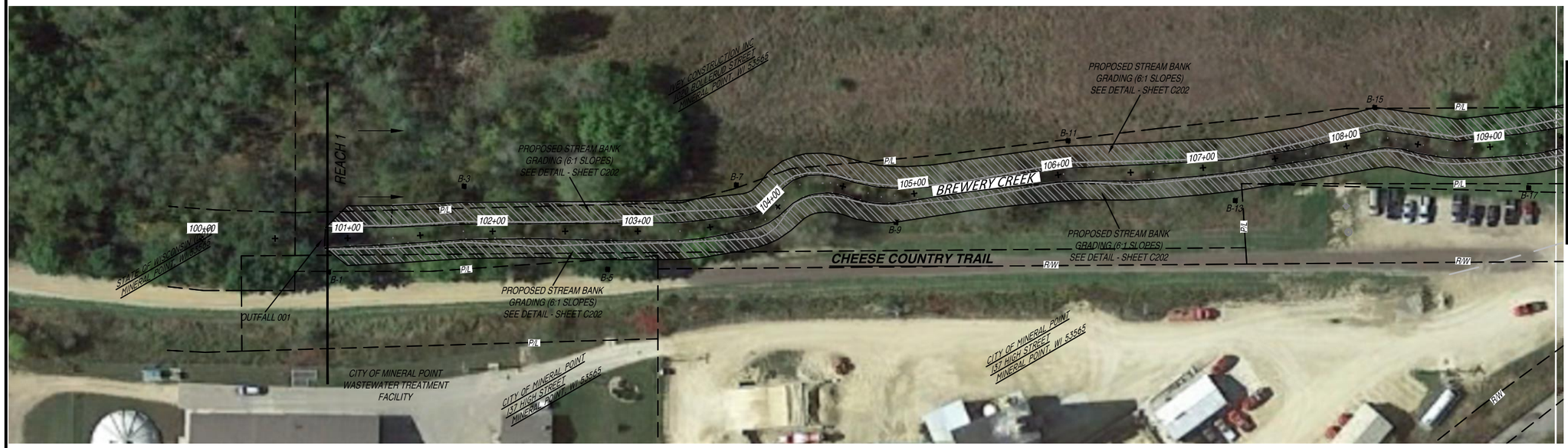
AS-BUILT: --/--/---- BY: *.-----

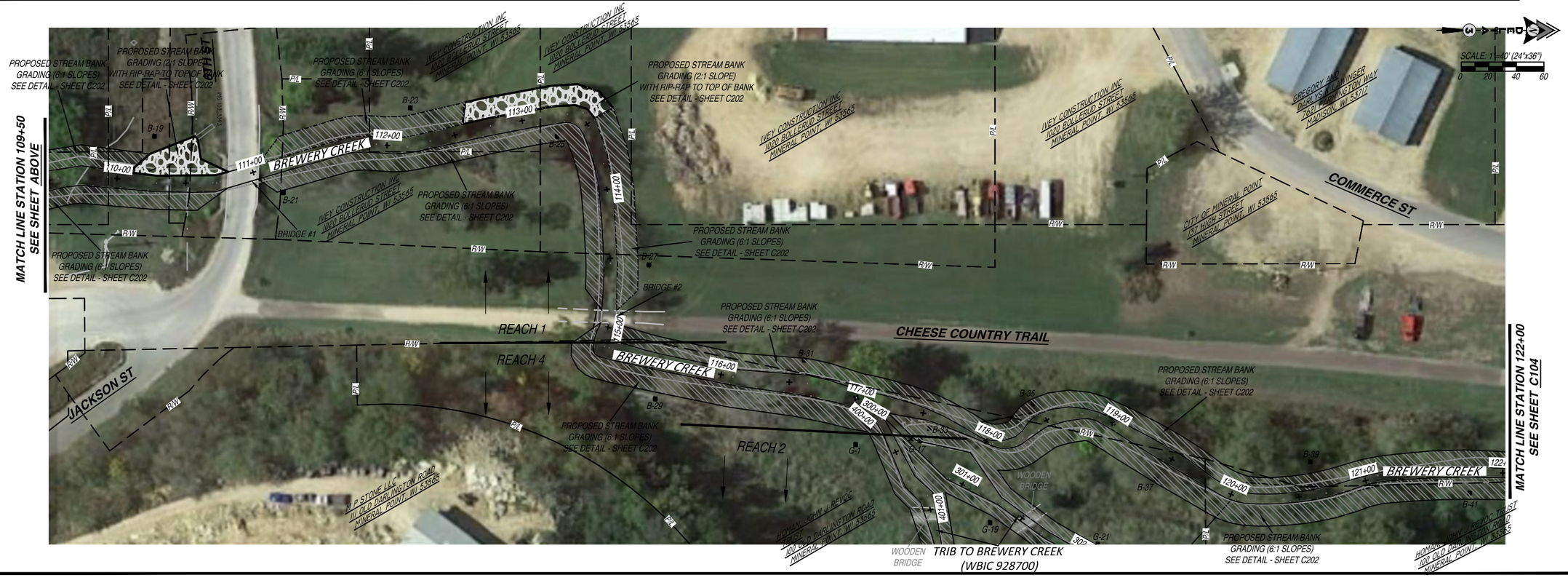
FOR AGENCY REVIEW

PROJECT NUMBER	D19-032
SHEET SCALE	NOT TO SCALE
DRAWN BY	C.COYIER
DATE ISSUED	MARCH 31, 2020
SHEET DESC.	LEGEND & GENERAL NOTES

SHEET TITLE:
G001

SHEET NUMBER # 02 of 11





SCALE: 1"=40' (24"x36")
0 20 40 60

ENGINEER:

DELTA 3
EVERY ANGLE COVERED

PROFESSIONAL CIVIL, MUNICIPAL, & STRUCTURAL ENGINEERING • ARCHITECTURE
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898 JACKSON STREET DUBUQUE, IOWA 52001 PHONE: (563) 542-9005

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DELTA 3 ENGINEERING, INC.
TELEPHONE: (608) 348-5355

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PROPOSED 2021 STREAM IMPROVEMENTS - BREWERY CREEK

CITY OF MINERAL POINT

PROJECT LOCATION: WITHIN MINERAL POINT CITY LIMITS, BREWERY CREEK(928600) & UNAMED STREAM(928700)
OWNER: CITY OF MINERAL POINT: 137 HIGH STREET, MINERAL POINT, WI 53565

REVISIONS:

NO.	DATE	DESCRIPTION

AS-BUILT: --/--/---- BY: -,-----

FOR AGENCY REVIEW

PROJECT NUMBER	D19-032
SHEET SCALE	HORZ.-1" =40'
DRAWN BY	C.COYIER
DATE ISSUED	MARCH 31, 2020
SHEET DESC.	PLAN VIEW - SOUTH BREWERY CREEK

SHEET TITLE:

C101

SHEET NUMBER # .-03 of 11

SCALE: 1"=40' (24"x36")

0 20 40 60

ENGINEER:

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PLATTEVILLE, WISCONSIN 53818
PHONE: (608) 348-5355

898 JACKSON STREET
DUBUQUE, IOWA 52001
PHONE: (563) 542-9005

FOR QUESTIONS
REGARDING THIS PROJECT,
PLEASE CONTACT:

MR. BART NIES, P.E.
DELTA 3 ENGINEERING, INC.
TELEPHONE: (608) 348-5355

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PROPOSED 2021 STREAM IMPROVEMENTS - BREWERY CREEK

CITY OF MINERAL POINT

PROJECT LOCATION: WITHIN MINERAL POINT CITY LIMITS, BREWERY CREEK(928600) & UNAMED STREAM(928700)
OWNER: CITY OF MINERAL POINT: 137 HIGH STREET, MINERAL POINT, WI 53565

REVISIONS:

NO.	DATE	DESCRIPTION

AS-BUILT: --/--/---- BY: -,-----

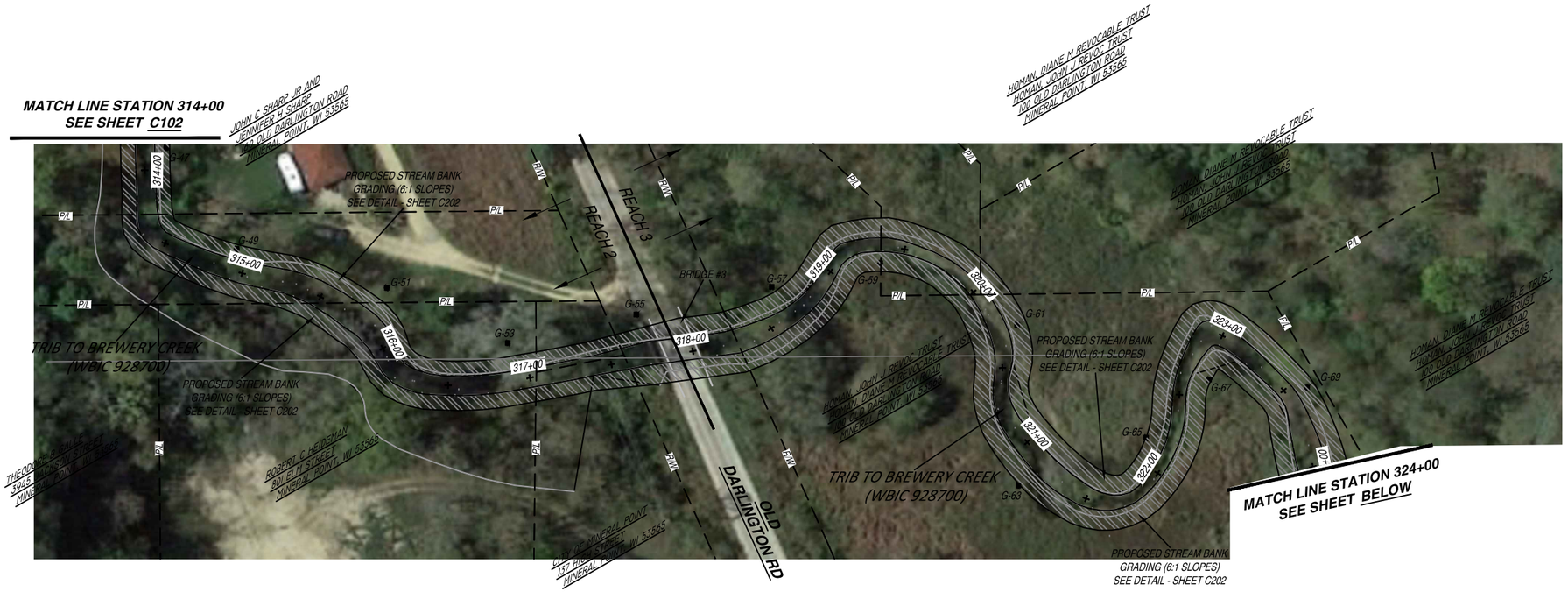
FOR AGENCY REVIEW

PROJECT NUMBER	D19-032
SHEET SCALE	HORZ.-1" =40'
DRAWN BY	C.COYIER
DATE ISSUED	MARCH 31, 2020
SHEET DESC.	PLAN VIEW - TRIB. TO BREWERY CREEK

SHEET TITLE:

C102

SHEET NUMBER # 04 of 11



SCALE: 1"=40' (24"x36")
0 20 40 60

SCALE: 1"=40' (24"x36")
0 20 40 60

ENGINEER:

DELTA 3
EVERY ANGLE CONSIDERED

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PLATTEVILLE, WISCONSIN 53818
PHONE: (608) 348-5355

898 JACKSON STREET
DUBUQUE, IOWA 52001
PHONE: (563) 542-9005

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DELTA 3 ENGINEERING, INC.
TELEPHONE: (608) 348-5355

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PROPOSED 2021 STREAM IMPROVEMENTS - BREWERY CREEK

CITY OF MINERAL POINT

PROJECT LOCATION: WITHIN MINERAL POINT CITY LIMITS, BREWERY CREEK(928600) & UNAMED STREAM(928700)
OWNER: CITY OF MINERAL POINT: 137 HIGH STREET, MINERAL POINT, WI 53565

REVISIONS:

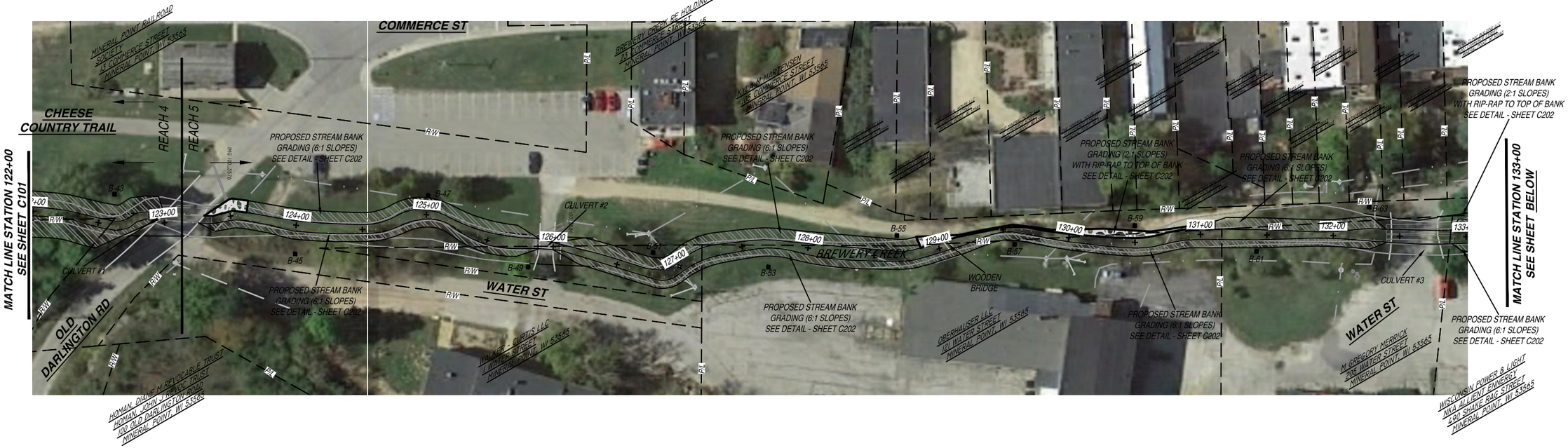
NO.	DATE	DESCRIPTION
AS-BUILT:		BY:
--/--/----		-.-----

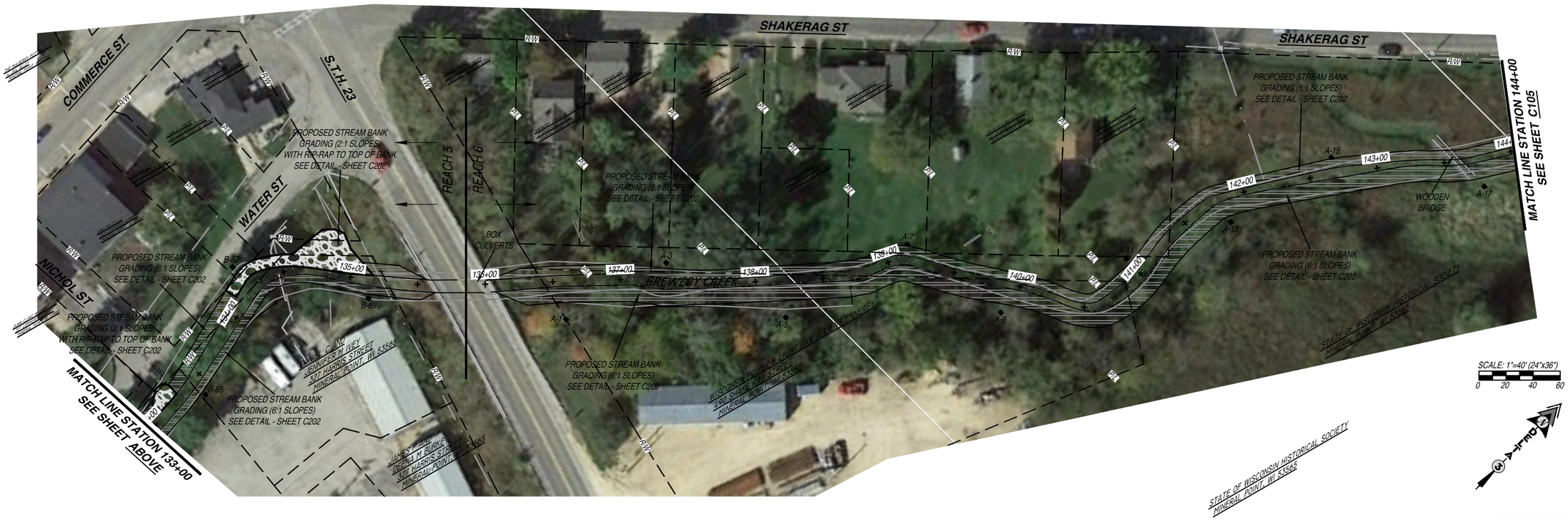
FOR AGENCY REVIEW	
PROJECT NUMBER	D19-032
SHEET SCALE	HORZ.-1" =40'
DRAWN BY	C.COYIER
DATE ISSUED	MARCH 31, 2020
SHEET DESC.	PLAN VIEW - TRIB. TO BREWERY CREEK

SHEET TITLE:

C103

SHEET NUMBER # 05 of 11





SCALE: 1"=40' (24"x36")
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ENGINEER:

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898 JACKSON STREET DUBUQUE, IOWA 52001 PHONE: (563) 542-9005

FOR QUESTIONS REGARDING THIS PROJECT, PLEASE CONTACT:

MR. BART NIES, P.E.
DELTA 3 ENGINEERING, INC.
TELEPHONE: (608) 348-5355

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PROPOSED 2021 STREAM IMPROVEMENTS - BREWERY CREEK

CITY OF MINERAL POINT

PROJECT LOCATION: WITHIN MINERAL POINT CITY LIMITS, BREWERY CREEK(928600) & UNAMED STREAM(928700)
OWNER: CITY OF MINERAL POINT: 137 HIGH STREET, MINERAL POINT, WI 53565

REVISIONS:

NO.	DATE	DESCRIPTION

AS-BUILT: --/--/---- BY: -.-----

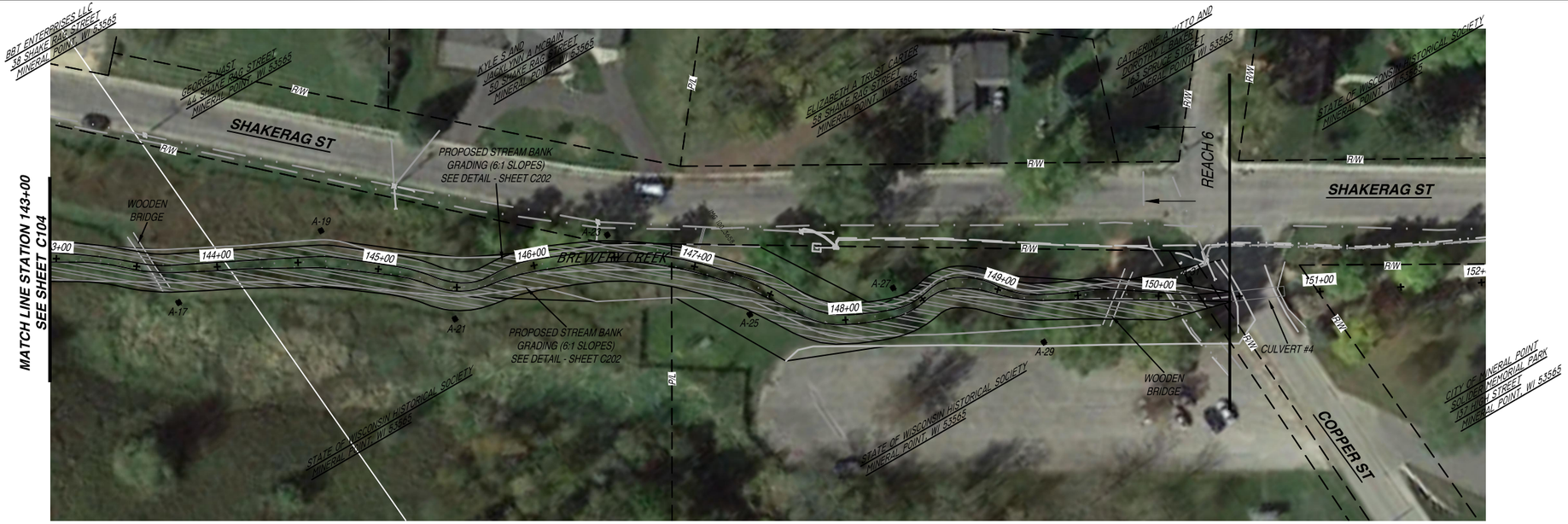
FOR AGENCY REVIEW

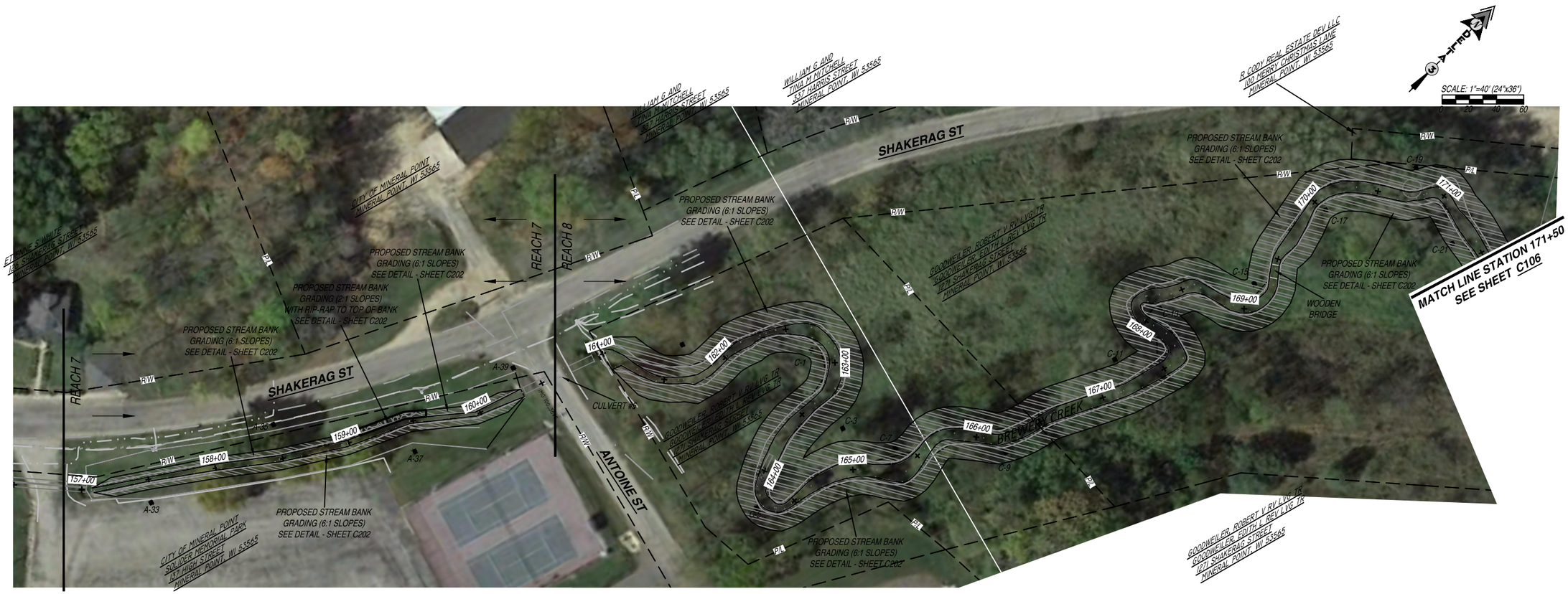
PROJECT NUMBER	D19-032
SHEET SCALE	HORZ.-1" =40'
DRAWN BY	C.COYIER
DATE ISSUED	MARCH 31, 2020
SHEET DESC.	PLAN VIEW - BREWERY CREEK

SHEET TITLE:

C104

SHEET NUMBER # 06 of 11





ENGINEER:

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EVERY ANGLE CONSIDERED

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898 JACKSON STREET PHONE: (563) 542-9005
DUBUQUE, IOWA 52001

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PROPOSED 2021 STREAM IMPROVEMENTS - BREWERY CREEK

CITY OF MINERAL POINT

PROJECT LOCATION: WITHIN MINERAL POINT CITY LIMITS, BREWERY CREEK(928600) & UNAMED STREAM(928700)
OWNER: CITY OF MINERAL POINT: 137 HIGH STREET, MINERAL POINT, WI 53565

REVISIONS:

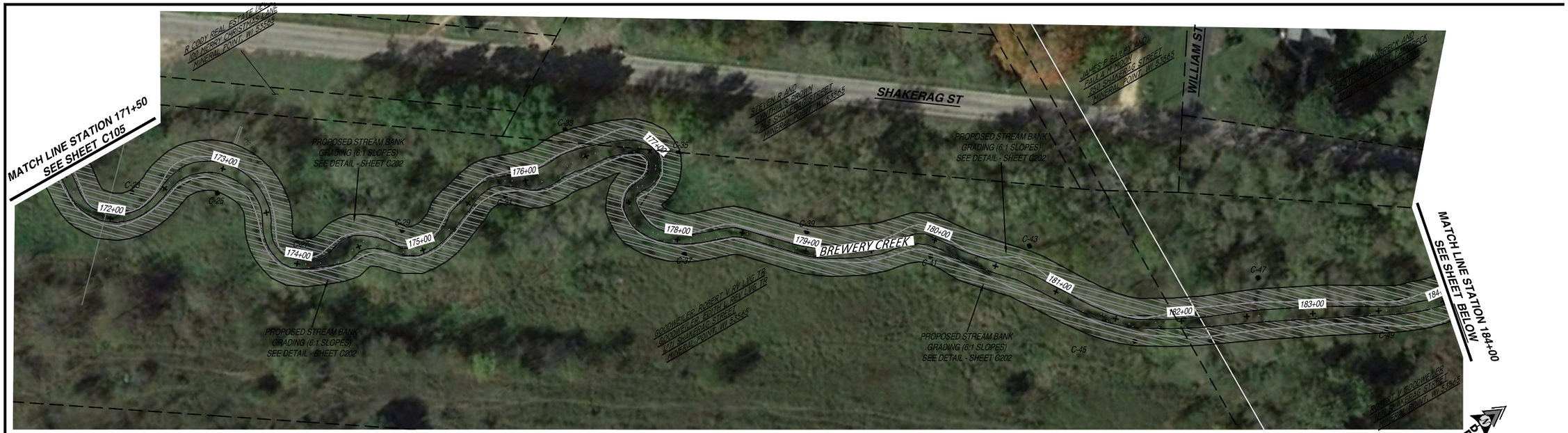
NO.	DATE	DESCRIPTION
AS-BUILT:		BY:
--/--/----		*------

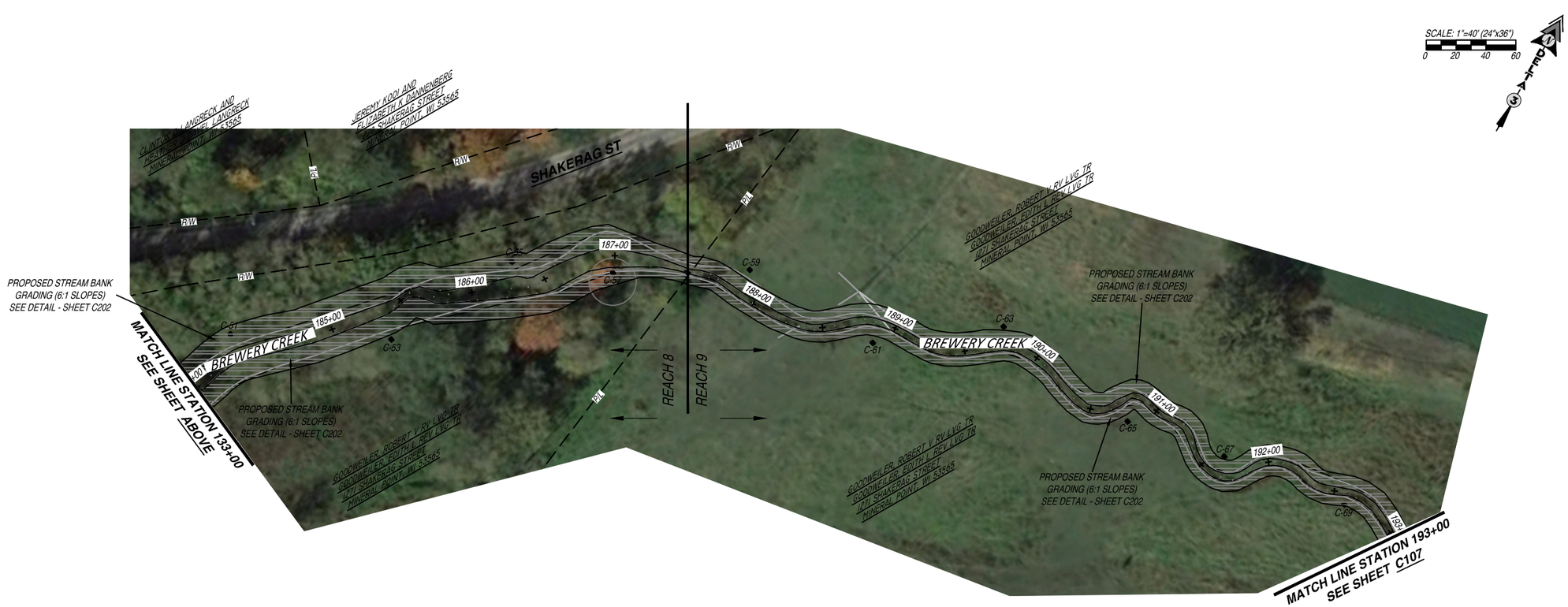
FOR AGENCY REVIEW	
PROJECT NUMBER	D19-032
SHEET SCALE	HORZ.-1" =40'
DRAWN BY	C.COYIER
DATE ISSUED	MARCH 31, 2020
SHEET DESC.	PLAN VIEW - BREWERY CREEK

SHEET TITLE:

C105

SHEET NUMBER # **07 of 11**





ENGINEER:

DELTA 3
EVERY ANGLE CONSIDERED

PROFESSIONAL CIVIL, MUNICIPAL, & STRUCTURAL ENGINEERING • ARCHITECTURE
GRANT WRITING • LAND DEVELOPMENT • PLANNING & GIS SERVICES

875 SOUTH CHESTNUT STREET — PHONE: (608) 348-5355
PLATTEVILLE, WISCONSIN 53818

898 JACKSON STREET — PHONE: (563) 542-9005
DUBUQUE, IOWA 52001

FOR QUESTIONS REGARDING THIS PROJECT, PLEASE CONTACT:

MR. BART NIES, P.E.
DELTA 3 ENGINEERING, INC.
TELEPHONE: (608) 348-5355

CONSIDERATION STATEMENT

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PROPOSED 2021 STREAM IMPROVEMENTS - BREWERY CREEK

CITY OF MINERAL POINT

PROJECT LOCATION: WITHIN MINERAL POINT CITY LIMITS, BREWERY CREEK(928600) & UNAMED STREAM(928700)
OWNER: CITY OF MINERAL POINT: 137 HIGH STREET, MINERAL POINT, WI 53565

REVISIONS:

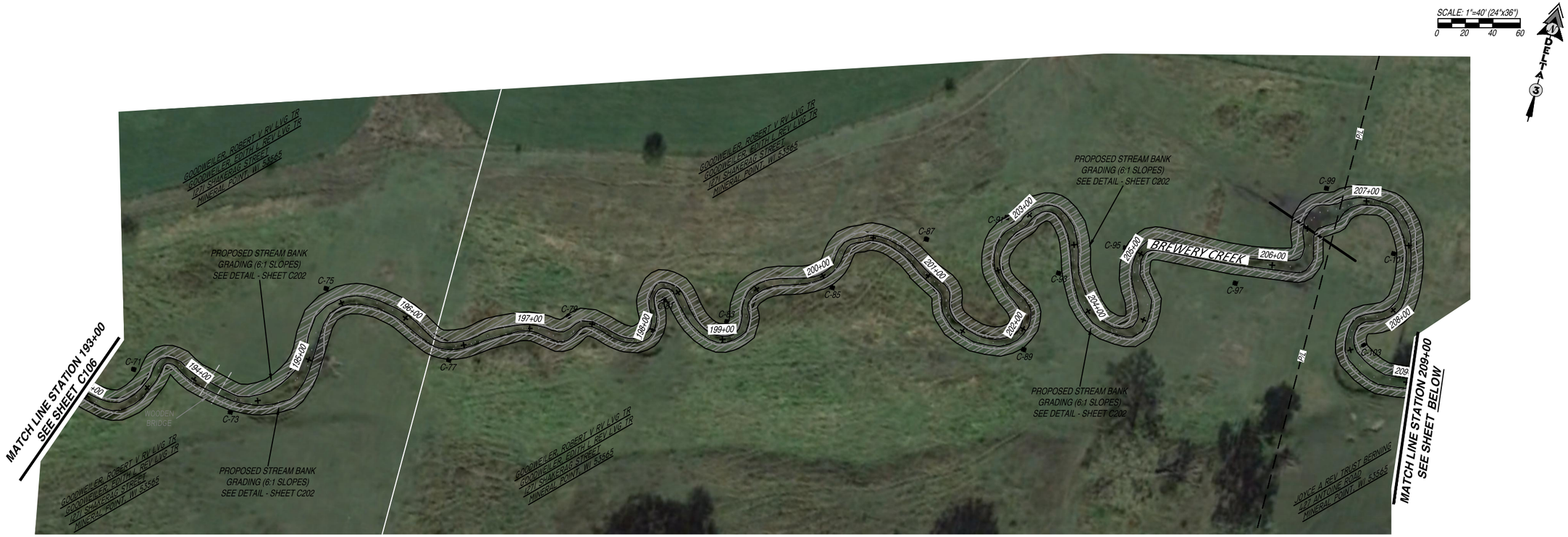
NO.	DATE	DESCRIPTION
AS-BUILT:		BY:
--/--/----		*-----

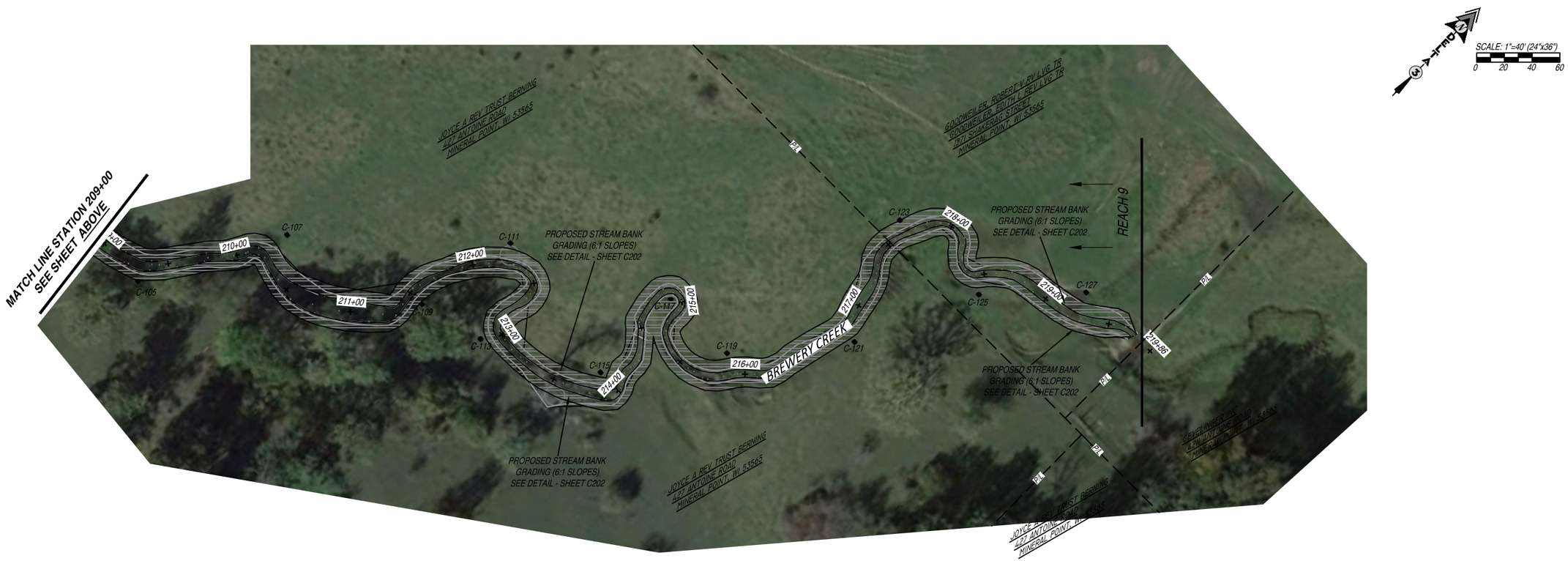
FOR AGENCY REVIEW	
PROJECT NUMBER	D19-032
SHEET SCALE	HORZ.-1" =40'
DRAWN BY	C.COYIER
DATE ISSUED	MARCH 31, 2020
SHEET DESC.	PLAN VIEW - BREWERY CREEK

SHEET TITLE:

C106

SHEET NUMBER # **08 of 11**





ENGINEER:

DELTA 3
EVERY ANGLE COVERED

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875 SOUTH CHESTNUT STREET
PLATTEVILLE, WISCONSIN 53818
PHONE: (608) 348-5355

898 JACKSON STREET
DUBUQUE, IOWA 52001
PHONE: (563) 542-9005

FOR QUESTIONS REGARDING THIS PROJECT, PLEASE CONTACT:

MR. BART NIES, P.E.
DELTA 3 ENGINEERING, INC.
TELEPHONE: (608) 348-5355

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PROPOSED 2021 STREAM IMPROVEMENTS - BREWERY CREEK

CITY OF MINERAL POINT

PROJECT LOCATION: WITHIN MINERAL POINT CITY LIMITS, BREWERY CREEK(928600) & UNAMED STREAM(928700)
OWNER: CITY OF MINERAL POINT: 137 HIGH STREET, MINERAL POINT, WI 53565

REVISIONS:

NO.	DATE	DESCRIPTION
AS-BUILT:		BY:
--/--/----		*------

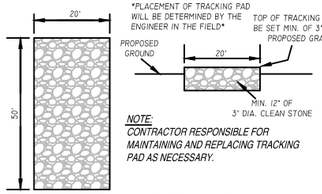
FOR AGENCY REVIEW

PROJECT NUMBER	D19-032
SHEET SCALE	HORZ.-1" =40'
DRAWN BY	C.COYIER
DATE ISSUED	MARCH 31, 2020
SHEET DESC.	PLAN VIEW - BREWERY CREEK

SHEET TITLE:

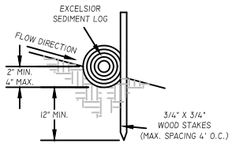
C107

SHEET NUMBER # 09 of 11

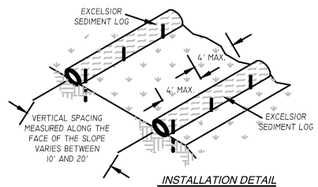


NOTE:
CONTRACTOR RESPONSIBLE FOR MAINTAINING AND REPLACING TRACKING PAD AS NECESSARY.

TRACKING PAD DETAIL
SCALE: N.T.S.



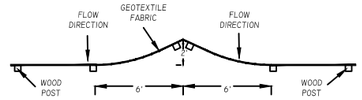
TRENCH DETAIL
SCALE: N.T.S.



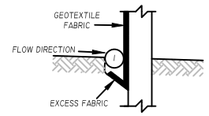
INSTALLATION DETAIL
SCALE: N.T.S.

TYPE 1 = 20" ROLL (HEAVY DUTY CONCENTRATED FLOW)
TYPE 2 = 12" ROLL (HEAVY CONCENTRATED FLOW)
TYPE 3 = 9" ROLL (MILD CONCENTRATED FLOW)
TYPE 4 = 6" ROLL (LOW CONCENTRATED FLOW)

EROSION CONTROL SEDIMENT LOG
SCALE: N.T.S.



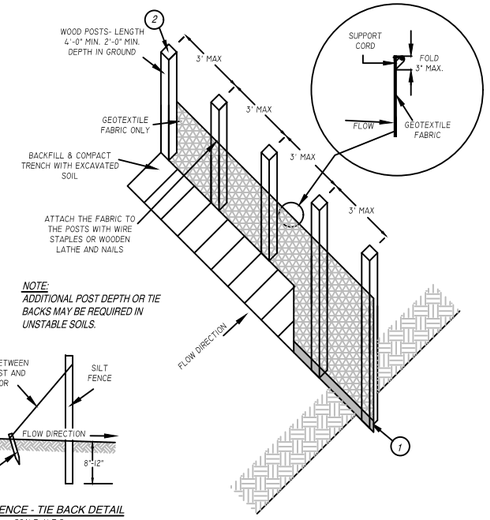
SILT FENCE - JOINING TWO LENGTHS DETAIL
SCALE: N.T.S.



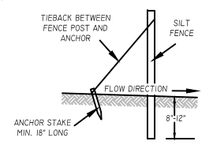
SILT FENCE - TRENCH DETAIL
SCALE: N.T.S.

GENERAL NOTES- SILT FENCE:
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE WISDOT STANDARD SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION (MOST CURRENT EDITION) AND THE APPLICABLE SPECIAL PROVISIONS.

1. TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
2. WOOD POST SHALL BE A MINIMUM SIZE OF 1-1/8" X 1-1/8" OF OAK OR HICKORY.



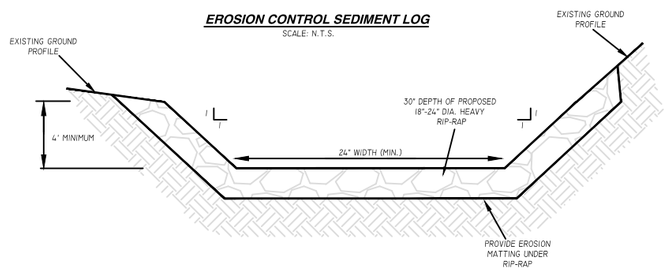
NOTE:
ADDITIONAL POST DEPTH OR TIE BACKS MAY BE REQUIRED IN UNSTABLE SOILS.



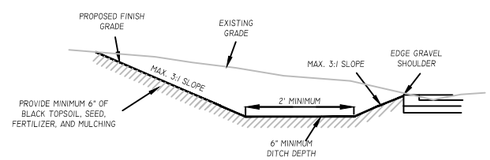
SILT FENCE - TIE BACK DETAIL
SCALE: N.T.S.

SILT FENCE INSTALLATION DETAIL
SCALE: N.T.S.

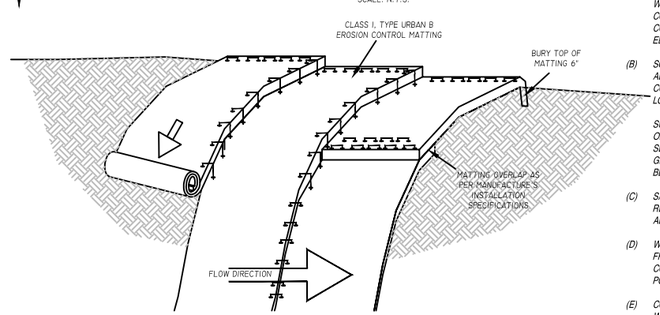
SILT FENCE DETAILS
SCALE: N.T.S.



DRAINAGE DITCH DETAIL B-B
SCALE: N.T.S.



REGRADED DITCH DETAIL
SCALE: N.T.S.



EROSION MATTING NOTES:

1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING APPLICATION OF FERTILIZER AND MULCH AND SEED.
2. BEGIN AT THE TOP OF THE SHOULDER (OR CHANNEL) BY ANCHORING THE BLANKET IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
3. ROLL THE BLANKETS DOWN (STARTING AT DOWNSTREAM PROCEEDING UPSTREAM) HORIZONTALLY ACROSS THE SLOPE.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH MANUFACTURE'S RECOMENDED OVERLAP.
5. WHEN BLANKETS MUST BE SPLICED DOWN THE SLOPE, PLACE BLANKETS END OVER END (SHINGLE STYLE) WITH AN OVERLAP. USE A DOUBLE ROW OF STAGGERED STAPLES 4" APART TO SECURE BLANKETS.
6. IN HIGH CHANNEL APPLICATIONS, A STAPLE SLOT IS RECOMMENDED AT 30 TO 40 FOOT INTERVALS. USE A ROW OF STAPLES 4" APART OVER THE ENTIRE WIDTH OF THE CHANNEL. PLACE A SECOND ROW 4" BELOW THE FIRST ROW IN A STAGERED PATTERN.
7. THE TERMINAL END OF THE BLANKETS MUST BE ANCHORED IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.

EROSION MATTING - SLOPE INSTALLATION DETAIL
SCALE: N.T.S.

EROSION CONTROL NOTES:

1. GENERAL EROSION NOTES AND MAINTENANCE MEASURES ARE ILLUSTRATED ON THE PLAN & PROFILE SHEETS. AFTER AWARD OF THE CONTRACT, THE GENERAL CONTRACTOR SHALL INSTALL ALL BEST MANAGEMENT PRACTICES AS SHOWN ON THE PLAN & PROFILE SHEETS. ONCE INSTALLED, THE GENERAL CONTRACTOR SHALL CONTACT DELTA 3 ENGINEERING, INC. (608-348-5355). ONCE NOTIFIED DELTA 3 ENGINEERING INC. WILL VISIT THE SITE WITHIN 5 DAYS TO REVIEW THE SITE WITH THE GENERAL CONTRACTORS SUPERINTENDENT. UPON VISITING THE SITE, THE CONSULTING ENGINEER AND THE GENERAL CONTRACTORS SUPERINTENDENT WILL REVIEW THE SITE FOR COMPLIANCE WITH THE EROSION CONTROL MEASURES. IF AND WHEN ALL BEST MANAGEMENT PRACTICES REQUIRED TO COMMENCE SITE CONSTRUCTION ARE IN PLACE, THE CONSULTING ENGINEER AND PROJECT SUPERINTENDENT WILL SIGN AND CERTIFY THIS FACT. THIS REVIEW AND CERTIFICATION SHALL TAKE PLACE PRIOR TO THE REQUIRED PRE-CONSTRUCTION MEETING. THE SITE SUPERINTENDENT SHALL MAINTAIN AN AS-BUILT COPY OF THE EROSION CONTROL MEASURES ON SITE AT ALL TIMES. ANY ACTIVITIES INVOLVING INSTALLATION OF BEST MANAGEMENT PRACTICES SHALL BE INDICATED ON THE AS-BUILT PLAN WITH AN INSTALLED TIME AND DATE. RECORDED INFORMATION SHALL BE PERMANENTLY PLACED ON THE SITE MAP INCLUDING ANY CHANGES MADE TO THE BEST MANAGEMENT PRACTICES. IF THE SITE MAP BECOMES HARD TO READ, THE INITIAL DRAWING SHALL BE SAVED AND A CLEAN COPY SHALL BE ISSUED IN ORDER TO CONTINUE RECORDING ANY ON-SITE EROSION CONTROL ACTIVITY.

2. A COMPLETE COPY OF ALL INSPECTION REPORTS, PLAN REVISIONS, ETC., MUST BE RETAINED AT THE PROJECT SITE AT ALL TIMES DURING DURATION OF THE PROJECT AND KEPT IN THE PERMANENT PROJECT RECORDS FOR AT LEAST FIVE YEARS FOLLOWING SUBMISSION OF THE NOTICE OF TERMINATION (NOT).

3. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INSURING THAT ALL SUB-CONTRACTORS INVOLVED IN GROUND DISTURBING ACTIVITY COMPLY WITH THE EROSION CONTROL REQUIREMENTS.

4. DAILY INSPECTIONS BY THE PROJECT SUPERINTENDENT AND MONTHLY INSPECTIONS BY THE OWNER'S CONSTRUCTION MANAGER MUST BE MADE TO DETERMINE THE EFFECTIVENESS OF THE EROSION CONTROL MEASURES. THE GENERAL CONTRACTOR IS TO INSPECT EROSION AND SEDIMENT CONTROLS WITHIN 24 HOURS AFTER A RAINFALL EVENT OF 0.5 INCHES OR GREATER. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR OR REPLACE EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES AS NECESSARY WITHIN 24 HOURS OF INSPECTION.

5. ONCE THE SITE REACHES FINAL STABILIZATION, ALL PERMANENT EROSION AND SEDIMENTATION CONTROLS ARE INSTALLED AND ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS ARE REMOVED, THE GENERAL CONTRACTOR AND OWNER MUST COMPLETE A FINAL SITE INSPECTION. UPON APPROVAL BY OWNER, THE OWNER AND GENERAL CONTRACTOR, AS APPLICABLE, MUST COMPLETE AND SUBMIT A NOTICE OF TERMINATION (NOT) FORM TO BE SUBMITTED TO THE WISCONSIN DEPARTMENT OF NATURAL RESOURCES.

6. A RECORD OF THE DATES WHEN MAJOR GROUND-DISTURBING ACTIVITIES OCCUR, WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE, AND WHEN STABILIZATION MEASURES ARE INITIATED MUST BE MAINTAINED UNTIL THE NOT IS FILED. CONTROLS MUST BE IN PLACE DOWN GRADIENT OF GROUND-DISTURBING ACTIVITIES PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.

7. A LOG OF ALL INSPECTIONS BY FEDERAL, STATE, OR LOCAL STORM WATER OR OTHER ENVIRONMENTAL AGENCIES SHALL BE KEPT BY THE GENERAL CONTRACTOR. THE LOG SHALL INCLUDE THE DATE AND TIME OF VISIT AND WHETHER A REPORT WAS ISSUED OR WILL BE ISSUED AS A RESULT OF THE INSPECTION. ANY REPORTS ISSUED SHALL BE FAXED TO THE DELTA 3 ENGINEERING INC. 608-348-5455 (FAX).

8. SOIL STABILIZATION - THE PURPOSE OF SOIL STABILIZATION IS TO PREVENT SOIL FROM LEAVING THE SITE. IN THE NATURAL CONDITION, SOIL IS STABILIZED BY NATIVE VEGETATION. THE PRIMARY TECHNIQUE TO BE USED AT THIS PROJECT FOR STABILIZING SITE SOIL WILL BE TO PROVIDE A PROTECTIVE COVER OF TURF GRASS OR PAVEMENT.

   (A) TEMPORARY SEEDING OR STABILIZATION - AREAS MAY BE STABILIZED TEMPORARILY WITH THE USE OF FAST-GERMINATING ANNUAL SEED, STRAW MULCH, WOOD CELLULOSE FIBERS, TACKIFIERS, NETTING OR BLANKET. WHERE CONDITIONS ARE FAVORABLE, AREAS SHALL BE TEMPORARILY STABILIZED WITHIN 7 DAYS AFTER CONSTRUCTION ACTIVITY CEASES. ALL DISTURBED GROUND WHERE THERE WILL NOT BE CONSTRUCTION FOR LONGER THAN 14 DAYS MUST BE SEEDED OR OTHERWISE STABILIZED.

   (B) PERMANENT SEEDING OR SOD - ALL AREAS AT FINAL GRADE MUST BE SEEDED OR SODDED WITHIN 3 DAYS AFTER COMPLETION OF THE MAJOR CONSTRUCTION ACTIVITY. EXCEPT FOR SMALL LEVEL SPOTS, SEEDED AREAS SHOULD GENERALLY BE PROTECTED WITH MULCH. ALL AREAS TO BE SEEDED WILL ALSO HAVE TOPSOIL AND OTHER AMENDMENTS AS STATED IN WISDOT SPECIFICATION SECTION 02900-PLANTING.

   (C) MULCHING - ALL AREAS THAT ARE TEMPORARY OR PERMANENT SEEDED SHALL BE MULCHED ACCORDING TO SECTION 627 - MULCHING OF THE WISDOT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION. ALL MULCH IS TO BE ANCHORED UTILIZING METHOD A, B, OR C.

   (D) EROSION CONTROL MATTING - FOR ANY SLOPES GREATER THAN 3:1, EROSION MATTING IS REQUIRED.

9. STRUCTURAL CONTROLS - BEFORE ANY MAJOR GRADING ACTIVITIES, THE FOLLOWING BEST MANAGEMENT PRACTICES SHALL BE INSTALLED ON THE PROPOSED SITE - SILT FENCE, TEMPORARY TRACKING PAD, AND STORM SEWER INLET PROTECTION.

   (A) SILT FENCE - SILT FENCE IS A SYNTHETIC PERMEABLE WOVEN OR NON-WOVEN FABRIC TYPICALLY INCORPORATING WOODEN OR METAL SUPPORT STAKES AT INTERVALS SUFFICIENT TO SUPPORT THE FENCE, WATER, AND SEDIMENT RETAINED BY THE FENCE. SILT FENCE CAN ALSO BE INSTALLED WITH A WIRE FENCE BACKING. THE FENCE IS DESIGNED TO RETAIN SEDIMENT-LADEN WATER AND ALLOW SETTLEMENT OF SUSPENDED SOILS BEFORE THE STORM WATER FLOWS THROUGH THE FABRIC FOR DISCHARGE DOWNSTREAM. SILT FENCE SHALL BE LOCATED AS SHOWN ON THE PLAN & PROFILE SHEETS. THE SILT FENCE TO BE INCLUDED FOR THIS PROJECT SHALL BE CONSTRUCTED PER WISCONSIN DNR TECHNICAL STANDARDS FOR SILT FENCE (CODE 1056).

   (B) TEMPORARY TRACKING PAD - ALL ACCESS POINTS FROM THE PUBLIC STREET INTO THE CONSTRUCTION SITE SHALL INCLUDE A TRACKING PAD COMPOSED OF COURSE STONE TO THE DIMENSIONS SHOWN ON DETAIL SHEET (C202). ANY SEDIMENT REACHING A PUBLIC OR PRIVATE ROAD SHALL BE REMOVED BY STREET CLEANING (NOT FLUSHING) BEFORE THE END OF EACH WORKDAY.

   (C) STORM SEWER INLET PROTECTION - CURB AND GRATED INLETS ARE PROTECTED FROM THE INTRUSION OF SILT AND SEDIMENT THROUGH A VARIETY OF SEDIMENT CONTROL PRACTICES TO ALLOW SETTLEMENT OF SUSPENDED SOILS BEFORE DISCHARGING INTO THE STORM SEWER. GRATED INLETS TYPICALLY INCLUDE A STURDY FRAME WRAPPED IN GEOTEXTILE FABRIC OR SEDIMENT LOG PERIMETER TO SLOW THE FLOW OF WATER AND ALLOW PONDING WHERE SEDIMENT MAY SETTLE OUT. CURB INLETS TYPICALLY INCLUDE SEDIMENT LOG BARRIERS HELD IN PLACE WITH GEOTEXTILE FABRIC. OTHER MANUFACTURED PRODUCTS ARE ALSO AVAILABLE. ALL STORM DRAINS SHALL BE PROTECTED BY USING STRAW BALES, SEDIMENT LOGS, FABRIC, OR EQUIVALENT BARRIER.

   FINAL SITE STABILIZATION IS ACHIEVED WHEN TURF GRASS COVER PROVIDES PERMANENT STABILIZATION FOR AT LEAST 70 PERCENT OF THE DISTURBED SOIL SURFACE, EXCLUSIVE OF AREAS THAT HAVE BEEN PAVED.

10. OTHER POLLUTANT CONTROLS

   (A) DUST CONTROL - CONSTRUCTION TRAFFIC MUST ENTER AND EXIT THE SITE AT THE STABILIZED CONSTRUCTION EXIT. THE PURPOSE IS TO TRAP DUST AND MUD THAT WOULD OTHERWISE BE CARRIED OFF-SITE BY CONSTRUCTION EQUIPMENT.

   WATER TRUCKS OR OTHER DUST CONTROL AGENTS WILL BE USED AS NEEDED DURING CONSTRUCTION TO REDUCE DUST GENERATED ON THE SITE. DUST CONTROL MUST BE PROVIDED BY THE GENERAL CONTRACTOR TO A DEGREE THAT IS ACCEPTABLE TO THE OWNER'S CONSTRUCTION MANAGER, AND IN COMPLIANCE WITH APPLICABLE LOCAL AND STATE DUST CONTROL REGULATIONS. AFTER CONSTRUCTION, THE SITE WILL BE STABILIZED (AS DESCRIBED ELSEWHERE), WHICH WILL REDUCE THE POTENTIAL FOR DUST GENERATION.

   (B) SOLID WASTE DISPOSAL - NO SOLID MATERIALS, INCLUDING BUILDING MATERIALS, ARE ALLOWED TO BE DISCHARGED FROM THE SITE WITH STORM WATER. ALL SOLID WASTE, INCLUDING DISPOSABLE MATERIALS INCIDENTAL TO THE MAJOR CONSTRUCTION ACTIVITIES, MUST BE COLLECTED AND PLACED IN CONTAINERS. THE CONTAINERS WILL BE EMPTIED AS NECESSARY BY A CONTRACT TRASH DISPOSAL SERVICE AND HAULED AWAY FROM THE SITE. THE LOCATION OF SOLID WASTE RECEPTACLES SHALL BE SHOWN AND APPROVED BY THE OWNER.

   SUBSTANCES THAT HAVE THE POTENTIAL FOR POLLUTING SURFACE AND/OR GROUNDWATER MUST BE CONTROLLED BY WHATEVER MEANS NECESSARY IN ORDER TO ENSURE THAT THEY DO NOT DISCHARGE FROM THE SITE. FOR EXAMPLE, SPECIAL CARE MUST BE EXERCISED DURING EQUIPMENT FUELING AND SERVICING OPERATIONS. IF A SPILL OCCURS, IT MUST BE CONTAINED AND DISPOSED SO THAT IT WILL NOT FLOW FROM THE SITE OR ENTER GROUNDWATER, EVEN IF THIS REQUIRES REMOVAL, TREATMENT, AND DISPOSAL OF SOIL. IN THIS REGARD, POTENTIALLY POLLUTING SUBSTANCES SHOULD BE HANDLED IN A MANNER CONSISTENT WITH THE IMPACT THEY REPRESENT.

   (C) SANITARY FACILITIES - ALL PERSONNEL INVOLVED WITH CONSTRUCTION ACTIVITIES MUST COMPLY WITH STATE AND LOCAL SANITARY OR SEPTIC SYSTEM REGULATIONS. TEMPORARY SANITARY FACILITIES MUST BE PROVIDED AT THE SITE THROUGHOUT THE CONSTRUCTION PHASE. THEY MUST BE UTILIZED BY ALL CONSTRUCTION PERSONNEL AND MUST BE SERVICED BY A COMMERCIAL OPERATOR.

   (D) WATER SOURCE - NON-STORM WATER COMPONENTS OF SITE DISCHARGE MUST BE CLEAN WATER. WATER USED FOR CONSTRUCTION WHICH DISCHARGES FROM THE SITE MUST ORIGINATE FROM A PUBLIC WATER SUPPLIER, OR PRIVATE WELL APPROVED BY THE STATE HEALTH DEPARTMENT. WATER USED FOR CONSTRUCTION THAT DOES NOT ORIGINATE FROM AN APPROVED PUBLIC SUPPLY MUST NOT DISCHARGE FROM THE SITE. IT CAN BE RETAINED IN THE PONDS UNTIL IT INFILTRATES AND EVAPORATES.

   (E) CONCRETE WASTE FROM CONCRETE READY-MIX TRUCKS - DISCHARGE OF EXCESS OR WASTE CONCRETE AND/OR WASH WATER FROM CONCRETE TRUCKS WILL BE ALLOWED ON THE CONSTRUCTION SITE, BUT ONLY IN SPECIFICALLY DESIGNATED DIKED AREAS PREPARED TO PREVENT CONTACT BETWEEN THE CONCRETE AND/OR WASH WATER AND STORM WATER THAT WILL BE DISCHARGED FROM THE SITE. ALTERNATIVELY, WASTE CONCRETE CAN BE PLACED INTO FORMS TO MAKE RIP-RAP OR OTHER USEFUL CONCRETE PRODUCTS. THE CURED RESIDUE FROM THE CONCRETE WASHOUT DIKED AREAS SHALL BE DISPOSED IN ACCORDANCE WITH APPLICABLE STATE AND FEDERAL REGULATIONS. THE JOB SITE SUPERINTENDENT IS RESPONSIBLE FOR ASSURING THAT THESE PROCEDURES ARE FOLLOWED.

   (F) FUEL TANKS - TEMPORARY ON-SITE FUEL TANKS FOR CONSTRUCTION VEHICLES SHALL MEET ALL STATE AND FEDERAL REGULATIONS. TANKS SHALL HAVE APPROVED SPILL CONTAINMENT WITH THE CAPACITY REQUIRED BY THE APPLICABLE REGULATIONS. THE TANK SHALL BE IN SOUND CONDITION FREE OF RUST OR OTHER DAMAGE WHICH MIGHT COMPROMISE CONTAINMENT. HOSES, VALVES, FITTINGS, CAPS, FILLER NOZZLES, AND ASSOCIATED HARDWARE SHALL BE MAINTAINED IN PROPER WORKING CONDITION AT ALL TIMES.

11. MINIMIZING EROSION AND RUNOFF DURING TRENCH OPERATIONS

   (A) EXCAVATED TRENCH MATERIALS SHALL BE PLACED ON THE UPPER SIDE OF THE TRENCH WHILE THE TRENCH IS OPEN.

   (B) EXCAVATED TRENCH MATERIAL, UPON COMPLETING WORK IN TRENCH, SHALL BE PLACED BACK IN THE TRENCH OR HAULED AWAY TO A PROPER SPOIL SITE. THE TRENCH SHALL BE BACKFILLED AND STABILIZED AT THE END OF EACH WORKING DAY.

ENGINEER:
DELTA 3
EVERY ANGLE COVERED
PROFESSIONAL CIVIL, MUNICIPAL, & STRUCTURAL ENGINEERING • ARCHITECTURE
GRANT WRITING • LAND DEVELOPMENT • PLANNING & GIS SERVICES
875 SOUTH CHESTNUT STREET PLATTEVILLE, WISCONSIN 53818 PHONE: (608) 348-5355
898 JACKSON STREET DUBUQUE, IOWA 52001 PHONE: (563) 542-9005

FOR QUESTIONS REGARDING THIS PROJECT, PLEASE CONTACT:
MR. BART NIES, P.E.
DELTA 3 ENGINEERING, INC.
TELEPHONE: (608) 348-5355

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PROPOSED 2021 STREAM IMPROVEMENTS - PROPOSED REVISIONS TO BREWERY CREEK
CITY OF MINERAL POINT
PROJECT LOCATION: WITHIN MINERAL POINT CITY LIMITS, BREWERY CREEK(928600) & UNAMED STREAM(928700)
OWNER: CITY OF MINERAL POINT: 137 HIGH STREET, MINERAL POINT, WI 53565

REVISIONS:		
NO.	DATE	DESCRIPTION
AS-BUILT:		BY:
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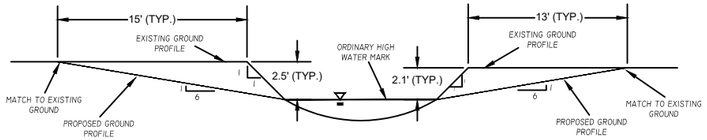
FOR AGENCY REVIEW	
PROJECT NUMBER	D19-032
SHEET SCALE	NOT TO SCALE
DRAWN BY	C.COYIER
DATE ISSUED	MARCH 31, 2020
SHEET DESC.	DETAILS - EROSION CONTROL & NOTES

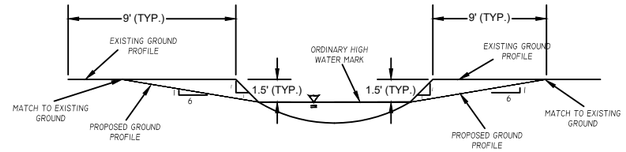
SHEET TITLE:
C201

SHEET NUMBER # 10 of 11



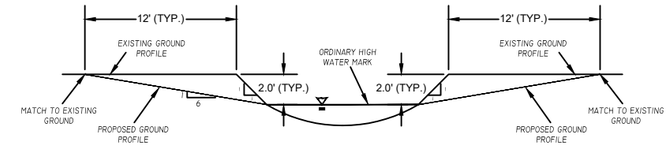
TYPICAL CROSS SECTION DETAIL - REACH 1

SCALE: N.T.S.



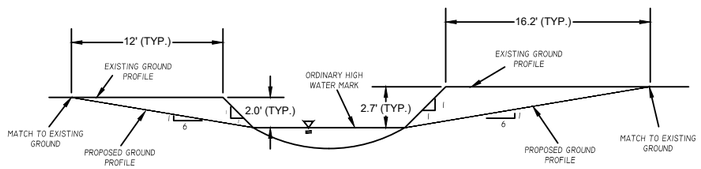
DRAINAGE DITCH DETAIL: REACH 2

SCALE: N.T.S.



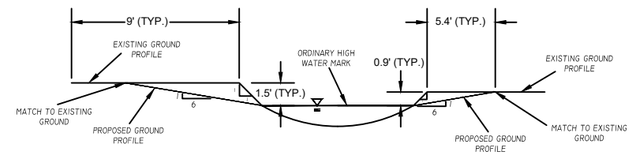
DRAINAGE DITCH DETAIL: REACH 3

SCALE: N.T.S.



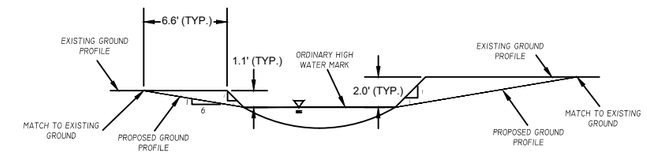
DRAINAGE DITCH DETAIL: REACH 4

SCALE: N.T.S.



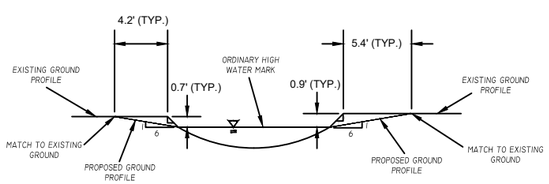
DRAINAGE DITCH DETAIL: REACH 5

SCALE: N.T.S.



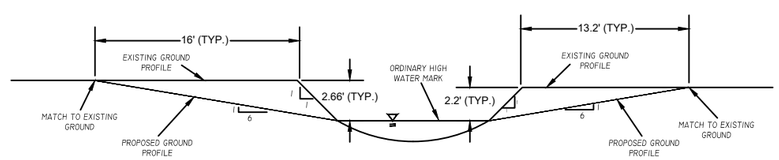
DRAINAGE DITCH DETAIL: REACH 6

SCALE: N.T.S.



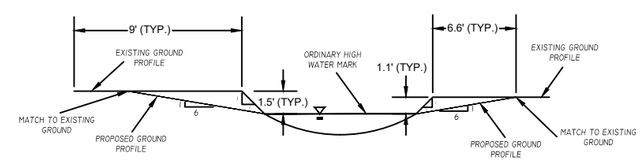
DRAINAGE DITCH DETAIL: REACH 7

SCALE: N.T.S.



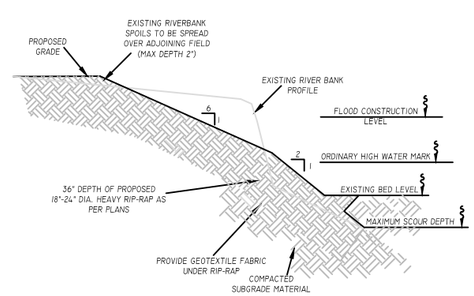
DRAINAGE DITCH DETAIL: REACH 8

SCALE: N.T.S.



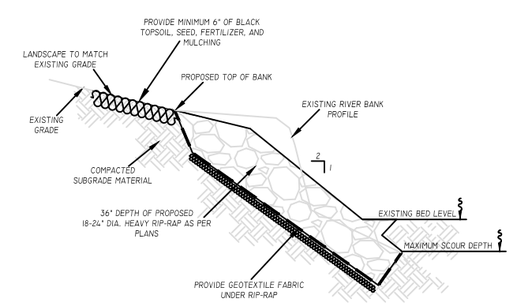
DRAINAGE DITCH DETAIL: REACH 9

SCALE: N.T.S.



STREAM BANK GRADING DETAIL

SCALE: N.T.S.



STREAM BANK GRADING WITH RIP-RAP TO TOP OF BANK DETAIL

SCALE: N.T.S.

ENGINEER:

DELTA 3
EVERY ANGLE COVERED

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FOR QUESTIONS REGARDING THIS PROJECT, PLEASE CONTACT:

MR. BART NIES, P.E.
DELTA 3 ENGINEERING, INC.
TELEPHONE: (608) 348-5355

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PROPOSED 2021 STREAM IMPROVEMENTS - BREWERY CREEK

CITY OF MINERAL POINT

PROJECT LOCATION: WITHIN MINERAL POINT CITY LIMITS, BREWERY CREEK(928600) & UNAMED STREAM(928700)
OWNER: CITY OF MINERAL POINT: 137 HIGH STREET, MINERAL POINT, WI 53565

REVISIONS:

NO.	DATE	DESCRIPTION
AS-BUILT:		BY:
--/--/----		-.-----

FOR AGENCY REVIEW	
PROJECT NUMBER	D19-032
SHEET SCALE	NOT TO SCALE
DRAWN BY	C. COYIER
DATE ISSUED	MARCH 31, 2020
SHEET DESC.	DETAILS - STREAM BANK

SHEET TITLE:

C202

SHEET NUMBER # **11 of 11**

Attachment #7

ATTACHEMENT #7
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II. Reach 1 1

III. Reach 2 7

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V. Reach 4 17

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IX. Reach 8 28

X. Reach 9 36

I. Introduction

The lateral recession rate of the eroding bank is a critical component for the NRCS Streambank Erosion Estimator. The following documentation provides the justification for the lateral recession rates used in the NRCS Streambank Erosin Estimator. Lateral recession rate was estimated based on the photos provided, description, and on site evaluation. The following includes representative photos of Project Reaches to be stabilized through installation of Best Management Practices (BMPs).

II. Reach 1

Image 1.1 – Undercut with exposed tree roots.

Image 1.2 – Undercut with exposed tree roots.

Image 1.3 – Undercut with exposed tree roots.

Image 1.4 – Undercut with exposed tree roots.

Image 1.5 – Undercut with exposed tree roots.

Image 1.6 – Undercut with exposed tree roots.

Image 1.7 – Undercut with exposed tree roots.

Image 1.8 – Undercut with exposed tree roots.

Image 1.9 – Undercut and slump with exposed tree roots.

Image 1.10 – Undercut with slump and exposed tree roots.

III. Reach 2

Image 2.1 – Undercut with exposed roots. Erosion is somewhat hidden in Reach 2 due to overhanging grass.

Image 2.2 – Undercut with exposed roots. Erosion is somewhat hidden in Reach 2 due to overhanging grass.

Image 2.3 – Undercut with exposed tree roots.

Image 2.4 – Undercut with exposed tree roots.

Image 2.5 – Undercut with exposed tree roots.

Image 2.6 – Undercut with exposed roots.

Image 2.7 – Undercut with exposed roots.

Image 2.8 – Undercut with exposed roots.

Image 2.9 – Undercut with exposed roots.

Image 2.10 – Undercut with exposed roots.

Image 2.11 – Undercut with exposed tree roots.

Image 2.12 – Undercut with exposed tree roots.

IV. Reach 3

Image 3.1 - Undercut with slump and fallen trees.

Image 3.2 - Undercut with exposed roots.

Image 3.3 - Undercut with exposed roots.

Image 3.4 - Undercut with exposed roots.

Image 3.5 - Undercut with exposed roots.

Image 3.6 - Undercut with slump and exposed roots.

Image 3.7 - Undercut with slump and exposed roots.

Image 3.8 - Undercut with exposed tree roots.

Reach 4

Image 4.1 - Undercut with exposed tree roots.

Image 4.2 - Undercut with exposed tree roots.

Image 4.3 - Undercut with exposed tree roots.

Image 4.4 - Undercut with exposed tree roots.

Image 4.5 - Undercut with exposed tree roots.

V. Reach 5

Image 5.1 - Undercut with slump and exposed roots.

Image 5.2 - Undercut with slump and exposed roots.

Image 5.3 - Undercut with exposed roots.

Image 5.4 - Undercut with exposed roots.

Image 5.5 - Undercut with exposed roots.

Image 5.6 - Undercut with exposed roots.

VI. Reach 6

Image 6.1 - Undercut with exposed roots.

Image 6.2 - Undercut with slump and exposed roots.

Image 6.3 - Undercut with exposed roots.

Image 6.4 - Undercut with exposed roots.

Image 6.5 - Undercut with exposed roots.

Image 6.6 - Undercut with exposed roots.

Image 6.7 - Undercut with exposed roots.

VII. Reach 7

Image 7.1 - Undercut.

VIII. Reach 8

Image 8.1 - Undercut with exposed tree roots.

Image 8.2 - Undercut with exposed tree roots.

Image 8.3 - Undercut with exposed tree roots.

Image 8.4 - Undercut with exposed tree roots.

Image 8.5 - Undercut with exposed tree roots.

Image 8.6 - Undercut with exposed tree roots.

Image 8.7 - Undercut with exposed tree roots.

Image 8.8 - Undercut with exposed tree roots.

Image 8.9 - Undercut with exposed tree roots.

Image 8.10 - Undercut with exposed tree roots.

Image 8.11 - Undercut with exposed tree roots.

Image 8.12 - Undercut with exposed tree roots.

Image 8.13 - Undercut with exposed tree roots.

Image 8.14 - Undercut with exposed tree roots.

Image 8.15 - Undercut with exposed tree roots.

IX. Reach 9

Image 9.1 - Undercut with slump and exposed roots. Erosion is somewhat hidden in Reach 9 due to overhanging grass.

Image 9.2 - Undercut with exposed roots. Erosion is somewhat hidden in Reach 9 due to overhanging grass.

Image 9.3 - Undercut with exposed roots. Erosion is somewhat hidden in Reach 9 due to overhanging grass.

Image 9.4 - Undercut with slump and exposed roots. Erosion is somewhat hidden in Reach 9 due to overhanging grass.

Image 9.5 - Undercut with slump and exposed roots. Erosion is somewhat hidden in Reach 9 due to overhanging grass.

Image 9.6 - Undercut with slump and exposed roots. Erosion is somewhat hidden in Reach 9 due to overhanging grass.

Image 9.7 - Undercut with exposed roots. Erosion is somewhat hidden in Reach 9 due to overhanging grass.

Image 9.8 - Undercut with exposed roots. Erosion is somewhat hidden in Reach 9 due to overhanging grass.

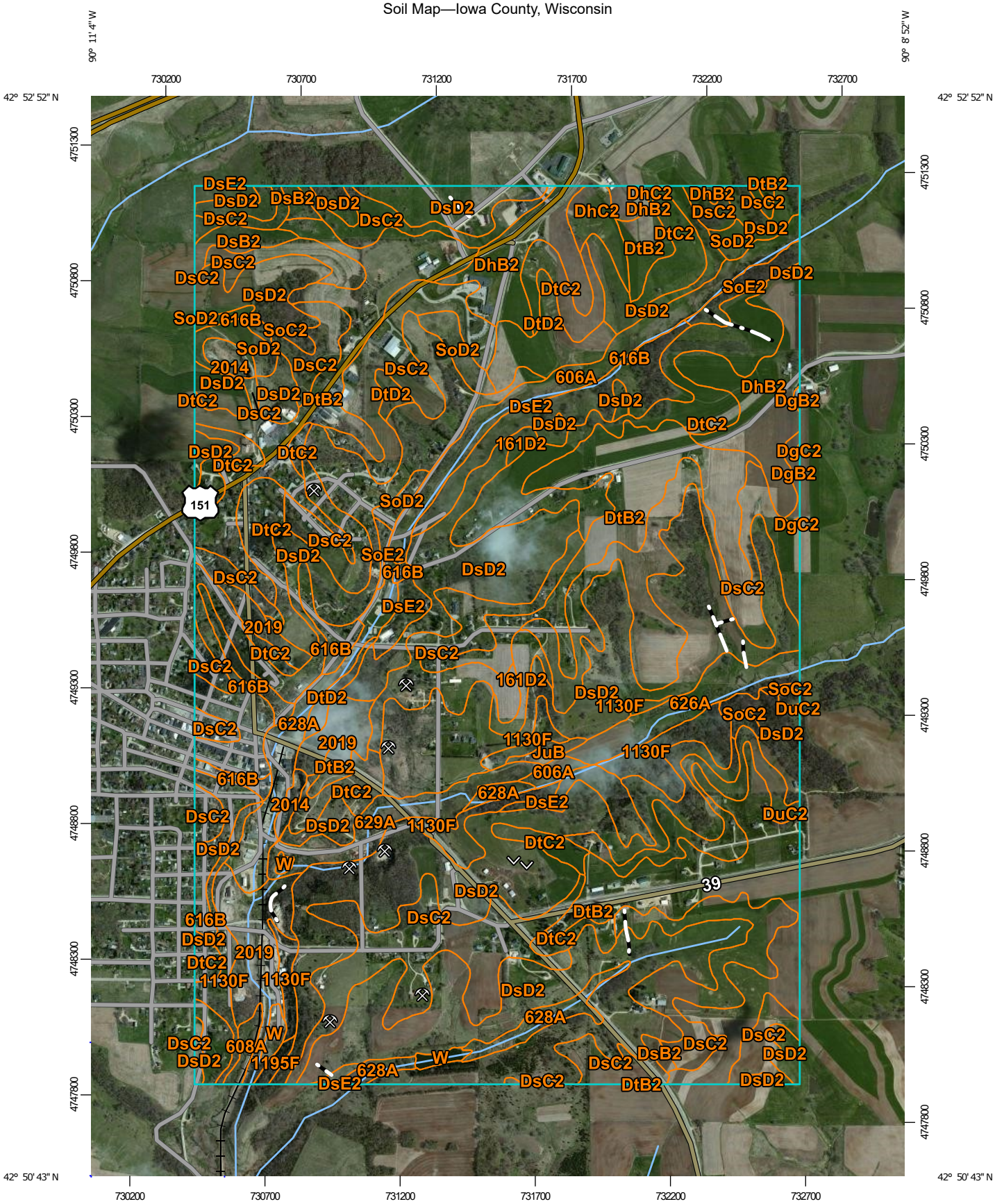
Image 9.9 - Undercut with exposed roots. Erosion is somewhat hidden in Reach 9 due to overhanging grass.

Image 9.10 - Undercut with exposed roots. Erosion is somewhat hidden in Reach 9 due to overhanging grass.

Image 9.11 - Undercut with exposed roots. Erosion is somewhat hidden in Reach 9 due to overhanging grass.

Attachment #8

Soil Map—Iowa County, Wisconsin



Map Scale: 1:19,400 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 250 500 1000 1500

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Iowa County, Wisconsin
Survey Area Data: Version 14, Sep 14, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 2, 2011—Aug 21, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
161D2	Fivepoints silt loam, 12 to 20 percent slopes, moderately eroded	9.6	0.5%
606A	Huntsville silt loam, 0 to 3 percent slopes, occasionally flooded	39.6	2.2%
608A	Lawson silt loam, 0 to 3 percent slopes, occasionally flooded	4.1	0.2%
616B	Chaseburg silt loam, moderately well drained, 2 to 6 percent slopes	21.2	1.2%
626A	Arenzville silt loam, 0 to 3 percent slopes, occasionally flooded	24.2	1.3%
628A	Orion silt loam, 0 to 3 percent slopes, occasionally flooded	43.7	2.4%
629A	Ettrick silt loam, 0 to 2 percent slopes, frequently flooded	23.5	1.3%
1130F	Lacrescent-Dunbarton complex, very stony, 30 to 60 percent slopes	49.5	2.7%
1195F	Elkmound-Northfield complex, 30 to 60 percent slopes, very rocky	2.3	0.1%
2014	Pits, quarry, hard bedrock	7.6	0.4%
2019	Dumps, mine	46.5	2.5%
DgB2	Dodgeville silt loam, 2 to 6 percent slopes, moderately eroded	3.0	0.2%
DgC2	Dodgeville silt loam, 6 to 12 percent slopes, moderately eroded	0.2	0.0%
DhB2	Dodgeville silt loam, deep, 2 to 6 percent slopes, moderately eroded	73.8	4.0%
DhC2	Dodgeville silt loam, deep, 6 to 12 percent slopes, moderately eroded	10.5	0.6%
DsB2	Newglarus silt loam, moderately deep, 2 to 6 percent slopes, moderately eroded	11.6	0.6%
DsC2	Newglarus silt loam, moderately deep, 6 to 12 percent slopes, moderately eroded	349.0	19.0%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
DsD2	Newglarus silt loam, moderately deep, 12 to 20 percent slopes, moderately eroded	602.6	32.8%
DsE2	Newglarus silt loam, moderately deep, 20 to 30 percent slopes, moderately eroded	51.7	2.8%
DtB2	Palsgrove silt loam, 2 to 6 percent slopes, moderately eroded	230.4	12.5%
DtC2	Palsgrove silt loam, 6 to 12 percent slopes, moderately eroded	137.6	7.5%
DtD2	Palsgrove silt loam, 12 to 20 percent slopes, moderately eroded	27.0	1.5%
DuC2	Newglarus complex, 6 to 12 percent slopes, moderately eroded	24.2	1.3%
JuB	Judson silt loam, 2 to 6 percent slopes	3.0	0.2%
SoC2	Sogn and Dodgeville silt loams, shallow, 6 to 12 percent slopes, moderately eroded	4.1	0.2%
SoD2	Sogn and Dodgeville silt loams, shallow, 12 to 20 percent slopes, moderately eroded	22.1	1.2%
SoE2	Sogn and Dodgeville silt loams, shallow, 20 to 30 percent slopes, moderately eroded	9.4	0.5%
W	Water	5.9	0.3%
Totals for Area of Interest		**1,837.9**	**100.0%**

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AGRICULTURAL ANALYSIS

710 Commerce Drive
PO Box 169
Watertown, WI 53094

920-261-0446 phone
920-261-1365 fax
www.rockriverlab.com

Delta3 Engineering-Platteville Total Phosphorous Analysis

Field ID	Sample #	Total P (ppm)
MP ALT B	1	747.4
MP ALT B	3	661.2
MP ALT B	5	893.7
MP ALT B	7	665.8
MP ALT B	9	844.8
MP ALT B	11	916.3
MP ALT B	13	769.2
MP ALT B	15	761.0
MP ALT B	17	671.6
MP ALT B	19	749.7
MP ALT B	21	641.6
MP ALT B	23	758.1
MP ALT B	25	735.4
MP ALT B	27	666.3
MP ALT B	29	821.7
MP ALT B	31	718.6
MP ALT B	33	781.1
MP ALT B	35	893.8
MP ALT B	37	554.0
MP ALT B	39	1111.0
MP ALT B	41	773.8
MP ALT B	43	547.1
MP ALT B	45	913.6
MP ALT B	47	569.8
MP ALT B	49	591.2
MP ALT B	51	464.4
MP ALT B	53	541.2
MP ALT B	55	747.7
MP ALT B	57	603.2
MP ALT B	59	607.2
MP ALT B	61	668.0
MP ALT B	63	706.3
MP ALT B	65	840.4
MP ALT B	67	644.5
MP ALT B	69	547.3

Field ID	Sample #	Total P (ppm)
MP ALT G	1	937.7
MP ALT G	3	868.4
MP ALT G	5	762.5
MP ALT G	7	797.7
MP ALT G	9	835.0
MP ALT G	11	768.6
MP ALT G	13	737.0
MP ALT G	15	754.0
MP ALT G	17	874.9
MP ALT G	19	849.8
MP ALT G	21	769.5
MP ALT G	23	773.9
MP ALT G	25	917.1
MP ALT G	27	911.9
MP ALT G	29	660.1
MP ALT G	31	706.5
MP ALT G	33	922.3
MP ALT G	35	800.4
MP ALT G	37	661.6
MP ALT G	39	721.6
MP ALT G	41	754.0
MP ALT G	43	716.1
MP ALT G	45	706.4
MP ALT G	47	766.7
MP ALT G	49	748.5
MP ALT G	51	739.6
MP ALT G	53	746.4
MP ALT G	55	697.9
MP ALT G	57	853.4
MP ALT G	59	647.3
MP ALT G	61	755.1
MP ALT G	63	802.7
MP ALT G	65	763.3
MP ALT G	67	636.5
MP ALT G	69	704.0
MP ALT G	71	717.4
MP ALT G	73	733.5
MP ALT G	75	751.1

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Delta3 Engineering-Platteville Total Phosphorous Analysis

Field ID	Sample #	Total P (ppm)
MP ALT A	1	765.5
MP ALT A	3	867.3
MP ALT A	5	950.6
MP ALT A	7	1289.0
MP ALT A	9	772.9
MP ALT A	11	804.4
MP ALT A	13	836.9
MP ALT A	15	867.6
MP ALT A	17	509.2
MP ALT A	19	777.5
MP ALT A	21	600.4
MP ALT A	23	702.6
MP ALT A	25	509.2
MP ALT A	27	556.7
MP ALT A	29	584.2
MP ALT A	31	622.5
MP ALT A	33	587.1
MP ALT A	35	612.2
MP ALT A	37	610.1
MP ALT A	39	672.7

Field ID	Sample #	Total P (ppm)
MONT F	1	1005.0
MONT F	5	822.7
MONT F	9	927.9
MONT F	13	710.0
MONT F	17	828.0
MONT F	21	760.4
MONT F	25	772.2
MONT F	29	922.2
MONT F	33	725.2
MONT F	52	947.0
MONT F	56	919.3
MONT F	60	730.2
MONT F	64	705.8
MONT F	68	609.5
MONT F	72	840.0
MONT F	76	770.8
MONT F	80	939.0
MONT F	84	828.1

Field ID	Sample #	Total P (ppm)
MONT B	1	912.3
MONT B	5	613.5
MONT B	9	637.0
MONT B	13	817.6
MONT B	17	669.7
MONT B	21	860.3
MONT B	24	760.0
MONT B	28	698.8
MONT B	32	639.4
MONT B	36	598.4
MONT B	40	736.3
MONT B	44	645.4

Field ID	Sample #	Total P (ppm)
MONT A	47	695.7
MONT A	51	695.9
MONT A	55	551.3
MONT A	59	709.3
MONT A	63	769.7
MONT A	68	660.3
MONT A	72	660.1
MONT A	76	824.4
MONT A	80	747.2
MONT A	84	662.4
MONT A	87	739.1

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Delta3 Engineering-Platteville Total Phosphorous Analysis 6/13/19

Field ID	Sample #	Total P (ppm)
Wauzeka-Kickapoo	1	608.8
Wauzeka-Kickapoo	3	308.6
Wauzeka-Kickapoo	5	519.5
Wauzeka-Kickapoo	7	494.1
Wauzeka-Kickapoo	9	661.9
Wauzeka-Kickapoo	11	576.8
Wauzeka-Kickapoo	13	687.7
Wauzeka-Kickapoo	15	578.9
Wauzeka-Kickapoo	17	616.2
Wauzeka-Kickapoo	19	483.0
Wauzeka-Kickapoo	21	567.2
Wauzeka-Kickapoo	23	562.1
Wauzeka-Kickapoo	25	356.4
Wauzeka-Kickapoo	27	588.7
Wauzeka-Kickapoo	29	335.2

Field ID	Sample #	Total P (ppm)
D3-C-MP	1	800.7
D3-C-MP	5	851.8
D3-C-MP	9	727.6
D3-C-MP	13	915.3
D3-C-MP	59E	719.8
D3-C-MP	63E	762.8
D3-C-MP	67E	816.0
D3-C-MP	71E	659.4
D3-C-MP	75E	669.9
D3-C-MP	79E	668.6
D3-C-MP	83E	1185.0
D3-C-MP	87E	715.6
D3-C-MP	91E	693.6
D3-C-MP	95E	567.1
D3-C-MP	99E	685.7
D3-C-MP	103E	627.6
D3-C-MP	107E	758.3
D3-C-MP	111E	733.1
D3-C-MP	115E	612.1
D3-C-MP	119E	597.9

Field ID	Sample #	Total P (ppm)
D3-C-MP	57	1144.0
D3-C-MP	61	531.3
D3-C-MP	65	610.6
D3-C-MP	69	687.5
D3-C-MP	73	817.9
D3-C-MP	77	614.1
D3-C-MP	81	1489.0
D3-C-MP	85	883.8
D3-C-MP	89	663.1
D3-C-MP	93	713.0
D3-C-MP	97	630.9
D3-C-MP	101	807.9
D3-C-MP	105	658.2
D3-C-MP	109	668.5
D3-C-MP	113	785.5
D3-C-MP	117	620.3
D3-C-MP	121	721.7
D3-C-MP	123E	733.3
D3-C-MP	125	881.4
D3-C-MP	127E	712.1

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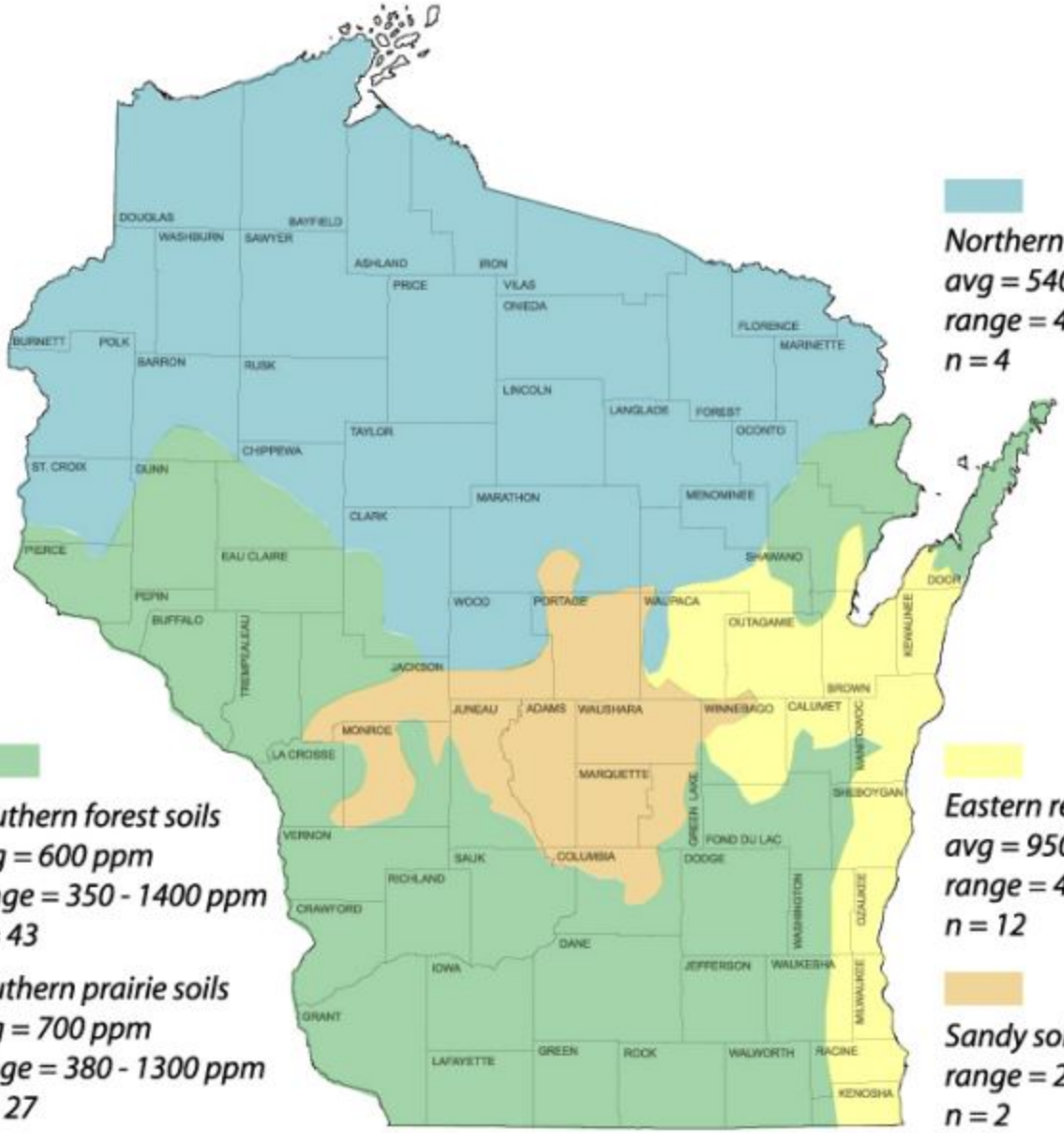
Delta3 Engineering-Platteville Total Phosphorous Analysis 6/13/19

Field ID	Sample #	Total P (ppm)
D3-C-MP	3	955.9
D3-C-MP	7	939.4
D3-C-MP	11	795.9
D3-C-MP	15	891.5
D3-C-MP	17	885.6
D3-C-MP	19	757.7
D3-C-MP	21	1082.0
D3-C-MP	23	719.0
D3-C-MP	25	935.3
D3-C-MP	27	910.2
D3-C-MP	29	1083.0
D3-C-MP	31	604.5
D3-C-MP	33	942.6
D3-C-MP	35	729.7
D3-C-MP	37	855.7
D3-C-MP	39	1099.0
D3-C-MP	41	739.9
D3-C-MP	41E	1005.0
D3-C-MP	43	894.8
D3-C-MP	45	1051.0
D3-C-MP	47	564.2
D3-C-MP	49	856.7
D3-C-MP	51	896.7
D3-C-MP	53	850.3
D3-C-MP	55	1083.0

Soil Total P



Northern loamy soils
avg = 540 ppm
range = 480-580 ppm
n = 4

Southern forest soils
avg = 600 ppm
range = 350 - 1400 ppm
n = 43

Southern prairie soils
avg = 700 ppm
range = 380 - 1300 ppm
n = 27

Eastern red soils
avg = 950 ppm
range = 430 - 2820 ppm
n = 12

Sandy soils
range = 250 - 400 ppm
n = 2

Organic soils: range = 1330 - 1350 ppm, n = 2

Attachment #9

NRCS Excel Workbook Estimating 'Other' Erosion Types June 2006

Annual soil loss predictions for conservation planning purposes are made with current soil loss prediction technology (RUSLE2). RUSLE2 estimates sheet, rill and interrill erosion. Erosion that is seasonal in nature and caused by concentrated flow, however, is not predicted by RUSLE2.

This workbook provides conservation planners with simple tools and processes to help estimate the amount of erosion occurring in ephemeral gullies, classic gullies and on streambank erosion sites.

Definitions:

Rill Erosion: consists of the removal of soil by concentrated water running through little streamlets, or headcuts. Detachment in a rill occurs if the sediment in the flow is below the amount the load can transport and if the flow exceeds the soil's resistance to detachment. As detachment continues or flow increases, rills will become wider and deeper. Rills may be of any size but are usually less than four inches deep. Rills are:

<> generally parallel on the slope, but may converge,
<> generally of uniform spacing and dimension,
<> generally appear at different locations on the landscape from year to year,
<> generally shorter than ephemeral cropland gullies,
<> usually end at a concentrated flow channel, or an area where the slope flattens and deposition occurs,
<> are on the same portion of the slope that is used to determine the length of slope (L) for RUSLE2,
<> many small, but conspicuous channels running in the direction of slope gradient

Rill erosion is considered in the RUSLE2 calculations.

Ephemeral Gully Erosion: Small erosion channels formed on crop fields as a result of concentrated flow of runoff water. These channels are routinely eliminated by tillage of the field but return following subsequent runoff events. Ephemeral Gullies are small enough to be eliminated (temporarily) with the use of typical farm tillage equipment and they:

<> recur in the same area of concentrated flow each time they form,
<> frequently form in well-defined depressions in natural drainage ways,
<> are generally wider, deeper, and longer than the rills in the field,

Ephemeral Gullies are **not** calculated by the RUSLE2 program.

Gully Erosion: Permanent gullies are formed when channel development has progressed to the point where the gully is too wide and too deep to be tilled across. These channels carry large amounts of water after rains and deposit eroded material at the foot of the gully. They disfigure landscape and make the land unfit for growing crops. Gullies:

<> may grow or enlarge from year to year by head cutting and lateral enlarging,
<> often occur in depressions or natural drainage ways,
<> may begin as ephemeral gullies that were left in the field untreated,
<> may, over time, become partially stabilized by grass, weeds or woody vegetation,

Gully erosion is not calculated by the RUSLE2 program.

Streambank Erosion: The wearing away of streambanks by flowing water. The removal of soil from streambanks is typically caused by the direct action of stream flow and/or wind/wave action, typically occurring during periods of high flow. Streambank erosion:

<> is a natural process that generally increases when unprotected streambanks (e.g. no woody vegetation) are subject to the actions of flowing water and ice damage.

<> is a common occurrence on many Vermont river channels that are experiencing geomorphic adjustments

---

The soil loss from ephemeral gullies, gullies and streambank erosion areas can be estimated by calculating the volume of soil removed by erosion processes. The volume of soil loss can be multiplied by the typical unit weight of the soil (based on soil texture) which is eroded. Approximate soil unit weights are expressed below[1]:

Soil Texture	Estimated Dry Density lb/ft^3
Gravel	110
Sand	105
Loamy Sand	100
Sandy Loam	100
Fine Sandy Loam	100
Sandy Clay Loam	90
Silt Loam	85
Silty Clay Loam	85
Silty Clay	85
Clay Loam	85
Organic	22

Procedure for estimating Ephemeral Soil Erosion:

The following formula will be used to calculate annual estimated ephemeral gully erosion:

$$\frac{\text{Ephemeral Gully } \textbf{Length} \text{ X Gully Average } \textbf{Width} \text{ X Gully Average } \textbf{Depth}}{2000} \textbf{ X } \text{Soil Weight (lbs/ft}^3\text{)} \textbf{ X } \text{Occurrences per Year} \textbf{ = } \textbf{Estimated} \text{ Soil Loss (Tons per Year)}$$

* Ephemeral gully erosion may reform multiple times per year, and under certain conditions it may not form in a given year. The voided volume which would be calculated after a runoff event is not necessarily representative of an annual rate, but is representative of only the specific event. This erosion can be calculated for individual storms and can be summed for a yearly estimate.

1 Data from published soil surveys, laboratory data, and soil interpretation record are to be used where available. Parent materials, soil consistency, soil structure, pore space, soil texture, and coarse fragments all influence unit weight.

Procedure for estimating Gully Soil Erosion:

The following formula will be used to calculate annual estimated classic gully erosion:

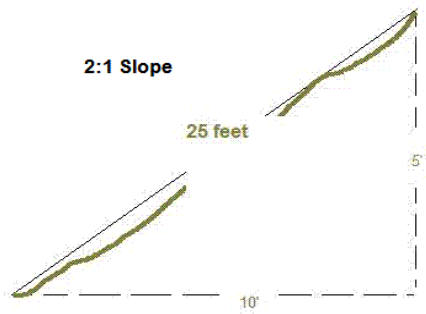
$$\frac{\text{Gully } \textbf{Length} \times (\text{Average } \textbf{Width} \times \text{Average } \textbf{Depth} \times 0.5) \times \textbf{Soil Weight} \text{ (lbs/ft3)}}{2000} \;/\; \text{Formation Years} = \textbf{Estimated} \text{ Soil Loss Per Year (Tons)}$$

Procedure for estimating Streambank Soil Erosion (Direct Volume Method):

The following formula will be used to calculate annual estimated streambank erosion unless a field measurement procedure[2] is used:

$$\frac{\text{ing Bank } \textbf{Length} \times \text{Eroding Bank Height} \times \text{Lateral Recession Rate (FT/YR)} \times \text{Soil Weight (lb}}{2000} = \textbf{Estimated} \text{ Soil Loss Per Year (Tons)}$$

** Eroding bank height is measured along the bank, not the vertical height of bank. Example: if vertical height of an eroding streambank is 5 feet, and the bank is on a 2:1 slope, the total eroding bank distance is 25 feet -- 1/2 (Base X Height).



***The average annual recession rate is the thickness of soil eroded from a bank surface (perpendicular to the face) in an average year.

Stream bank erosion sometimes presents itself as a major occurance in a given year, whereas the same bank may not erode significantly for a period of years if no major runoff events occur. Recession rates need to be calculated as an average of years when erosion does and does not occur. Recession rate is not calculated as the erosion occurring after a single event.

Use available resources to assist in the estimation of recession rate: use past and present aerial photography, old survey records, and any other information that helps to determine the bank condition at known times in the past. When such information is lacking or insufficient, field observations and professional judgement are needed to estimate recession rates.
It is often not possible to directly measure recession rates in the field. Therefore, the following table has been included which relates recession rates to narrative descriptions of banks eroding at different rates (Table from NRCS Wisconsin guidance).

Lateral Recession Rate (ft/yr)	Category	Description
0.01-0.05	Slight	Some bare bank but active erosion not readily apparent. Some rills but no vegetative overhang. No exposed tree roots.
0.06-0.2	Moderate	Bank is predominantly bare with some rills and vegetative overhang. Some exposed tree roots but no slumps or slips.
0.3-0.5	Severe	Bank is bare with rills and severe vegetative overhang. Many exposed tree roots and some fallen trees and slumps or slips. Some changes in cultural features such as fence corners missing and realignment of roads or trails. Channel cross section becomes U-shaped as opposed to V-shaped.
0.5+	Very Severe	Bank is bare with gullies and severe vegetative overhang. Many fallen trees, drains and culverts eroding out and changes in cultural features as above. Massive slips or washouts common. Channel cross section is U-shaped and stream course may be meandering.

2 The best way to quantify streambank erosion is to measure it directly in the field. The basic procedure in measuring streambank erosion is to survey, flag, or in some way fix a “before" image of the channel you are evaluating in order to establish the baseline condition. Changes due to erosion can then be monitored over time by going back to the study area and re-measuring from the fixed reference points.
Channel cross-sections can be surveyed and plotted on a periodic basis to monitor change. Stakes or pins can be driven into channel banks flush with the surface. The amount of stake or pin exposed due to erosion is the amount of change at the streambank erosion site between your times of observation.
The time required to monitor a site often precludes this method of data collection. The Direct Volume Method can be used to estimate streambank erosion at your site.

Acknowledgements: This Excel workbook was created as a planning tool for use by conservation planners. The basic format and content of the tool is a compilation of various similar tools, processes and procedures employed by NRCS in several states including: Indiana, Iowa, Kansas, Maryland, Michigan, Missouri, Nebraska, Oklahoma, South Dakota and Wisconsin. Some of the terminology in the 'Definitions' section of this Readme document closely mirrors these sources.

NRCS Streambank and Irrigation Ditch Erosion Estimator (Direct Volume Method)

Farmer / Cooperator Name:	Varies	Evaluated By:	J. Fure
Tract Number:	Varies	Evaluation Date:	May 7, 2020

Field Number	*Eroding Strmbnk Reach #; or Ditch Side/Bottom*	*Eroding Bank or Ditch Length (Feet)*	*Eroding Bank Height; or Ditch Bottom Width* (Feet)*	*Area of Eroding Strmbank or Ditch (FT^2)*	*Lateral or Ditch Bottom Recession Rate (Estimated) (FT / Year)*	*Estimated Volume (FT^3) Eroded Annually*	*Soil Texture*	*Approximate Pounds of Soil per FT^3*	*Estimated Soil Loss (Tons/Year)*	*Soil Total Phosphorus (ppm)*	*Estimated Phosphorus Loss (Pounds/Year)*
Varies	1 (Right)	1,432	3.6	5,155	0.25	1,288.8	Silt Loam	85	54.8	748.7	82.0
	1 (Left)	1,432	4.0	5,728	0.20	1,145.6	Silt Loam	85	48.7	748.7	72.9
	2 (Right)	2,422	2.3	5,571	0.20	1,114.1	Silt Loam	85	47.4	782.4	74.1
	2 (Left)	2,422	2.4	5,813	0.20	1,162.6	Silt Loam	85	49.4	782.4	77.3
	3 (Right)	893	3.1	2,768	0.30	830.5	Silt Loam	85	35.3	734.8	51.9
	3 (Left)	893	3.2	2,858	0.30	857.3	Silt Loam	85	36.4	734.8	53.5
	4 (Right)	765	4.0	3,060	0.25	765.0	Silt Loam	85	32.5	620.1	40.3
	4 (Left)	765	3.8	2,907	0.25	726.8	Silt Loam	85	30.9	620.1	38.3
	5 (Right)	1,183	1.5	1,775	0.25	443.6	Silt Loam	85	18.9	649.6	24.5
	5 (Left)	1,183	2.2	2,603	0.25	650.7	Silt Loam	85	27.7	649.6	35.9
	6 (Right)	1,345	4.3	5,784	0.20	1,156.7	Silt Loam	85	49.2	751.0	73.8
	6 (Left)	1,345	1.7	2,287	0.20	457.3	Silt Loam	85	19.4	751.0	29.2
	7 (Right)	327	1.9	621	0.15	93.2	Silt Loam	85	4.0	620.5	4.9
	7 (Left)	327	1.4	458	0.15	68.7	Silt Loam	85	2.9	620.5	3.6
	8 (Right)	2,655	3.8	10,089	0.35	3,531.2	Silt Loam	85	150.1	885.6	265.8
	8 (Left)	2,655	4.2	11,151	0.35	3,902.9	Silt Loam	85	165.9	885.6	293.8
	9 (Right)	3,219	2.3	7,404	0.25	1,850.9	Silt Loam	85	78.7	734.4	115.5
	9 (Left)	3,219	3.4	10,945	0.25	2,736.2	Silt Loam	85	116.3	734.4	170.8
				TOTAL		22781.8			968.2		**1508.3**

Attachment #10

Water Quality Trading
Operation and Maintenance Plan

Introduction:
The Water Quality Trading (WQT) Operation and Maintenance (O&M) Plan is meant to be a working document and should be updated as new trading practices are implemented. Currently, the Operation and Maintenance Plan revolves around streambank stabilization along Brewery Creek. The attached *Streambank Inspection Form* should be completed during annual inspections and following major storm events. Inspection forms shall be retained for at least five (5) years to ensure compliance with the WQT Plan.

Publicly Owned Riprap:
City representative to complete inspection form annually and following major storm events. The form will then be provided to the Director of Public Works following inspection. The City will address maintenance issues identified during inspection within 30 days. Substantial maintenance issues may require an extended timeframe for generation of plans, specifications, and a public bid process to perform the work. Inspections and O&M activities shall be reported in the annual WQT Report sent to the DNR.

Privately Owned Riprap:
City representative to complete inspection form annually and following major storm events. The form will then be provided to the Director of Public Works following inspection. The City will address maintenance issues identified during inspection within 30 days. Substantial maintenance issues may require an extended timeframe for generation of plans, specifications, and a public bid process to perform the work. Maintenance expenses will be incurred by the City. The Private Property Owner will be allowed to perform maintenance activities at the expense of the Private Property Owner. Inspections and O&M activities shall be reported in the annual WQT Report sent to the DNR.

Easement:
A temporary construction easement and permanent access easement are to be utilized by the City of Mineral Point to construct, operate, and maintain the streambank stabilization.

Quality Assurance:
Riprap gradation and composition shall be provided for each source of material. Riprap shall be installed per *Wisconsin Department of Transportation Specification 606 Riprap*, attached.

Installation:
- Install erosion control.
- Grade streambanks as indicated on Plans.
- Install riprap:
    - Place geotextile fabric over substrate, lap edges and ends.
    - Do not place riprap over frozen or spongy subgrade surfaces.
    - Place riprap as indicated on Construction Plans.
    - Installed Thickness: Heavy Riprap; 18-inch to 24-inch diameter; installed minimum 30-inch thickness or as per thickness shown on the plans.
- Restore all disturbed areas to prevent erosion.

Practice Registration:
The purpose of the "Water Quality Trading Management Practice Registration" form is to report to WDNR that a management practice identified in the trading plan has been properly installed and is established and effective. This information will be used to track implementation progress, verify compliance and perform audits, as necessary. A registration form should be submitted for every management practice that has been identified in the trading plan. If practices are established prior to trading plan submittal, registration forms may be submitted with the trading plan. Otherwise, registration forms should be submitted during the permit term as practices become effective or with the annual report. A blank *Water Quality Trading Management Practice Registration Form 3400-207* is attached and should be submitted following implementation of the trading practice.

Tracking Procedures:
The City will track credits used monthly. The City will report credit usage to the DNR on a monthly basis in the Discharge Monitoring Reports (DMRs). The annual report will summarize the 12 months of credit usage and credit generation. The City will report to DNR any concern that they have that may result in a need to modify the trade agreement and/or this trade plan. For example, a need to generate additional credits based on discharge.

Inspections/Maintenance Considerations:
- A *Streambank Inspection Form* is attached.
    - Station: As noted on Construction Plans
    - Condition of Riprap: Excellent; Good; Fair; or Poor
    - Maintenance Estimate: Provide an estimate for how long the maintenance will take to complete or a dollar value for completion. This will help determine if the City will perform the work or if the City will hire another entity to perform the work.
    - Date Completed: Following completion of the required maintenance, input the date of completion.
    - Comments: Provide the required maintenance activity along with any other useful information. If the cell provided is not large enough for Comments, write "See Back of Sheet" and provide comments on the reverse side of the Form.
- Following installation of the riprap, inspect the riprap closely over the next few months to ensure that seeding grows.
- Riprap may settle or shift especially after flooding events or freeze/thaw.
- May need to control weed and brush growth.
- Inspect riprap areas as needed.
- At a minimum, inspect after major storm events.
- If riprap has been damaged, repair it promptly to prevent a progressive failure.
- If repairs are needed repeatedly at a location, evaluate the site to determine if the original design conditions have changed.

Routine Maintenance Items that can be performed by City:
- Evaluate streambank condition
    - Re-grade/re-seed streambank that is impaired.
    - Reconstruct/replace riprap that has settled, shifted, or washed out.
- Manage Vegetation
    - Remove invasive/noxious plants.

- Manage Garbage
    - Remove garbage and other debris that could otherwise impair the streambank stability.

Monthly Certification:
Each month, the City will certify that the riprap is maintained and operating in a manner consistent with this Water Quality Trading Plan or provide a statement noting noncompliance with this Plan. The monthly Discharge Monitoring Report (DMR) will include the following statement as a certification of compliance when the Credit Generating Practice is operating in a manner consistent with the Plan:

> "I certify that to the best of my knowledge that the management practices identified in the approved water quality trading plan as the source of phosphorus credits is installed, established and properly maintained."

Annual Inspection:
An annual inspection of the riprap will be performed by a licensed Professional Engineer to ensure that the riprap is functioning as intended in order to meet the requirements of the WQT Plan.

Noncompliance:
The City will notify DNR by telephone call to DNR's regional wastewater compliance engineer within 24 hours or next business day of becoming aware that phosphorus credits used or intended for use by City are not being generated as outlined in this Water Quality Trading Plan.

The City will submit a written notification within five days after the City recognizes that the phosphorus credits are not being generated as outlined in the Trading Plan. DNR may waive the requirement for submittal for a written notice within five days and instruct the City to submit the written notice with the next regularly scheduled monitoring report required by City's WPDES Permit.

The written notification should include:

- Description of noncompliance and cause.
- Period of noncompliance including dates and times.
- Schedule for attaining compliance including time and steps toward compliance.
- Plan to prevent reoccurrence of the noncompliance.

Notification of Trade Agreement Termination:
If a trade agreement or the trading plan needs to be terminated during the permit term, the permittee should submit a Notice of Termination to the wastewater engineer/specialist to inform WDNR of the termination. WDNR staff should use this information to determine if a permit modification is required due to the termination, the termination will result in non-compliance, or other permit actions are required due to the termination. When credits are reduced or eliminated for any reason, the permittee is still required to meet their WQBELs without any grace period. To prevent noncompliance with WQBELs, changes to trading plans must be addressed before credits are lost. Modifying the permit/trading plan will require at least 180 days. A blank *Notification of Water Trade Agreement Termination Form 3400-209* is attached and should be submitted to WDNR prior to practice termination, no later than the submittal date of the annual report.

Streambank Inspection Form

Date_____

Inspector_____

Reason for Inspection _____

Stream Reach	Station Start	Station Stop	Condition	Required Maintenance	Maintenance Estimate (Time or Cost)	Date Completed	Comments
1							
2							
3							
4							
5							
6							
7							
8							
9							

Section 606 Riprap

606.1 Description

(1) This section describes furnishing and placing riprap.

606.2 Materials

606.2.1 Riprap Stone

(1) Furnish durable field or quarry stone that is sound, hard, dense, resistant to the action of air and water, and free of seams, cracks, or other structural defects. Use stone pieces with a length and width no more than twice the thickness. Do not place material without the engineer's approval of the stone quality, size, and shape.

(2) The department will determine the average dimension of stone pieces by averaging measurements of thickness, width, and length. Furnish stones conforming to the size requirements for the riprap grade the plans show. Size requirements are expressed as the percent of the gross in-place riprap volume occupied by stones within average dimension size ranges for each riprap grade as follows:

AVERAGE DIMENSION RANGES FOR EACH RIPRAP GRADE				FRACTION OF GROSS
LIGHT RIPRAP inches	MEDIUM RIPRAP inches	HEAVY RIPRAP inches	EXTRA-HEAVY RIPRAP inches	IN-PLACE RIPRAP VOLUME OCCUPIED BY STONES
>16	>20	>25	>30	0%
11 - 13	14 - 16	18 - 20	22 - 25	10% - 14%
9 - 11	11 - 14	14 - 18	18 - 22	15% - 21%
4 - 9	5 - 11	6.5 - 14	8 - 18	20% - 28%
<4	<5	<6.5	<8	5% - 7%
<1	<1	<1	<1	2% or less

(3) The contractor may substitute waste concrete slabs for stone. Furnish sound concrete, free of protruding reinforcement, and conforming to the size requirements specified for stone.

606.2.2 Riprap Grout

(1) Furnish an air-entrained mortar or concrete to fill the voids between riprap stones in grouted riprap. Conform to the physical requirements for component materials as specified in 501.2 except furnish fine aggregate or a combination of fine and coarse aggregate with a gradation that results in a grout with a consistency that allows complete filling of the riprap voids.

(2) Certify that the grout conforms to the following mixture requirements:

- Contains 470 pounds or more of portland cement per cubic yard of grout. The contractor may substitute class C fly ash for up to 30 percent of the required portland cement.
- Contains only enough water to achieve a 3-inch slump. Any additional workability required to completely fill the riprap voids must be achieved with admixture without increasing the w/cm ratio.
- Contains 9 percent or more air for mixes with a nominal top size aggregate less than 3/8 inch or 7 percent or more air for a mix with 3/8 inch or larger aggregate.

606.3 Construction

606.3.1 General

(1) Prepare the bed for the riprap by excavating, shaping the slopes, and constructing the toe for riprap installation. After placing the riprap, restore the surface of adjacent work and dispose of surplus material.

606.3.2 Placing Light Riprap

(1) If laying stone above the waterline, place it by hand. Lay it with close, broken joints and firmly bed it in the slope and against the adjoining stones. Lay the stones perpendicular to the slope with ends in contact. Compact the riprap thoroughly as construction progresses. Make the finished surface even and tight. Place larger stone in lower courses. Chink spaces between stones by firmly ramming spalls into place. If placing riprap over geotextile, use type R and conform to 645.3.1.6.

(2) Unless specified otherwise, make riprap at least one foot thick, measured perpendicular to the slope.

(3) Do not place riprap against, or in contact with, concrete surface before the end of the concrete's curing and protection period.

606.3.3 Placing Medium, Heavy, and Extra-Heavy Riprap

(1) The contractor may place medium, heavy, and extra-heavy riprap by any mechanical means that produce a completed job within reasonable tolerances of the typical section the plans show. Limit

handwork to the quantity necessary to fill large voids or to correct segregated areas. If placing riprap over geotextile, use type HR and conform to 645.3.1.7.

(2) Unless specified otherwise, make medium riprap at least 18 inches thick, heavy riprap at least 24 inches thick, and extra-heavy riprap at least 30 inches thick.

606.3.4 Placing Grouted Riprap

(1) If the plans specify using grouted riprap, lay the stone as specified above under 606.3.2 or 606.3.3. Fill the spaces between the stones with cement mortar. Use sufficient mortar or concrete to completely fill voids, except leave the face surface of the stone exposed.

(2) Place grout from the bottom to the top and then sweep the surface with a stiff broom. After completing the grouting, cure the surface as specified in 415.3.12 except substitute type 1-D curing compound as specified for structures in 502.2.6. During cold weather, protect the concrete as specified in 415.3.13 for concrete pavement.

606.4 Measurement

(1) The department will measure the bid items under this section by the cubic yard acceptably completed, measured as the volume within the limiting dimensions the contract designates or the engineer establishes in the field.

606.5 Payment

(1) The department will pay for measured quantities at the contract unit price under the following bid items:

ITEM NUMBER	DESCRIPTION	UNIT
606.0100	Riprap Light	CY
606.0200	Riprap Medium	CY
606.0300	Riprap Heavy	CY
606.0400	Riprap Extra-Heavy	CY
606.0500	Grouted Riprap Light	CY
606.0600	Grouted Riprap Medium	CY
606.0700	Grouted Riprap Heavy	CY
606.0800	Grouted Riprap Extra-Heavy	CY

(2) Payment for the bid items under this section is full compensation for preparing the bed, providing and placing riprap, restoring adjacent work, and disposing of surplus material. The department will pay for excavation in excess of the approximate volume of earth occupied by the riprap under the Excavation Common bid item as specified under 205.5.

(3) Payment for the Grouted Riprap bid items also includes placing and curing mortar.

State of Wisconsin
Department of Natural Resources
101 South Webster Street
Madison WI 53707-7921
dnr.wi.gov

Water Quality Trading Management Practice Registration

Form 3400-207 (R 1/14)

Notice: Pursuant to s. 283.84, Wis. Stats., this form must be completed by any WPDES permittee that is using water quality trading as a method of complying with a permit limitation. Failure to complete this form would not result in penalties. Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records Law (ss. 19.31 - 19.39, Wis. Stats.).

Applicant Information

Permittee Name	Permit Number WI-	Facility Site Number

Facility Address	City	State	ZIP Code

Project Contact Name (if applicable)	Address	City	State	ZIP Code

Project Name

Broker/Exchange Information (if applicable)

Was a broker/exchange be used to facilitate trade? ◯ Yes ◯ No

Broker/Exchange Organization Name	Contact Name

Address	Phone Number	Email

Trade Registration Information (Use a separate form for each trade agreement)

Type	Trade Agreement Number	Practices Used to Generate Credits	Anticipated Load Reduction	Trade Ratio	Method of Quantification
◯ Urban NPS ◯ Agricultural NPS ◯ Other					

County	Closest Receiving Water Name	Land Parcel ID(s)	Parameter(s) being traded

The preparer certifies all of the following:

- I have completed this document to the best of my knowledge and have not excluded pertinent information.
- I certify that the information in this document is true to the best of my knowledge.

Signature of Preparer	Date Signed

Authorized Representative Signature

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision. Based on my inquiry of those persons directly responsible for gathering and entering the information, the information is, to the best of my knowledge and belief, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature of Authorized Representative	Date Signed

Leave Blank – For Department Use Only

Date Received		Trade Docket Number
Entered in Tracking System ☐ Yes	Date Entered	Name of Department Reviewer

State of Wisconsin
Department of Natural Resources
101 South Webster Street
Madison WI 53707-7921
dnr.wi.gov

Notification of Water Trade Agreement Termination

Form 3400-209 (1/14)

Notice: Pursuant to s. 283.84, Wis. Stats., and ch. NR 217 Wis. Adm. Code, this form must be completed by any WPDES permittee that is using water quality trading as a method of complying with a permit limitation. Failure to complete this form would not result in penalties. Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records Law (ss. 19.31 - 19.39, Wis. Stats.).

Applicant Information

Permittee Name	Permit Number WI-	Facility Site Number

Facility Address	City	State	ZIP Code

Project Contact Name (if applicable)	Address	City	State	ZIP Code

Project Name

Credit Generator Information

Credit generator type (select all that apply):

- ☐ Permitted Discharge (non-MS4/CAFO)
- ☐ Permitted MS4
- ☐ Permitted CAFO
- ☐ Urban nonpoint source discharge
- ☐ Agricultural nonpoint source discharge
- ☐ Other - Specify:

Trade Agreement number(s) to be terminated including affected land parcel ID(s):

Amount of trading credit being terminated	Effective date of termination

Reason for termination

Is this agreement being updated or replaced?

- ◯ Yes
- ◯ No
- ◯ Unsure

Will this termination result in non-compliance with the effective limit or other permit requirements?

- ◯ Yes; Name: _____
- ◯ No
- ◯ Unsure

The preparer certifies all of the following:

- I am familiar with the specifications submitted for this application, and I believe all applicable items in this checklist have been addressed.
- I have completed this document to the best of my knowledge and have not excluded pertinent information.

Signature of Preparer	Date Signed

Authorized Representative Signature

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision. Based on my inquiry of those persons directly responsible for gathering and entering the information, the information is, to the best of my knowledge and belief, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature of Authorized Representative	Date Signed